COMMUNITY BENEFITS PLAN AMENDMENTS

SUMMARY

The Community Benefits Plan (also referred to in this Attachment as the "CBA") is Exhibit G to the HPS2/CP DDA. The CBA's goal is to ensure that the local Bayview Hunters Point ("BVHP") community has the opportunity to participate in, and benefit from, the Project. Most community benefits are captured in the CBA.

The CBA Amendments have been reviewed and approved by OCII staff.

The currently approved CBA is silent on the Developer's annual reporting obligation. The CBA is being modified to include a bi-annual reporting obligation. The currently approved CBA includes a Developer obligation to facilitate the rehabilitation of Building 813 and to provide 260,000 gross square feet for use as a center for the incubation of emerging businesses and technologies. Under the modified CBA, the Agency will convey Building 813 to Developer. As consideration for the conveyance, Developer will provide 75,000 gross square feet of maker space within the Shipyard Site. The currently approved CBA also includes an agreement to distribute Community Facilities Space ("CFS") throughout the Project Site, including a significant portion in the retail portion of the Project Site. The modified CBA includes an approval process for locating CFS; a process for approval of Community Facility Entities; a provision to provide the CFS in warm shell condition and a temporary relief of obligation clause.

DETAILED AMENDMENT OVERVIEW

Amendments to the Community Benefits Plan include:

REPORTING OBLIGATION

(a) Section 7.2(a)

- Added an obligation to provide a bi-annual written report and, if requested, summary presentation of the Community Benefits Status Report to the CAC and Agency Commission
- Added a requirement that the written report will describe the status of Developer's and, to the extent known by Developer, each Vertical Developer's compliance with their respective obligations under the Community Benefits Plan during the immediately preceding period between January 1 and June 30 or July 1 and December 31

BUILDING 813 SITE

- Section 3.4(c) has been deleted and replaced. Below are some of the substantive changes:
  - §3.4 (i) - Maker Space Requirement – Developer shall provide 75,000 gross square feet of maker space within the Shipyard Site
  - §3.4 (i) Added a definition for "Maker Space"
  - §3.4 (ii) Added an obligation requiring Developer to complete at least 37,500 gross square feet of Maker Space to Cold Shell condition based on milestone related to completion of retail, research and development and office uses

- §3.4 (ii) Added an obligation requiring Developer to complete remaining 37,500 gross square feet of Maker Space to Cold Shell condition based on milestone related to completion of retail, research and development and office uses

- §3.4 (iv) Added a definition for "Good-Faith Efforts" related to marketing, identification and tenant selection for Maker Spaces

- §3.4 (iv) Added a definition for "Marketing Period" related to marketing, identification and tenant selection for Maker Spaces

- §3.4 (v) Added a Temporary Relief of Obligation, temporarily relieving Developer of Maker Space tenanting obligation if, after Good-Faith Efforts are exhausted, Developer is unable to identify an appropriate tenant for any Maker Space

- §3.4 (vii) Added a term limit specifying when Maker Space obligation will terminate

COMMUNITY FACILITIES SPACE

- Section 3.2 has been deleted and replaced. Below are some of the substantive changes:

  - §3.2(b) Added a requirement that Developer shall use "Good-Faith Efforts" to identify a list of Community Facilities Entities able to use Community Facilities Space

  - §3.2(c) Provides specific details on the process for selection of Community Facilities Entities

  - §3.2(d) Added a Temporary Relief of Obligation, temporarily relieving Developer of Community Facilities Entity tenanting obligation if, after Good-Faith Efforts are exhausted, Developer is unable to identify an appropriate Community Facilities Entity. Relief of the CFS tenanting obligation shall not exceed 5 years. The CFS obligation will never terminate.

  - §3.2(e) Added a definition for "Warm Shell" condition and an obligation that Developer provide CFS in "Warm Shell" condition for approved Community Facilities Entity(ies)

EXHIBIT 2 TO THE THIRD AMENDMENT

Amendments to Community Benefits Plan

1. Section 7.2(a) is hereby added to the Community Benefits Plan as follows:

   (a) Reporting Obligation. Commencing as of the Third Amendment Effective Date and continuing until issuance of the last Certificate of Completion for the Project, Developer shall within thirty (30) days following each Community Benefits Reporting Period (as defined below) submit a Community Benefits Status Report to the Agency. Following each such submission, if requested by the CAC and the Agency, respectively, Developer shall present a summary of such Community Benefits Status Report to the CAC and to the Agency Commission. "**Community Benefits Status Report**" means a written report that describes the status of Developer's and, to the extent known by Developer, each Vertical Developer's compliance with their respective obligations under this Community Benefits Plan during the immediately preceding period between January 1 and June 30 or July 1 and December 31, whichever is applicable (the "**Community Benefits Reporting Period**"). Developer may (but, for the avoidance of doubt, shall not be required to) coordinate its reporting pursuant to this Section 7.2(a) with similar reporting by HPS 1 Developer pursuant to the HPS 1 DDA. Each Assignment and Assumption Agreement entered into with a Vertical Developer following the Third Amendment Effective Date shall require the applicable Vertical Developer to reasonably cooperate with Developer in preparing such report with respect to such Vertical Developer's obligations under this Community Benefits Plan.

2. Building 813 Site. Section 3.4(c) of the Community Benefits Plan is hereby deleted and replaced with the following:

   3.4(c) Building 813 Site.

   (i) Maker Space Requirement. Developer shall provide 75,000 gross square feet of maker space within the Shipyard Site to be leased for or otherwise occupied by users (each, a "**Maker**") consistent with the definition of Maker Space in the Shipyard Redevelopment Plan (which may include space for incubation of emerging businesses) (the "**Maker Space**"), as more particularly set forth in this Section 3.4(c).

   (ii) Location and Availability. Any proposed Maker Space shall be identified the applicable Sub-Phase Application, including the building location and size of such Maker Space, provided that any such location shall, in the Agency Director's reasonable discretion, not be materially detrimental to the successful leasing and tenancy of such Maker Space. Unless otherwise Approved by the Agency Director, (i) at least 37,500 gross square feet of Maker Space shall have been Completed to Cold Shell condition as of the date that the building that contains the 2,000,000th cumulative gross square foot of retail, research and development and office uses developed on the Shipyard Site under this DDA and (ii) at least 37,500 gross square feet of Maker Space shall have been Completed to Cold Shell condition as of the date that the building that contains the

3,000,000th cumulative gross square foot of retail, research and development and office uses developed on the Shipyard Site under this DDA.

(iii) Consideration. The rental charge or other consideration paid for the Maker Space shall be equal to not more than then-current market rates for comparable spaces in the City. Developer shall provide the Agency Director with the amount of such rental charge or other consideration prior to the commencement of the Marketing Period (as defined below) and such amount shall be subject to the Approval of the Agency Director.

(iv) Tenant Selection; Good Faith Efforts. For each Maker Space, Vertical Developer may market such Maker Space to any potential tenant, without geographic restriction, provided that Vertical Developer shall use "**Good Faith Efforts**" to identify tenants for the Maker Space, which, for the purposes of this Section 3.4(c), shall mean: (1) Vertical Developer shall create a marketing plan that identifies specific marketing actions to be taken during the Marketing Period, including those that focus on both residents and businesses located in BVHP; (2) prior to commencing marketing activities for the Maker Space, Vertical Developer shall present the marketing plan to the CAC and shall provide a copy of the marketing plan (and identification of recommendations from the CAC with respect thereto, if any, and whether they were incorporated in the marketing plan) to the Agency; (3) Vertical Developer shall commence marketing efforts for Maker Space within a particular building (including implementation of the actions specified in clause (1), above) no less than twelve (12) months and no more than eighteen (18) months (at Vertical Developer's election) of Vertical Developer's reasonable estimated date for receipt of temporary certificate of occupancy for such building, and continue until the earlier of: (i) twelve (12) months thereafter, or (ii) until a lease or leases or other occupancy agreement(s) for the subject Maker Space are fully executed and delivered (such period, the "**Marketing Period**"); (4) at the CAC's request, Vertical Developer shall provide a verbal report to the CAC on the status of its marketing efforts at reasonable intervals specified by the CAC; and (5) prior to commencement of the Marketing Period, Vertical Developer shall record in the Official Records an appropriate restriction against the applicable building (or portions thereof, if the Maker Space is within a separate legal parcel), specifying, as applicable: (x) the location of the Maker Space within each applicable building, (y) the restrictions established in this Section 3.4(c), and (z) that failure to comply with such restrictions shall be grounds for termination of any lease or other occupancy agreement for Maker Space, which the Agency may enforce as beneficiary of such restrictions.

(v) Temporary Relief of Obligation. If, after using Good-Faith Efforts as reasonably confirmed by the Agency Director, Vertical Developer is unable to identify an appropriate tenant for any Maker Space, such Maker Space may be made available to any tenant without restriction, provided that the term of any lease or other occupancy agreement (a "**Temporary Agreement**") with such tenant shall not exceed five (5) years. Upon the vacancy of such Maker Space, by termination of a Temporary Agreement or otherwise, Vertical Developer shall repeat the process set forth in Sections 3.4(c)(iv)(3) and (4) (except that the Marketing Period shall begin no earlier than eighteen (18) months prior to the termination of the Temporary Agreement, and proceed until the earlier to

occur of (i) twelve (12) months thereafter, or (ii) until a lease or leases or other occupancy agreement(s) for the subject Maker Space are fully executed and delivered).

(vi) Assignment and Assumption Agreement. When Developer enters into an Assignment and Assumption Agreement in connection with the Transfer of a Lot that includes Maker Space, Developer shall assign the rights and obligations of this Section 3.4(c) to the applicable Vertical Developer with respect to such Maker Space.

(vii) Term. The obligations of this Section 3.4(c) shall automatically terminate as to any building containing Maker Space upon the first to occur of: (a) the termination of the third successive Temporary Agreement, each of no shorter than five years (whether or not such Temporary Agreements remained in effect for such five-year term); (b) the expiration of the Shipyard Redevelopment Plan; or (c) 10 cumulative years of occupancy by a Maker (not counting any intervening dark periods between occupants) (the "**Occupancy Period**"), provided that the Occupancy Period shall automatically extend by five (5) years upon the expiration of the then-current Occupancy Period unless otherwise Approved by the Agency Commission on the request of Vertical Developer.

(vii) Special Remedy. Without limiting any other remedies available to the Agency under this DDA, if either requirement in clause (ii) above to provide specified amounts of Maker Space as of the dates required therein is not satisfied, then the Agency shall be permitted in its sole and absolute discretion to withhold Sub-Phase Approval for any subsequent Sub-Phases in the Shipyard Site unless and until such requirement is satisfied or the Agency Director reasonably determines that Developer or Vertical Developer, as applicable, has made material progress to satisfy such requirement. Further, if Vertical Developer materially breaches its obligations under this Section 3.4(c) and fails to cure same within sixty (60) days following Vertical Developer's receipt of notice thereof from the Agency (with a copy thereof to Developer), then unless otherwise Approved by the Agency, until such breach is materially cured to the reasonable satisfaction of the Agency Developer may not count the square footage of such Maker Space against, and will not be deemed to have satisfied, its obligation to provide 75,000 square feet of Maker Space until alternative space is provided in compliance with this section.

3. Community Facilities Space. Section 3.2 of the Community Benefits Plan is hereby deleted and replaced with the following:

Section 3.2 Community Facilities Space.

(a) Location. The Agency and Developer acknowledge and agree that the Community Facilities Space shall be generally distributed throughout the Project Site, although they anticipate that a significant portion of the Community Facilities Space shall be provided in the regional retail portion of the Project anticipated on the Candlestick Site. Developer shall use good faith efforts to work with the Agency to agree upon the location of any Community Facilities Spaces within a Major Phase before the submission of the applicable Major Phase Application and within each applicable Sub-Phase before the submission of the applicable Sub-Phase Application. If Developer and the Agency Approve the location of a Community Facilities Space within a Sub-Phase, then such

Community Facilities Space shall be included in the applicable Sub-Phase Application. If Developer and the Agency have not Approved the locations of the Community Facility Spaces within a Sub-Phase, if any, then the Agency may be permitted in its sole and absolute discretion to withhold the Sub-Phase Approval until such locations have been Approved by Developer and the Agency.

(b) Identification of Community Facilities Entity. For each Community Facilities Space, Vertical Developer shall use "**Good-Faith Efforts**" to identify a list of Community Facilities Entities able to use such Community Facilities Space, which, for the purposes of this Section 3.2(b), shall mean: (i) Vertical Developer shall identify specific marketing actions that focus on residents and businesses located in BVHP and prospective tenanting standards for the Community Facilities Space; (ii) Vertical Developer shall present a merchandising plan, marketing plan and tenanting standards to the CAC prior to commencing marketing activities for the Community Facilities Space and shall provide a copy of the merchandising plan, marketing plan and tenanting standards (including recommendations from the CAC, if any, and whether they were incorporated) to the Agency; (iii) Vertical Developer shall implement the marketing plan within no less than twelve (12) months and no more than eighteen (18) months (at Vertical Developer's election) of Vertical Developer's reasonable estimated date for receipt of temporary certificate of occupancy for such building, and continue until the earlier of: (i) twelve (12) months thereafter, or (ii) until Vertical Developer has identified at least one candidate Community Facilities Entity meeting the tenanting standards; and (iv) record in the Official Records an appropriate restriction against the applicable building (or portions thereof, if the Community Facilities Space is within a separate legal parcel) so that such Community Facilities Space remains Community Facilities Space subject to the restrictions herein for the life of the building where it is located.

(c) Community Facilities Entity Selection. Developer shall present its candidate Community Facilities Entity(ies) to the CAC. The CAC shall hear proposals from the candidate or candidates, (if the candidates so choose) and shall recommend the candidate the CAC finds most closely meets the tenanting standards ("**Approved Community Facilities Entity**"). As soon as reasonably possible thereafter, Developer shall provide the Community Facilities Space to the Approved-Community Facilities Entity in Warm Shell condition and on the same general terms and conditions as are provided to other similar Community Facilities Entities for other similar Community Facilities Space within the Project and as are provided to other users within the Sub-Phase and Major Phase of which the Community Facilities Space is a part, subject to the provisions set forth below. The lease or conveyance agreement(s) applicable to such Community Facilities Space (the "**Community Facilities Space Agreement**") shall at a minimum require the Community Facilities Entity to (1) continually use such space (subject to damage and destruction, downtime for refurbishment of tenant improvements, and reasonable hours of operation consistent with other comparable facilities), (2) provide commercially reasonable insurance coverage, (3) adhere to maintenance and security protocols and (4) timely pay its proportionate share of all pass-through and other charges, including applicable property taxes and assessments (including in-lieu payments), insurance and maintenance, and other operating expenses, all generally consistent with

other tenants or owners in the applicable Vertical Project. The Community Facilities Entity shall not, however, pay a purchase price or base rent for the Community Facilities Space. If Vertical Developer and the Community Facilities Entity are not able to reach agreement on the final form of the Community Facilities Space Agreement within one hundred eighty (180) days after the identification of such Community Facilities Entity notwithstanding good faith negotiations on the part of both parties, or if the Community Facilities Entity defaults in its obligations under the Community Facilities Space Agreement (after the expiration of notice and cure periods contained therein), then, unless otherwise Approved by the Agency, Developer shall use Good Faith Efforts to find a new Community Facilities Entity for the Community Facilities Space and provide such Community Facilities Space, each as set forth above. Unless otherwise Approved by the Agency, if Vertical Developer is unable to select a new Community Facilities Entity within one hundred eighty (180) days after the date Vertical Developer notifies Agency that negotiations for the Community Facilities Space Agreement have terminated or that the Community Facilities Entity has vacated the space or otherwise defaulted in its obligations as set forth above, then Vertical Developer shall have the right to rent or convey the Community Facilities Space to any user without restriction; provided, in the event of a rental, the applicable Community Facilities Space shall be offered again to a new Community Facilities Entity on the expiration of that rental under the process described above.

(d) Temporary Relief of Obligation. If, after using Good-Faith Efforts as reasonably confirmed by the Agency Director, Developer is unable to identify a candidate Community Facilities Entities meeting the approved tenant standards for a particular Community Facilities Space, such Community Facilities Space may be made available to any tenant without restriction, provided that the term of any lease or other occupancy agreement with such tenant shall not exceed five (5) years ('Temporary Agreement"). Upon the vacancy of such Community Facilities Space, by termination of a Temporary Agreement or otherwise, Developer shall again employ Good Faith Efforts to locate candidate Community Facilities Entities meeting the approved tenant standards be repeated (except that the marking plan shall be implemented beginning no earlier than eighteen (18) months prior to the termination of the applicable Temporary Agreement, and proceed for twelve (12) months thereafter or until Developer identifies at least one candidate Community Facilities Entities meeting the approved tenant standards, which shall thereafter be presented to the CAC as provided above). Developer may assign the rights and obligations of this Section 3.2 in any Assignment and Assumption Agreement to a Vertical Developer that includes the Transfer of a Lot that includes Community Facilities Space.

(e) Specific Use of Community Facilities Space.

(i) International African Marketplace. A portion of the Community Facilities Space within retail Vertical Projects on the Candlestick Site and identified as set forth above shall be used for an indoor African Marketplace that will serve as an African-themed, festive setting for the display and sale of arts, crafts, sculptures, fabrics and clothing, and books.

(ii) Library Reading Rooms. A portion of the Community Facilities Space within certain Vertical Projects identified as set forth above shall be used for facilities operated by the San Francisco Public Library (the "**SFPL**"), such as (i) a library reading room of not less than one thousand five hundred (1,500) gross square feet and (ii) automated book pick-up and drop-off kiosks ("**Bookautomatons**"), each to be operated by the SFPL. Developer will work cooperatively with the Agency and the City, including the SFPL, on the phasing of such improvements and the appropriate locations for the reading rooms and Bookautomatons.

(iii) CP State Recreation Area. Three thousand (3,000) gross square feet of the Community Facilities Space on the Candlestick Site within a Vertical Project Approved by Developer, the Agency and State Parks, shall be used by State Parks for a welcoming or information center for the CP State Recreation Area.

4. Artists' Space. Section 3.4(a)(v) of the Community Benefits Plan is hereby deleted and replaced with the following:

   (v) Arts Center. Developer shall work cooperatively with the Agency and the artists on the Shipyard Site, and as the case may be in consultation with the CAC, to complement the Shipyard Artists Studios by providing to the Agency, at no cost to the Agency and in Developer's sole discretion, either (a) a parcel of land equal to between fifteen thousand (15,000) and thirty thousand (30,000) square feet on which an Arts Center may be constructed or, as an alternative, (b) a Warm Shell space for use by artists and the Bayview community that would be no less than ten thousand (10,000) square feet and no more than fifteen thousand (15,000) square feet of useable space.

5. Warm Shell. The following definition is hereby added to section 7.6 of the Community Benefits Plan:

   "**Warm Shell**" means improvement to include the following, provided that code-based requirements shall mean Applicable City Regulations: (i) finished-dry-walled paint-ready demising and perimeter walls, HVAC (heating, ventilating, and air conditioning) primary distribution and secondary distribution (if required) to the space, stubbed domestic water line, stubbed gas line (if required), open ceilings with standard insulation (no special insulation for sound acoustics) and ceiling lighting, temporary life safety systems to the extent required by Applicable City Regulations, live fire sprinklers (heads turned down), the minimum code required restroom(s) with basic relative commercial grade finishes, utility connection roughs to the space, all in compliance with Applicable City Regulations; (ii) electrical system provided from the service point-of-entry distributed to main electrical room containing switchgear, to the transformers and panel boards that shall distribute each space by floor, whereby a branch electrical panel shall be installed including branch wiring and minimum code required outlets, and any other lighting required by Applicable City Regulations; (iii) floor pours up to finished grade (without finished materials i.e., carpeting, staining, etc., including subgrade preparation (foam or other fill material below finished floor where applicable), in a manner allowing for provision of plumbing to be located under the slab; and (iv) a space for mechanical equipment, trash and recycle rooms outside of the space provided in reasonable proximity

to the space (in the case of the trash and recycle rooms, it shall be on the ground floor). The Warm Shell improvements shall be provided in a standardized format in accordance with plans, specifications, and construction drawings approved by Vertical Developer. All utility activations and services associated with Warm Shell improvements referenced above shall be in the tenant's name.

FINANCING PLAN AMENDMENTS

SUMMARY

The Financing Plan is Exhibit H to the HPS2/CP DDA and establishes all of the terms of how the HPS2/CP Project is funded. The principal changes to the Financing Plan are the creation of a new Summary Proforma which reflects the changes to the Major Phases, as well as the Developer's increased revenue and cost assumptions. The Developer has provided a variance analysis of the Summary Proforma, which includes the following key conclusions discussed below. See Attachment 12c for the updated Summary Proforma. Other changes to the Financing Plan again reflect the Phasing Plan changes, but also provide a new term for the Payment In-Lieu of Taxes ("PILOT") for tax-exempt entities.

DETAILED AMENDMENT OVERVIEW

*Changes in the **Summary Proforma** include:*

Total Costs and Total Qualified Costs Variance from 2010 to 2018 Versions:

- Total Costs increased by $772 million (from $2.7 billion to $3.5 billion)
- Total Qualified Project Costs increased by $1.1 billion (from $2 billion to $3.1 billion)

TOTAL COSTS VARIANCE*	DEVELOPER'S EXPLANATION
$605	Infrastructure inflation since 2010 is cumulatively 32% per ONESF. This equates to a $605M increase in costs in excess of inflated costs per the 2010 DDA Summary Proforma.
$40	Addition of greater supporting infrastructure and the Commercial Kitchen to the Artist Building along with significant increases in the building costs for the new Artist Building have added $40M in addition to inflation.
$55	At time of the DDA, used FERMA 2000 estimates for demolition and abatement scaled up; we now have detailed studies of all of the buildings which provides us much more cost clarity. Additionally, BCDC rising sea level projections require raising the site higher.
$30	Increased planning, engineering and permitting cost increases greater than inflation due to the unanticipated lengthy and iterative review processes.
$40	Higher park costs associated with higher quality finishes on more recent designs, along with park inflation running at a higher rate than general infrastructure inflation

*(*in millions)*

Total Eligible Costs Variance:

- Total Eligible costs have increased by approximately $360M greater than total costs explained above. This is due to the original DDA Summary Proforma not including certain costs as eligible that were clearly defined as eligible in the Financing Plan. The following costs comprise the majority of the additional $360M in total eligible costs in the 2017 budget compared to 2010:

ELIGIBLE COSTS VARIANCE*	CATEGORY
$63	Property Taxes
$58	Community Benefits
$155	Project & Asset Management Fees
$41	Land Acquisition

**in millions*

Other changes to the Financing Plan include:

General Amendments

- Delete all reference to Stadium Proforma and Stadium Alternative
- Conforming amendments to project phasing to reflect three major phases at each Candlestick and Shipyard – six major phases in total.

§1.4C Adjustments to Major Phase Increment Allocation Amounts

- Example of Adjustment to Major Phase Increment Allocation Amounts revised to reflect three major phases rather than four
- Third Amendment Effective Date identified as the relevant date for the Summary Proforma rather than the Reference Date

§18.2 Preservation Alternatives

- Confirming amendments to the DDA to reflect reduced number of major phase and sub phases at the Shipyard.

§4.1.1. Payment In Lieu of Taxes

- New language stating that the OCII may require, in consultation with Developer, the imposition of a payment in lieu of taxes on tax exempt entities which may be located within the Shipyard and Candlestick.

EXHIBIT 3 TO THE THIRD AMENDMENT

Amendments to Financing Plan

1. Summary Proforma. The Summary Proforma attached to the Financing Plan as exhibit H-B thereto is hereby deleted and replaced by Exhibit 3-1 hereto. Section 1.4(a)(i) of the Financing Plan is hereby deleted and replaced with the following:

   (i) Developer has provided to the Agency a summary of its proforma for the Project, a copy of which is attached as Exhibit H-B (as revised from time to time in accordance with this Financing Plan, the "**Summary Proforma**"). Both Parties agree that the Summary Proforma provides a reasonable basis on which to base this Financing Plan, and the Agency has made a Reasonableness Determination regarding the Summary Proforma. Developer agrees that, for any future Reasonableness Determination under this Financing Plan, the Agency will have the right to request, and Developer will have the obligation to provide, additional documents or other information that is reasonably required to support Developer's projections, methodology, and underlying assumptions.

2. Section 1.4(c)(i)(B) of the Financing Plan is hereby deleted and replaced with the following:

   (B) the Agency makes a Reasonableness Determination with respect to Developer's projections.

   When those conditions are met, the Summary Proforma will be revised to increase the Major Phase Increment Allocation Amount for each Major Phase based on the existing Major Phase Increment Allocation Percentages (e.g., if the Major Phase Increment Allocation Percentages are then 25% - 35% - 40%, the aggregate total of the revised projected amounts of Shipyard Proceeds and Candlestick Proceeds will be allocated to each Major Phase according to the same 25% - 35% - 40% Major Phase Increment Allocation Percentages) or such other adjustment as may be Approved by Developer and the Agency Director in their respective sole discretion, provided that the total increase in Major Phase Increment Allocation Amounts may not exceed the total increase in Shipyard Proceeds and Candlestick Proceeds.

   If, instead of increased Project Costs that affect all of the Major Phases proportionately, Developer provides evidence to the Agency that Project Costs have increased disproportionately in the Major Phases due to unique circumstances, and the Agency has found the evidence reasonably supports the uniqueness of the circumstances, the Summary Proforma will be revised to increase the applicable Major Phase Increment Allocation Amounts for the Major Phases in proportion to the projected increases in Project Costs for each Major Phase, provided that the total increase in Major Phase Increment Allocation Amounts may not exceed the total increase in Shipyard Proceeds and Candlestick Proceeds.

3. Section 1.4(c)(ii)(B) of the Financing Plan is hereby deleted and replaced with the following:

   (B) the Agency makes a Reasonableness Determination with respect to Developer's projections.

   When those conditions are met, subject to the immediately following paragraph, the Summary Proforma will be revised to increase the Major Phase Increment Allocation Percentage(s) of the affected Major Phase(s) to reflect the increase(s) in Project Costs. The Major Phase Increment Allocation Percentage for each other Major Phase that has not been Completed will be reduced proportionately (e.g., if the Major Phase Increment Allocation Percentages are then 25% - 35% - 40%, they will be adjusted to 35% - 30% - 35%), and the Major Phase Increment Allocation Amounts for all such Major Phases will be recalculated based on the adjusted Major Phase Increment Allocation Percentages.

   If any Major Phase Increment Allocation Percentage would increase by more than fifteen percent (15%) (e.g., from 40% to more than 55%) from the Major Phase Increment Allocation Percentage then contained in the Summary Proforma, the Approval of the Agency Commission in its sole and absolute discretion shall be required for an adjustment to the Major Phase Increment Allocation Amounts for all Major Phases under this Section 1.4(c)(ii).

   In the alternative, if the conditions to this Section 1.4(c)(ii) are met and the Approval of the Agency Commission is not required for a reallocation, the Parties may agree, each in its respective sole discretion, that circumstances warrant a different reallocation, and the Major Phase Increment Allocation Percentages will be re-set and the Major Phase Increment Allocation Amounts will be recalculated according to the Parties' agreement.

4. Section 1.5 of the Financing Plan is hereby deleted and replaced with the following:

   1.5 **Major Phase Priorities**. The date of each Major Phase Approval will establish the priorities for application of Net Available Increment, and for Major Phase Approvals made on the same date, priority shall be assigned based on the Major Phase with the lowest numeric designation. For example, all Net Available Increment will be available for application to the Initial Major Phase until Developer receives the Major Phase Increment Allocation Amount for the Initial Major Phase, and then all Net Available Increment will be available for application to the Next-Priority Major Phases as described in Section 1.4(b)(iii) in the order of priority established by this Section 1.5. The priorities established under this Section 1.5 will not be affected by Transfers, the effect of section 6.2.3 or of section 26.7 of the DDA, or early termination of the DDA.

5. The definition of "Community Benefits Costs" in the Financing Plan is hereby deleted and replaced with the following:

"**Community Benefits Costs**" means payments made by or on behalf of Developer after the Reference Date for: (a) the Scholarship Fund Contribution, Education Improvement Fund Contribution, Wellness Contribution, Healthcare Predevelopment Contribution, Community First Housing Fund Contribution, Construction Assistance Fund Contribution, Credit Support Contribution, Workforce Contribution, and Implementation Committee Contribution (each as defined in the Community Benefits Plan); (b) the Agency Subsidy (as defined in the Below-Market Rate Housing Plan); and (c) Alice Griffith Costs.

6. The definition of "Soft Costs" in the Financing Plan is hereby deleted and replaced with the following:

   "**Soft Costs**" means payments made by or on behalf of Developer or any Transferee, in each case for the Project after the Reference Date for: (a) architectural, engineering, consultant, attorney, and other professional fees; (b) insurance; (c) third party construction financing (consisting of interest expense and related lender fees); (d) construction management fees that, if paid to Developer, a Transferee or their respective Affiliates, do not exceed three percent (3%) of Qualified Project Costs; (e) project management fees in the amount of four percent (4%) of Qualified Project Costs and an asset management fee in the amount of one percent (1%) of Qualified Project Costs; (f) fees paid to Governmental Entities for obtaining any Authorization; (g) Agency Costs and any other amount paid to the Agency under article 19 of the DDA; (h) fees paid to the issuer of any Corporate Guaranty; (i) security and credit enhancement required under the DDA or otherwise in connection with the Developer Construction Obligations, including costs for payment, performance, or maintenance bonds and any Adequate Security; (j) Lot marketing, appraisal, sales, and closing costs; (k) taxes and assessments; (l) Losses paid to Third Parties; (m) safety and security measures; (n) Audit Reports and Records; and (o) any other amount specifically identified in the DDA as a Soft Cost. Soft Costs do not include: (i) any amounts that cannot be reasonably verified through paid statements and invoices; (ii) Hard Costs; (iii) the portion of any cost that is commercially unreasonable as of the date the obligation to pay the cost was incurred and (iv) Developer's or a Transferee's (or their respective Affiliates) corporate office, personnel and overhead costs.

7. The definitions of "Non-Stadium Alternative", "Stadium Alternative", and "Stadium Assurance" are hereby deleted from the Financing Plan.

EXHIBIT 3-1 TO THE THIRD AMENDMENT

EXHIBIT H-B

Summary Proforma

[ATTACHED]

EXHBIT H-B-B

Summary Proforma (Non Stadium Alternative)

Major Phase / Project	
Major Phase 1	
Shipyard Major Phase Project Costs	766,875,727
Candlestick Major Phase Project Costs	522,164,691
Total Major Phase Project Costs	1,289,040,418
Total Major Phase Increment Allocation Amount	708,895,296
Major Phase Increment Allocation Percentage	37.4%
Major Phase 2	
Shipyard Major Phase Project Costs	745,433,796
Candlestick Major Phase Project Costs	292,891,081
Total Major Phase Project Costs	1,038,324,877
Total Major Phase Increment Allocation Amount	571,016,711
Major Phase Increment Allocation Percentage	30.1%
Major Phase 3	
Shipyard Major Phase Project Costs	572,622,676
Candlestick Major Project Costs	549,299,058
Total Major Phase Project Costs	1,121,921,734
Total Major Phase Increment Allocation Amount	616,989,993
Major Phase Increment Allocation Percentage	32.5%
Project	
Gross Revenue	3,543,356,420
Shipyard Major Phase Project Costs	2,084,932,199
Candlestick Major Project Costs	1,364,354,830
Total Major Phase Project Costs	3,449,287,029
Shipyard Major Phase Qualified Project Costs	1,910,310,031
Candlestick Major Phase Qualified Project Costs	1,196,037,702
Total Major Phase Qualified Project Costs	3,106,347,734
Shipyard Proceeds	890,959,000
Candlestick Proceeds	1,005,943,000
Total Proceeds	1,896,902,000
Pre-Agreement Costs	50,981,842
Pre-Agreement Return	21,666,609
Total	72,648,451

Note: Summary Proforma, including Major Phase Increment Allocation Amounts and Percentages subject to change per Financing Plan

INFRASTRUCTURE PLAN AMENDMENTS

SUMMARY

The Infrastructure Plan is Exhibit I to the HPS2/CP2 DDA. It details the Developer's Infrastructure Obligations, which include but are not limited to: sanitary sewer, storm drain, and water supply systems; joint utility trench systems for telephone, electrical, gas and other "dry utilities"; parks and open spaces; and streets, sidewalks, street lights and other street improvements. Most of these obligations are located inside the Project area; some apply to off-site improvements.

The Infrastructure Plan consists of two volumes: Volume 1: Candlestick Point Development and Volume 2: Hunters Point Shipyard Phase 2 Development. The present actions for Commission consideration include amendments (the "Infrastructure Plan Amendments") to Volume 2: Hunters Point Shipyard Phase 2 Development.

References to the stadium development alternative, a scenario including a stadium site for the San Francisco 49ers, are removed and infrastructure associated with the stadium alternative, such as lane control signs for stadium event days, are removed. This scenario is no longer planned because the 49ers relocated to another location subsequently to approval of the current Infrastructure Plan.

The currently approved network of streets in the southern part of HPS Phase 2 is replaced with a revised street network which is intended to create greater opportunity for the potential retention of legacy buildings. Both street locations and street cross-sections, which show overall street width and the width of individual components such as traffic lanes and sidewalks, are revised. Because utility systems are generally located under street rights-of-way, many utility system locations are also revised accordingly.

Configuration of the separated sanitary sewer system at HPS Phase 2 is changed at the direction of the San Francisco Public Utilities Commission ("PUC"). The sanitary sewer now connects with the existing City sewer system at one location at Innes Avenue. A second connection previously planned at Palou Avenue and Griffith Street is removed. This results in sewers traveling a greater distance and traversing a greater change in elevation. To accommodate this, sanitary sewer pump stations are increased from two to seven.

Design criteria for accommodating sea level rise at the development perimeter, at the shoreline, and for the parks and open spaces are revised to account for updated sea level rise projections subsequent to the approval of the Infrastructure Plan in 2010. The development perimeter design will address a minimum of 66 inches of sea level rise, increased from 36 inches. Shoreline improvement designs and parks and open space designs will address a minimum of 24 inches of sea level rise, increased from 16 inches.

Subsequent to the approval of the Infrastructure Plan in 2010, site analysis of the Innes Avenue off-site improvement found that a significant retaining wall may be necessary if the City wishes to widen the Innes Avenue sidewalks beyond their currently planned size as defined in the Infrastructure Plan. The sidewalks' size as depicted in the current Infrastructure Plan is feasible to construct with no retaining wall or with a very small retaining wall. The construction of that sidewalk remains a Developer obligation, including any retaining wall that is necessary to do so.

The Infrastructure Plan is revised to clarify that if the City wishes to widen the sidewalk beyond the width depicted in the Infrastructure Plan, and if this requires enlarging the retaining wall or constructing additional lengths of retaining wall, such costs would not be a Project Infrastructure Obligation borne by the Developer;

and that lack of availability of funds for such a facility shall not delay the Developer's Infrastructure Obligation with respect to Innes Avenue.

Open space and park improvements are revised to conform with the changes to parks and open space detailed in the Parks and Open Space Plan amendments also before this Commission now. Those changes are described separately in the section addressing the Parks and Open Space Plan.

Assorted other revisions are made to conform with the general transportation network and land use changes now before the Commission; and with revisions to infrastructure designs that have been made in the course of design review in collaboration between the Developer, OCII, and City departments and agencies.

No changes are made to Infrastructure Plan Volume 1: Candlestick Point Development.

DETAILED AMENDMENT OVERVIEW

Amendments to the Infrastructure Plan include:

General Amendments

- Figures, tables and text updated to reflect revised utility layout, land use plan and program
- References to Stadium Alternative removed
- Street cross sections updated
- Figure and table references updated
- References to changeable message signs and overhead lane control associated with the Stadium Alternative removed
- Text clarified to indicate Navy is responsible for permitting and infrastructure on Parcel E-2
- Document updated to reference approved 2014 Subdivision Regulations as appropriate
- Elevations revised to reflect approved Subdivision Regulations
- Reference added to technical memos and Master Utility Plans (MUP) that informed the update to the Infrastructure Plan
- Text has been revised to indicate the Hunters Point Pressure zone in lieu of the McLaren Pressure Zone
- Provision for OCS wires serving MUNI transit lines within HPS2 has been removed and replaced with provision for bus charging stations within the Transit Center

Table of Contents and Table of Figures

- Updated to reflect edits below

§1 Introduction / Project Description

- Text added to indicate: Permitting and infrastructure associated with Navy Parcel E-2 will be completed by the Navy. This is not meant to include Yosemite Slough Bridge and related approach span to Crisp Road which will be designed, permitted and constructed by the Developer
- Text clarified to state that Director's approval is required to grant exception pursuant to subdivision code
- Conceptual public utility easement figure added

§1.4 Project Datum

- o Further clarification of project datum added

§1.5 Technical Memoranda and Master Utility Planning

- » Text clarified to read: These Technical Memoranda or other Draft Master Utility Plan form the basis of what will become the final Master Plans, as amended from time to time, for each utility system, to be approved initially by the City prior to any Subdivision Maps (excepting tentative and final transfer maps) or Construction Permits related to the Project. Any subsequent amendments to the Master Utility Plans must be approved by the City prior to issuance of any affected Construction Permits

§2.1 Street Improvements

- o Text clarified to indicate that the Infrastructure Plan applies to public streets to be accepted
- o Privately owned and maintained mid-block breaks referenced

§2.1.1 Street Surface Improvements

- o Text clarified to reference Public Works Code 786 regarding City acceptance of improvements
- o Reference to flexible paving removed
- o Class IV bicycle facility added

§2.1.3.C Innes Avenue / Hunters Point Boulevard / Evans Avenue

- » Text added regarding potential widening of sidewalks on Innes pending City funding

§2.2 MUNI Improvements

- o Text added indicating the Project is not required to meet light rail ready standards, nor is it required to accommodate the Overhead Contact System
- o Text added regarding electric bus charging infrastructure

§2.3 Wet Utilities

- o Text clarified to reference MUPs in planning the public wet and dry utility systems to be reviewed by the San Francisco Public Utilities Commission (SFPUC)

§2.3.1 Separated Sanitary Sewer

- o Seven lift/pump stations indicated
  - • Draft Sanitary Sewer System Master Plan for the Hunters Point Shipyard Phase II Development, prepared by BKF Engineers and currently under review by the SFPUC.

§2.3.2 Separated Storm Drainage

- o Stormwater Management Requirements and Design Guidelines (SMR) replaced Stormwater Design Guidelines and LEED based performance
- o Applicable state trash capture requirement referenced
- o Following text added:

- Runoff from proposed Arelious Walker will be collected in a separated storm drain system that discharges to the adjacent combined sewer system serving the properties to the east of the proposed right-of-way.
- Historic Buildings 231 and 253 are proposed to remain with adjacent grades elevated above the existing finished floors to meeting grading requirements defined by Table X.1 in Attachment 4 within Appendix C of the Project Subdivision Regulations. Should economic studies associated with rehabilitating Buildings 231 and 253 indicate that is not feasible to preserve the buildings or raise the grade adjacent to the buildings while maintaining the building(s) integrity, the project may pursue an alternative grading and drainage strategy that includes maintaining existing grades and revise the Hunters Point Shipyard Phase II Development Grading and Storm Drain System Master Plan for review and approval by the SFPUC.
- Should LID strategies include treatment of development parcels and open space areas in combination with public right-of-ways, such combined or centralized treatment areas and associated infrastructure required to meet SMR performance standards will not be owned and maintained by the SFPUC, except for Northside Park treatment facility that will treat Hunters Point Naval Shipyard Phase 1 stormwater flows. This facility will be owned and maintained by PUC.

§2.3.3 Auxiliary Water Supply System (AWSS)

- Following text added:
  - The SFPUC has determined there is limited hydraulic capacity to serve HPS2, and the current AWSS cannot meet the required pressures and flow. A salt water pump station is shown on Figure 2.3.3 as an alternative water source to be designed and constructed at the developer's expense. However, the Developer and the SFPUC will work together to explore an alternative design that utilizes offsite facilities, or a combination of onsite and offsite facilities, instead of the salt water pump station shown. Should it be determined that this alternate design is desirable by both parties, the corresponding Master Utility Plan will reflect this change in design.
  - The Developer will design and construct, or pay for the reasonable costs of designing and constructing the AWSS as shown on Figure 2.3.3, including an alternative to the salt water pump station. . The City will provide hydraulic modeling criteria for the AWSS MUP to be prepared by the developer and submit design plans to the Developer for coordination purposes. The City will use its best efforts to control the costs as agreed by the City and the Developer in the ICA, DDA, and other Plan Documents. Upon acceptance of the Auxiliary Water Supply System by the City, the SFPUC will assume responsibility for the operation and maintenance of all facilities, including responsibility for compliance with all regulations and mitigation measures.

§2.3.4 Low Pressure Water System

- Connection points updated

§2.3.5 Recycled Water System

- Text revised to clarify that Developer will build a Recycled Water (RW) distribution network to be charged with potable water. If a RW source is constructed, the RW network will be disconnected from the potable low pressure system and connected to the RW system

- Connection point clarified to be required only if necessary to meet project demands
- Pressure reducing valves added to description of the recycled water system
- A new non-potable water section was added to address Article 12C of the Health Code

§3 Sea Level Rise

- Section revised to account for additional sea level rise (SLR) not contemplated in the original 2010 Infrastructure Plan: the 2010 plan accommodated 12" and 36" of SLR for the shoreline and development areas, respectively. The updated IP accommodates for 24" of SLR for shoreline areas and 66" for development areas. Reference to the development and implementation of an Adaptive Management Plan remains.

§3.2 Sea Level Rise Strategies

- Text clarified to reflect the fact that the appropriate district will develop the Adaptive Management Plan, not the City
- Added reference to the 2018 Ocean Protection Council guidance

- **§3.3. Project Design Criteria**
  - Table 3.3.1
    - Updated in row "Development Perimeter – Separated Storm Drainage System 5-Year Storm Event" to indicate that the minimum elevation of the stormwater treatment bio-retention soil mix will be at or above the 5-year HGL
    - Updated in row "Development Perimeter – Structures" to indicate that Occupied facilities, including pump station facilities and above grade electrical infrastructure, shall have a minimum first floor elevation of 103.7 feet, Project Datum, based on SLR

§3.4.1 Shoreline Improvements

- Text clarified to correctly reference the extent by which the various shoreline improvements will exceed the 1% annual chance event based on increased SLR shoreline protection
- Text clarified to correctly reference the extent by which the various shoreline improvements will exceed the 1% annual chance event based on increased SLR shoreline protection
- Figure added (Figure 3.4.1) showing the location of all the areas discussed in Section 3.4 with annotations indicating the proposed shoreline protection strategies (riprap, wave berm, habitat creation, etc.)

§3.4.2 Open Space and Park Improvements

- Section revised to reflect 24" of SLR for shoreline areas and 66" for development areas
- Outdated elevations removed

§3.4.3 Development Perimeter

- Section revised to reflect 24" of SLR for shoreline areas and 66" for development areas

§3.4.4 5-Year Storm Drainage System

- Following text added:

- Historic structures 140, 204, 205, 207, and 208 within the Historic District area include elements below the minimum required grading and hydrology requirements for proposed structures in "Development Perimeter – Structures" as defined by Table X.1 in Attachment 4 within Appendix C of the Project Subdivision Regulations and Table 3.3.1. However, such structures are compliant with the minimum grading requirements (100-yr tide, elevation 98.2) for "Parks and Open Space Adjacent to the Shoreline" as defined in Table X.1. Since certain building elements are not elevated above the 5-year HGL (100-yr tide + 24-inches SLR) but are above the 100-year tide elevation, drainage infrastructure, such as pump stations, historic structure disposition, and the current uses of the area will be evaluated and adapted over time in context with hydrologic and sea level conditions, and the AMP. Responsibility for and liability directly related to flooding and associated damage that may occur in buildings with elements below the minimum required grading and hydrology requirements or within private streets will be by the owner of the Open Space parcel containing the Historic District.

§3.5 Adaptive Management Strategies

- Section revised to reflect 24" of SLR for shoreline areas and 66" for development areas

§4.1 Open Space Parcels

- Following text added: Unless otherwise defied by the DA, DDA, or Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA), infrastructure within the Open Space Parcels will be owned and maintained by the Agency retaining ownership the Open Space Parcel(s).

§5.2 Interim Operational Requirements

- Requested' replaced with 'required'
- Text clarified to state that removal relocation or abandonment of interim improvements are sole cost of Developer

- Following text added:
  - Where requested by Developer, and if the designated City Agency or Agencies with jurisdiction over the affected Infrastructure, determines it is appropriate in connection with the phased development of the Project, portions of the Infrastructure may be constructed or installed as interim improvements to be owned and maintained by the Developer. Interim improvements would be removed or abandoned, as determined by the Acquiring Agency, when substitute permanent Phase Improvements are provided to serve a subsequent Development Parcel. Where requested by Developer, and if the designated City Agency or Agencies with jurisdiction over the affected Infrastructure, determines it is appropriate in connection with the phased development of the Project, portions of the Infrastructure may be constructed or installed as permanent improvements outside of the current phase.

§5.4 Waterfront Improvements

- Text added to clarify that shoreline improvements identified in the IP are based on preliminary engineering estimates and will be refined based on detailed investigations of the shoreline conditions. The findings from these investigations will be included in a technical memo. If the shoreline structures are determined to be significantly deficient or expensive to repair, they will be demolished or left in place with appropriate landscape improvements to deter unsafe public access

- Level of detail regarding improvements revised to reflect statement above

§5.5 Yosemite Slough Bridge

- Width revised to 45'

§5.7 Utility Relocation

- Text added to clarify that utility relocations are to be considered a financial obligation of the Developer unless otherwise indicated in the DDA or separate agreement

§6.1.1 Adjacency

- Following text added:
  - Unless specifically agreed to otherwise, segments of adjacent infrastructure required for a Major Phase, Sub-Phase, or Block shall be no less than complete street sections (back of sidewalk to back of sidewalk) for at least one continuous block (intersection to intersection
  - The conceptual limits of the existing Infrastructure to be demolished as well as conceptual layouts of the permanent and/or temporary infrastructure systems for each Development Parcel will be provided as part of the construction document submittals for that Development Parcel or Phase. Repairs and/or replacement of the existing facilities necessary to serve the Development Parcel will be designed and constructed by the Developer.

§6.2.5 Northside Park

- Following text added
  - Subject to the Navy parcel conveyance schedule, installation of the stormwater treatment infrastructure serving the Hunter's Point Phase 1 Hilltop development shall be installed concurrently with the first sub-phase of Phase II Infrastructure development in Parcel B.

§7.2.2 Historic Preservation Strategy

- Figure 7.2.1 added showing location of historic buildings

- Text clarified to reflect historic preservation of the DDA: economic feasibility of Building 211, 224, 231 and 253 will studied to determine the feasibility of preservation prior to development

§7.3 Sea Level Rise Strategy

- Following text added
  - Storm drainage improvements may be required to support implementation of the AMP and shall be constructed and financed by the Agency in ownership of the affected open space parcel at the time improvements are required and being implements

INFRASTRUCTURE PLAN

VOLUME 2

HUNTERS POINT SHIPYARD
PHASE 2 DEVELOPMENT

AUGUST 3, 2010

REVISED: OCTOBER 1, 2014

REVISED: APRIL 6, 2018

ORDINANCE NOS. 210 AND 211-10

Intentionally Blank

TABLE OF CONTENTS

1. Introduction / Project Description 1-1
   1.1 Purpose 1-1
   1.2 Infrastructure Plan Overview 1-1
   1.3 Property Acquisition, Dedication, and Easements 1-2
   1.4 Project Datum 1-3
   1.5 Technical Memoranda and Master Utility Planning 1-3
   1. 6 Conformance with EIR & Entitlements 1-4
2. Public Infrastructure within the Street Rights-of-Way 2-1
   2.1 Street Improvements 2-1
      2.1.1 Street Surface Improvements 2-1
      2.1.2 On-Site Street System 2-3
      2.1.3 Off-Site Street System 2-5
   2.2 MUNI Improvements 2-28
   2.3 Wet Utilities 2-31
      2.3.1 Separated Sanitary Sewer 2-31
      2.3.2 Separated Storm Drainage 2-33
      2.3.3 Auxiliary Water Supply System (AWSS) 2-35
      2.3.4 Low Pressure Water System 2-36
      2.3.5 Recycled Water System 2-38
      2.3.6 Non-Potable Water 2-39
   2.4 Dry Utility Layouts 2-45
      2.4.1 On-Site 2-45
3. Sea Level Rise 3-1
   3.1 General 3-1
   3.2 Sea Level Rise Strategies 3-1
   3.3 Project Design Criteria 3-2
   3.4 Project Initial Construction 3-3
      3.4.1 Shoreline Improvements 3-3
   3.4.2 Open Space and Park Improvements 3-7
      3.4.3 Development Perimeter 3-10
      3.4.4 5-Year Storm Drainage System 3-10
   3.5 Adaptive Management Strategies 3-13
      3.5.1 Strategies for Sea Level Rise Above 24 Inches 3-14
      3.5.2 Strategies for Sea Level Rise Greater Than 48-Inches 3-15
4 Public Open Space 4-1
   4.1 Open Space Parcels 4-1

5. Other Infrastructure 5-1
5.1 Building Demolition 5-1
5.2 Interim Operational Requirements 5-1
5.3 Waterfront Transportation 5-2
5.4 Waterfront Improvements 5-2
5.5 Yosemite Slough Bridge 5-8
5.6 Grading & Surcharge 5-10
5.7 Utility Relocation 5-11
5.8 Community Facilities Lots 5-11
5.8.1 Condition of Agency Parcels 5-11
5.9 Hillpoint Park Path 5-12
5.10 Transportation Management System 5-12
6. Infrastructure Phasing Methodology 6-1
6.1. Infrastructure Phasing 6-1
6.1.1 Adjacency 6-1
6.1.2 Cumulative Development Requirements 6-2
6.2. Specific Additional Factors and Criteria Influencing Infrastructure Phasing 6-7
6.2.1 Interim Operational Requirements 6-7
6.2.2 Intersection & Street Segment Improvements 6-7
6.2.3 Open Space 6-8
6.2.4 Interconnecting Infrastructure 6-8
6.2.5 Northside Park 6-8
7. Project Alternatives 7-1
7.1 Alternative Infrastructure Utilities 7-1
7.2 Historic Structure Preservation 7-1
7.2.1 Hunters Point Commercial Dry Dock and Naval Shipyard Historic District 7-1
7.2.2 Historic Preservation Strategy 7-1
7.3 Sea Level Rise Strategy 7-2

TABLE OF FIGURES

Table of Contents i
Table of Figures iii
Figure 1.3.1 Conceptual Public Utility Easement Locations 1-5
Figure 2.1.1A On-Site Roadway Network 2-13
Figure 2.1.1B Trust Land 2-14
Figure 2.1.2A On-Site Street Network 2-15
Figure 2.1.2B On-Site Street Network 2-16
Figure 2.1.2C On-Site Street Network 2-17
Figure 2.1.2D On-Site Street Network 2-18
Figure 2.1.2E On-Site Street Network 2-19
Figure 2.1.2F On-Site Street Network 2-20
Figure 2.1.2G On-Site Street Network 2-21
Figure 2.1.2H On-Site Street Network 2-22
Figure 2.1.2I On-Site Street Network 2-23
Figure 2.1.3A Off-Site Roadway Improvements – Griffith Street, Thomas Avenue, and Innes Avenue/Hunters Point Boulevard/Evans Avenue 2-24
Figure 2.1.3B Off-Site Roadway Improvements – Griffith Street, Thomas Avenue, and Innes Avenue/Hunters Point Boulevard/Evans Avenue 2-25
Figure 2.1.4 Off-Site Roadway Improvements – Palou Avenue Corridor 2-26
Figure 2.1.5 Traffic Signal Improvements 2-27
Figure 2.2.1 Regional Transit Improvements 2-30
Figure 2.3.1 Separated Sanitary Sewer Layout 2-40
Figure 2.3.2 Separated Storm Drainage Layout 2-41
Figure 2.3.3 AWSS Layout 2-42
Figure 2.3.4 Low Pressure Water System Layout 2-43
Figure 2.3.5 Recycled Water System Layout 2-44
Figure 2.4.1 Dry Utility Joint Trench Layout 2-47
Figure 3.4.1 Shoreline Improvements 3-12
Figure 3.5.1 General Site Section for Base Year – 16” of Sea Level Rise 3-17
Figure 3.5.2 General Site Section for 16” to 36” of Sea Level Rise 3-18
Figure 3.5.3 General Site Section for Greater than 36” of Sea Level Rise 3-19
Figure 3.5.4 Sea Level Rise for 100-year Storm Flooding Limit 3-20
Figure 4.1.1 Open Space Parcels 4-4
Figure 5.4.1 Waterfront Improvements 5-7
Figure 5.5.1 Yosemite Slough Bridge Approach Roadways 5-9
Figure 5.6.1 Preliminary Site Grading 5-13
Figure 5.8.1 Community Facilities Lots Locations 5-14
Figure 7.2.1 Commercial Dry Dock And Naval Shipyard Historic District 7-3

INFRASTRUCTURE PLAN

HUNTERS POINT SHIPYARD PHASE 2 DEVELOPMENT

1. INTRODUCTION / PROJECT DESCRIPTION

1.1 PURPOSE

This Infrastructure Plan is an attachment to the Disposition and Development Agreement (DDA) between the Redevelopment Agency of the City and County of San Francisco, a public body, corporate, and politic of the State of California, together with any successor public agency, (the Agency) and CP Development Co., LP, a Delaware limited partnership, together with its successors, (the Developer) and is an exhibit to the Interagency Cooperation Agreement (ICA) between the City and County of San Francisco (City) and the Agency. This Infrastructure Plan defines the Public Infrastructure for the Hunters Point Shipyard Phase 2 (HPS2) Development. The HPS2 Development is a portion of the overall Candlestick Point/Hunters Point Shipyard Phase 2 Development Project (Project). The Project is organized into two major sub-components: Candlestick Point Development (Candlestick Development) and Hunters Point Shipyard Phase 2 Development (Shipyard Site). A separate Infrastructure Plan covers the Candlestick Development. Collectively, these Infrastructure Plans comprise the Project Infrastructure Plan. Capitalized terms used but not otherwise defined shall have those meanings set forth in the DDA.

The overall Project description, location, and the nature of the Development within the HPS2 Area are described fully in the DDA.

1.2 INFRASTRUCTURE PLAN OVERVIEW

This HPS2 Infrastructure Plan will govern the construction and development of Infrastructure in the HPS2 Area and off-site work needed to support the HPS2 Development. This Infrastructure Plan may be modified to the extent such additional Infrastructure is mutually agreed to by the Agency, City, and the Developer consistent with the terms of the DDA and the ICA.

This Infrastructure Plan defines Infrastructure improvements to be provided by the Developer for the HPS2 Area and off-site work needed to support development of the HPS2 Area. While some Infrastructure improvements to be provided by City Agencies and other governmental agencies are described, their inclusion herein is not intended to be inclusive of all improvements to be provided by City Agencies and other governmental agencies.

Permitting and infrastructure associated with Navy Parcel E-2 will be completed by the Navy, except Yosemite Slough Bridge and related approach span to Crisp Road which will be designed, permitted and constructed by the Developer. The infrastructure improvements required by the Parcel E-2 landfill closure, Stormwater management and shoreline stabilization will be completed by the Navy. The City will receive the property from the Navy in an as-built condition, and the Developer shall not make any improvements to the remedial design completed by the Navy. The limit of the Developer's work in regards to this IP shall be limited to the roadway construction of Arelious Walker Dr. and park improvements for the Grassland Ecology Park. All work to be done by the Developer shall be coordinated with the as-built condition received from the Navy and approved by the Regulatory Agencies. No mass grading, storm drainage, sea level rise or shoreline improvements on Parcel E-2 (except that required within the Arelious Walker Dr. Right-of-Way) will be the responsibility of the Developer.

This Infrastructure Plan and the approved 2014 Subdivision Regulations for the Candlestick Point / Hunters Point Shipyard Project (Project Subdivision Regulations) establish the design standards, criteria and specifications of Infrastructure in the Project, including streets, low pressure water, recycled water, auxiliary water supply system, joint trench, street lighting, street furniture, separated storm and sewer systems, low impact design (LID) storm water treatment features, open space parcels, and other Infrastructure. Where improvement standards proposed herein differ from the Project Subdivision Regulations, such standards and Infrastructure shall require Director's granting of an exception pursuant to the Subdivision Code and shall be subject to design modification or exception requests and reviewed by the affected City Agencies during the Project Sub-Phase application or construction document approval process. During subdivision processing and approval by the City, including the review and approval of subdivision improvement plans, the final design of Infrastructure will be consistent with this Infrastructure Plan. This Infrastructure Plan focuses on the Infrastructure required to build the Project as described in the Project Environmental Impact Report (EIR).

1.3 Property Acquisition, Dedication, and Easements

The mapping, street vacations, property acquisition, dedication and acceptance of streets and other Infrastructure improvements will occur through the Subdivision Map process in accordance with the Project Subdivision Regulations. Except as otherwise noted, all Infrastructure described in this Infrastructure Plan shall be constructed within the public right-of-way or dedicated easements to provide for access and maintenance of Infrastructure facilities. In the event property necessary to provide the rights-of-way or easements for construction of improvements shown herein cannot be

acquired by the Developer, alternate Infrastructure designs will be submitted by the Developer for consideration by the City.

Public utility easements, which are conceptually located on Figure 1.3.1, will be allowed within the Project as may be necessary to service the development. Utilities or stormwater treatment solutions in these areas will be installed in accordance with the standards in this Infrastructure Plan and applicable City Regulations for public acquisition and acceptance within public utility easement areas, including provisions for maintenance access; however, such areas shall not be required to be dedicated as public right-of-ways or improved to public right-of-way standards. It is noted that the City strongly prefers public utilities be installed within public rights-of-way. In the event of a conflict between the Infrastructure Plan and the tentative map conditions, the tentative map conditions shall control.

1.4 Project Datum

Elevations are referred to herein in reference to the "CP/HPS2 Datum" or "Project Datum." "CP/HPS2 Datum" and "Project Datum" are both defined as the following:

- Old City Datum (CCSF) plus 100 feet
- The San Francisco Vertical Datum 2013 (SFVD 13) plus 88.7 feet
- The North American Vertical Datum 1988 (NAVD 88) plus approximately 88.7 feet

The definitions of development-related terms as defined in the DDA shall apply to this Infrastructure Plan.

1.5 Technical Memoranda and Master Utility Planning

Each Infrastructure system described herein has been more fully described in a Technical Memorandum or other Draft Master Utility Plan that has been submitted separately to the City and reviewed, including but not limited to the following:

- Hunters Point Shipyard Phase II Development Grading and Storm Drain System Master Plan, dated July 21, 2017 and prepared by BKF Engineers
- Sanitary Sewer System Master Plan for the Hunters Point Shipyard Phase II Development, dated July 21, 2017 and prepared by BKF Engineers

- Low Pressure Water System Master Plan for the Hunters Point Shipyard Phase II Development, dated July 21, 2017 and prepared by BKF Engineers

- Recycled Water System Master Plan for the Hunters Point Shipyard Phase II Development, dated July 21, 2017 and prepared by BKF Engineers

- Hunter's Point Shipyard Phase 2 Dry Utilities Joint Trench Master Plan & Master Electric Infrastructure Plan Hunter's Point San Francisco, CA, dated July 10, 2017 and prepared by Power Systems Design

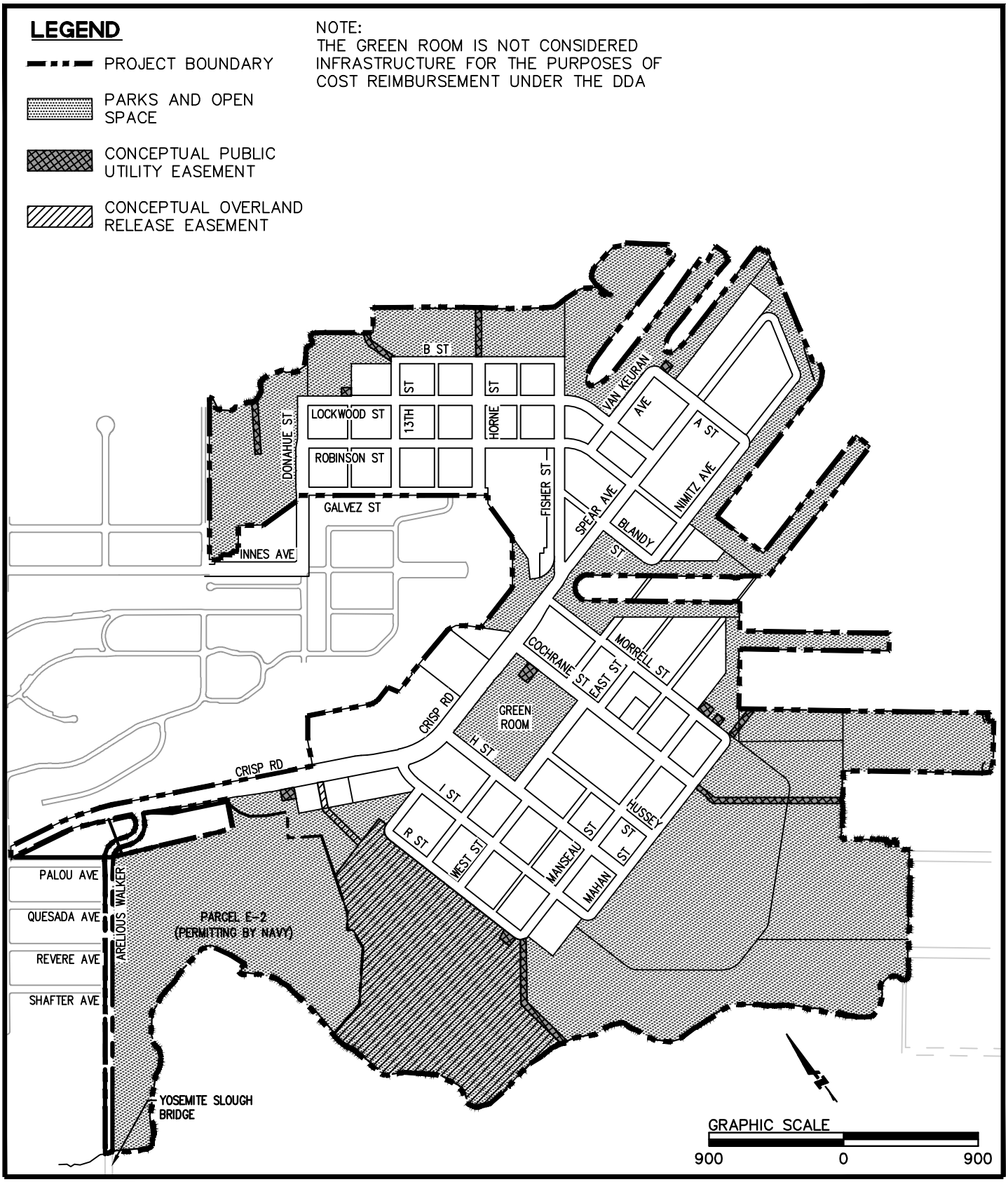
- Hunters Point Shipyard Phase 2 AWSS Alternatives, dated July 6, 2015 and prepared by AECOM for the SFPUC

- Hunters Point Shipyard Phase 2 – Sanitary Sewer Pump Station and Lift Station Design Optimization Technical Memorandum prepared by BKF Engineers

These documents identify the key design criteria and provide more detailed layouts of each Infrastructure system. These Technical Memoranda or other Draft Master Utility Plan form the basis of what will become the final Master Plans, as amended from time to time, for each utility system, to be approved initially by the City prior to any Subdivision Maps (excepting tentative and final transfer maps) or Construction Permits related to the Project. Any subsequent amendments to the Master Utility Plans must be approved by the City prior to issuance of any affected Construction Permits. Approval of this Infrastructure Plan does not imply approval of the respective utility system Technical Memoranda or other Draft Master Utility Plan. Each utility will be constructed according to the provisions of the relevant City Standard Plans and Specifications provided for in this infrastructure Plan, the associated Final Master Utility Plans, as amended from time to time, and construction permits. All facilities will be located within the public right-of-way or dedicated easements to provide for access and maintenance to facilities.

1. 6 CONFORMANCE WITH EIR & ENTITLEMENTS

This Infrastructure Plan has been developed to be consistent with Project mitigation measures required by the Environmental Impact Report (EIR) and other entitlement documents. Regardless of the status of their inclusion in this Infrastructure Plan, all mitigation measures of the EIR shall apply to the Project. Compliance with Project mitigation measures shall be the responsibility of the Developer or its Contractor until acceptance of the related Infrastructure by the Agency, City, or on-site development entity.



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD PHASE II DEVELOPMENT

CONCEPTUAL PUBLIC UTILITY EASEMENT LOCATIONS

FIGURE 1.3.1

2. PUBLIC INFRASTRUCTURE WITHIN THE STREET RIGHTS-OF-WAY

2.1 STREET IMPROVEMENTS

A new on-site street system, comprised of proposed new and reconstructed streets, and improvements to selected off-site roadways outside the project boundary, will be constructed to serve the Project, as described in Section 2.

The following Infrastructure descriptions apply generally to public streets in the HPS2 Area, but may vary slightly by street based on particular requirements, as shall be determined during the review of the applicable subdivision improvement plans and in accordance with the procedure for granting exceptions as set forth in the applicable Subdivision Code and the Project DDA. The street improvements will be implemented at specific stages of development; on-site street improvements will be implemented as triggered by the adjacency principle described in Section 6 and off-site street improvements will be implemented based on traffic triggers as discussed in Section 6. Mid-block breaks, which are conceptually identified on Figure 2.1.1A, will be owned and maintained in accordance with the DDA.

2.1.1 STREET SURFACE IMPROVEMENTS

Street surface improvements consist of roadway reconstruction, preparation, excavation, fine grading, pavement section (including base and asphalt concrete wearing surface), combined concrete curbs and gutters, concrete sidewalk and curb ramps, traffic control signs and striping, street landscaping and trees, low impact design stormwater treatment facilities where applicable, and appurtenant improvements. Grading will be performed by cutting existing grades and redistributing the resulting soil for placement on site, or by importing fill for placement in order to provide sufficient gradient to accommodate the 100-year overland flow requirements and the projected sea level rise, as described in Section 3. Consideration will be made during design of potential settlement that may result by the addition of loads to existing compressible soils by Infrastructure described in this Infrastructure Plan, and action will be taken by the Developer prior to construction to minimize such settlements.

The street structural sections will consist of three typical types: asphaltic concrete over concrete; asphaltic concrete over aggregate base; and a combination to meet and match existing streets. Future feasibility studies will be conducted for locations within reconstructed roadway sections and parking lots for permeable or porous paving materials.

Streetscape improvements of the on-site streets will include sidewalk, a planting area, street trees and street furnishings, as approved by the Agency and City. These improvements will be further defined by the Streetscape Master Plan to be submitted by the Developer for approval by the City and/or Agency in accordance with the Design Review and Document Approval Procedure (DRDAP). Street furnishings include, but are not limited to, benches, trash cans, bike support facilities and pedestrian scale lighting.

Upon acceptance of these street improvements by the City, responsibility for the operation and maintenance of the roadway and streetscape elements shall be designated and allocated as may be allowed by the City pursuant to the various City and County of San Francisco Municipal Codes, including but not limited to Public Works Code Section 786. Responsibility for accepted street improvements for streets within the Public Trust will be determined separately.

At the time of new permanent street construction, all Infrastructure under the pavement, including utility crossings at intersections, will be installed prior to final street pavement. For major utilities such as water lines, the facilities are to be installed and tested for acceptance. For minor conduits, such as for future traffic signal wires, sleeves (or individual conduits if detailed data is available at the time) will be installed in a manner that minimizes the need for future street cuts. Spare conduits will be provided within the joint trench where necessary for future installation of twelve (12) conductor cable to synchronize intersections. The foundations for underground utilities shall be determined by the geotechnical and civil engineering requirements for the location.

The following lane use definitions shall apply to this Infrastructure Plan:

Shared right-through lane means a traffic lane from which a vehicle may either make a right turn, or travel straight through the intersection.

Shared left-through lane means a traffic lane from which a vehicle may either make a left turn, or travel straight through the intersection.

Exclusive through lane means a traffic lane from which a vehicle may only travel straight through the intersection.

Exclusive left-turn lane means a traffic lane from which a vehicle may only make a left turn.

Exclusive right-turn lane means a traffic lane from which a vehicle may only make a right turn.

The following bicycle facility definitions shall apply to this Infrastructure Plan:

Class I bicycle facility means an off-road bicycle path, generally shared with pedestrians. Class I facilities may be adjacent to an existing roadway, or may be entirely independent of existing vehicular facilities.

Class II bicycle facility means striped bicycle lanes on roadways.

Class III bicycle facility means a signed bicycle route. Class III facilities do not have striped, reserved right of way for bicycles, but are signed and designed to accommodate and encourage bicycle traffic. These facilities are often demarcated by "sharrows" indicating the shared use of the lane by both motorized vehicles and bicycles.

Class IV bicycle facility means a separated and protected one-way or two-way bicycle facility, commonly referred to as a cycle track. Class IV facilities designed for use by only bicyclists and are physically separated from both vehicular and pedestrian facilities by a vertical element.

2.1.2 On-Site Street System

The following specific on-site street improvements shall be provided by the Developer in connection with the development of the HPS2 Area in accordance with this Infrastructure Plan.

Street Segments

The on-site street system for the HPS2 Area, including existing and proposed streets, is shown on Figure 2.1.1A. Streets and parks within the Public Trust lands, which are subject to separate acceptance procedures and post-acceptance regulations, are shown on Figure 2.1.1B. Figures 2.1.2A – 2.1.2E show on-site street cross sections within the HPS2 Area, including basic geometries within the rights-of-way such as numbers of lanes, their uses, their widths, and the full width of right-of-way. These sections demonstrate the transportation functionality of the roadways and may not be inclusive of all features and utilities that will be included in the final street sections. Curb ramps and crosswalks are shown diagrammatically and will be designed to align across pedestrian paths of travel. The precise locations of these features will be subject to approval through the design process. Street names for proposed roadways are only to identify particular roadway segments and are subject to final determination at a later time.

Intersection Improvements

The following specific intersection Improvements shall be provided by Developer in connection with the development of the HPS2 Area in accordance with this Infrastructure Plan.

New Traffic Signals

The Developer shall install new traffic signal poles, masts, and heads, pedestrian count-down indicators, and other related infrastructure in each corner of the intersection, and install a new traffic signal controller at the following intersections (as shown on Figure 2.1.5), or as may be agreed upon by the City and Developer based on further information from a traffic engineer:

1. Crisp Road / Arelious Walker
2. Crisp Road / Donahue Street
3. Crisp Road / H Street
4. Crisp Road / Cochrane Street
5. Crisp Road / Fisher Avenue / Spear Avenue
6. Spear Avenue / Robinson Street
7. Spear Avenue / Lockwood Street
8. Fisher Avenue / Robinson Street
9. Fisher Avenue / Lockwood Street
10. Donahue Street / Robinson Street
11. Donahue Street / Innes Avenue
12. Arelious Walker / Quesada

Certain traffic signals will have interconnection infrastructure as recommended by the Project Transportation Plan, which may be amended by mutual agreement of the City and Developer from time to time.

Other Traffic Control

At intersections on major roadways where traffic signals are not installed, the Developer shall install stop signs on streets intersecting the following major roadways:

1. Donahue Street, at Galvez Street
2. Robinson Street, between Donahue Street and Fischer Street
3. Lockwood Street, between Donahue Street and Fischer Street
4. Spear Avenue, between Fischer Street and A Street
5. H Street, between Crisp Road and Mahan Street
6. Cochrane Street, between Crisp Road and Mahan Street

The Developer shall install stop sign and related traffic control infrastructure at other intersections in the HPS2 Area, with configuration (all-way or side-street) to be determined in consultation with

the City prior to approval of Improvement Plans. All other streets shall have traffic control as recommended by the Project Transportation Plan, which may be amended by mutual agreement of the City and Developer from time to time.

2.1.3 Off-Site Street System

The following specific off-site improvements shall be provided by Developer in connection with the development of the HPS2 Development in accordance with this Infrastructure Plan:

Street Segments

The Developer shall reconstruct or improve existing street segments outside of the HPS2 Area as described below, pursuant to a schedule based on traffic triggers defined by Section 6. The proposed street improvements are generally limited to the sidewalk (including curb ramps) and street sections within the existing right-of-way. Limited areas of streetscape improvements may be included in off-site street segments or along certain off-site corridors as described herein. A Technical Memorandum will recommend one or more of the following types of roadway improvements for the street pavement section based on site reconnaissance, topographic survey and geotechnical investigation completed prior to the final design and any proposed construction. These recommendations will be mutually agreed upon by both the Developer and SFDPW prior to final design. Site reconnaissance will consist of a site walk to document the existing conditions within the ROW including pavement and sidewalk conditions and above ground utilities requiring protection and/or potential relocation during work activities. A topographic survey of existing surface elevations including location of surface utilities will be completed following site reconnaissance. Existing pavement conditions will be evaluated and documented by performing a limited geotechnical investigation.

Because the proposed work activities are needed to improve access to the project area per the Transportation Plan, all the proposed improvements by the Developer are limited to pavement and sidewalk improvements within the right of way. Therefore, any primary subsurface utilities that are present below the existing off-site roadway and sidewalk sections will be not be redesigned or reconstructed.

All off-site street and streetscape improvements will be constructed per recommendations of a Technical Memorandum discussing Off-Site Street Pavement Rehabilitation and Replacement and per the approved Plans and Specifications per current City requirements.

Based on the above documents the types of off-site roadway improvement work expected to be performed are defined as:

Reconstruct Structural Section – This street improvement includes removal of the existing roadway pavement section between roadway structural joints and/or expansion joints as necessary – including asphalt concrete (AC) pavement, portland cement concrete base (PCC), aggregate base (AB) and sidewalk as needed. Following removal a new roadway structural section will be constructed, which will include placement of a new AC wearing course, PCC and/or AB, adjustment of valve boxes and manhole frames and covers to grade, placement of new traffic markings / striping and construction of new sidewalk as needed per current City requirements within the existing ROW.

Repair and Resurface Streets – This street improvement includes partial removal of the existing AC wearing surface (up to the top of the PCC base or a maximum of 3 inches) by grinding, assessment and potential replacement of the concrete roadway structural section in those areas demonstrating visible signs of structural failure (e.g., cracks more than 1/8-inch in thickness, differential settlement of more than 1/2-inch, etc.), and removal of sidewalk sections with visible signs of failure. Repairs of the PCC in areas with affected structural sections shall be made from structural joint to structural joint. Following these activities the failed road pavement sections will be repaired or replaced, a new AC surface will be placed (up to 3 inches), including adjustment of valve boxes and manhole frames and covers to grade, and placement of new traffic markings / striping. Sidewalk sections will be repaired or replaced. This work will be completed per current City requirements within the existing ROW. The extent of this type of repair is intended to correct areas of deficient structural sections without replacing an entire roadway segment, as agreed by the Developer and City.

Resurface Streets – This street improvement includes removal of the existing AC wearing surface (down to the top of the PCC base, or a maximum of 3 inches in depth) by grinding and placement of a new AC wearing surface. Resurfacing of streets shall include adjustment of valve boxes and manhole frames and covers to grade and placement of new traffic markings / striping.

Overlay Streets – This street improvement includes placement of a new AC wearing surface overlay over the existing pavement surface without modification of the underlying pavement. Resurfacing of streets shall include adjustment of valve boxes and manhole covers to grade and placement of new traffic markings / striping.

Restripe Street – This work is defined as the removal of existing pavement delineation, obliterating of prior pavement markings, and placement of new pavement delineation and pavement markings.

Existing off-site roadways being improved are shown on Figures 2.1.3A and 2.1.3B. Existing off-site roadways outside the project boundary, such as Thomas Avenue, Griffith Street, Innes Avenue (Including Innes Avenue / Hunters Point Boulevard / Evans Avenue), and Palou Avenue will be improved to serve the HPS2 Area. The intersection of Thomas Avenue and Ingalls Street is included as part of the HPS2 Infrastructure Plan; Ingalls Street is included in the Infrastructure improvements to be built to serve the CP Area. For each segment of improved street pavement, improvements to street pavement at street intersections will continue into the crossing street and up to the curb returns on either side of the crossing street. The City may choose to incorporate additional design elements into these off-site roadways at City cost. These may include LID features to address the flow rate of storm water flows into the combined sanitary sewer system, major curb and gutter replacement (where not called for by the Technical Memorandum) and/or curb bulb-outs.

These terms as defined above are used in describing the work at specific locations delineated below:

A. Thomas Avenue

Work will consist of widening Thomas Avenue by three feet on each side of the street (within the existing right-of-way) between Ingalls Street and Griffith Street in accordance with Figure 2.1.3B (4 travel lanes, 2 parking lanes, and sidewalks on both sides of the street). Developer will implement the improvements identified in a technical memorandum, which likely will consist of Reconstruct Structural Section. In addition to Reconstruct Structural Section, additional improvements within this road segment will include new pedestrian lighting added to existing pole when possible; extension of drainage laterals and installation of new catch basins; and relocation of low pressure water system fire hydrants. Street signage to be provided includes relocation of existing street signs. Work does not include low impact development storm water quality treatment. A pre-design study for off-site roadways targeted for reconstruction will include possible use of LIDs. Implementation of any LID elements is not part of the Developer's scope of work for off-site road improvements.

A new traffic signal will be installed at the intersection of Thomas Avenue at Ingalls Street as discussed in the following section on Intersection Improvements.

B. Griffith Street

Work will occur on Griffith Street between Thomas Avenue and Palou Avenue in accordance with Figure 2.1.3B (2 travel lanes, 2 parking lanes (which may be converted to travel lanes), and sidewalks on both sides of the street). Developer will implement the improvements identified in a Technical Memorandum, which describe the limits of work for each of the following potential types of work on Griffith Street: Reconstruct Structural Section, Repair and Resurface Street, Resurface Street, Overlay Street and/or Restripe Street.

In addition to the improvements identified above, other improvements within this road segment may include street lights that need to be replaced or moved during construction will be upgraded with new fixtures and an additional pedestrian lighting added to the existing pole when possible; extension of drainage laterals and installation of new catch basins; and relocation of low pressure water system fire hydrants. Street signage to be provided includes relocation of existing street signs. Work does not include low impact development storm water quality treatment. A pre-design study for off-site roadways targeted for reconstruction will include possible use of LIDs. Implementation of any LID elements is not part of the Developer's scope of work for off-site road improvements.

C. Innes Avenue / Hunters Point Boulevard / Evans Avenue

Work will consist of widening the corridor consisting of Innes Avenue, Hunters Point Boulevard, and Evans Avenue by 2 feet on the southern side of the existing roadway between Earl Street (the Hunters Point Shipyard Phase 2 Development Area boundary) and Jennings Street in accordance with Figure 2.1.3A (4 travel lanes, sidewalk on both sides of the street, bicycle facilities, parking, and turn lanes vary throughout the corridor). Developer will implement the improvements identified in a Technical Memorandum, which consist of Reconstruct Structural Section as necessary.

In addition to Reconstruct Structural Section, additional improvements within this roadway segment include: upgrading of street lights that need to be replaced or moved during construction with new fixtures and new pedestrian lighting added to the existing pole when possible; extension of drainage laterals and installation of new catch basins; and relocation of low pressure water system fire hydrants. Work includes streetscape improvements which can include new street trees with grates, street benches, bicycle racks, and trash receptacles as per the agreed Streetscape Plan between the Developer and the City. Street signage to be provided includes relocation of existing street. Work does not include irrigation system for the street trees or low impact development storm

water quality treatment. A pre-design study for off-site roadways targeted for reconstruction will include possible use of LIDs. Implementation of any LID elements is not part of the Developer's scope of work for off-site road improvements. It is the desire of the City that the sidewalk along the south side of Innes Avenue be widened beyond the minimum width of five feet as depicted in Figure 2.1.3. The City shall be obligated to fully reimburse the Developer for the increase in soft and hard costs of such widening separate from the reimbursement provisions of the DDA for Infrastructure. If the City has not demonstrated to the Developer's satisfaction the availability of funds to fully reimburse the Developer at the time of the approval of the associated Sub-Phase application, then the Developer shall not permit or construct the City's alternative of a widened right-of-way design for Innes Avenue, and shall instead permit and construct the cross-section identified in Figure 2.1.3. The Developer shall construct such widening if an executed Memorandum of Agreement or Memorandum of Understanding documenting between the City and the Developer that City funds for design and construction are available is completed in advance of the Approval of the associated Sub-Phase Application. Furthermore, the improvement of Innes Avenue / Hunters Point Boulevard / Evans Avenue will not be delayed by the availability of City funds to construct retaining walls to widen sidewalks on Innes Avenue / Hunters Point Boulevard / Evans Avenue.

A new traffic signal will be installed at the intersection of Evans Avenue / Middle Point / Jennings as discussed in the following section on Intersection Improvements.

D. Palou Avenue

Work will be performed on Palou Avenue between Griffith Avenue and the easternmost curb returns on Third Street in accordance with Figure 2.1.4 (2 travel lanes, 2 parking lanes, and sidewalk on both sides of the street between Griffith Street and Keith Street; 3 travel lanes, 2 parking lanes and sidewalk on both sides of the street between Keith Street and Third Street).

From Third Street to Lane Street, the Developer will implement the improvements identified in a Technical Memorandum, which likely consists of Reconstruct Structural Section. From Lane Street to Griffith Street, the Developer will implement the improvements identified in a Technical Memorandum, which may include one or more of the following; Reconstruct Structural Section, Repair and Resurface Street, Resurface Street, Overlay Street and/or Restripe street.

Palou Avenue [Proposed Improvement] (Griffith Street to 3rd Street) – In addition to the improvements identified above other additional improvements may include street lights that need

to be replaced or moved during construction will be upgraded to new fixtures and an additional pedestrian lighting added to the existing pole when possible; extension of drainage laterals and installation of new catch basins; and relocation of low pressure water system fire hydrants. Work can include streetscape improvements, which are new street trees with grates, street benches, bicycle racks, and trash receptacles, as per agreed Streetscape Plan between the Developer and the City. Street signage to be provided includes relocation of existing street signs. Bulb-outs are to be provided. Bulb-outs will have a minimum radius of 10 feet at the outside of the bulb and 20 feet at the inside of the bulb. New catch basins will be installed where necessary at the bulb-outs to facilitate drainage. Work does not include irrigation system for the street trees or low impact development storm water quality treatment. A pre-design study for off-site roadways targeted for reconstruction will include possible use of LIDs, implementation of any LID elements is not part of the Developer's scope of work for off-site road improvements. Work does not include irrigation system for the street trees.

Six new traffic signals will be installed at major intersections along Palou Avenue as discussed in the following section on Intersection Improvements.

Palou Avenue [Future Improvements to be constructed by the Developer only as a mitigation measure should future observed Project impacts and the Project entitlement documents require] (Griffith Street to Third Street) – Work includes Reconstruct Structural Section for area to be widened, removal of 3 feet sidewalk on each side of the street; curb ramps; curb and gutter; adjusting extension of drainage laterals and installation of new catch basins/ reuse of existing catch basins allowed; new street signage if required by change in traffic requirements; and traffic striping. Work does not include streetscape improvements which are new street trees with grates, street benches, bicycle racks, and trash receptacles; street signage; irrigation system for the street trees or low impact development storm flow treatment.

E. Illinois Street Improvements

As mutually agreed by the Developer and the City, the Developer will contribute its fair share for the improvement of the southbound approach of Illinois Street at Cargo Way. These improvements include widening the southbound approach on Illinois Street to provide a dedicated southbound left turn lane (approximately 100 feet long) and a dedicated right-turn lane, and extending the existing bicycle lane on Illinois Street to the Cargo Way intersection. Sidewalks, street lighting, signing, striping, pavement, and signal equipment will be replaced or relocated as made necessary by these changes.

INTERSECTION IMPROVEMENTS

The following specific off-site intersection Improvements shall be provided by Developer in connection with the development of the HPS2 Area in accordance with this Infrastructure Plan:

New Off-Site Traffic Signals

The Developer shall install new traffic signal poles, masts, and heads, pedestrian count downs, and other related infrastructure in each corner of the intersection, and install a new traffic signal controller at the following intersections (or at a nearby location as agreed upon by the City and Developer based on further information from a traffic engineer), pursuant to a schedule based on Traffic Triggers and Infrastructure Phasing defined in Section 6:

1. Palou Avenue / Griffith Street*
2. Palou Avenue / Hawes Street*
3. Palou Avenue / Ingalls Street*
4. Palou Avenue / Jennings Street*
5. Palou Avenue / Keith Street*
6. Palou Avenue / Lane Street*
7. Middle Point Road / Evans Avenue / Jennings Street
8. Pennsylvania Avenue / 25th Street
9. Thomas Avenue / Ingalls Street

*New traffic signals along Palou Avenue should be equipped to provide transit signal priority, including traffic signal interconnect wiring. Interconnect wiring should extend to the Palou Avenue / Third Street intersection.

**Improvements along Thomas Avenue and improvements to the intersection of Thomas Avenue / Ingalls Street are included as part of the HPS2 Infrastructure Plan; improvements along Ingalls Street from Carroll Avenue to Thomas Avenue are included as part of the CP Infrastructure Plan.

New traffic signal locations are illustrated on Figure 2.1.5.

At other off-site intersections on roadways being reconfigured or modified by the project, where traffic signals are not installed, traffic control devices shall remain the same as existing conditions. New traffic control devices will not be required at other off-site intersections unless specifically identified in this Infrastructure Plan.

Intersection Lane Configuration Revisions

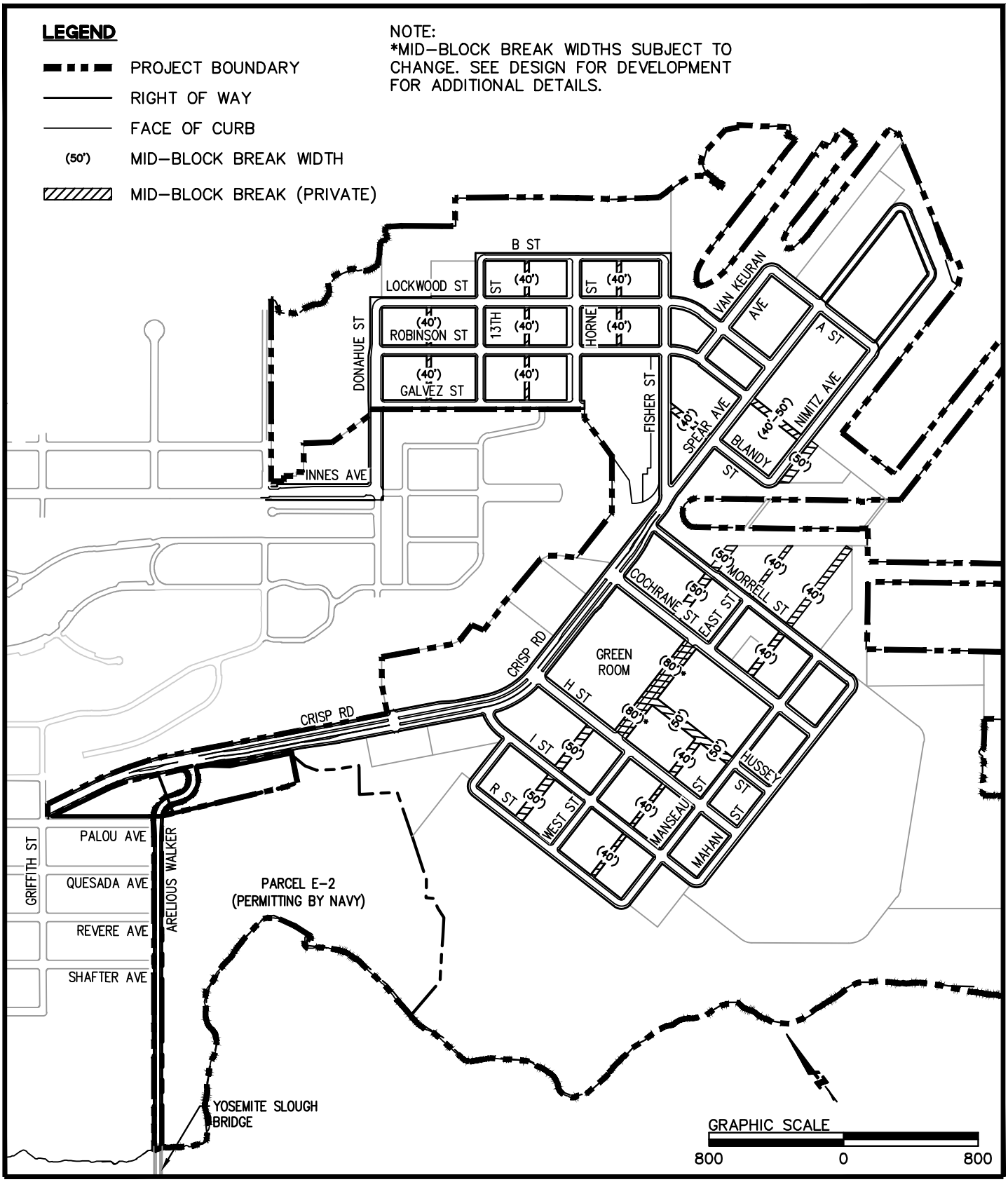
In addition to signalization and other traffic control, the Developer will restripe the intersection approaches to provide revised lane configurations as described in Table 2.1.1 below at the intersections listed:

Table 2.1.1 Off-Site Intersection Lane Configuration Revisions

Intersection	Street	Direction	Lane Striping Configuration Revisions
Evans / Jennings / Middle Point	Evans	Eastbound Approach	Reconfigure existing 3 travel lanes (includes turn lanes) to provide a shared through and left-turn lane, through lane, and right-turn lane.
		Westbound Approach	Reconfigure existing 3 travel lanes (includes turn lanes) to provide a shared through and left-turn lane, through lane, and right-turn lane.
	Jennings	Southbound Approach	Reconfigure to provide a southbound left-turn pocket, a shared southbound through and right-turn lane. The reconfiguration of the southbound approach would require displacement of about 200 feet of on-street parking on the west side of Jennings Street, which would eliminate about 8 to 10 parking spaces.
Palou / Griffith / Crisp	Crisp	Southwest Approach	Remove southwest leg.
		Westbound Approach	Re-stripe westbound approach to provide two approach lanes, a left-turn lane and a shared left/through/right lane.
	Griffith	Northbound Approach	Reconfigure to provide 2 approach lanes- a shared left/through/right-turn lane and a right-turn lane. The reconfiguration of the northbound approach requires displacement of approximately 200 feet of on-street parking on the east side of Griffith Street, which would eliminate about 8 to 10 parking spaces.
	Palou	Eastbound Approach	Reconfigure to provide 2 approach lanes - a left-turn lane, and a shared through and right-turn lane
Thomas / Ingalls	Thomas	Westbound Approach	Reconfigure to provide 2 lanes, a left-turn lane and a shared through and right-turn lane

Other Traffic Control

At other off-site intersections on roadways being reconfigured or modified by the project, where traffic signals are not installed, traffic control devices shall remain the same as existing conditions. New traffic control devices will not be required at other off-site intersections unless specifically identified in this Infrastructure Plan.

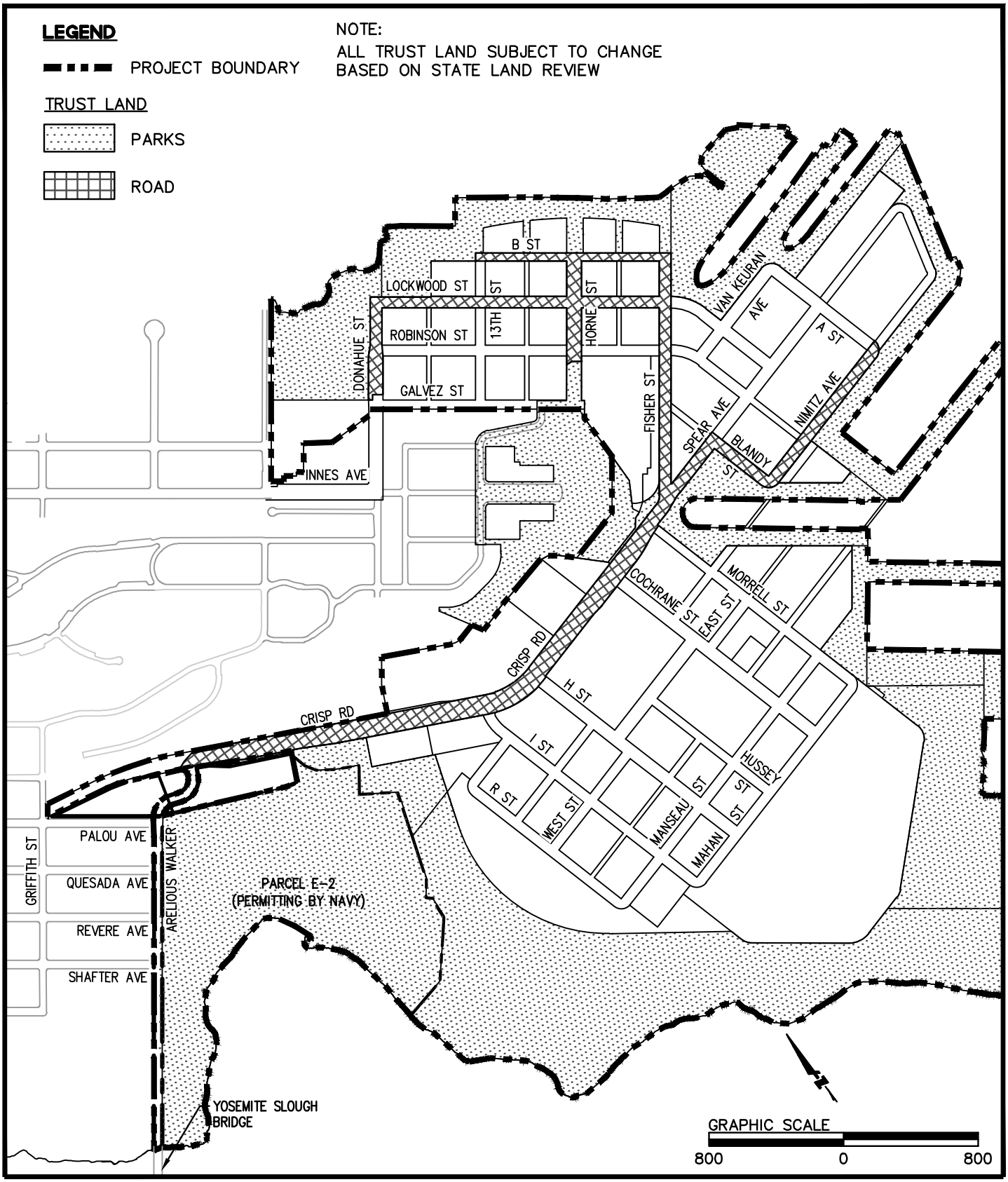


BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

ON-SITE ROADWAY NETWORK

FIGURE 2.1.1A



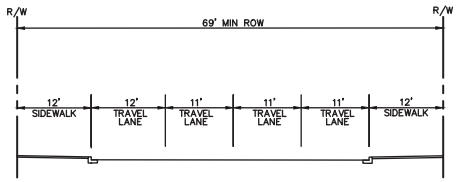
BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

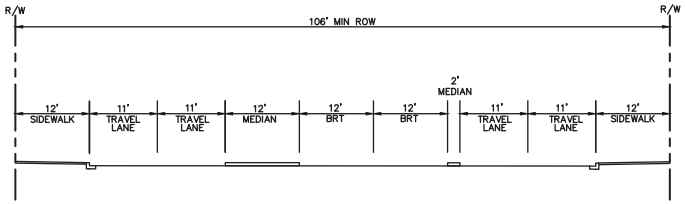
TRUST LAND

FIGURE 2.1.1B

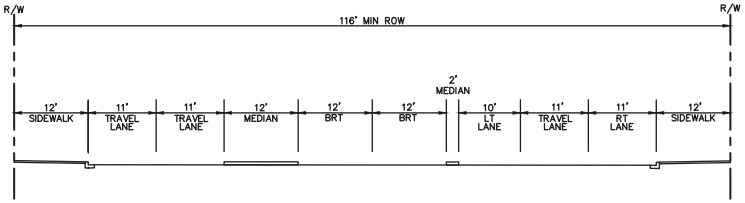
Crisp Road, west of Arelious Walker



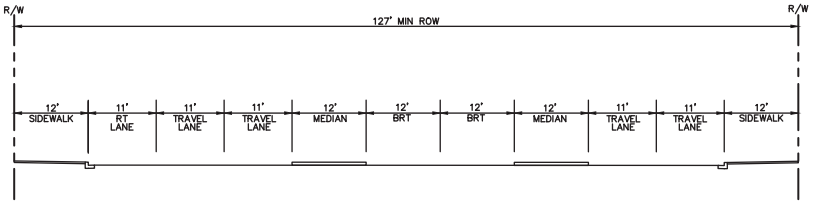
Crisp Road, east of Arelious Walker



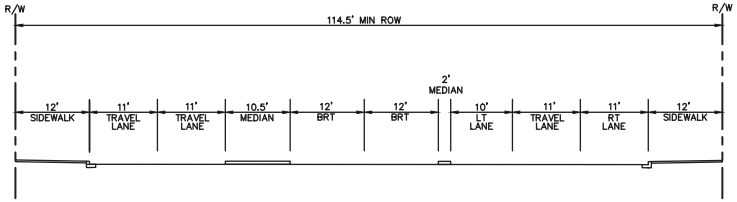
Crisp Road, west of Donahue Street



Crisp Road, east of Donahue Street



Crisp Road, between I Street and H Street



FEHR PEERS

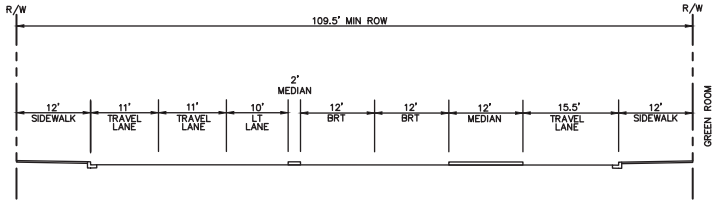
Hunters Point Shipyard Phase II Development

On-Site Street Network

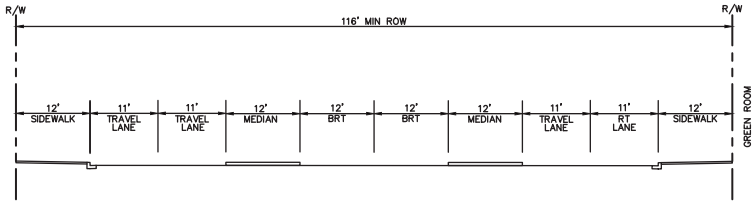
Figure 2.1.2A

① Park with multi-use paths is adjacent to the street. The alignment of Arelious Walker at Crisp Road is subject to change; however, the cross-section at this intersection is fixed. The cross section of the Yosemite Slough Bridge will be refined as bridge designs advance.

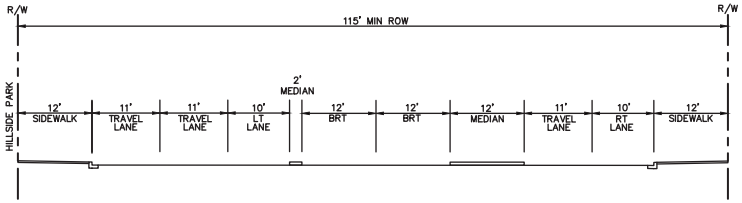
Crisp Road, east of H Street



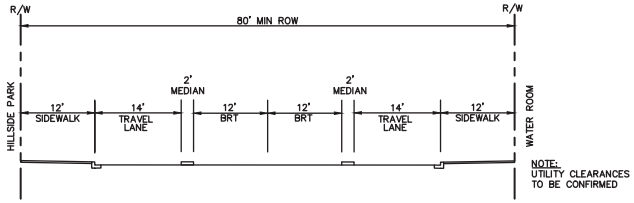
Crisp Road, west of Cochrane Street



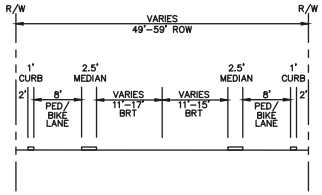
Crisp Road, east of Cochrane Street



Crisp Road, between Morrell Street and Fisher Avenue



Arelious Walker, south of Crisp Road ①



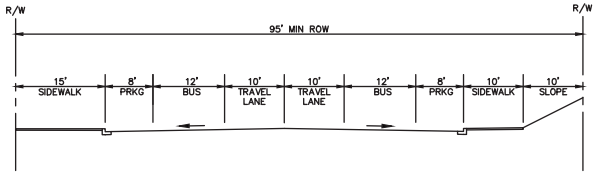
FEHR PEERS

Hunters Point Shipyard Phase II Development

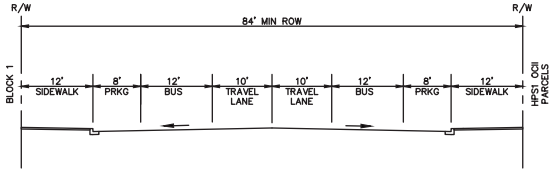
On-Site Street Network

Figure 2.1.2B

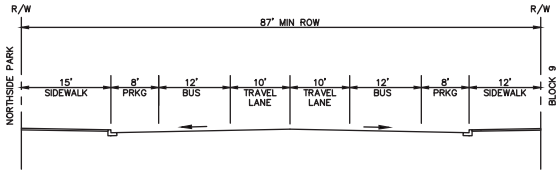
Innes Avenue at Donahue Street



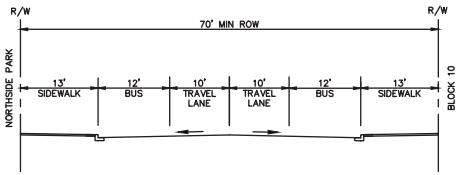
Donahue Street between Innes Avenue and Galvez Street



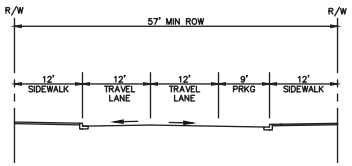
Donahue Street, between Galvez Street and Robinson Street



Donahue Street, between Robinson Street and Lockwood Street



13th Street



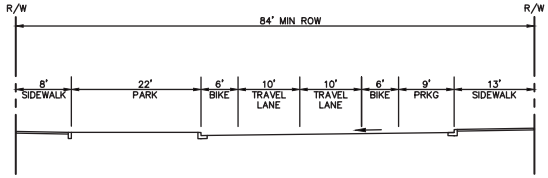
FEHR PEERS

Hunters Point Shipyard Phase II Development

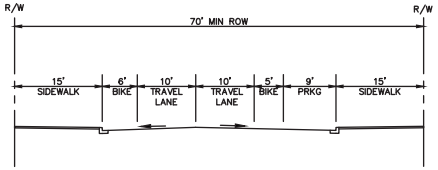
On-Site Street Network

Figure 2.1.2C

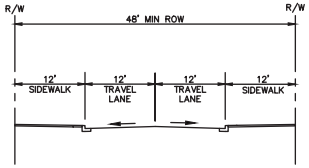
Horne Street



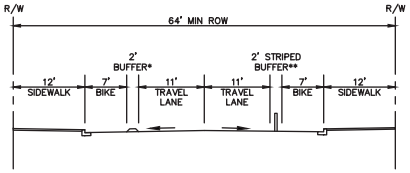
Fisher Street



B Street



Robinson Street



NOTE:

*6" RAISED MEDIAN, OR STRIPED BUFFER WHERE REQUIRED BY SFPUC FOR UTILITY CLEARANCE

**STRIPED BUFFER WITH SAFE HIT POSTS. CURB MAY BE IMPLEMENTED IF STRIPED BUFFER NOT REQUIRED BY SFPUC FOR UTILITY CLEARANCE

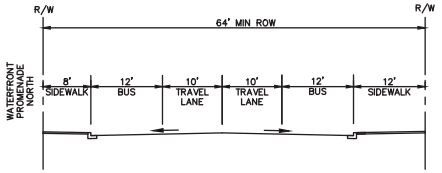
FEHR PEERS

Hunters Point Shipyard Phase II Development

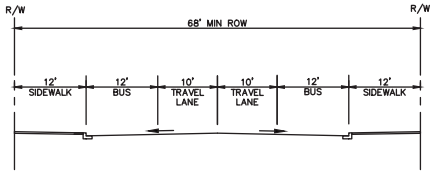
On-Site Street Network

Figure 2.1.2D

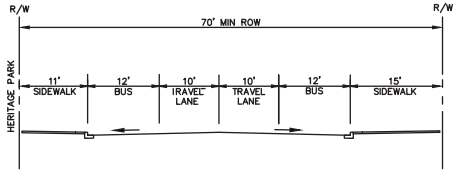
Lockwood Between Donahue and Midblock



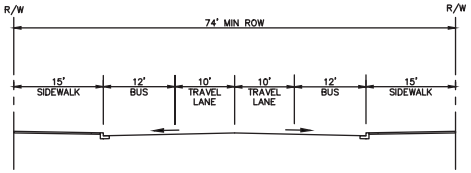
Lockwood Between midblock and Fisher Ave



Lockwood Between Fisher Ave and Van Keuran



Lockwood Between Van Keuran and Spear



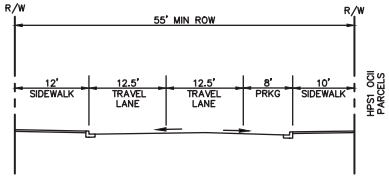
FEHR PEERS

Hunters Point Shipyard Phase II Development

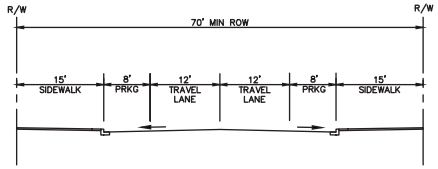
On-Site Street Network

Figure 2.1.2E

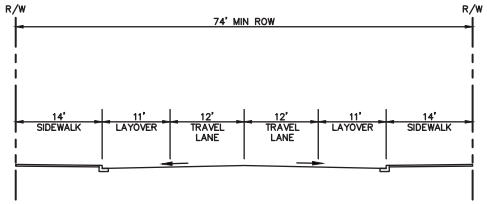
Galvez Avenue



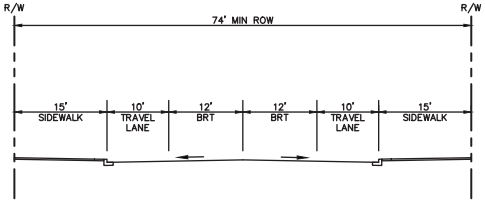
Commercial Roadway



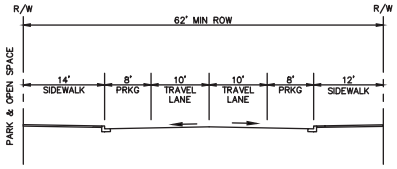
Transit Layover



Spear Avenue



Residential/Commercial Roadway



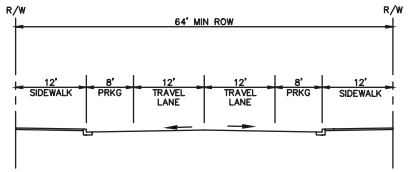
FEHR PEERS

Hunters Point Shipyard Phase II Development

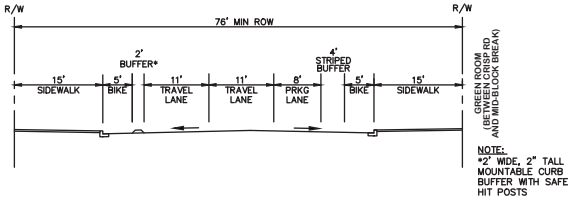
On-Site Street Network

Figure 2.1.2F

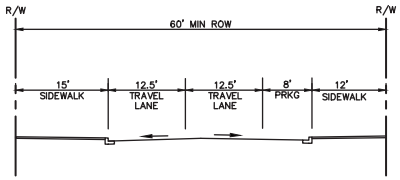
Residential/Commercial Roadway



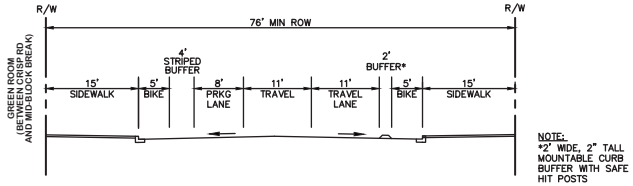
H Street



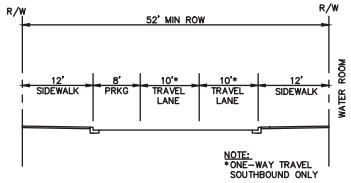
Hussey Street



Cochrane Street



Morrell Street, between Crisp Road and Mid-Block



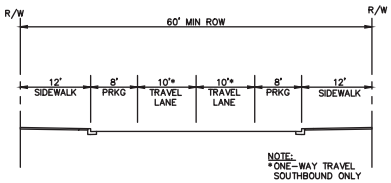
FEHR PEERS

Hunters Point Shipyard Phase II Development

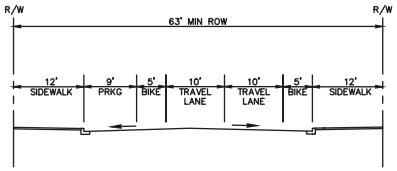
On-Site Street Network

Figure 2.1.2G

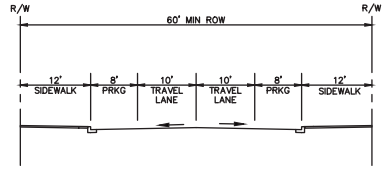
Morrell Street, between Mid-block and East Street



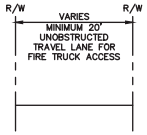
Manseau Street



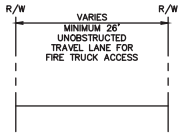
Residential/Commercial Roadway



Mid-block Break (20' Minimum Emergency Vehicle Access)



Mid-block Break (26' Minimum Emergency Vehicle Access)



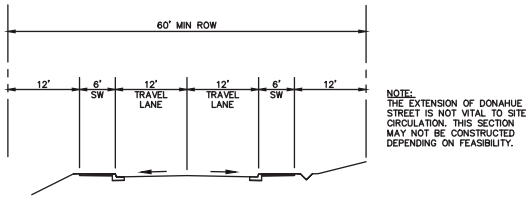
FEHR PEERS

Hunters Point Shipyard Phase II Development

On-Site Street Network

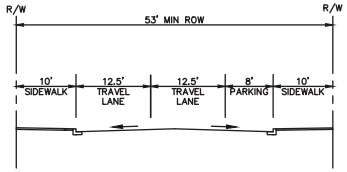
Figure 2.1.2H

Residential/Commercial Roadway



Note: The Developer is pursuing the extension of Donahue Street to Crisp Road. However, the Developer is not obligated to complete the extension of Donahue Street as it relies on several external factors.

Commercial Street

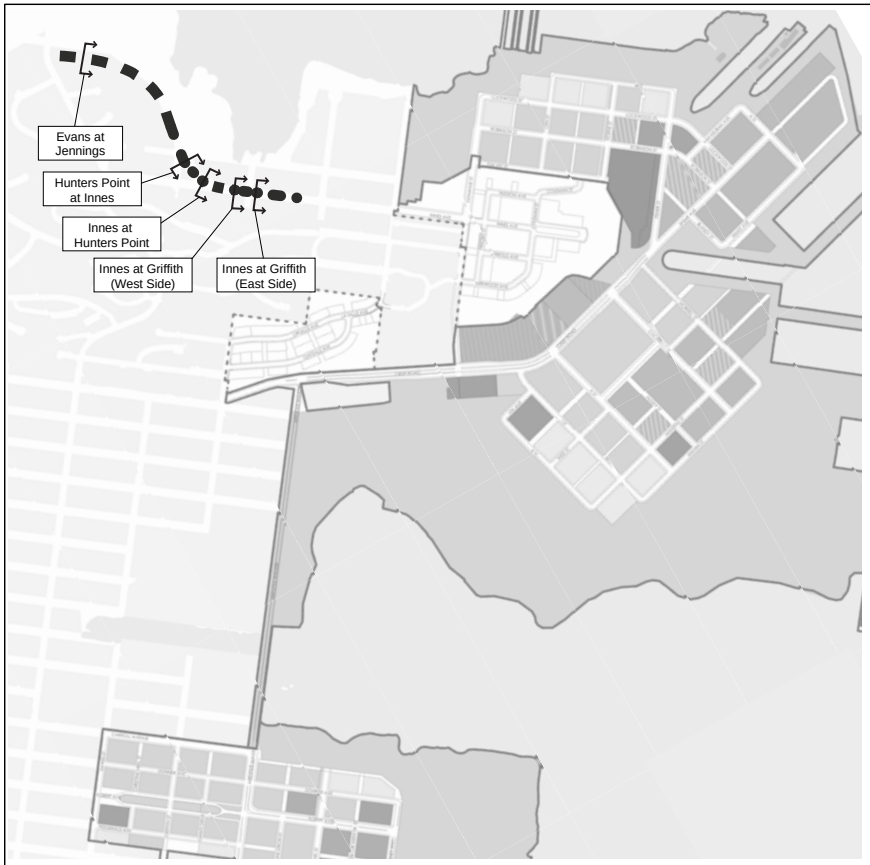


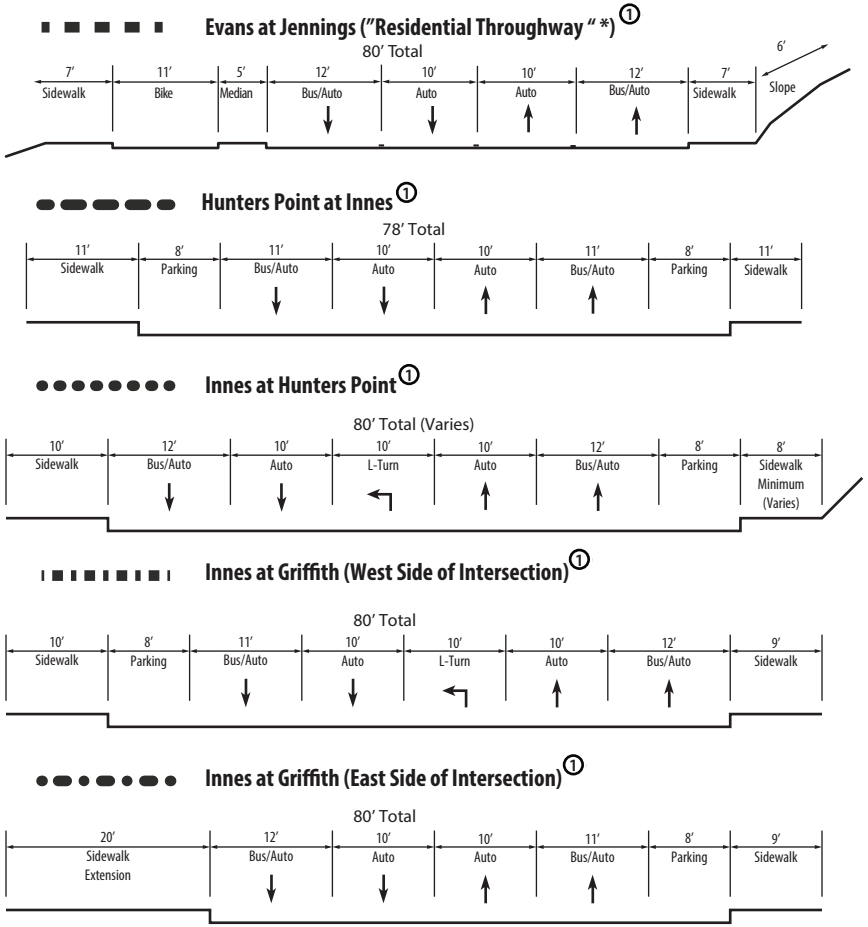
FEHR PEERS

Hunters Point Shipyard Phase II Development

On-Site Street Network

Figure 2.1.2I





SECTIONS NOT TO SCALE

① Typical sections shown here represent the most constrained portion of the Right-of-Way. Parking, turn lanes and sidewalk widths vary within blocks along the corridor.

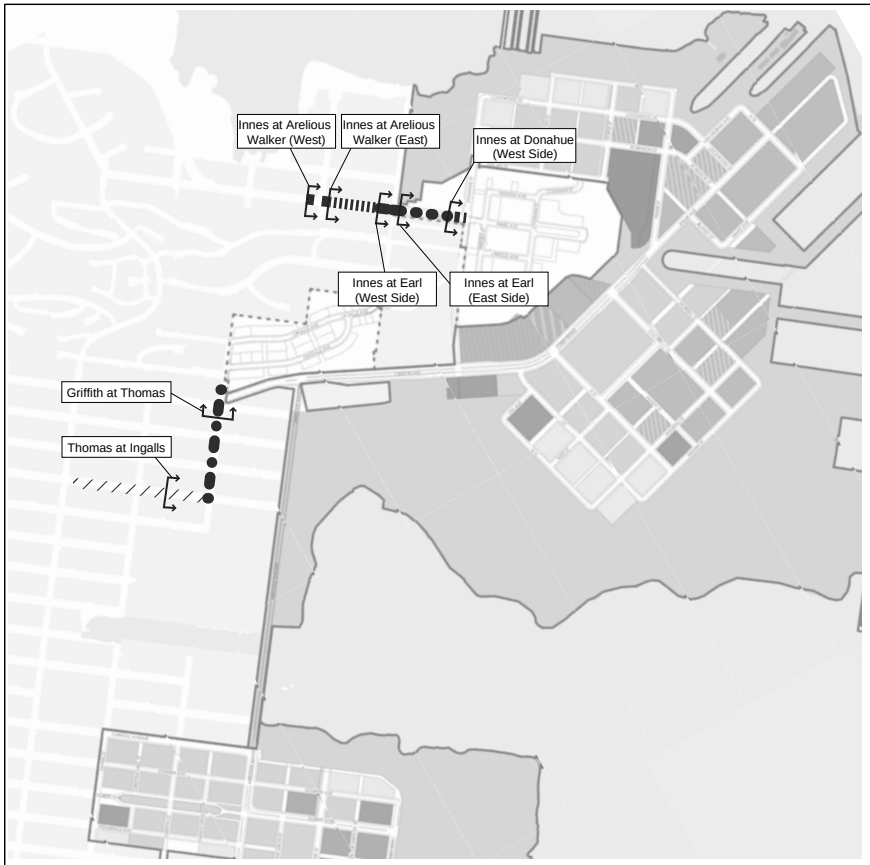
* Street type based on typology developed in the City of San Francisco Draft Better Street Plan, June 2008.

FEHR PEERS

Hunters Point Shipyard Phase II Development

Off-Site Roadway Improvements - Griffith Street, Thomas Avenue and Innes Ave/Hunters Point Blvd/Evans Ave

Figure 2.1.3A



Innes at Arelious Walker (West Side of Intersection) ①

80′ Total (Varies)

10′ Sidewalk	12′ Bus/Auto	10′ Auto	10′ L-Turn	10′ Auto	11′ Bus/Auto	8′ Parking	5′ Sidewalk	4′

Innes at Arelious Walker (East Side of Intersection) ①

80′ Total

10′ Sidewalk	8′ Parking	11′ Bus/Auto	10′ Auto	10′ Auto	12′ Bus/Auto	9′ Sidewalk	10′

Innes at Earl (West Side of Intersection) ①

80′ Total (Varies)

10′ Sidewalk	12′ Bus/Auto	10′ Auto	10′ L-Turn	10′ Auto	12′ Bus/Auto	5′ Sidewalk	11′

Innes at Earl (East Side of Intersection) ①

95′ Total

15′ Sidewalk	8′ Parking	12′ Bus/Auto	10′ Auto	10′ Auto	12′ Bus/Auto	8′ Parking	10′ Sidewalk	10′

Innes at Donahue (West Side of Intersection) ①

95′ Total

15′ Sidewalk	8′ KEEP CLEAR Zone	12′ Bus/Auto	10′ Auto	10′ Auto	12′ Bus/Auto	18′ Sidewalk Bulbout	10′

SECTIONS NOT TO SCALE

① Typical sections shown here represent the most constrained portion of the Right-of-Way. Parking, turn lanes and sidewalk widths vary within blocks along the corridor.

② Truck loading is permitted on either side of Ingalls and Griffith from 6 AM to 4 PM; parking/loading lane becomes auto travel lane from 4 PM to 7 PM.

* Street type based on typology developed in the City of San Francisco Draft Better Street Plan, June 2008.

Thomas at Ingalls ("Industrial Mixed-Use Street" *) (Existing ROW = 80′) ①②

80′ Total

12′ Sidewalk	7′ Pkng	11′ Aut o	10′ Auto	10′ Aut o	11′ Auto	7′ Pkng	12′ Sidewalk

Griffith at Thomas ("Industrial Mixed-Use Street" *) (Existing ROW = 64′) ①②

64′ Total

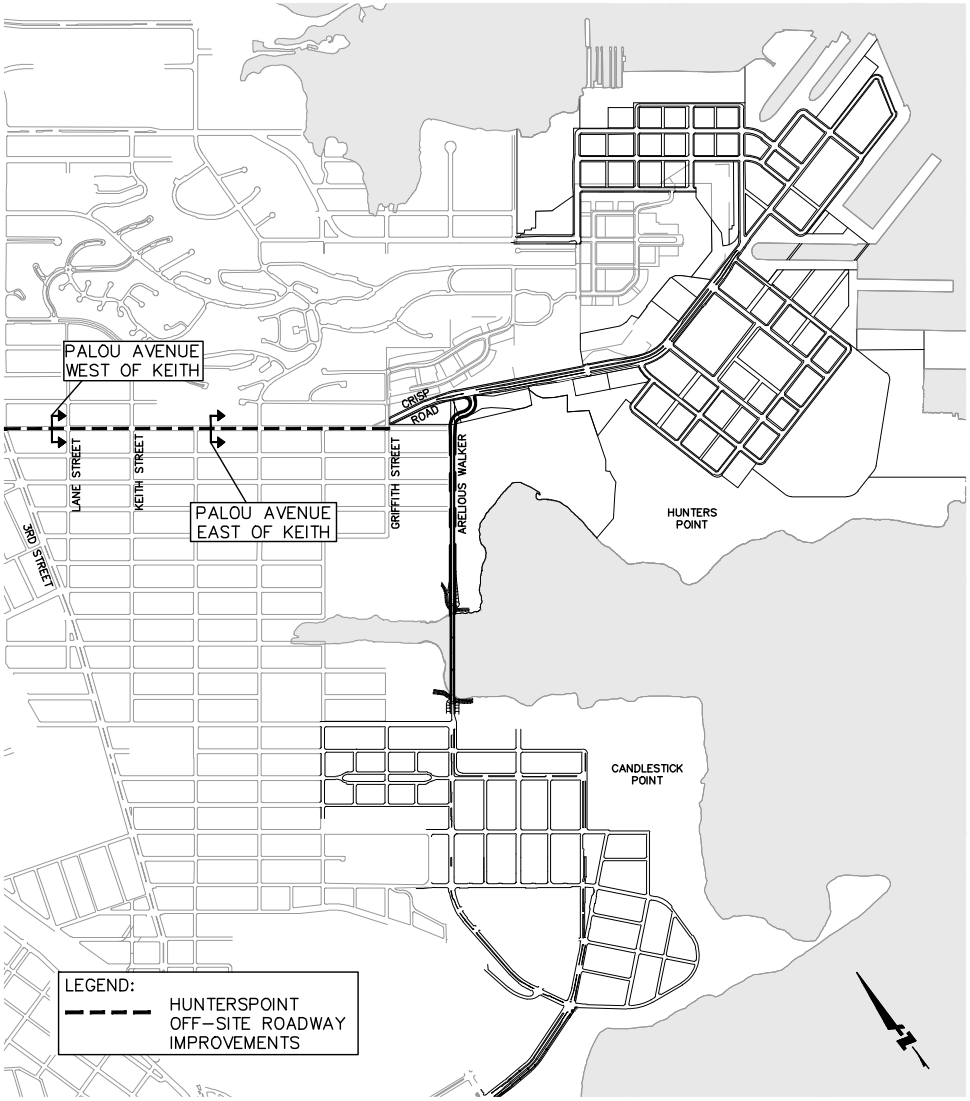
12′ Sidewalk	10′ Parking	10′ Aut o	10′ Aut o	10′ Parking	12′ Sidewalk

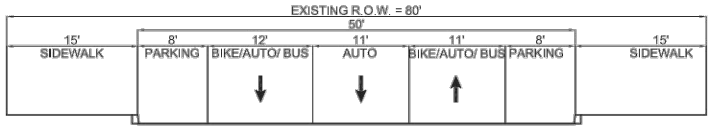
FEHR PEERS

Hunters Point Shipyard Phase II Development

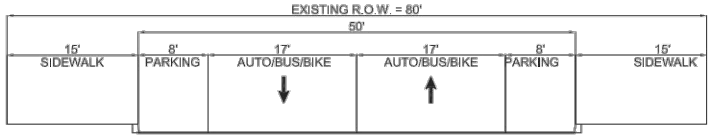
Off-Site Roadway Improvements - Griffith Street, Thomas Avenue and Innes Ave/Hunters Point Blvd/Evans Ave

Figure 2.1.3B





CONCEPTUAL PALOU SECTION WEST OF KEITH STREET
NTS



CONCEPTUAL PALOU SECTION EAST OF KEITH STREET
NTS

REFERENCE:
1. CONCEPTUAL SECTION LAYOUTS PROVIDED BY F&P
2. CITY AND COUNTY OF SAN FRANCISCO STREET SHAPE FILES DOWNLOADED JUNE 2009.

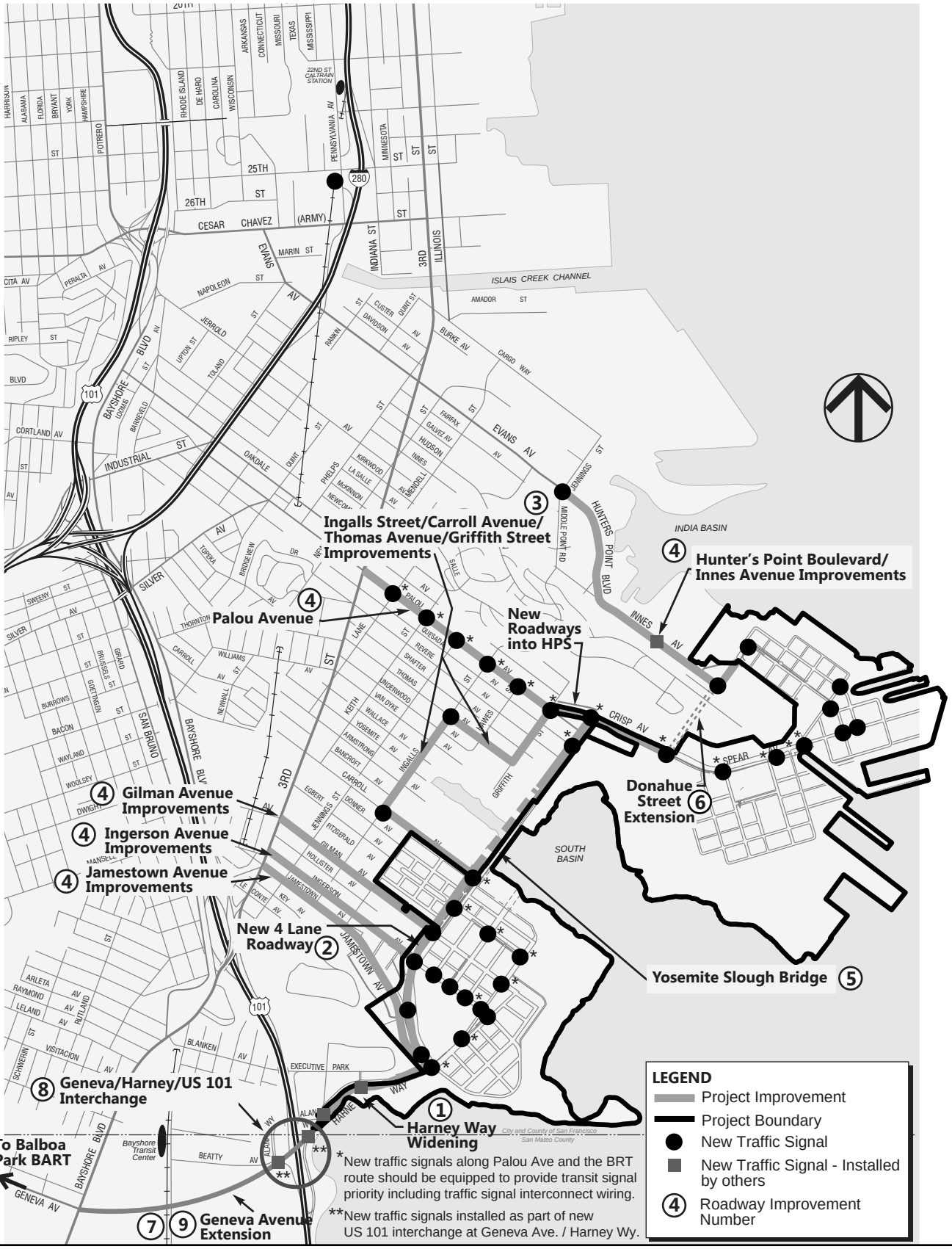
NOTES:
1. FOR LIMITS OF WORK, REFER TO TEXT DESCRIPTIONS OF IMPROVEMENTS.

HUNTERS POINT SHIPYARD PHASE II DEVELOPMENT

OFF-SITE ROADWAY IMPROVEMENTS - PALOU AVENUE

FIGURE 2.1.4

SOURCE: MACTEC ENGINEERING AND CONSULTING, INC
REVISED: BKF ENGINEERS, DATE: 11/30/2017



FEHR PEERS

Hunters Point Shipyard Phase II Development

Traffic Signal Improvements

Figure 2.1.5

2.2 MUNI IMPROVEMENTS

As described in the Project Transportation Plan, MUNI intends to provide an increased level of service to the HPS2 Area, including a new Bus Rapid Transit (BRT) route (extension of 28L-19th Avenue Limited), extensions of several motor coach routes (23-Monterey, 24-Divisadero, 44-O'Shaughnessy, and 48-Quintara), and introduction of a new express motor coach route (HPS2X – Hunters Point Express). Service improvements that MUNI intends to operate are illustrated on Figure 2.2.1.

There may be necessary or desirable revisions to MUNI transit plans for services described herein, as a result of the review and legislative approval process associated with service implementation, the development of proposals which better serve the CP Area or the HPS2 Area of the Project and/or their adjacent neighborhoods, integration with changes to MUNI service elsewhere in the City, particularly the southeast quadrant of the City, or other reasons. In addition, the Project is not required to meet "light rail ready" standards, nor is it required to accommodate the Overhead Contact System.

The following transit services will be provided by Developer and MUNI, as described herein:

HUNTERS POINT TRANSIT CENTER

In consultation with MUNI, the Developer will develop and provide a new Hunters Point Transit Center (Transit Center). Most of the bus lines serving Hunters Point Shipyard (including Muni lines 24-Divisadero, 44-OShaughnessy, and 48-Quintara) would be extended into Hunters Point Shipyard and would stop at the transit center allowing quick and immediate transfers to other lines. The Transit Center shall be located within the block encompassed by Spear Avenue, A Street, Lockwood Street, and Van Keuran Avenue and shall include ten bus bays, shelters, ticketing kiosks, real-time transit information technology, a bike station, operator restrooms, and office space for the CP and HPS2 TDM Coordinator. If office space cannot be provided at the Transit Center, the Developer shall provide office space for the TDM coordinator at an alternate location. Once constructed, the City shall maintain the Transit Center, except for the TDM coordinator office space, which shall be maintained by Developer.

The Developer will work with SFMTA to determine the infrastructure requirements for electric bus charging at the Transit Center. Responsibility for the cost of the charging equipment will be determined once the technology is confirmed. The Developer will provide joint trench sub-

structures for primary service for end of line charging for electric buses at the Transit Center. Space will be provided for this infrastructure at the Transit Center, both subsurface and at grade.

BUS RAPID TRANSIT (BRT)

Developer and City shall participate in the planning, design and construction of transit-only lanes and stations in the HPS2 area, as described herein, to accommodate new BRT service. Within the HPS2 area, transit only lanes will travel across the Yosemite Slough Bridge along Arelious Walker Drive, Crisp Road and Spear Avenue into the Hunters Point Transit Center. Four BRT stops will be constructed within the Hunters Point Shipyard Development Area, including the Hunters Point Transit Center. BRT stops shall be designed and constructed according to standards developed for other ongoing BRT studies in San Francisco at the time of adoption of this Plan, including along Geary Boulevard and Van Ness Avenue.

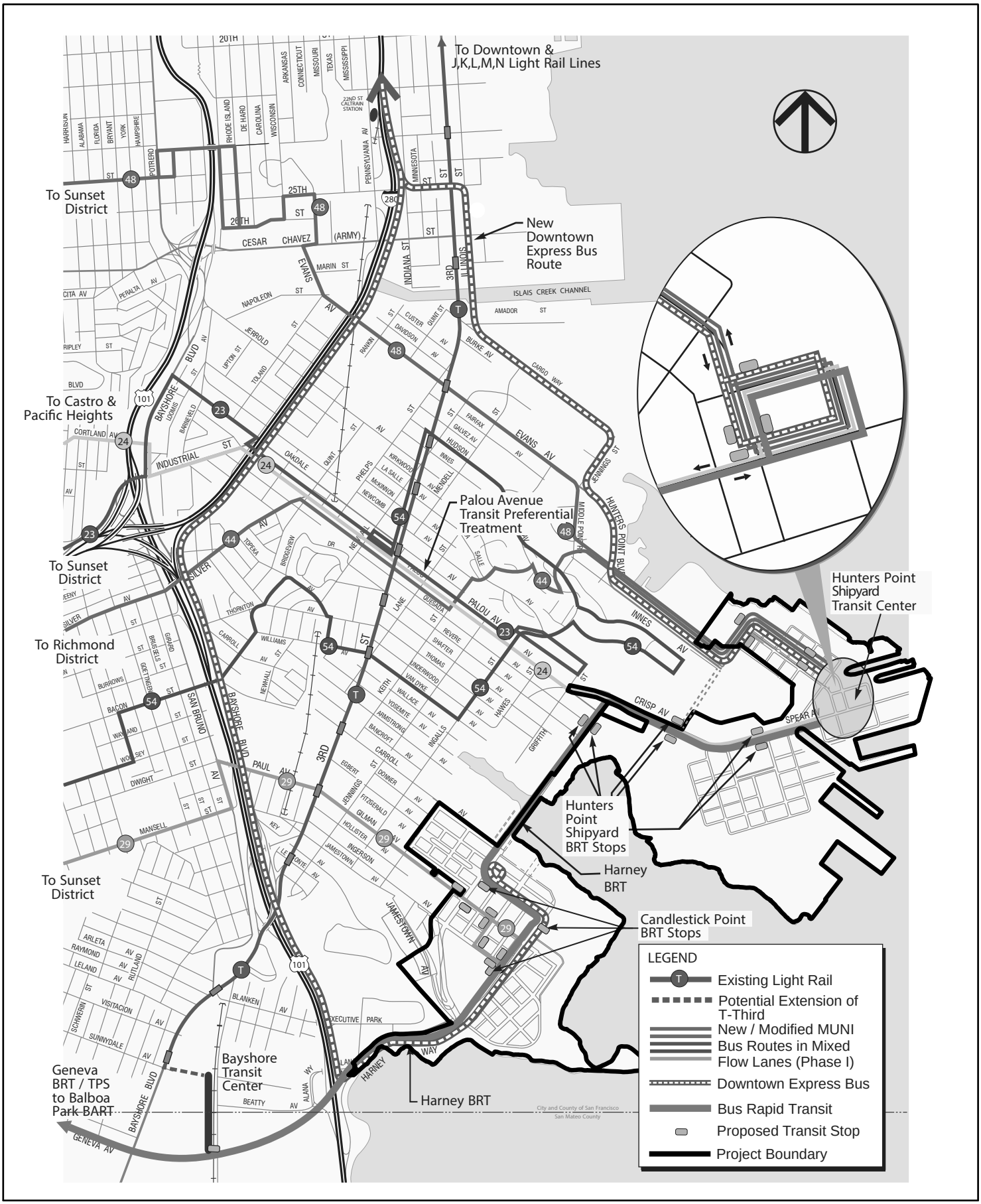
The Developer will provide facilities for bus stop locations, including but not limited to: a 10-inch thick PCC bus pad, electric service pull box, communication system pull box, and minimum 8-foot wide sidewalk to provide clearance for potential future transit shelters that might be provided by others. The precise location of such facilities shall be determined in consultation with the City. If the Developer modifies entrances and/or exits that affect MUNI facilities, such as bus terminal areas or bus stops, the Developer will work with MUNI to develop acceptable mitigation measures. The Developer will bear the reasonable costs of relocation of MUNI facilities if needed.

MOTOR COACH ROUTES (23-MONTEREY, 44-O'SHAUGHNESSY, 48-QUINTARA, HPX-HUNTERS POINT EXPRESS)

MUNI shall extend existing motor coach routes and create a new Downtown express route to serve the HPS2 Area. The City shall install and maintain transit shelters, including related furniture, adjacent to selected transit zones on land owned by the City (unless otherwise agreed by the Developer) along these routes, as depicted on Figure 2.2.1. The precise location of such facilities shall be determined in consultation with Developer. If the Developer modifies entrances and/or exits that affect MUNI facilities, such as bus terminal areas or bus stops, the Developer will work with MUNI to develop acceptable mitigation measures. Developer will bear the reasonable costs of relocation of MUNI facilities if needed.

PALOU AVENUE TRANSIT PREFERENTIAL STREET (TPS) TREATMENTS

As part of installation of new traffic signals along Palou Avenue between Third Street and Griffith Street (see Section 2.1.3), Developer will provide or construct signal interconnect, equipped with transit signal priority devices.



FEHR PEERS	**Hunters Point Shipyard Phase II Development**	**Figure 2.2.1**
	Regional Transit Improvements	

2.3 WET UTILITIES

The following section describes Infrastructure for the separated sanitary sewer, separated storm drainage, low pressure water, recycled water and Auxiliary Water Supply System (AWSS), which shall, except as otherwise indicated, be provided by the Developer in connection with the development of the HPS2 Area of the Project. Permitting and infrastructure associated with Navy Parcel E-2 will be completed by the Navy. As described in Section 1.5, a Technical Memorandum or other Draft Master Utility Plan presenting the hydraulic analysis and planning criteria for proposed build-out development for each public wet and dry utility system of the Project has been prepared by the Developer and submitted to the San Francisco Public Utilities Commission (SFPUC) for review. Improvements delineated in this Infrastructure Plan summarize the major elements of the respective systems. Pursuant to SFPUC policy at the time of the adoption of this agreement, Infrastructure that will be owned by the City or a department thereof will be placed in a dedicated rights-of-way or easements prior to acceptance. Other utilities may be placed in public utility easements pursuant to the criteria of the respective utility providers. Locations of utilities shown in this Infrastructure Plan are schematic and are subject to final alignment design and easement or dedication through the Subdivision Land Act Mapping process.

2.3.1 SEPARATED SANITARY SEWER

The separated sanitary sewer flows for the HPS2 Area development will be collected by a separated sanitary sewer system as shown on Figure 2.3.1. The system consists of separated sanitary sewer gravity mains, force mains, and 7 lift and/or pump stations. The Project's sanitary sewer flow will ultimately drain to a sanitary sewer pump station located at Horne Street and Robinson Street where it will be pumped to a sanitary sewer manhole at Innes Avenue and Donahue Street. From there and as directed by the SFPUC, a separated sanitary sewer gravity main will connect into the existing combined sewer gravity main within Innes Avenue that drains to the Southeast Treatment Plant. No improvements are required to rehabilitate any portion of the City's combined sewer system or the City's pumping stations outside the boundary of the HPS2 Area.

Four lots fronting Galvez Avenue near Donahue Street on the Hunters Point Phase I Hilltop project are currently designed with a separated sanitary sewer system that will be pumped on an interim basis to the Hilltop sanitary sewer gravity system. Upon completion of the HPS2 separated sanitary sewer system, these lots will be connected to the new sewer main in Galvez Avenue. The Developer will make this connection and abandon the small lift station and its force main once connection has been made to the HPS2 Area Separated Sanitary Sewer System. Rehabilitation of the existing combined gravity sewer pipeline and support system, if required, would be provided by the City.

No improvements are required by the Developer to any portion of the City's combined sewer systems or City's pumping stations outside the boundary of the HPS2 Area development. Portions of the existing combined sewer within the HPS2 Area development may be removed and or abandoned by the Developer where reuse is not compatible with Project objectives. The City will not accept existing facilities or be responsible to replace or rehabilitate any existing facilities within the Project Boundary. No sanitary sewer service connection will be permanently interrupted.

The Separated Sanitary Sewer System will be designed in accordance with the Subdivision Code and Project Subdivision Regulations. In addition, the Separated Sanitary Sewer System will be conceptually designed in a final Sanitary Sewer System Master Plan for the Hunters Point Shipyard Phase II Development, prepared by BKF Engineers that has been submitted by the Developer to the City, and a supporting Sanitary Sewer Memorandum by BKF Engineers. In subdivision processing, including the review and approval of subdivision improvement plans, the precise location and final design of the Separated Sanitary Sewer System Infrastructure will be consistent with this Infrastructure Plan and an approved Sanitary Sewer System Master Plan for the Hunters Point Shipyard Phase II Development.

The design criteria used for the development of the Separated Sanitary Sewer System is based upon established industry operations standards, regulatory agency requirements, and Project Subdivision Regulations, and is consistent with criteria utilized for recent developments with separated sanitary sewer systems within the City and County of San Francisco. Design criteria have been presented to, and reviewed by, the SFPUC Wastewater Enterprise.

The proposed Separated Sanitary Sewer System has been configured to handle the sewer flows based on the land use plan and defined development contained in the Plan or Plan Documents. The proposed separated sanitary sewer system shall be constructed in compliance with the Subdivision Regulations..

Upon acceptance of the Separated Sanitary Sewer System by the City, the SFPUC will assume responsibility for the operation and maintenance of all facilities, including responsibility for compliance with all regulations and mitigation measures.

Reuse of any particular portion of the existing gravity combined sewer and support system in the manner described above shall be subject to further review by the SFPUC of the Developer's reuse proposal. Such review shall include an assessment of the condition of the existing pipe(s) performed by the Developer using a technical assessment methodology approved by the SFPUC prior to any

construction or excavation work in the vicinity of the systems in question. Such review shall also take into account the system in which the existing combined sewer is proposed for reuse and the proposed rehabilitation methodology. The SFPUC will bear costs of rehabilitation if and to the extent the technical assessment of the sewer pipe reveals conditions that the SFPUC would address under its typical practice with respect to maintaining and rehabilitating combined sewer pipes.

2.3.2 Separated Storm Drainage

The separated storm drainage flows for the development will be conveyed by a Separated Storm Drainage System as shown on Figure 2.3.2. In addition, overland flow drainage from the HP Phase I Development area along Donahue and Coleman Streets will be tributary to the proposed storm drain system within the norther development blocks of Shipyard Site. Piped stormwater flows from HP Phase I development in Donahue Street will be treated in the Northside Park consistent with SFPUC Stormwater Management Requirements and Design Guidelines (SMR) before discharging to San Francisco Bay through proposed Outfalls A and B within the northern area of the Shipyard Site.

The Separated Storm Drainage System will consist of Low Impact Design (LID) features to treat the 2-year 24-hour design storm, a 5-year piped collection system, and 100-year storm event overland release system. The HP Area will be designed to comply with the SMR and Stormwater Management Ordinance (SMO). As required by the SMR, the HP Area will develop a Preliminary and Final Stormwater Control Plan (SCP) that will be submitted concurrently with the Basis of Design and final construction documentation for approval by the SFPUC, respectively. Stormwater BMPs, including decentralized and centralized bio-retention treatment facilities, will be designed such that the bottom of the stormwater treatment bio-retention soil mix is above the 5-yr HGL for the storm drainage system. The starting hydraulic grade line design elevation for the storm drain system will be 100.2 feet (100-year tide elevation of 98.2 + 24-inches of SLR).

LID strategies will be used to meet the required SMR performance measure across the site. LID strategies include, but are not limited to, infiltration trenches, vegetated swales, vegetated rock filters, bio-retention devices, flow-through planters, permeable pavements, tree well filter units, and other LID technologies. The selection of LID features will be made through studies and through the design process and will involve the use of context-sensitive features that complement the proposed streetscape, open spaces, and accompanying Infrastructure. Runoff will be treated, as defined by the SMR, before discharging into the separate storm drain system and being delivered to San Francisco Bay.

The 5-year piped system will consist of gravity mains draining to San Francisco Bay. The overland flow releases for the 100-year minus 5-year flow will be conveyed through pipes and streets from face-of-curb to face-of-curb, into a junction box, and through a gravity pipe that will discharge to San Francisco Bay via six outfalls subject to approval of the associated Master Utility Plan. Discharges to the San Francisco Bay will be made consistent with the Project Storm Water Management Plan (SWMP) and the National Pollution Discharge Elimination System (NPDES) permit, and applicable requirements of the Trash Amendments (Trash Capture) of the California State Water Resources Control Board. Storm Drain main sizes range from 12 inches to 72 inches in diameter.

Runoff from proposed Arelious Walker will be collected in a separated storm drain system that discharges to the adjacent combined sewer system serving the properties to the east of the proposed right-of-way. Stormwater runoff directed to the CSS from the proposed Arelious Walker must be managed per the SMR and associated CSS performance requirements.

The overland release system consists of the 5-year collection system, the street network, open space areas and other designated areas or approved corridors, some or all of which may require easements from State agencies. The Project will require several overland release discharge facilities to San Francisco Bay.

Grading of the HPS2 Area shall be performed in compliance with the Project Risk Management Plan. Consistent with the Project Subdivision Regulations, the development areas near San Francisco Bay will be set at a minimum top of curb elevation of 100.2 feet, Project Datum. The minimum first floor building elevation shall be no lower than 103.7 feet, Project Datum. Subterranean levels may be included, with appropriate protection measures as required by the SFPUC and City Health Department to be designed by the respective property owners at the time of building design.

The Separated Storm Drainage System, including LID features will be designed in accordance with the Subdivision Code, Project Subdivision Regulations, and the SMR. In addition, the Separate Storm Drain System will be conceptually designed in a final Hunters Point Shipyard Phase II Development Grading and Storm Drain System Master Plan prepared by BKF Engineers that has been submitted by the Developer to the City. In subdivision processing, including the review and approval of subdivision improvement plans, the precise location and final design of the Separated Storm Drainage System Infrastructure will be consistent with this Infrastructure Plan and the Hunters Point Shipyard Phase II Development Grading and Storm Drain System Master Plan.

The design criteria used for the development of the Separated Storm Drainage System is based upon established industry operations standards, regulatory agency requirements, and Project Subdivision Regulations, and is consistent with criteria utilized for recent developments with separated storm drain systems within the City of San Francisco. Design criteria have been presented to, and reviewed by, the SFPUC, which oversees the SMR and storm drainage system for the City.

The proposed Separated Storm Drainage System has been configured to meet the stormwater flows based on the land use plan and defined development contained in the Plan or Plan Documents. Gravity manholes, drainage inlets, laterals and other appurtenances will be constructed as required to meet HPS2 Area design standards. Upon acceptance of the Separated Storm Drainage System by the City, the City will assume responsibility for the operation and maintenance of all facilities, including responsibility for compliance with all regulations and mitigation measures. Should LID strategies include treatment of development parcels and open space areas in combination with public right-of-ways, such combined or centralized treatment areas and associated infrastructure required to meet SMR performance standards will be owned by OCII and maintained by the Master Developer or its Assignee, which will not be OCII. The centralized treatment area in Northside Park treatment facility that provides treatment for Hunters Point Naval Shipyard Phase 1 stormwater flows will be owned and maintained by the SFPUC.

2.3.3 Auxiliary Water Supply System (AWSS)

The Auxiliary Water Supply System (AWSS) and the Infrastructure to be constructed by Developer in connection therewith are identified on Figure 2.3.3. This system is also known as a high pressure-water supply system dedicated for fire protection, operated by the San Francisco Fire Department (SFFD), and owned and maintained by the SFPUC. The system serves as a source of fire protection in industrial, commercial and many residential districts. The system consists of cast iron or earthquake resistant ductile iron pipe (ERDIP), high pressure hydrants, valves and fittings, suction intakes, and appurtenances.

The HPS2 Area is not currently served by the AWSS. The City will extend the AWSS with transmission mains and appurtenances along Crisp Avenue from the intersection of Ingalls Street and Revere Avenue to the Project boundary and along Evans Avenue, Hunters Point Boulevard, Innes Avenue and Donahue Street from the intersection of Keith Street and Evans Avenue to the Project boundary. The Developer will provide a new AWSS loop within the development connecting with AWSS system infrastructure extending from this loop to the edges of the development as shown on Figure 2.3.3. Unless a future alternative design is approved by the SFFD

and the SFPUC in coordination with the Developer, the proposed AWSS system shall also have two (2) electrically operated remotely controlled valves on the mains at the connection points (if required), four suction intakes at the shoreline, high pressure hydrants throughout the system, a new saltwater pump station, and two fireboat wharf manifolds.

The SFPUC has determined there is limited hydraulic capacity to serve HPS2, and the current AWSS cannot meet the required pressures and flow. A salt water pump station is shown on Figure 2.3.3 as an alternative water source to be designed and constructed at the Developer's expense. However, the Developer and the SFPUC will work together to explore an alternative design that utilizes off-site facilities, or a combination of on-site and off-site facilities, instead of the salt water pump station shown, fire boat manifolds, suction intakes, and portable water supply tenders. Access for emergency vehicles to the Salt Water Pump Station, if constructed, will be coordinated with the SFFD during the permitting process. Should it be determined that this alternate design is desirable by both parties, the corresponding Master Utility Plan will reflect this change in design.

The Developer will design and construct, or pay for the reasonable costs of designing and constructing the AWSS as shown on Figure 2.3.3 or a future alternative design approved by the SFFD and the SFPUC in coordination with the Developer. The City will provide hydraulic modeling criteria for the AWSS MUP to be prepared by the developer and submit design plans to the Developer for coordination purposes. The City will use its best efforts to control the costs as agreed by the City and the Developer in the ICA, DDA, and other Plan Documents. Upon acceptance of the Auxiliary Water Supply System by the City, the SFPUC will assume responsibility for the operation and maintenance of all facilities, including responsibility for compliance with all regulations and mitigation measures.

2.3.4 Low Pressure Water System

Potable water and fire flow demands for the HPS2 Development will be served by the Low Pressure Water System as shown on Figure 2.3.4. The Low Pressure Water System will deliver water supplied by the City, and will also serve as the supply for the recycled water system until such time as a recycled water supply is developed as described in Section 2.3.5 below.

The HPS2 Area will be supplied City water through connections to the City's University Mound Pressure Zone at two locations: 1) Palou Avenue and Griffith Street; and 2) Innes Avenue and Earl Street and through a connection to the Hunters Point Pressure Zone at Coleman Street between Galvez Street and Innes Avenue. No improvements are required by the Developer to the City water

system outside of these connection points. The Project water system has been designed to meet hydraulic grade line (HGL) elevations at the boundary conditions as shown in the following table:

Table 2.3.1 Hunters Point Shipyard Phase 2 Boundary Conditions

Connection Point	*Hydraulic Grade at Connection Point (feet)*[1]					
	@0 gpm	*@500 gpm*	*@1,000 gpm*	*@1,500 gpm*	*@ 2,000 gpm*	*@3,500 gpm*
Palau Ave/Griffith St	267	266	262	256	247	237
Innes Ave/Earl St	268	265	261	254	245	234

Notes: [1] CP/HPS2 Datum

In addition, the boundary condition for the connection to the Hunters Point Pressure Zone at Coleman Street between Galvez Street and Innes Avenue is defined by the "Hunters Point Naval Shipyard Phase 1, Parcel A' Hydraulic Analysis of Low Pressure Water System" report by DMJM Harris dated July 18, 2007 and supporting model. The proposed Low Pressure Water System has been configured to meet the water demands based on the land use plan and defined development contained in the Plan or Plan Documents.

The proposed distribution system consists of a backbone of 16-inch transmission pipelines from the connection points and 12-inch (or smaller) pipelines throughout the majority of the development. Valves, pressure-reducing valves, blow-offs, air release valves, services, meters and other appurtenances will be constructed as necessary to meet system operational requirements. Where a Development block or parcel fronts a street with a transmission main pipeline, the Developer may request a design modification and exception request to utility standards and requirements subject to approval by the Director of Public Works with the consent of the SFPUC to allow for a lateral service connection to a transmission main.

The Low Pressure Water System will be designed in accordance with the Subdivision Code and Project Subdivision Regulations. In addition, low pressure water system will be conceptually designed in a final Low Pressure Water System Master Plan for the Hunters Point Shipyard Phase II Development prepared by BKF Engineers that has been submitted by the Developer to the City. In subdivision processing, including the review and approval of subdivision improvement plans, the precise location and final design of the Low Pressure Water System Infrastructure will be generally consistent with this Infrastructure Plan and the Low Pressure Water System Master Plan for the Hunters Point Shipyard Phase II Development.

The design criteria used for the development of the low pressure water system is based upon established industry operations standards, regulatory agency requirements, and Project Subdivision Regulations, and is consistent with criteria utilized for recent developments within the City. Design criteria have been presented to, and reviewed by, the City Distribution Division (CDD) of the SFPUC, as well as the San Francisco Fire Department (SFFD).

Upon acceptance of the Low Pressure Water System by the City, the SFPUC will assume responsibility for the operation and maintenance of all facilities, including responsibility for compliance with all regulations and mitigation measures.

2.3.5 Recycled Water System

The Recycled Water System as shown on Figure 2.3.5 will be constructed by the Developer and will be designed in accordance with the Subdivision Code and Project Subdivision Regulations. In addition, the Recycled Water System will be conceptually designed in a final Recycled Water System Master Plan for the Hunters Point Shipyard Phase II Development, prepared by BKF Engineers that has been submitted by the Developer to the City. In subdivision processing, including the review and approval of subdivision improvement plans, the precise location and final design of the Recycled Water System Infrastructure will be consistent with this Infrastructure Plan and the Recycled Water System Master Plan for the Hunters Point Shipyard Phase II Development.

The design criteria used for the development of the Recycled Water System is based upon established industry operations standards, regulatory agency requirements, and the Project Subdivision Regulations, and is consistent with criteria utilized for recent developments within the City. The design criteria have been presented to, and reviewed by the SFPUC.

The proposed Recycled Water System will be connected to the Low Pressure Water System on an interim basis via reduced pressure principle backflow prevention devices located in the general vicinity of connections of the Low Pressure Water System. These will occur in or near the following two intersections: 1) Palou Avenue and Griffith Street; 2) Innes Avenue and Earl Street; and potentially 3) Coleman Avenue and Hudson Avenue, if required to meet project demands. The locations of permanent connections to the yet-to-be-constructed recycled water supply are also anticipated to be in the general vicinity of these same locations.

The proposed Recycled Water System has been configured to meet the recycled water demands, based on the land use plan and defined development contained in the Plan or Plan Documents. The Recycled Water System is comprised of 6-inch, 8-inch, and 16-inch mains. Valves, pressure-

reducing valve, blow-offs, air release valves, services, meters, purple hydrants/fill stations, and other appurtenances will be constructed as necessary to meet City design standards. The proposed Recycled Water System includes services to all buildings, including residential, and irrigation services for parks and open spaces, in order to provide recycled water.

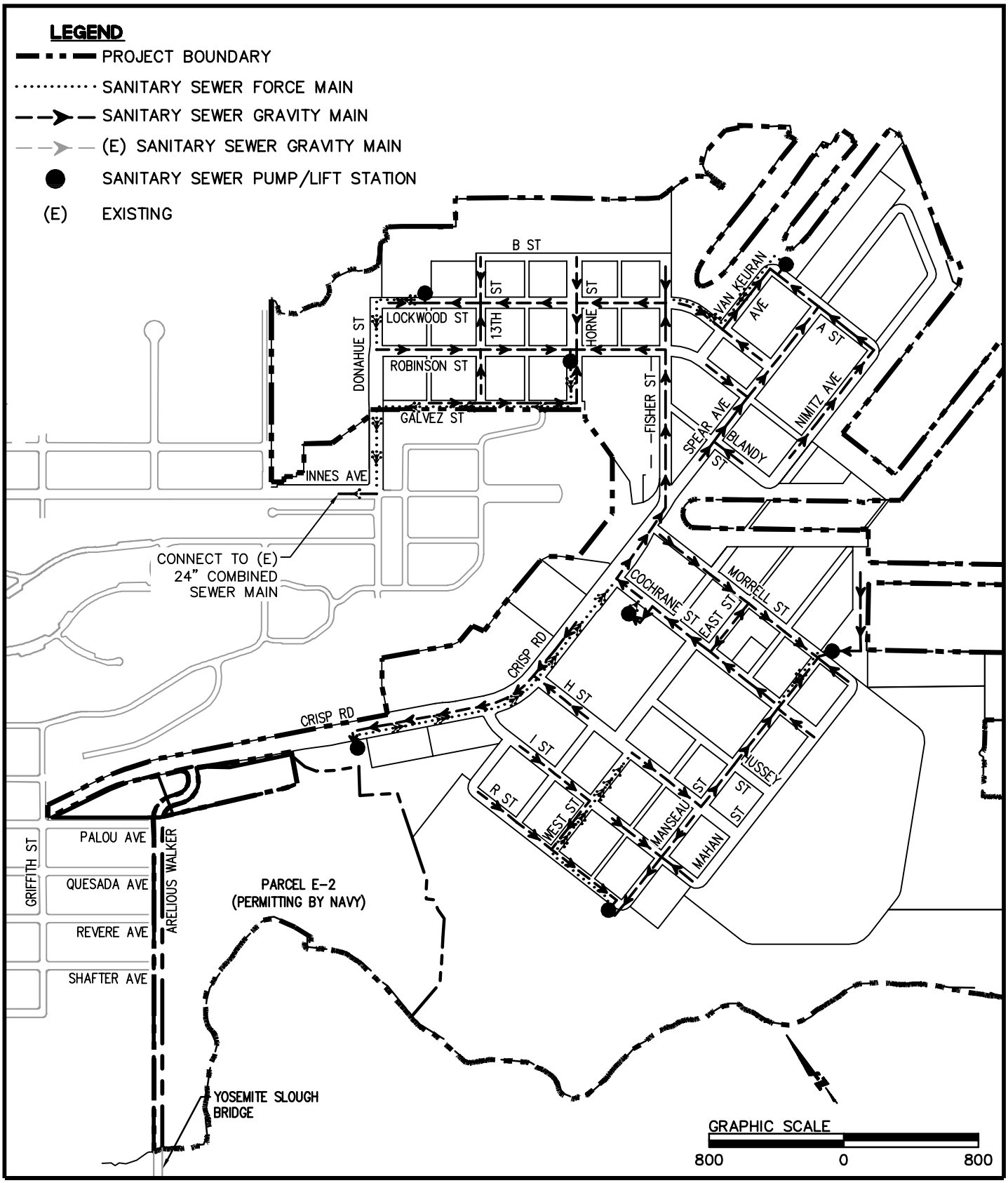
Unless an exemption to the Recycled Water Ordinance is requested by the Developer and granted by the SFPUC, the SFPUC will assume responsibility for the operation and maintenance of the Recycled Water System upon acceptance.

2.3.6 Non-Potable Water

The Project is a Large Development Project for purposes of Article 12C.4 of the San Francisco Health Code ("Article 12C.4"). Accordingly, the Developer is undertaking feasibility analyses in order to identify an approach for generating recycled water on-site that will meet the requirements of Article 12C.4.

The Developer will comply with Article 12C.4, unless implementation of Article 12C.4 would be prohibited under Section II.D.1.c of the Hunters Point Shipyard Redevelopment Plan on the basis that it would conflict with development permitted or contemplated under that plan. By approving this plan, the City does not concede that any such conflict exists, or could exist, through application of Article 12C of the San Francisco Health Code.

If the Project proceeds with a parcel by parcel approach, the Project may apply for an exemption from the Recycled Water Ordinance requirement to provide a Recycled Water System as described above in Section 2.3.5. If the Project proceeds with a district-wide non-potable water system, the Project will prepare a Non-Potable Implementation Plan for review and approval by the SFPUC.

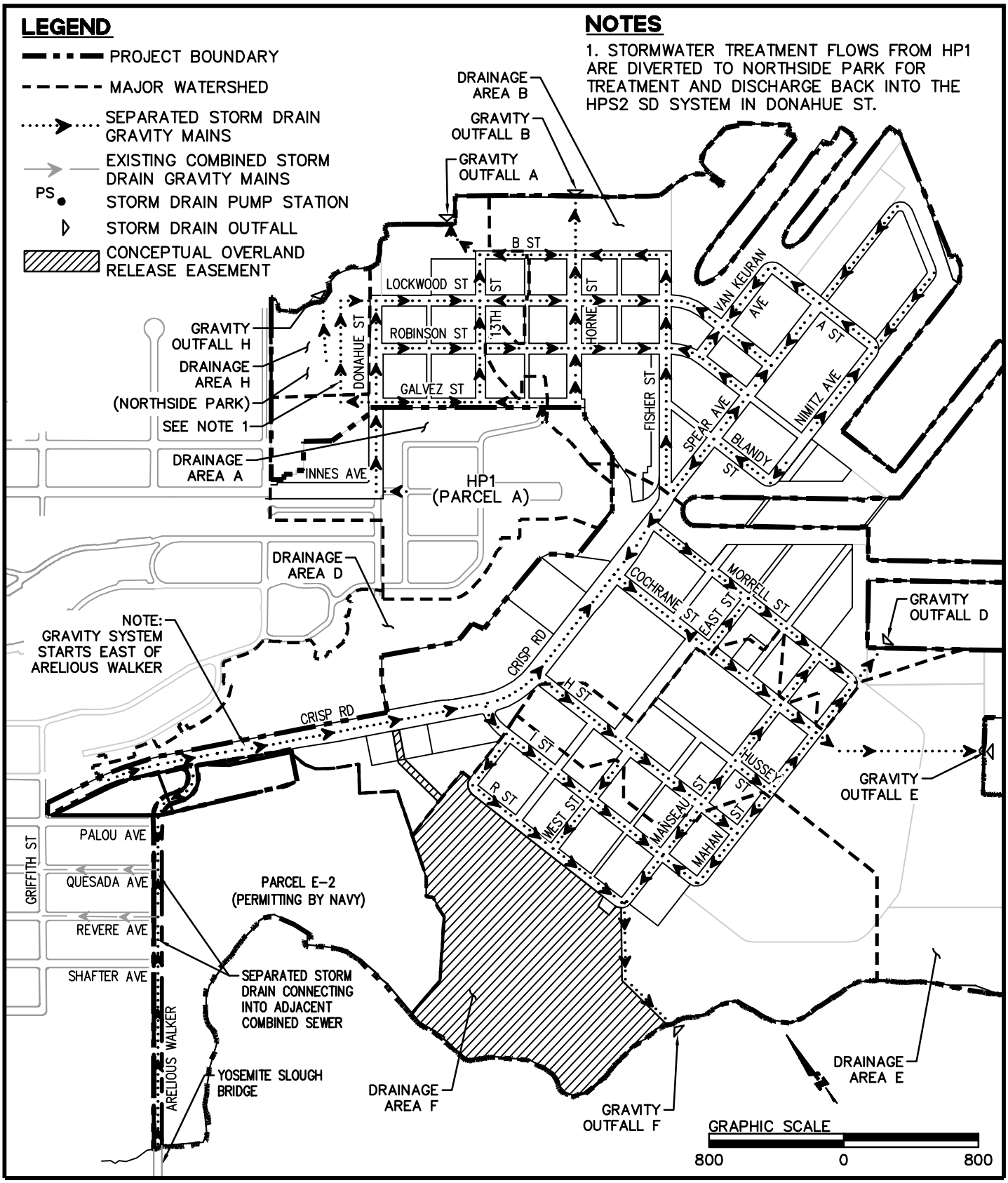


BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD PHASE II DEVELOPMENT

SEPARATED SANITARY SEWER LAYOUT

FIGURE 2.3.1

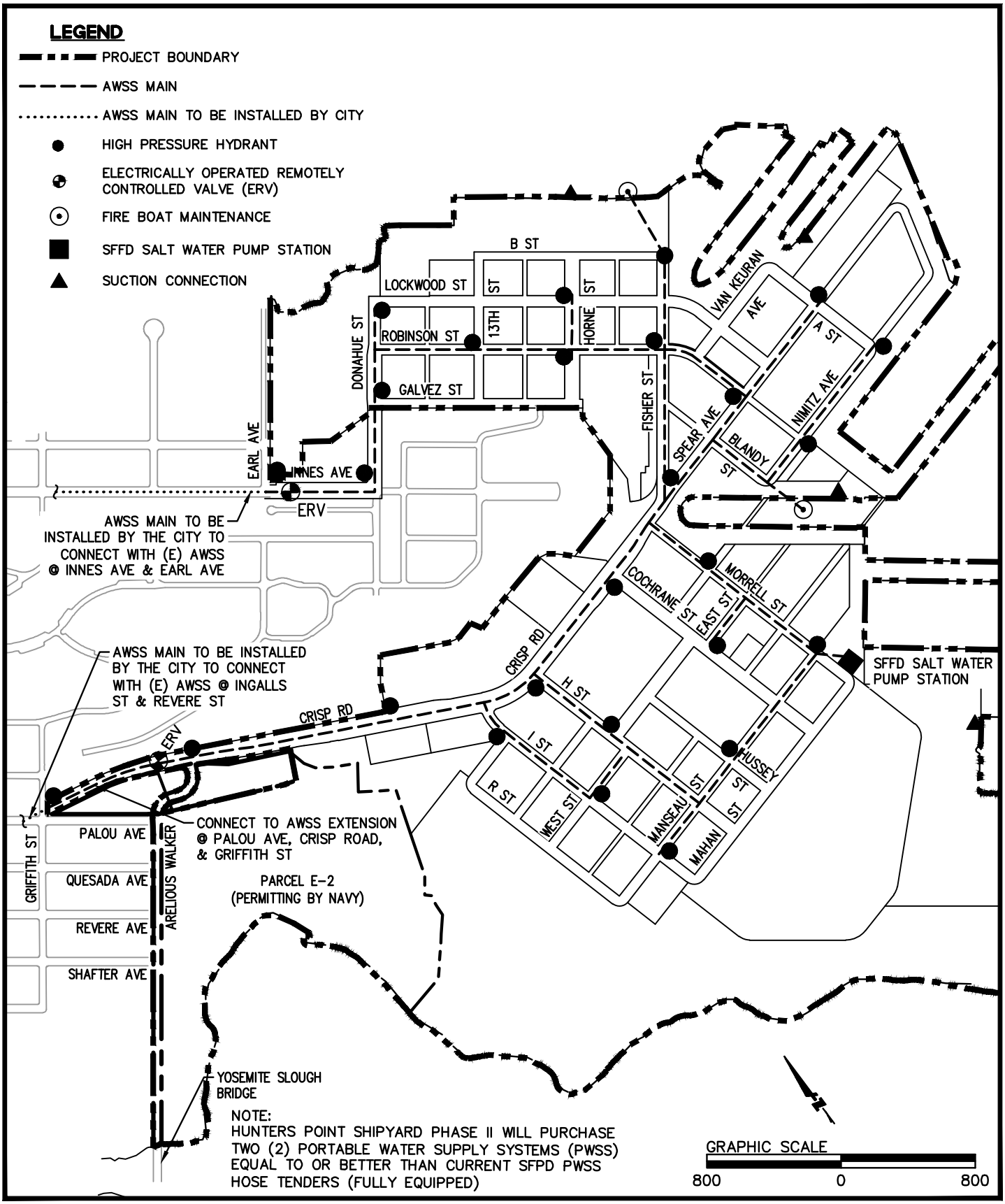


BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

SEPARATED STORM DRAINAGE LAYOUT

FIGURE 2.3.2

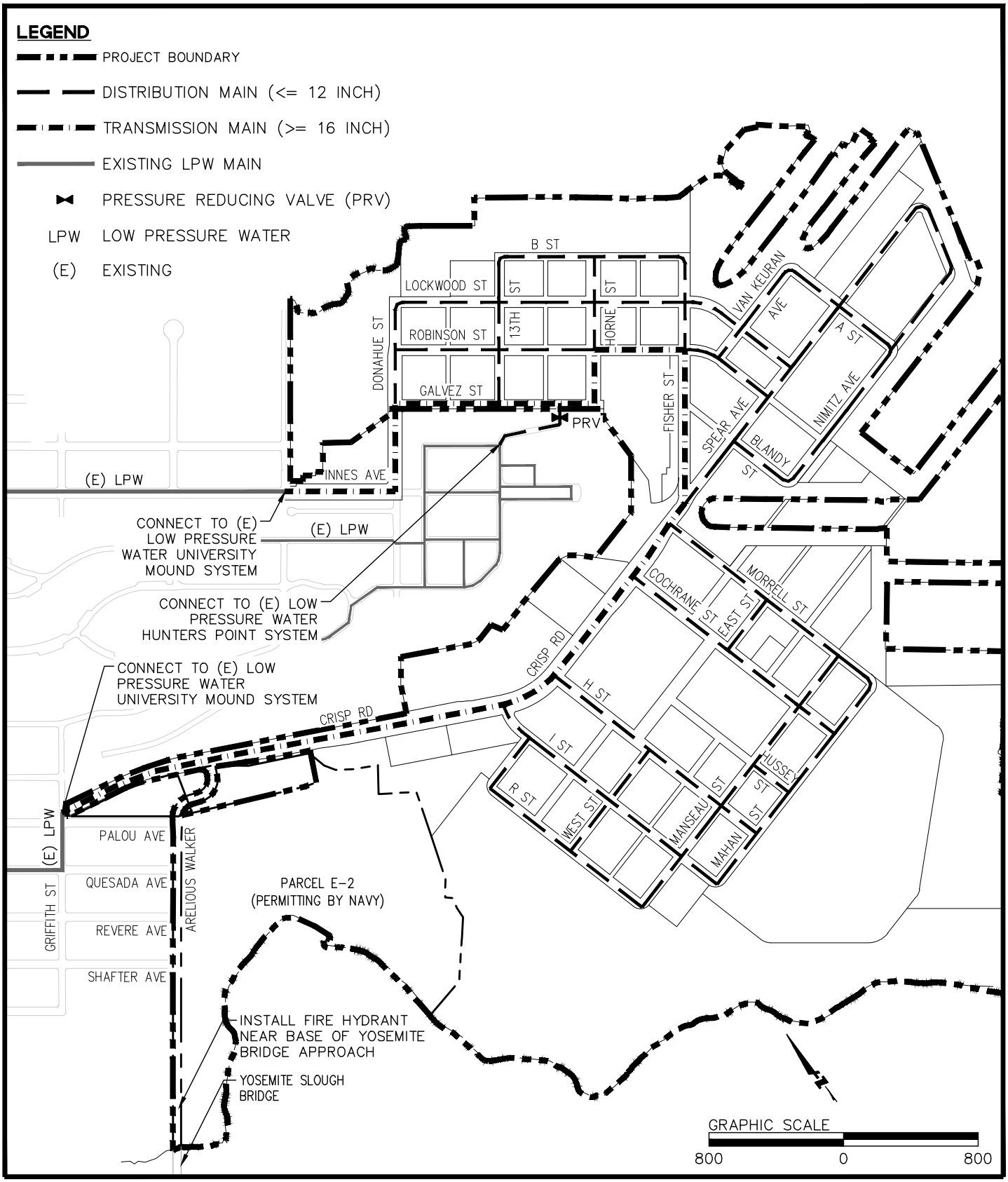


BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD PHASE II DEVELOPMENT

AWSS LAYOUT

FIGURE 2.3.3

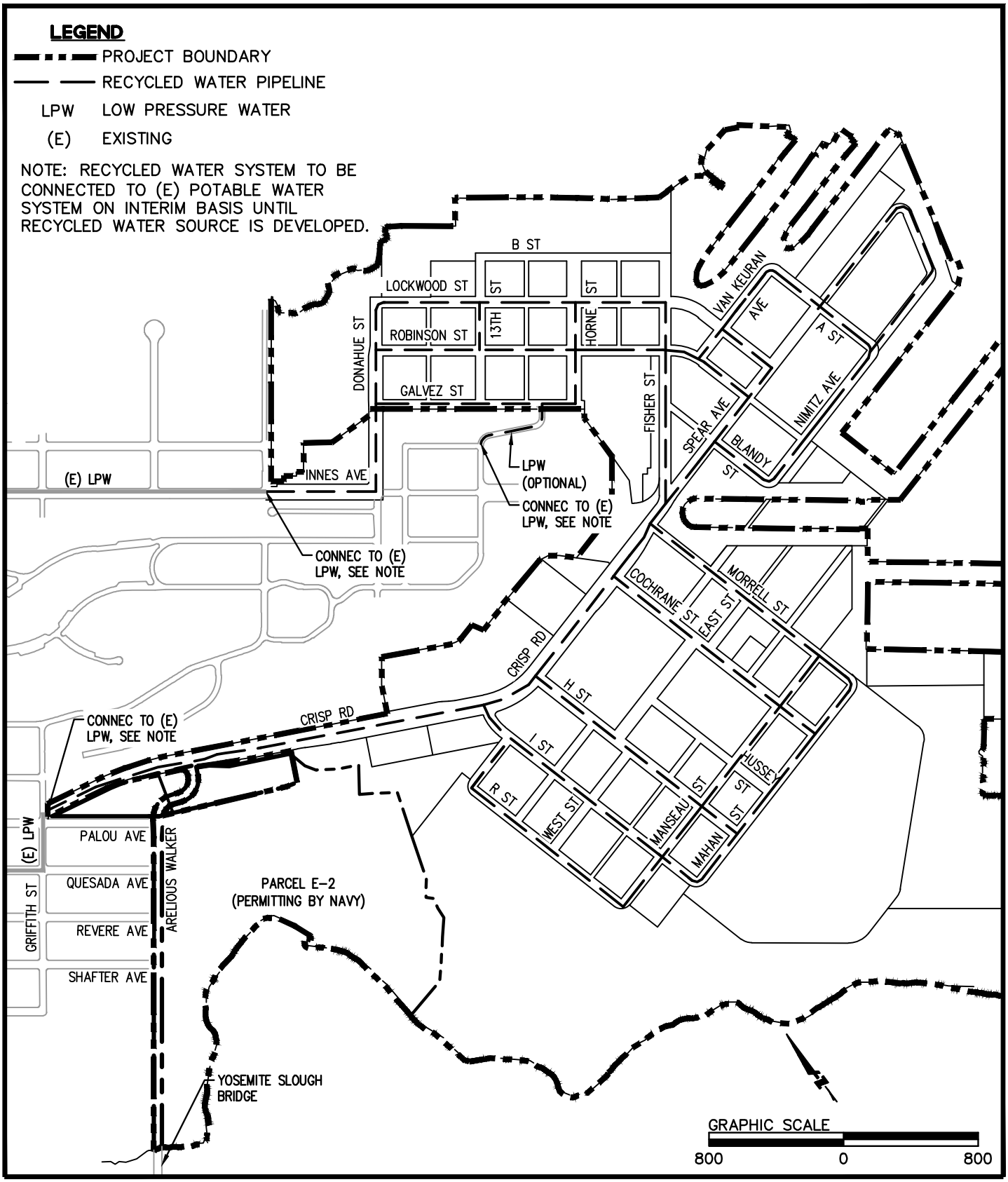


BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

LOW PRESSURE WATER SYSTEM LAYOUT

FIGURE 2.3.4



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

RECYCLED WATER SYSTEM LAYOUT

FIGURE 2.3.5

2.4 DRY UTILITY LAYOUTS

2.4.1 ON-SITE

GENERAL JOINT UTILITY TRENCH REQUIREMENTS

Work necessary to provide the joint trench for dry utilities (that lie in public streets and in the sidewalk area if at all possible) consists of trench excavation and installation of conduit ducts for telephone, cable, fiber optic, electrical, gas, fire and police alarm systems operated by the City Department of Technology ("DT Systems"), DPT, and MUNI. The overall layout of these systems is shown on Figure 2.4.1. Additionally, space for utility vaults, splice boxes, street lights and bases will be provided. The utility owner/franchisee (e.g., MUNI, AT&T, SFPUC, PG&E, fiber optic companies, etc.) will install facilities such as transformers and wire, and be responsible for making these systems operational.

All necessary and properly authorized Public Utility Infrastructure for which franchises are authorized by the City shall be designed and installed in the public right-of-way in accordance with governing codes, rules and regulations (in effect at time of construction), and approved by DPW. Joint trenches or utility corridors will be utilized wherever feasible. The location and design of joint trenches/utility corridors in the public right-of-way must be approved by DPW during the subdivision review process.

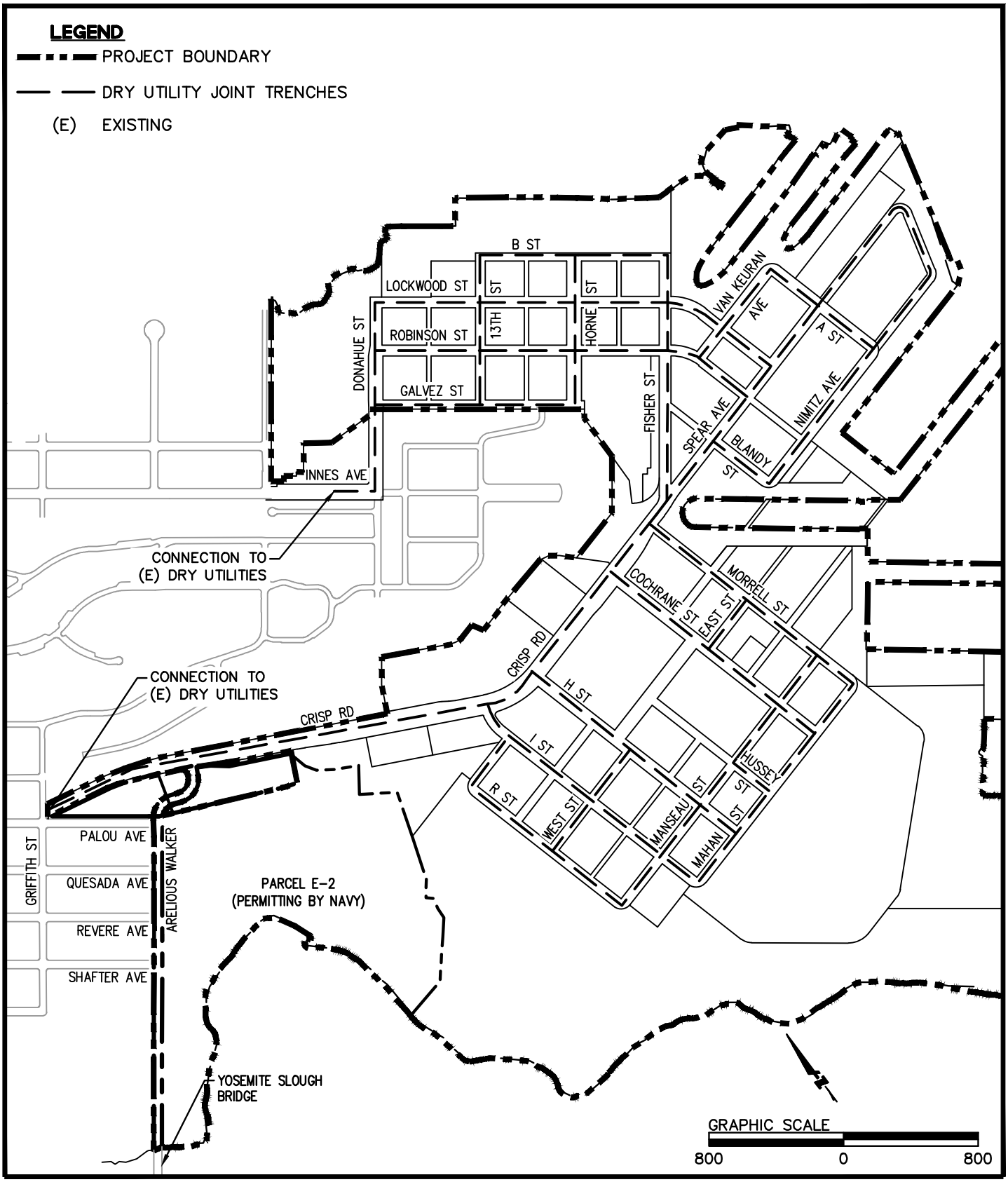
The existing electrical distribution system in the subject project area will be replaced as necessary and placed underground consistent with the timing of the development in phases as the project builds out, while maintaining service to existing customers.

The electric distribution system is planned to be in a joint or common trench which would include gas, phone, cable TV, and streetlight facilities. Redundancy for the proposed electrical distribution system would be achieved by providing looped circuits where necessary, and providing circuit ties to different substation feeders. Spare conduits will be provided to the extent reasonably required and approved by the City.

STREET LIGHTS

All street lights in the HPS2 Area shall have LED fixtures as approved by the Bureau of Light, Heat, and Power. Secondary power for LED street lighting shall be installed in a separate trench in accordance with City Regulations in effect at time of construction. Sections 937 through 943 of the San Francisco Public Works Code in effect at the time of adoption of this Infrastructure Plan contain specific requirements for street lighting and are hereby incorporated by reference. Upon acceptance

of the street lighting system by the City, the SFPUC will assume responsibility for the operation and maintenance of all facilities, including the light fixtures, poles, secondary power conduit and pull-boxes, and shall assume responsibility for compliance with all regulations and mitigation measures.



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

DRY UTILITY JOINT TRENCH LAYOUT

FIGURE 2.4.1

3. SEA LEVEL RISE

3.1 GENERAL

Sea Level Rise (SLR) will result in changing water levels in the San Francisco Bay that the Project will need to accommodate. The evolution of design strategies to address SLR is a process that is in its infancy. As a result, the design criteria employed at the time of this Infrastructure Plan are based on the best scientific forecasts and potential design strategies currently available. The forecasts will very likely change over time and will provide guidance for the future. As design solutions are developed in parallel with project approvals, the SFPUC Sea Level Rise Checklist will be provided for applicable infrastructure.

3.2 SEA LEVEL RISE STRATEGIES

SLR will result in changing water levels that the project will need to accommodate. Estimates for the project were developed by Moffatt & Nichol (M&N). The SLR values adopted for this project for implementation purposes are the worst-case SLR estimates described in the Sea Level Rise Guidance Document issued by the State of California in 2013, which are: 24" by 2050 and 66" by 2100. The 2018 Update of the Sea-Level Rise Guidance by the Ocean Protection Council and Natural Resources Agency is still in Draft form but is referenced here because it will likely supersede the current Guidance. For 2050, per the Draft, there is a 99.5% probability that SLR would be below 24". For 2100, the Draft estimates that for the High Emissions scenario there is a 95% probability that SLR would be below 53", and a 98% probability that SLR would be below 66". To summarize, the project's approach to address SLR is to use a low risk tolerance and effectively plan for a very low probability event by accommodating 24" by 2050 and 66" by 2100.

Shoreline areas and open space adjacent to the Shoreline, except for Heritage Park will be designed such that, until 2050, even for worst-case SLR trends (24"), flooding would not occur during 100-year return period tides or lower. Development areas will be designed such that, even for worst-case SLR trends (66" by 2100), flooding would not occur during 100-year return period tides or lower. For SLR exceeding the above design allowances, Adaptive Management Strategies (described in Section 3.5) will be implemented. The mechanism for developing and implementing the Adaptive Management Plan (AMP) is described in Section 3.5.

The project has three zones that could be impacted by SLR:

- Shoreline -- The land or marine structures that are at the edge of San Francisco Bay.

- Parks and Open Space -- the public land located from the shoreline upland to the edge of the Development Area.

- Development Area Perimeter -- the closest element of the development area to the shoreline that will have structures and/or facilities that are to be elevated above the adopted SLR elevation values.

The present 100-year return period tide elevation (also called 1% annual chance tide) was used for open space and development area design, which was estimated by M&N as elevation 98.2, Project Datum. The 100-year return period tide elevation does not include additional estimated allowance for wind-driven waves. The present 100-year return period Total Water Level (TWL), which includes the effect of tides, storm surges, tsunamis, and waves, was also estimated by M&N and varies by location as described in various reports. The general initial strategies for the Project and the adaptive management strategies needed after the Project is constructed are described below.

3.3 PROJECT DESIGN CRITERIA

The constructed Project will incorporate SLR strategies that are based on the design criteria provided in Table 3.3.1 below. Existing structures to remain may include elements below the minimum required grading and hydrology requirements for proposed structures within the "Development Perimeter – Structures" as defined in Table X.1 of Attachment 4 in Appendix C of the Project Subdivision Regulations. Such elements should be protected from flooding to the greatest extent practicable. Responsibility for and liability directly related to flooding and associated damage that may occur in buildings with elements below the minimum required grading and hydrology requirements or within private streets will be by the property owner.

Table 3.3.1 Sea Level Rise Design Criteria

Parameter	*Criteria*	*Value*
Shoreline	At a minimum, provide an elevation to accommodate the 100-year return period TWL in the Bay (caused by tides and/or wave runup) with minimal overtopping, plus 24 inches of SLR	Provide shoreline protection at a minimum of the elevation required by the "Criteria".
Parks and Open Space adjacent to the shoreline	At a minimum, provide an elevation that will not result in flooding due to tides up to 100-year return period in the Bay even with 24" of SLR, while allowing ponding during combined large rain and high tide events	For facilities that are to be dry, either raise the elevation of site or provide appropriate Shoreline protection to meet the "Criteria."

Parameter	*Criteria*	*Value*
Parks and Open Space-Heritage Park	At a minimum, provide an elevation of 98.2 (100-year tide elevation) while allowing ponding during combined large rain and high tide events	For facilities that are to be dry, either raise the elevation of site or provide appropriate Shoreline protection to meet the "Criteria."
Development Perimeter – Structures	Finished floor of occupied facilities shall be at a minimum elevation of the 100-year tide plus 66 inches of SLR	Occupied facilities, including pump station facilities and above grade electrical infrastructure, shall have a minimum first floor elevation of 103.7 feet, Project Datum, based on SLR
Development Perimeter – Separated Storm Drainage System 5-Year Storm Event	Provide 2 feet freeboard between storm drainage system hydraulic grade line and the street finished grade with a 100-Year tide plus 24 inches of SLR in San Francisco Bay	Minimum elevation of street centerlines is elevation 103.3 feet, Project Datum. Minimum elevation of the bottom of stormwater treatment bio-retention soil mix will be at or above the 5-year HGL (includes 24-inches of SLR). Storm drainage system designs to accommodate 24-inches of SLR for system operation with 2 feet of freeboard between 5-year event storm hydraulic grade line and the finished grade of the street. Less freeboard will be allowed where the elevation of the 100-year overland release water surface is lower than the back of sidewalk.
Development Perimeter – Separated Storm Drainage System 5- to 100-Year Storm Event	With a 100-year tide in San Francisco Bay, overland release in the streets is allowed to the edge of the City right-of-way commonly identified as the back of sidewalk	Drain overland release to shoreline/ San Francisco Bay

3.4 PROJECT INITIAL CONSTRUCTION

The initial construction will provide the required improvements to address a minimum of 24 inches of SLR at the Shoreline. It will also provide the required improvements to address a minimum of 66 inches of SLR at the development perimeter for development parcels.

3.4.1 SHORELINE IMPROVEMENTS

The shoreline improvements shall be constructed to accommodate a minimum of 24 inches of SLR above the 100-year return period TWL (due to tides and/or wave runup) with minimal overtopping. The elevation of shoreline improvements will include consideration for wind-driven waves when

constructed to the recommended perimeter elevations. Improvements will address drainage of wave splash. Specific improvements to the various facilities are as follows:

- Northside Park - City will receive a reconstructed shoreline and land surface from the Navy as part of its site remediation plan for this park. The Navy has placed riprap to protect the shoreline from erosion and flooding, to an elevation of 106.8 feet, Project Datum, which exceeds the recommended perimeter elevation for minimal overtopping during the 1 percent annual chance event plus 24 inches of SLR. The slope protection was placed at 3:1 or flatter slopes (H:V). The Project needs no additional shoreline improvements.

- Submarine Drydocks (Waterfront Promenade North) - The northern portion of the shoreline was used as a submarine mooring facility. The southern portion of the shoreline is a wharf that will remain. The existing Shoreline edge is high enough to accommodate the 1 percent annual chance storm event with minimal overtopping, but the area immediately inland will not accommodate any appreciable amount of SLR. As a result, this area will require a raised embankment, either along the shoreline with rock protection on the Bay side, or setback from the shoreline depending on the location of the public trail that is still in the planning stages. The project will install the required berm along the shoreline to accommodate the 1 percent annual chance storm event with minimal overtopping, plus include an allowance for 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Wharf Along Berths 55 to 61 (Waterfront Promenade North) - The elevation of the deck of the wharf ranges from 101.4 feet 101.9 feet, Project Datum, which is high enough that it is protected from the 100-year tide plus 36 inches of SLR. A 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Rip-Rap Protected Slope East of Berth 55 (Heritage Park) - The Navy has reconstructed the northern shoreline edge as part of its site remediation plan by placing a wave berm with slope protection to protect shoreline from erosion and flooding. The improvements will accommodate the 1 percent annual chance storm event with minimal overtopping plus 36 inches of SLR. The south frontage adjacent to Dry Dock 3 will be raised by the project to accommodate the 1 percent annual chance storm event with minimal overtopping plus 24

inches of SLR. The project does not include any improvements to the wharf on the northwest of the site for SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Drydocks 2 and 3 (Heritage Park Frontage) - The elevation of the shoreline edges around the drydocks are high enough that they are protected from the 100-year tide plus 24 inches of SLR. A 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Drydocks 2, 3, and 4 (Waterfront Promenade North Pier between Dry Dock 2 and the Northern Marina) - The existing Shoreline is a concrete wharf which is at elevation 99.4. A wave protection embankment/berm will be provided by the Project immediately inland of the wharf to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Drydocks 2, 3, and 4 (Northern Marina) - The existing Shoreline elevation is 99.7 feet, Project Datum. The project will raise the edge of the Shoreline to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Shoreline of Dry Dock No. 4 – The existing edge of Dry Dock 4 is approximately elevation 100.5 feet, Project Datum. The project will raise the edge of the Shoreline to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Easterly Shoreline of Parcel D - The existing Shoreline elevation is approximately 100.2 feet, Project Datum. The project will raise the edge of the Shoreline to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR.

In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Easterly Shoreline of Parcel E - The existing shoreline is at elevation 99.4 to 98.1 feet, Project Datum. The project will raise the edge of the Shoreline to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Re-Gunning Crane Pier Habitats - This is the Re-gunning pier. The existing surface elevations range from 99.6 to 98.4 feet, Project Datum. While the foundations for the Re-Gunning Crane will be protected, the pier edges that consist of cellular steel sheetpiles will be modified by removing the upper portion of the sheetpiles, laying back the slopes behind them, and installing edge treatment measures that will allow establishment of marsh vegetation or other habitat-friendly vegetation over time. The habitat type and function will change over time in response to SLR. Crane foundation protection solutions will be investigated by the Developer with final designs prepared by the Developer and coordinated with OCII during the permitting process.

- Grasslands Ecology Park Southern Portion - The eastern edge of this park has an existing elevation of 99.7 feet, Project Datum. The southern edge existing grade ranges from 99.5 feet to 101.0 feet, Project Datum. The Navy will reconstruct the shoreline edge as part of its site remediation plan by placing wave protection berms with riprap or other slope protection to protect the shoreline from erosion and flooding. The Navy will also provide the grading and embankment for the Bay Trail to an elevation high enough that it provides flood protection from the 1 percent annual chance storm event plus 36 inches of SLR.

- Grasslands Ecology Park Northern Portion – The existing shoreline elevation ranges from 96.0 feet to 99.7 feet, Project Datum. From 3600 to 4600 feet westerly of the easterly shoreline of Parcel E, the Navy will reconstruct the shoreline edge as part of its site remediation plan. The Navy will place wave berms with riprap or other slope protection to protect the shoreline from erosion and flooding for the 1% annual chance storm event with minimal overtopping plus 36 inches of SLR. On the remaining 400 feet to the western edge of the park, the Navy shoreline edge improvements, which will be completed before land

transfer to the City, will create a shoreline edge designed as a habitat zone where flooding is expected. Those berms that must protect the shoreline will be constructed to accommodate the 1% annual chance storm event with minimal overtopping plus 36 inches of SLR. The Navy will also raise the shoreline edge perimeter elevation at the Yosemite Slough Bridge north abutment to accommodate the 1% annual chance storm event with minimal overtopping plus 36 inches of SLR, which will extend 200 feet northeasterly along the adjacent shoreline.

3.4.2 Open Space and Park Improvements

Open Space and Park improvements within the shoreline zone shall be constructed such that the intended Year 2050 operation of the facilities with 24 inches of SLR is accommodated. Some existing facilities will always be above the water, some will always be flooded at some point in time, and some will experience occasional tidal flooding and be subject to both wet and dry conditions.

Dry Facilities

Dry facilities are those facilities that will be required to be above the water level of San Francisco Bay, and either are existing above the elevation, will be rehabilitated to above the elevation, or will be constructed at the time of initial construction to accommodate a minimum of 24 inches of SLR above the current 100-year tide of 98.2 feet, Project Datum.

Wet Facilities

Wet facilities are those facilities that will be allowed to flood and be allowed to convert back to wetlands and/or marshes will remain unchanged.

The specific Open Space and Park facilities and their condition to accommodate the 100-year tide plus 24 inches of SLR are as follows:

- Northside Park - No project improvements are required to prevent SLR impacts for this park.

- Submarine Drydocks (Waterfront Promenade North) - The grading for the new Park area will be a minimum of 24 inches above the current 100-year tide. A 20-foot wide space is reserved so that for greater than 24 inches of SLR, various methods of wave protection can be constructed to protect against extreme tides and waves.

- Wharf along Berths 55 to 61 (Waterfront Promenade North) - The grading for the new Park area will be a minimum of 24 inches above the current 100-year tide. A 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Rip-Rap Protected Slope East of Berth 55 (Heritage Park) - A 20-foot wide space is reserved for future adaptations to address greater than 36 inches of SLR on the north and 24 to 36 inches on the south. Wave barriers or other facilities can be constructed to protect against extreme tides and wave conditions for the 100-year tide plus SLR as described for the shoreline. The project will not provide an increase in site elevations above existing conditions for the EIR Variant associated with the Heritage Alternative. For non-Heritage alternatives, the site is to be raised to a minimum of 24 inches above the current 100-year tide.

- Drydocks 2 and 3 (Heritage Park Frontage) - A wave protection embankment/berm will be provided by the Project immediately inland of the wharf to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions. The project will not provide an increase in site elevation for the Heritage Alternative. For non-Heritage alternatives, the site is to be raised to a minimum of 24 inches above the current 100-year tide.

- Drydocks 2, 3, and 4 (Waterfront Promenade North Pier between Dry Dock 2 and the Northern Marina) - A 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other facilities can be constructed to protect against 100-year tide plus 24 inches of SLR. Adjacent to Dry Dock 3 there is limited space that may dictate that the wall be raised. The project will not provide an increase in site elevation for the Heritage Alternative. For non-Heritage alternatives, the site is to be raised to a minimum of 24 inches above the current 100-year tide.

- Drydocks 2, 3, and 4 (Northern Marina) - The project will raise the edge of the Shoreline to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions. The project will not provide an

increase in site elevation for the Heritage Alternative. For non-Heritage alternatives, the site is to be raised to a minimum of 24 inches above the current 100-year tide.

- Shoreline of Dry Dock No. 4 - The edge of the existing Dry Dock 4 is at elevation 100.5 feet, Project Datum. The project will raise the Shoreline edge to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Easterly Shoreline of Parcel D - Elevations of the land inland of the shoreline are approximately 100.2 feet, Project Datum, which is approximately 24 inches above the current 100-year tide. The project will raise the edge of the Shoreline to prevent flooding from the 1% annual chance storm event with minimal overtopping plus 24 inches of SLR. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Easterly Shoreline of Parcel E - The project will raise the elevation of the land inland of the shoreline to a minimum of 24 inches above the current 100-year tide. In addition, a 20-foot wide space is reserved so that for greater than 24 inches of SLR, wave barriers or other appropriate shore protection facilities can be constructed to protect against extreme tide conditions.

- Re-Gunning Crane Pier Habitats – While the foundations for the Re-Gunning Crane will be protected, the pier edges that consist of cellular steel sheetpiles will be modified by removing the upper portion of the sheetpiles, laying back the slopes behind them, and installing edge treatment measures that will allow establishment of marsh vegetation or other habitat-friendly vegetation over time. The habitat type and function will change over time in response to SLR. Other project improvements that are required are shoreline improvements and removal of concrete, asphalt, and other features to establish habitat in this area. Public access will be studied as part of the improvements, and may be incorporated subject to feasibility analyses conducted by the Developer in coordination with OCII. Crane foundation protection solutions will be investigated by the Developer with final designs prepared by the Developer and coordinated with OCII during the permitting process.

- Grasslands Ecology Park Southern Portion - The Navy will reconstruct the shoreline edge as part of its site remediation plan by placing wave protection berms with riprap or other slope protection to protect the shoreline from erosion and flooding. The Navy will also provide the grading and embankment for the Bay Trail to an elevation high enough that it provides flood protection from the 1 percent annual chance storm event plus 36 inches of SLR. In addition, the Navy is expected to install a cap over the land inland of the shoreline as part of its site remediation plan. No additional grading improvements will be provided by the Project.

- Grasslands Ecology Park North – The Navy will install shore protection system (riprap or similar) along the shoreline of this reach to protect it from erosion and flooding for the 1% annual chance storm event with minimal overtopping plus 36 inches of SLR. On the southern edge of the southwestern edge, the Navy shoreline improvements will create a shoreline edge designed as a habitat zone where flooding is expected. Areas that are not intended as wetland areas by the Navy are expected to be capped as part of its site remediation plan. The Navy plans to remove certain contaminated soils in this general area and construct tidal wetlands. For areas that are to be protected, space will be reserved to accommodate for greater-than-36-inches SLR to allow for wave barriers or other facilities to protect against extreme conditions. No additional grading improvements will be provided by the Project.

3.4.3 Development Perimeter

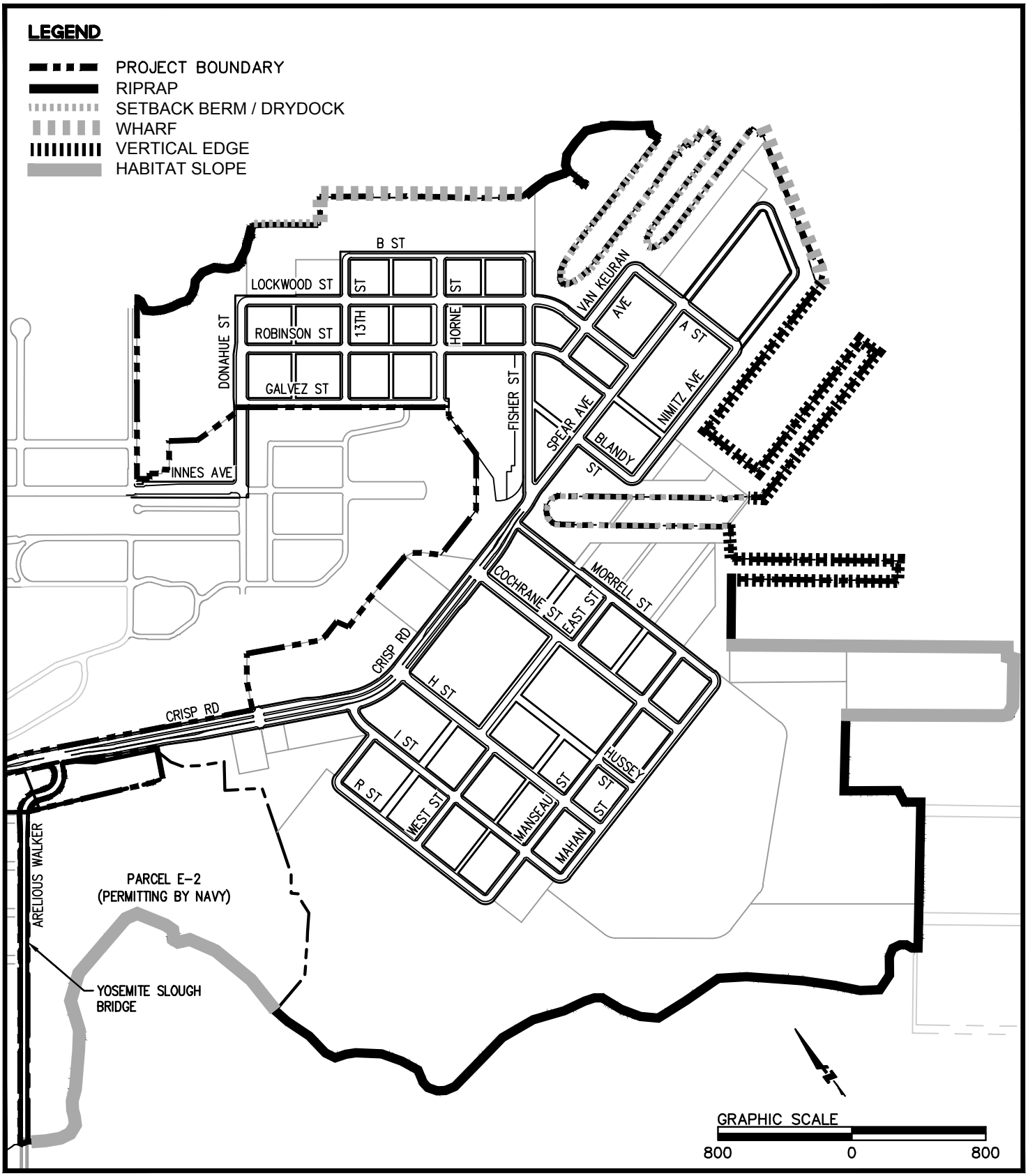
The perimeter edges of the developed areas shall be constructed such that the minimum elevations of street centerlines will accommodate over 36 inches of SLR. Building occupied floors shall have a minimum elevation that provides 66” of SLR protection. Parking floors can be lower, but must include pumps and other improvements to protect from flooding as well as comply with the AMP.

3.4.4 5-Year Storm Drainage System

The initial construction of the 5-year storm drainage system will be conceptually designed in a final Hunters Point Shipyard Phase II Development Grading and Storm Drain System Master Plan prepared by BKF Engineers as submitted by the Developer to the City. Additionally, the 5-year storm system shall operate with a 2-foot minimum freeboard between street finished grade elevations and hydraulic grade line of the storm drain system pipelines. Due to constraints within the Project site, design modifications and exceptions to freeboard requirements may be requested. A design modification and exception request to utility standards and requirements is subject to

approval by the Director of Public Works with the consent of the SFPUC. The 5-year piped system shall be designed to operate with an SLR allowance of 24 inches. This change in height does not include wind-driven wave. Wind-driven waves is applicable only to shoreline structures and related wave protection.

Historic structures 140, 204, 205, 207, and 208 within the Historic District area include elements below the minimum required grading and hydrology requirements for proposed structures in "Development Perimeter – Structures" as defined by Table X.1 in Attachment 4 within Appendix C of the Project Subdivision Regulations and Table 3.3.1. However, such structures are compliant with the minimum grading requirements (100-year tide, elevation 98.2) for "Parks and Open Space Adjacent to the Shoreline" as defined in Table X.1. Since certain building elements are not elevated above the 5-year HGL (100-year tide + 24-inches SLR) but are above the 100-year tide elevation, drainage infrastructure, such as pump stations, historic structure disposition, and the current uses of the area will be evaluated and adapted over time in context with hydrologic and sea level conditions, and the AMP. Responsibility for and liability directly related to flooding and associated damage that may occur in buildings with elements below the minimum required grading and hydrology requirements or within private streets will be by the owner of the Open Space parcel containing the Historic District.



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

SHORELINE IMPROVEMENTS

FIGURE 3.4.1

3.5 ADAPTIVE MANAGEMENT STRATEGIES

As the SLR is experienced, the projections of the magnitude of future SLR will be adjusted based on actual SLR conditions. Adjustments of the shoreline, parks and open space, and the development perimeter may be needed. A Project-specific SLR adaptation strategy will be implemented that will provide guidance, identify relevant stakeholders, define appropriate management actions and triggers, and establish a Project-specific funding mechanism. It will be administered by an entity for the Project as defined by the DDA, such as a Geologic Hazard Abatement District (GHAD), Community Facilities District (CFD), or other similar public entity with similar funding responsibility.

The strategies for SLR and the improvement alternatives will be further defined by an AMP that will define specific triggers for action based on observed changes in sea level. The plan will required updates on a 5-to-10 year basis based on observed changes in sea levels as well as other effects of climate change (e.g., more or less extreme storm wave conditions).

The adaptive management strategies for the Project in general are outlined below. An Adaptive Management Plan (AMP) detailing strategies for each of the individual elements of the shoreline, adjacent Parks and Open Space, and the Development Perimeter will be developed. The AMP shall specifically address each of the following elements for the future SLR scenarios: Northside Park; Waterfront Promenade North; Heritage Park; Waterfront Promenade North Pier; Waterfront Promenade South Pier; Shoreline of Dry Dock No. 4 (Water Room); Easterly shoreline of Parcel D; Easterly Shoreline of Parcel E; Urban Recreation Area; Grasslands Ecology Park; and any other Shoreline within the limits of Hunters Point Shipyard Phase 2 not specifically included above.

In general, although these strategies refer to “minimum” standards, the initial constructed grades at the Development Perimeter for the project are higher than the minimum standards defined by the “Development Perimeter – Structures” as defined by Table X.1 in Attachment 4 within Appendix C of the Project Subdivision Regulations, and Table 3.3.1 of this document. Therefore, a higher amount of SLR can be accommodated at the Development Area Perimeter as outlined in Section 3.4 above. Figure 3.5.1, 3.5.2, and 3.5.3 show the progression of Adaptive Management through the successive rise of sea level from the initial 24 inches of SLR condition through the 66 inches of SLR condition.

The improvements required by the AMP are to be funded by the financial plan described in the DDA and Plan Documents.

3.5.1 Strategies for Sea Level Rise Above 24 Inches

When it is known that SLR has occurred and is approaching 16-inches, the following strategies or more current strategies should be implemented to protect the particular shoreline or waterfront improvements.

Shoreline

Accommodate 1 percent annual chance storm event with minimal overtopping plus an additional 24-inches of SLR, (assuming the shoreline has already experienced 24-inches of SLR) for a cumulative total of 48 inches of SLR. Modify shoreline protection and marine structures to provide same level of protection as initial constructed conditions.

Parks and Open Space

As mean sea level rises up to 24-inches, allow more frequent flooding of the parks and open space during storm events greater than 5-year return period, raise ground level of facilities, or install wave protection berms. In addition, provide for the collection of 100-year overland release and its discharge to San Francisco Bay if the drainage path is blocked by a berm or other feature.

Development Perimeter

No change in constructed project required.

Within the developed perimeter, for separated storm drainage systems, the 5-year storm event and 5- to 100-year storm events will require that operation of the separated storm drainage systems be provided with the following described capabilities:

- 5-year Storm Event –The operation of the 5-year collection system will normally operate with a freeboard of 2 feet, but as SLR occurs, the system will require a minimum of 1-foot of freeboard for operation before the follow-on strategies are implemented and operational. When the SLR from the beginning of the project exceeds 24 inches then the AMP should be implemented, with analysis and planning commencing such that by the time the SLR value reaches 36 inches any required improvements should be operational.

  Building 813 along Crisp Road, which is tied to Outfall-D, may need to install pumps to handle storm flows when SLR is greater than 24 inches and less than 36 inches.

- 5- to 100-year Storm Events – With the 100-year high water on San Francisco Bay, overland release from the streets is allowed, subject to City approval, from the edge of the City right-of-way (back of sidewalk) where no downstream flow impacts are identified.

3.5.2 Strategies for Sea Level Rise Greater Than 48-Inches

When it is known that SLR has occurred and is approaching 36-inches in increase, the following strategies or more current strategies should be implemented to protect the particular shoreline or waterfront improvements.

Shoreline

Accommodate 1 percent annual chance storm event with minimal overtopping plus appropriate SLR, as based on guidance at the time. Modify shoreline protection and marine structures to provide same level of protection as initial constructed conditions

Parks and Open Space

As mean sea level rises beyond 36-inches, allow more frequent flooding of the parks and open space during storm events greater than 5-year return period, Raise elevation of facilities, provide wave berms, and enhance the capabilities of pumping stations to increase freeboard in the storm drainage systems. In addition, provide for the collection of 100-year overland release and its discharge to San Francisco Bay if the drainage path is blocked by a berm or other feature.

Development Perimeter

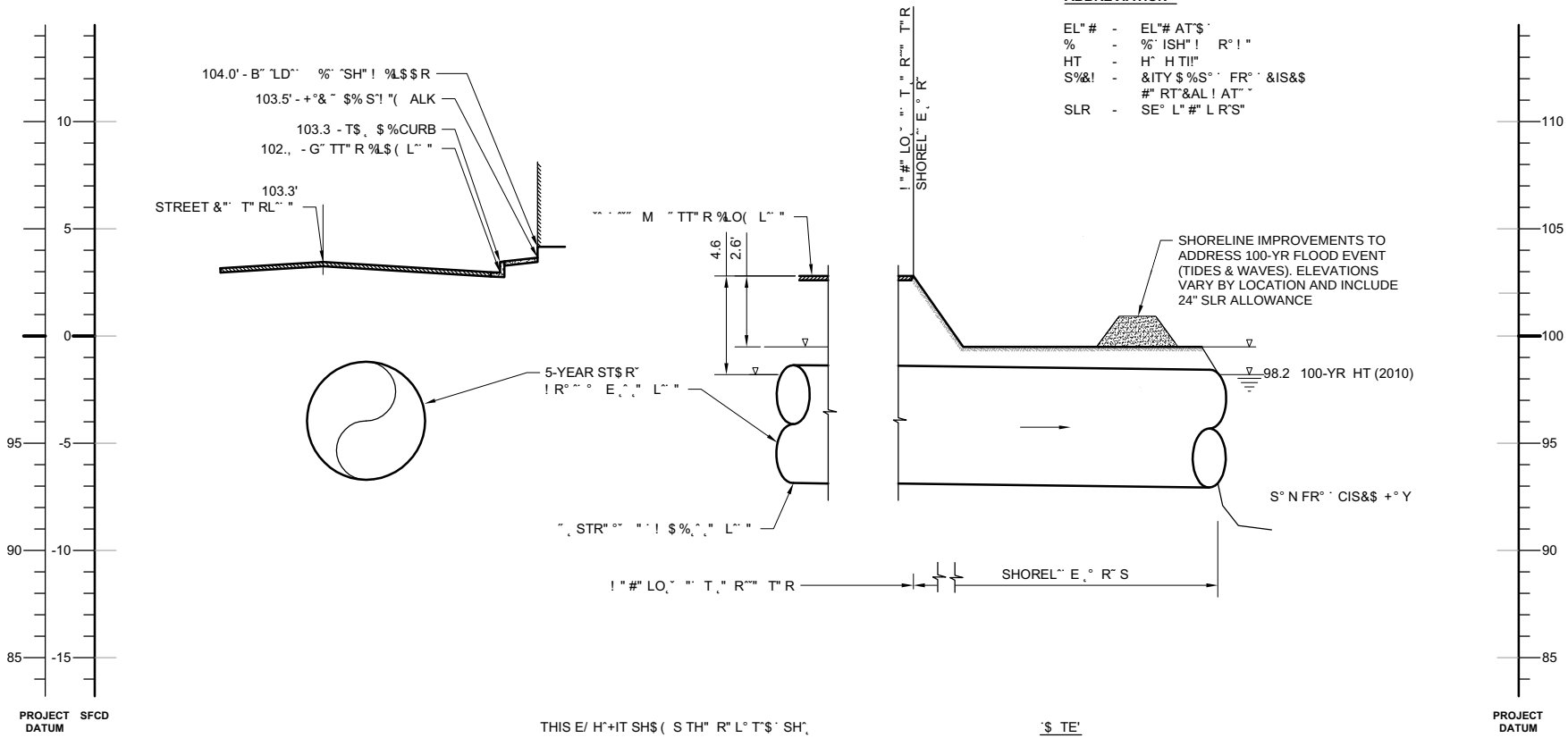
No change in constructed project required.

Within the development perimeter, for separated storm drainage systems, the 5-year storm event and 5- to 100-year storm events will require that operation of the separated storm drainage systems be provided with the following described capabilities:

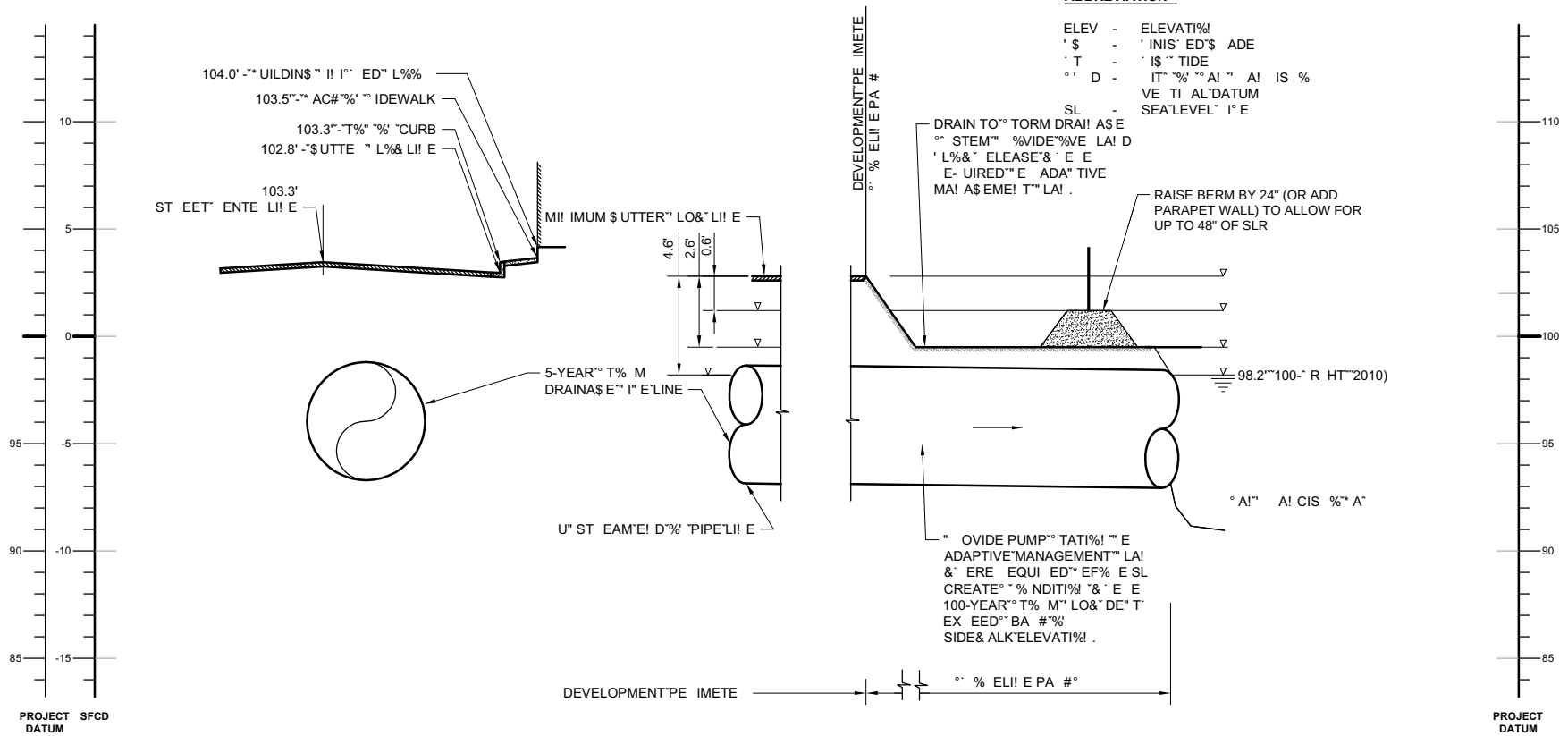
- 5-year Storm Event –The operation of the 5-year collection system will normally operate with a freeboard of 2 feet, but as SLR occurs the system will require a minimum of 1-foot of freeboard for operation before the follow-on strategies are implemented and operational. When the SLR from the beginning of the project exceeds 48 inches, then the second phase of the AMP should be implemented, with analysis and planning commencing such that by the time the SLR value reaches 60 inches, any required improvements should be operational.

  The storm drainage outfalls for the Project must address SLR when the SLR exceeds the conceptual values at the outfall described by Figure 3.5.4 in the 5- to 100-year storm event. Final values will be confirmed as part of the permitting process.

- 5- to 100-year Storm Events – With the 100-year high water on San Francisco Bay, overland release in the streets is allowed to the edge of the City right-of-way commonly identified as the back of sidewalk. As SLR exceeds the values described by Figure 3.5.4, a pump station should be installed. An area for installation of a pump station should be reserved.



	,(nters P¸ ˆn˙ˇ - ˆ. / ar0ˇPhaseˇll Develo. men˙	Fi'(re)*+*!
	Genera˘ˇˆ teˇ ec˙ˆon For Base Year ˇ24'˝¸ $ ea˘%evelˇRˆ° e	



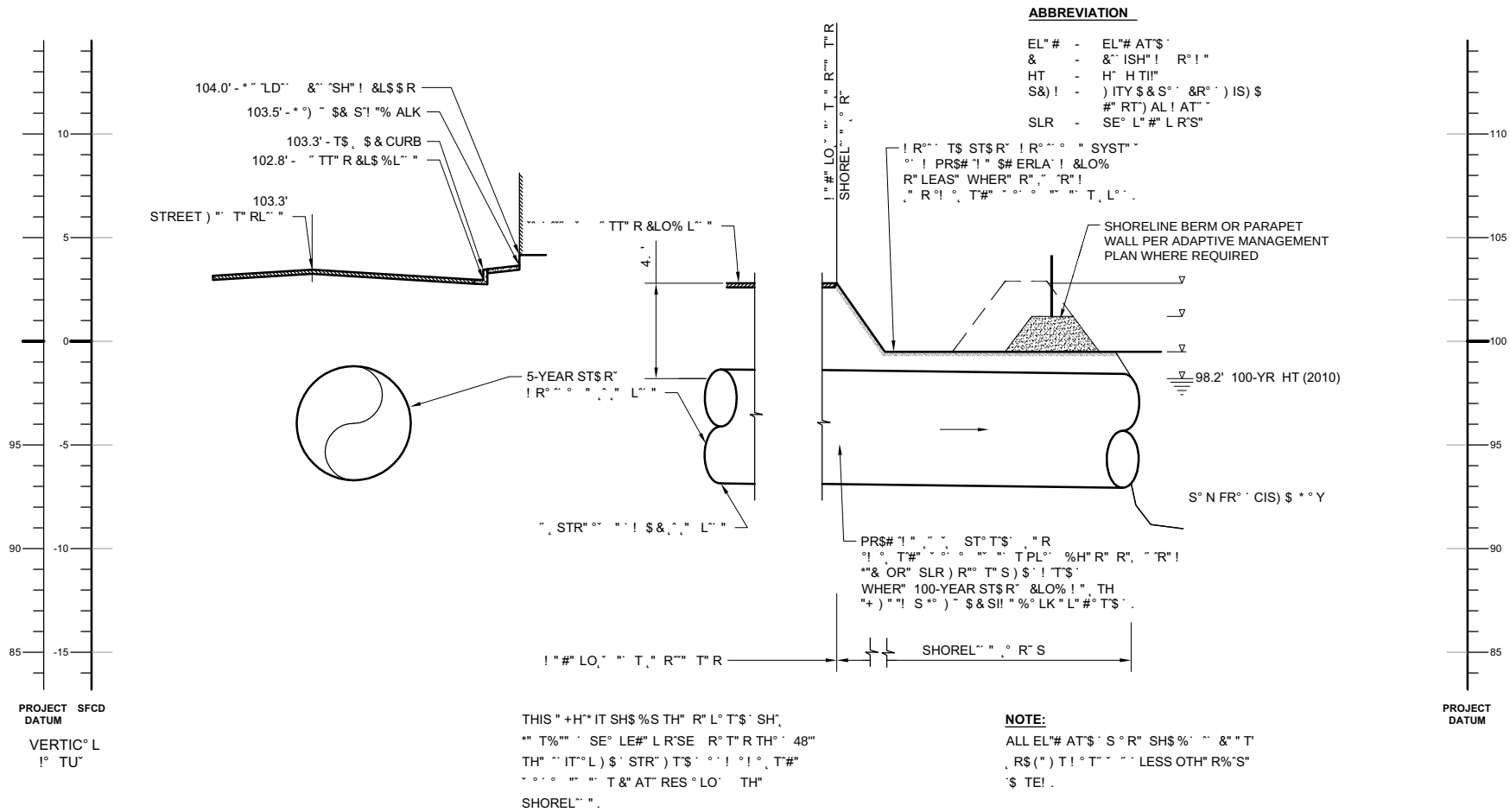
ABBREVIATION

ELEV - ELEVATI%!
' $ - ' INIS˙ ED˜$ ADE
˙ T - ˙ I$ ˙˜ TIDE
° ' D - IT˜ ˜%' ˜° A! ˜' A! IS %
VE TI AL˜DATUM
SL - SEA˜LEVEL˜ I° E

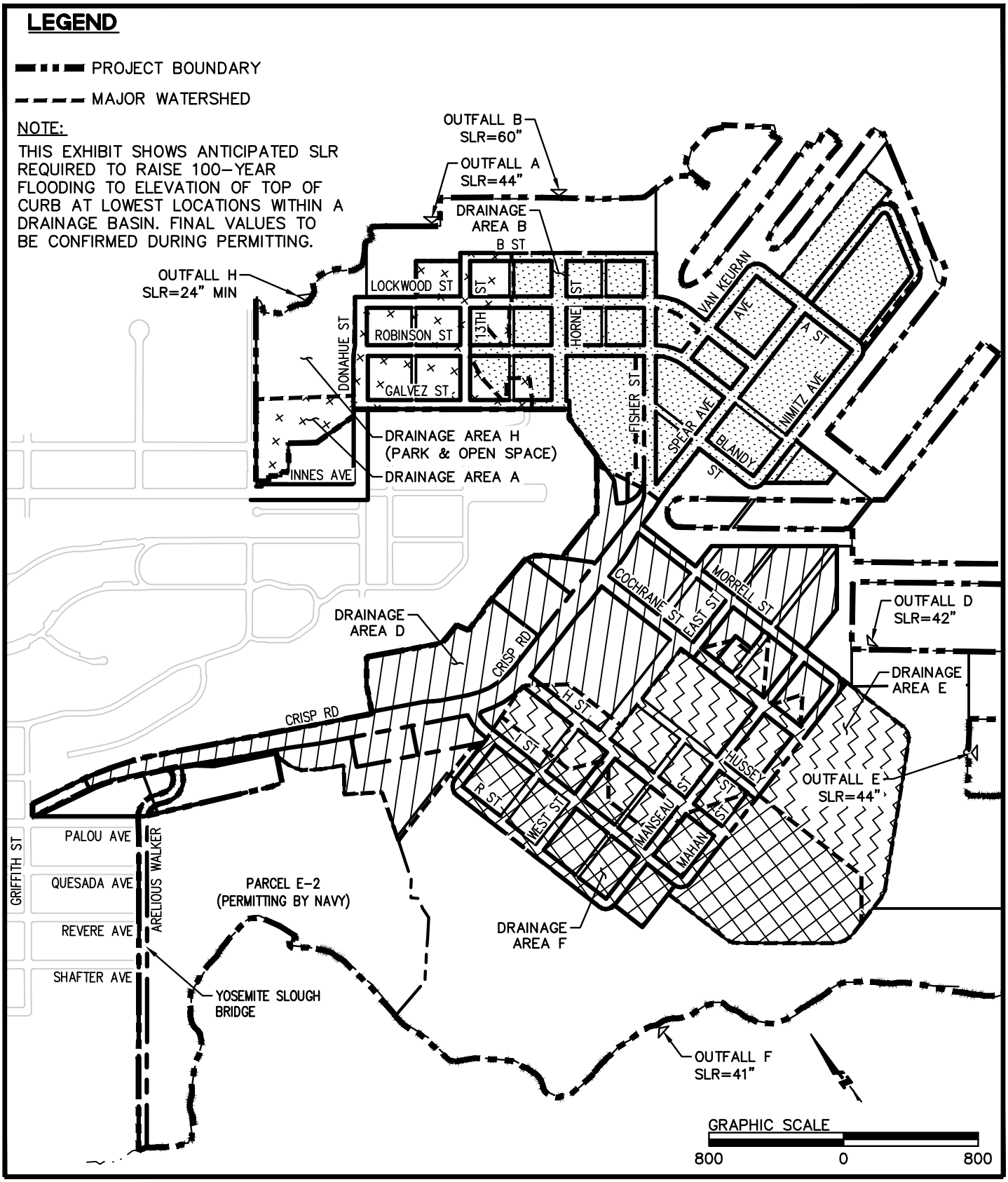
T˙ IS E, ˙ IBIT˜° ˙ %& ° T˙ E˜ ELATIO! ° ˙ I"
BET& EE! ˜SEA LEVEL ISE˜' %M˜24"˜T%˜48"(
T˙ E˜INITIAL %! ° T U TI%! A! D ADA" TIVE
MANA$ EMENT˜' EATURE° ˜AL%! $ ˜THE
°˙ % ELI! E.

NOTE:
ALL ELEVATI%! ° ˜A E˜° ˙ %&! ˜I! ˜' EET(
" %) E T˜DATUM˜U! LESS OT˙ E WI° E
!% TED.

	,(nters P° ˙n˜˜ - ˙. / ar0ˆPhaseˆll Develo. men˜˜	Fi'(re ")*) +
	Generaˆˆ ˙ teˆ ec˜˜on Forˆ24" to 48" °#ˆ eaˆ$evel R˙&e	



	+(nters P° ˙n˝^ ˜ ˙, - ar. ^Phase^ll Develo, men˝	Fi'(re)*)
	Genera˘^ ˙ te^ ec˝˙on For Gre˘˝er T˜˘ n 48"^° #^ ea^$e%el^R˙&e	



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

SEA LEVEL RISE FOR 100-YEAR STORM FLOODING LIMIT

FIGURE 3.5.4

4 PUBLIC OPEN SPACE

4.1 OPEN SPACE PARCELS

The Open Space Parcels in the HPS2 Area of the Project shall be developed in accordance with the Project Open Space Master Plan, and as summarized herein. Except as provided herein, the Developer shall construct all of the improvements in the Open Space Parcels. Improvements to Open Space Parcels are described in the Parks, Open Space and Habitat Concept Plan and will be further defined in Design Document submittals to the Agency described under the DRDAP. The completed Open Space and Park Improvements will be provided on the schedule defined in the DDA. Unless otherwise provided for in the DDA, or other Instrument, Infrastructure within the Open Space Parcels will be owned and maintained by the entity retaining ownership of the Open Space Parcel(s).

Overall, the Project will involve the creation of new parks and recreational opportunities, provide park improvements, and create new access to the shoreline. New parks will include destination parks, neighborhood parks, a sports field complex and multi-use lawn, the waterfront promenade, the waterfront recreation area, and the extension of the Bay Trail through the Project site. Improvements in the Park and Open Space parcels will be subject to a site-specific storm water management plan, which may include the presence of LID features as part of a comprehensive storm water management approach for the HPS2 Area.

In total approximately 327.1 acres of parks (not counting Boulevard Parks, Jamestown Walker Slope, Bayview Hillside Open Space, the Green Room, and the Re-Gunning Crane Pier) will be provided in the CP Area and HPS2 Area combined, which includes a net reduction of 23.5 acres of CPSRA. The HPS2 Area will include approximately 232.0 acres of parks (Boulevard Parks, the Green Room, and the Re-Gunning Crane Pier are not counted in the acreage total).

Table 4.1 (Proposed Parks and Open Space) presents the proposed park and open space in the HPS2 Area. Figure 4.1.1 illustrates the location of the proposed parks and open space. A brief description of the new parks and open space facilities, and the Bay Trail is provided in the Parks, Open Spaces and Habitat Concept Plan. Open Space development in the HPS2 Area of the Project will include an extensive network of parks.

Table 4.1 Proposed Parks and Open Space

	Acres (Approx.)	*Park Role*	*Features*	*New / Existing Park*
New Urban Parks				
Northside Park	12.8	Neighborhood	Overlook Terrace, Information Kiosk, Terraced Planting, Water-wise ornamental Gardens, Seating Terrace, Tennis Courts, Basketball Courts, Playground, Shade Pavilion, Lawn Steps, African Market, Open Lawn, BBQ, Picnic Area, Terraced Viewing Mound, Bay Trail, Boardwalk, Café, Centralized Stormwater Treatment	New
Waterfront Promenade North	13.3	Destination	Waterfront Promenade, Picnic/Seating Areas, Interpretive Grasslands, Native Plant Garden, Open Lawns, Plaza, Dog Run, Dog Park, Tot-Lot, Exercise Area, Centralized Stormwater Treatment	New
Waterfront Promenade North Pier	10.5	Destination	Waterfront Promenade, Restrooms, Café, Concessionaire, Seating Plinths, Tree Grove, Marina, Native Plant Gardens, Marina Support Facility, Exercise Area, Dog Run	New
Waterfront Promenade South Pier	5.3	Destination	Waterfront Promenade, Restrooms, Café, Concessionaire, Seating Plinths, Tree Grove, Marina, Native Plant Gardens, Marina Support Facility, Exercise Area	New
Heritage Park	15.5	Destination	Shoreline Revetment, Native Planting, Historic Building/ Visitor Center, Cultural Center, Tree Groves, Gardens, Open Lawns, Seating Areas, Plaza, Sculptural Landform, Multi-use Event Area, Maritime Education Area, Kiosk, Exercise Area	New
Water Room Plaza/ Dry Dock 4	7.3	Destination	Plaza, Amphitheater Seating, Pedestrian and Bike Bridge, Sculptural Art Feature	New
Grasslands Ecology Park	106.8	Ecology Park	Picnic Pods and Shelters, Bay Nature Interpretive Play, Viewing Mounds, Overlook Terraces, Amphitheater / Outdoor Classroom, Native Grasslands and Plant Gardens, Viewing Pier, Interpretive Center, Freshwater Wetland, Tidal Wetland, Basketball Court, Tennis Courts, Centralized Stormwater Treatment	New
Shipyard Hillside Open Space	2.4	Destination	Native Hillside Plantings, Native Planting Garden, Overlook Terraced Steps	New
Subtotal	*173.9*			
New Sports Fields and Active Urban Recreation				
Community Sports Field Complex	28.7	Sports Fields	Multi-use Sports Fields, Softball/Baseball Fields, Field House, Parking Lot, Centralized Stormwater Treatment	New
Waterfront Recreation and Education Park	3.4	Destination	Tidal Wetlands, Interpretive Walk, Upland Habitats, Tree Grove, Seating Areas, Waterfront Recreation and Education Center, Bay Nature Interpretive Play	New
Multi-Use Fields	20.5	Destination	Multi-use Lawn	New
Maintenance Yard	5.5	Facility	Parks and Open Space Maintenance Yard	New
Subtotal	*58.1*			
Total Acreage	***232.0***			

Table 4.1 Proposed Parks and Open Space

	Acres (Approx.)	*Park Role*	*Features*	*New / Existing Park*
Other Parks & Open Space (*excluded from ***Total Acreage*** above)				
Gunning Crane Pier Habitat	9.2	Destination	Tidal Wetlands, Interpretive Walk, Re-gunning Crane, Upland Habitats, Tree Grove, Seating Areas	New
Green Room (Publicly accessible, privately owned)	8.1	Destination	Café, Plazas, Seating Areas, Water Feature, Shade Groves, Picnic Areas, Ornamental Gardens, Open Lawn, Pavilion/Outdoor Stage, Stage with Shade Structure, Sculptural Marker, Promenade, Children's Play Area, Basketball Court, Bocce Courts	New
Subtotal	*17.3*			

Note: Park features to be constructed per the Parks, Open Space and Habitat Concept Plan

Source: Lennar Urban, 2009.

Revised: FivePoint, 2018.

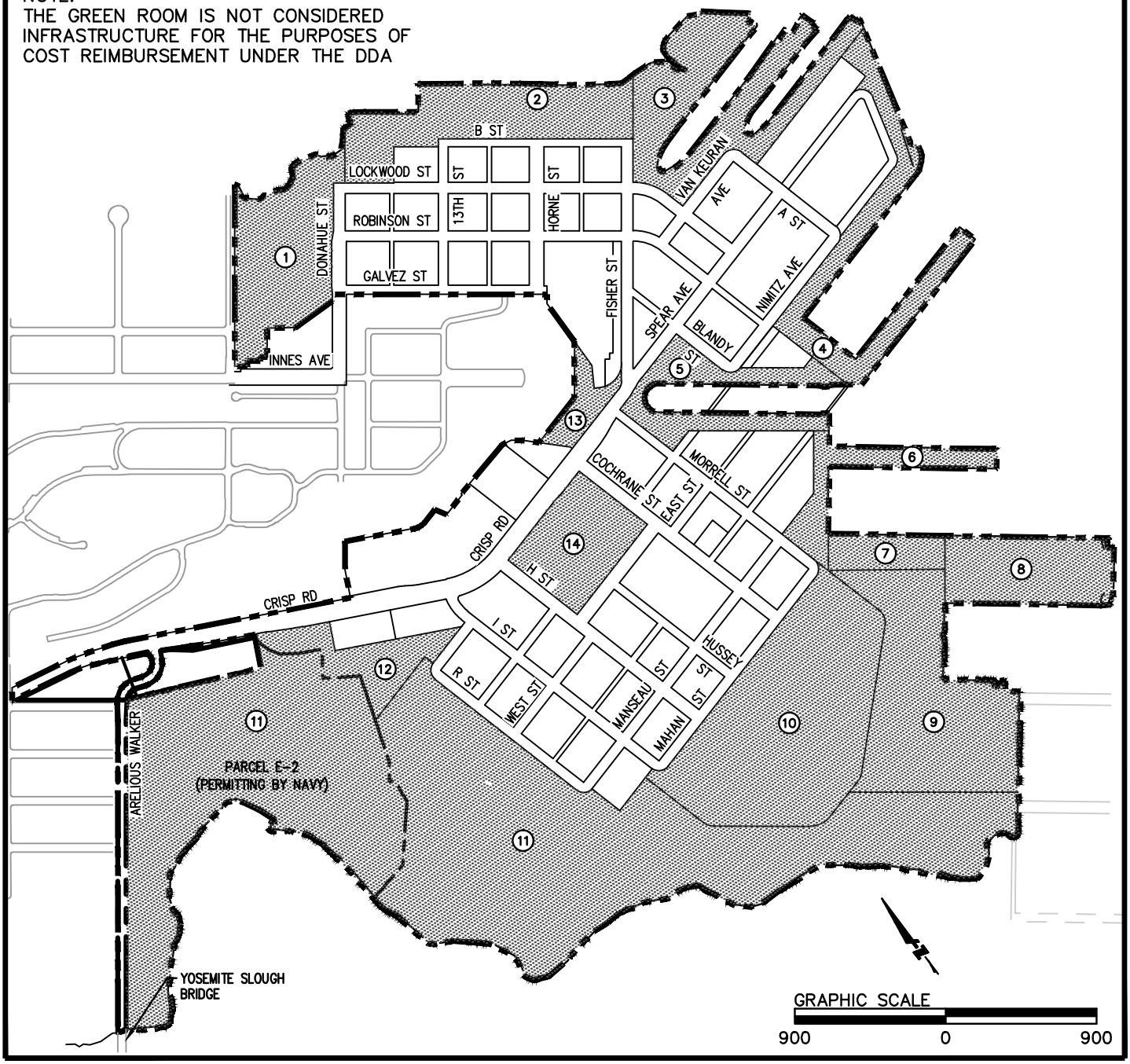
PARKS AND OPEN SPACE

1. NORTHSIDE PARK
2. WATERFRONT PROMENADE NORTH
3. HERITAGE PARK
4. WATERFRONT PROMENADE NORTH PIER
5. WATER ROOM PLAZA/DRY DOCK 4/ PEDESTRIAN AND BICYCLE BRIDGE
6. WATERFRONT PROMENADE SOUTH PIER
7. WATERFRONT RECREATION & EDUCATION PARK
8. GUNNING CRANE PIER HABITATS
9. MULTI USE OPEN SPACE
10. COMMUNITY SPORTS FIELD COMPLEX
11. GRASSLANDS ECOLOGY PARK
12. MAINTENANCE YARD
13. SHIPYARD HILLSIDE OPEN SPACE
14. GREEN ROOM

LEGEND

- PROJECT BOUNDARY
- (6) PARK IDENTIFICATION NUMBER
- PARKS AND OPEN SPACE

NOTE:
THE GREEN ROOM IS NOT CONSIDERED INFRASTRUCTURE FOR THE PURPOSES OF COST REIMBURSEMENT UNDER THE DDA



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD PHASE II DEVELOPMENT

OPEN SPACE PARCELS

FIGURE 4.1.1

5. OTHER INFRASTRUCTURE

5.1 BUILDING DEMOLITION

Demolition of structures and other existing improvements within the HPS2 Area shall be executed in compliance with City regulations and with the Project Risk Management Plan. As a minimum standard, materials resulting from demolition activities shall be recycled to the extent required by City codes and regulations and in compliance with the Hunters Point Shipyard Navy Transfer Risk Management Plan.

5.2 INTERIM OPERATIONAL REQUIREMENTS

Essential to the function of site infrastructure are the interim improvements which may be requested to serve an early phase of the development. An early phase of work may trigger a need for interim parking, drainage, water mains, sewer mains, dry utilities, or modifications to existing utilities for a locale prior to it receiving its final Improvements per the Infrastructure Plan. A specific example is a vehicular turn-around area needed at the terminus of a new street prior to the ultimate extension of the street. Construction and maintenance of such interim improvements shall be by the Developer subject to the DRDAP process and other DDA requirements. These interim improvements shall be removed, relocated or abandoned by the Developer, at the Developer's sole cost and with approval by Department of Public Works, after final Improvements are in place.

Normally, the wet utilities within City right of way will be installed per the requirements of this Infrastructure Plan when the new street is constructed; however, the Developer reserves the right to request of the City the ability to connect these new wet utilities to the existing City facilities. City concurrence shall not be unreasonably withheld, provided City system capacities are not exceeded. For example, new storm and sanitary sewer segments may be temporarily connected to the City's combined sewer mains.

Where requested by Developer, and if the designated City Agency or Agencies with jurisdiction over the affected Infrastructure determines it is appropriate in connection with the phased development of the Project, portions of the Infrastructure may be constructed or installed as interim improvements to be owned and maintained by the Developer. Interim improvements would be removed or abandoned, as determined by the Acquiring Agency, when substitute permanent Phase Improvements are provided to serve a subsequent Development Parcel.

Where requested by Developer, and if the designated City Agency or Agencies with jurisdiction over the affected Infrastructure, determines it is appropriate in connection with the phased development of the Project, portions of the Infrastructure may be constructed or installed as permanent improvements outside of the current phase.

5.3 WATERFRONT TRANSPORTATION

Waterfront transportation improvements, including a passenger ferry terminal, may be implemented at a future time. These improvements are not part of the Project.

5.4 WATERFRONT IMPROVEMENTS

The existing waterfront of the HPS2 Area is characterized by a wide variety of conditions. Virtually the entire HPS2 Area shoreline consists of pile supported piers, timber crib walls, concrete bulkheads, riprap and similar shoreline protection structures. There are some areas of beach-fronted, unprotected slopes.

Except those Improvements noted as work to be performed by the Navy, the Developer will make Improvements to the shorelines to minimize, to the maximum extent practical, coastal flooding and to provide continuous public access along the San Francisco Bay. Shoreline Improvements in the HPS2 Area will be phased over a period of several years. The principal of adjacency described in Section 6 shall generally apply to the phasing of shoreline improvements. Proposed shoreline improvements and modifications along the HPS2 Area shoreline are defined below. The scope of Waterfront Improvements – rehabilitation, repair, abandonment and demolition – as presented herein are the basis of the Water Improvement funding stipulated in the DDA. The total scope of all Waterfront Improvements is limited to the total of the funding allocated to Waterfront Improvements by the DDA.

The improvements described below are based on a preliminary engineering evaluation. Detailed investigations of the shoreline condition will be performed by Developer to further define the scope of shoreline improvements. Using the information from these investigations, the Developer will submit a Technical Memorandum on the Infrastructure to be implemented, including rehabilitation, or demolition and abandonment, of existing waterfront structures based on detailed marine structure and geotechnical engineering analysis. This Technical Memorandum will further refine the improvements summarized below. The Developer will provide improvement or demolition as recommended by the Technical Memorandum. If the structure is determined to be adequate, or repairable to current codes with relatively minor repairs, the Developer will conduct the repairs for

continued public use as Open Space. If the investigation finds the structure to be significantly deficient or expensive to repair, the Developer will demolish the wharf portion, or allow it to remain in place with appropriate landscaping improvements that will deter public access. For reference, berth locations are show on Figure 5.4.1.

RIP-RAP PROTECTED SLOPE (NORTHSIDE PARK)

No work anticipated. This portion of shoreline will be improved to a rip-rap revetment by the Navy.

SUBMARINE DRYDOCKS (WATERFRONT PROMENADE)

- Install a raised embankment, either along the shoreline with rock protection on the Bay side, or setback from the shoreline depending on the location of the public trail that is still in the planning stages.

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

WHARF ALONG BERTHS 55 TO 61 (WATERFRONT PROMENADE)

- Repairs to the 4-ft diameter steel caisson piles, which may range from limiting ongoing corrosion by wrapping or encasing the piles in concrete, to structural retrofit of piles by welding additional steel plates to the piles.

- Repairs to the reinforced concrete beams and deck slab, including spall repair, using shotcrete, grout, and/or epoxy injections.

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

RIP-RAP PROTECTED SLOPE EAST OF BERTH 55 (HERITAGE PARK)

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

DRYDOCKS 2 AND 3 (HERITAGE PARK FRONTAGE)

- Install a wave protection embankment/berm inland of the drydock edge

- Add weep holes as needed on the sidewalls of the Drydocks from above the lowest tide to near the top of the dry dock walls.

- Repair the exposed drydock walls by patching any spalls, exposed and corroded reinforcing bars, and broken concrete. This may include applying high strength concrete grout to exposed surfaces and/or epoxy mix application to cracks. Repairs will extend from below the lowest tide up to near the top of the dry dock walls.

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

WHARF AT OUTBOARD END BETWEEN DRYDOCKS 2 AND 3(HERITAGE PARK)

The existing timber structure has been demolished and removed by the Navy.

DRYDOCKS 2, 3, AND 4 (WATERFRONT PROMENADE NORTH PIER BETWEEN DRY DOCK 2 AND THE NORTHERN MARINA)

- Repair or replace the existing steel bulkhead.

- Conduct an inspection of the pile-supported wharf portion of the wharf, assess the structural integrity of the deck and piles, and make appropriate repairs for continued public access along this reach.

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

DRYDOCKS 2, 3, AND 4 (NORTHERN MARINA)

- Retrofit the bulkheads via jetgrouting the timber cribs or similar method

- Patch exposed spalls, replace reinforcing bars that are exposed and deemed to be necessary, inject epoxy material to cracks, and fill visible holes and/or depressions.

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

SHORELINE OF DRY DOCK NO. 4

- Install a wave protection embankment/berm inland of the drydock edge

- Add weep holes as needed on the sidewalls of the Drydocks from above the lowest tide to near the top of the dry dock walls.

- Repair the exposed drydock walls by patching any spalls, exposed and corroded reinforcing bars, and broken concrete. This may include applying high strength concrete grout to exposed surfaces and/or epoxy mix application to cracks. Repairs will extend from below the lowest tide up to near the top of the dry dock walls.

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

EASTERLY SHORELINE OF PARCEL D

- Install a raised embankment, either along the shoreline with rock protection on the Bay side, or setback from the shoreline depending on the location of the public trail that is still in the planning stages.

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

EASTERLY SHORELINE OF PARCEL E

- Install a raised embankment, either along the shoreline with rock protection on the Bay side, or setback from the shoreline depending on the location of the public trail that is still in the planning stages.

- Public access improvements along the shoreline, and reserving a 20-ft wide buffer for future adaptation (see Section 3.4.2)

RE-GUNNING CRANE PIER HABITATS

- Conduct an inspection of the crane foundations, and retrofit as needed after coordinating with OCII

- Conduct an inspection of the cellular sheet piles, identify portions and extent of demolition of the sheetpiles, lay back the slopes behind the sheetpiles, and install edge treatment measures that will allow establishment of marsh vegetation or other habitat-friendly vegetation over time.

- Remove concrete, asphalt, and other features behind the existing edge and resurface appropriately to establish habitat in this area.

- Public access improvements (still under planning – extents to be determined)

THE GRASSLANDS ECOLOGY PARK SOUTHERN PORTION

- Public access improvements landward of the Navy-constructed shoreline edge

GRASSLANDS ECOLOGY PARK NORTH

- Public access improvements landward of the Navy-constructed shoreline edge

PARKS AND OPEN SPACE

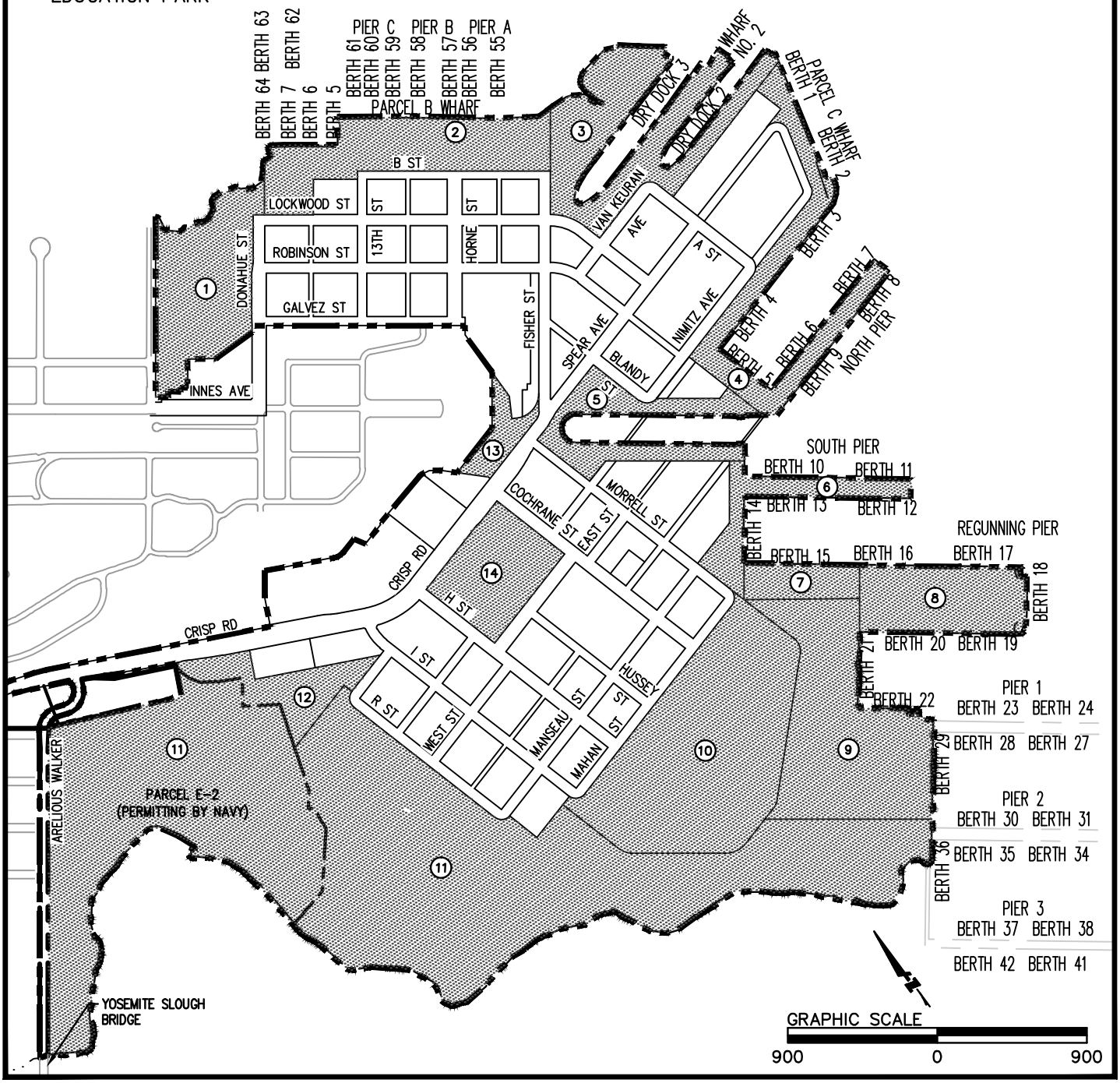
1. NORTHSIDE PARK
2. WATERFRONT PROMENADE NORTH
3. HORNE BLVD PARK 1
4. HORNE BLVD PARK 2
5. HERITAGE PARK
6. WATERFRONT PROMENADE NORTH PIER
7. WATER ROOM PLAZA/DRY DOCK 4/ PEDESTRIAN AND BICYCLE BRIDGE
8. WATERFRONT PROMENADE SOUTH PIER
9. WATERFRONT RECREATION & EDUCATION PARK
10. GUNNING CRANE PIER HABITATS
11. MULTI USE OPEN SPACE
12. COMMUNITY SPORTS FIELD COMPLEX
13. GRASSLANDS ECOLOGY PARK
14. MAINTENANCE YARD
15. SHIPYARD HILLSIDE OPEN SPACE
16. GREEN ROOM

LEGEND

PROJECT BOUNDARY

⑥ PARK IDENTIFICATION NUMBER

PARKS AND OPEN SPACE



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

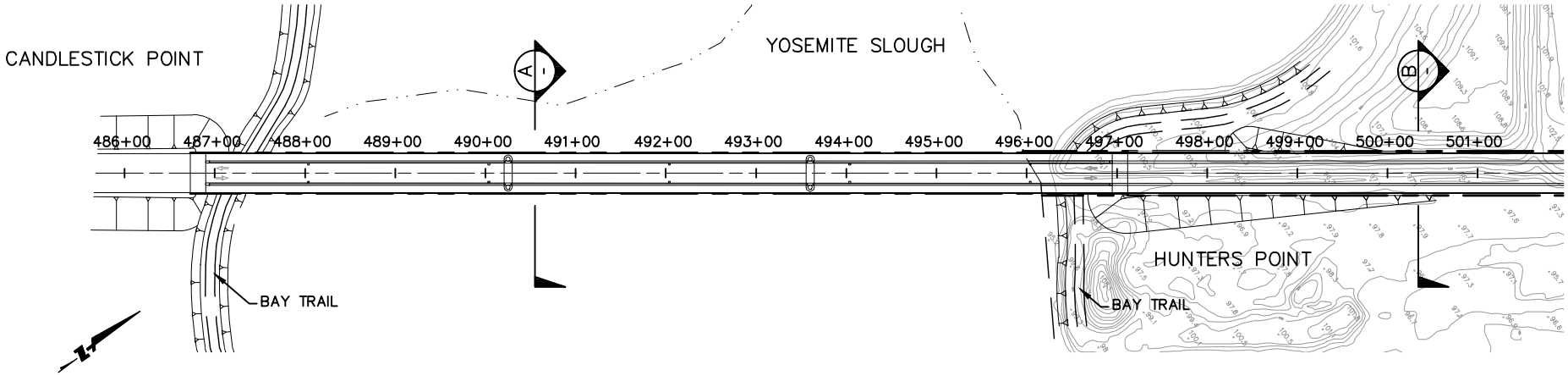
WATERFRONT PLAN

FIGURE 5.4.1

5.5 YOSEMITE SLOUGH BRIDGE

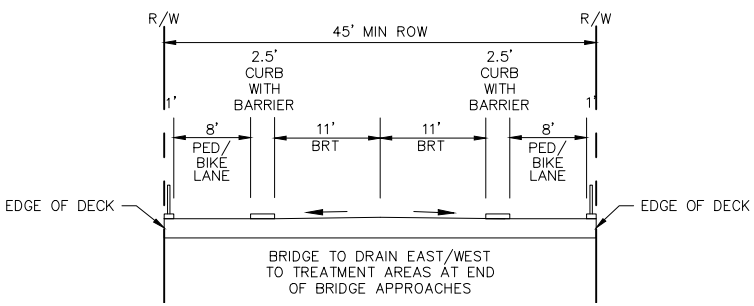
A new Yosemite Slough bridge will be constructed to extend Arelious Walker Drive across Yosemite Slough from the CP Area to the HPS2 Area as shown on Figure 5.5.1. The bridge is intended to primarily function for transit, bicycle, and pedestrian use. The bridge will be a maximum of 45-feet wide and have two dedicated 11-foot-wide BRT lanes and space for bicycle and pedestrian use, both of which would be open at all times. The bridge will be approximately 902 feet long with abutments on the north and south ends connecting the bridge to land. Preliminary studies indicate the bridge will be supported by 8 piers of four columns each.

The bridge would be served by approach streets from the Hunters Point side to the north and the Candlestick Point side to the south. The bridge approach on the Hunters Point side would consist of approximately 1,000 feet of new bridge approach roadway connected to 970 feet of new Arelious Walker Drive connecting Crisp Avenue to the bridge. The bridge approach street on the Candlestick Point side would consist of 250 feet of bridge approach roadway. The approach streets will have two dedicated 11-foot-wide BRT lanes, which will be open at all times along with pedestrian and bicycle facilities. Stormwater from the bridge and approach streets will be subject to the requirements of the SMR. Conceptual bridge and approach street layouts and sections are shown on Figure 5.5.1. The final design for the bridge may be refined, but will be in compliance with the Environmental Impact Report and subsequent addenda.



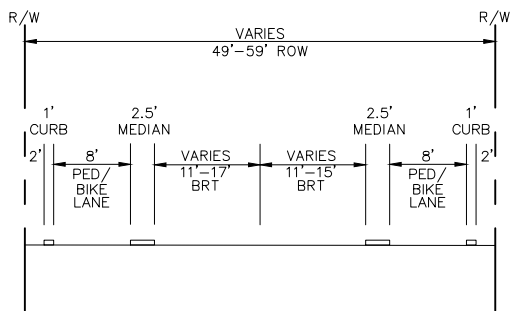
YOSEMITE SLOUGH BRIDGE PLAN

NTS



SECTION A

NTS



SECTION B

NTS

BkF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD PHASE II DEVELOPMENT

YOSEMITE SLOUGH BRIDGE AND APPROACH ROADWAYS

FIGURE 5.5.1

The entrances to the bridge approach roadways along Arelious Walker Drive (both North and South of the bridge) will have barrier facilities that will prevent motorized vehicle traffic (except BRT vehicles) from accessing the bridge. A barrier or other enforcement mechanism acceptable to the City will also be installed to block the BRT lanes, such that only authorized buses and emergency vehicles may gain access. These facilities will be further defined in the Infrastructure submittals required in the DRDAP, but would most likely be in the form of a gate, retractable bollards, removable barriers, or photo enforcement.

To facilitate a safe and continuous bay trail connection between Candlestick Point and Hunters Point appropriate crosswalks will be installed across the approach roads at points that will accommodate users of the bay trail. In Candlestick Point the crosswalk will be at Arelious Walker and Carroll and in Hunters Point it will likely be within the first 500 feet of the approach road following the bridge. The exact location of the bay trail in Hunters Point is not set yet, but will be coordinated with the slough restoration project to accommodate this crossing. The approximate locations of these crossings are shown on Figures 5.6.1. At the time the bridge and its approach roadways are accepted by the City for operation and maintenance, they will be designated by the City as public right-of-way with restrictions. The bridge and roadways will be restricted to transit-only use and closed to private vehicular traffic. The remainder of the time, the auto and BRT lanes would be restricted to prevent private vehicular use of the BRT and auto lanes, but allow free passage of pedestrians and bicyclists.

5.6 GRADING & SURCHARGE

Grading, including preparation, import fill, excavation fill and compaction consistent with the Project Risk Management Plan and Soil and Groundwater Management Plan, will occur to some degree over certain portions of the HPS2 Area. The preliminary site grading plan is shown on Figure 5.6.1. Final grades based on this preliminary site grading plan will be determined through the design review and approval process. The degree of grading will vary depending upon the needs of each zone within the HPS2 Area as determined by gravity utilities, access requirements, projections of SLR, and/or other criteria. Grades in all areas of the Project will be adequate to accommodate the storm drain overland flow considerations. In addition to grading, retaining walls may need to be constructed by the Developer in specific portions of the HPS2 Area. These retaining walls may be needed in major landslide hazard areas as required by the Geotechnical Analysis of the site. Retaining walls may also be needed on sloped parcels to create a level pad. Upon acceptance of the retaining walls by the City, the underlying property owners will have all responsibility for their operation and maintenance.

Surcharge techniques may be utilized in particular zones, including right of way areas, in order to accelerate consolidation. The grading will be defined by the Hunters Point Shipyard Phase II Development Grading and Storm Drain System Master Plan prepared by BKF Engineers, which has been submitted by the Developer to the City, and subsequent approved final version.

5.7 UTILITY RELOCATION

A number of existing utilities may require relocation during the course of Project development. Additionally, undefined relocations may be necessary to accommodate the installation of Infrastructure described elsewhere in this Infrastructure Plan. It will be the responsibility of the Developer and utility companies to maintain service to existing users. When feasible, all utilities should be installed in the locations provided for in the respective Technical Memoranda or Draft Master Utility Plans, to avoid relocation. Relocations shall be delineated in the Tentative Map process, detailed in the Improvement Plan process, and considered a financial obligation of the Developer pursuant to this Infrastructure Plan or unless indicated otherwise in the DDA, or separate agreement.

5.8 COMMUNITY FACILITIES LOTS

There are several Community Facilities Lots at the HPS2 area which include a fire station lot as well as lots for other community uses as defined in the Candlestick Point and Phase 2 of the Hunters Point Shipyard Community Benefits Plan. The locations of these Community Facilities Lots are shown on Figure 5.8.1.

5.8.1 CONDITION OF AGENCY PARCELS

In coordination with the requirements of the DDA and as part of the Project Infrastructure, the Developer shall complete all work necessary to create Developable Lots for Community Facilities within the Project Site, and shall deliver such Lots to the Agency. To be a Developable Lot, the following conditions shall be met:

1. A final subdivision map for conveyance and financing of the Lot as a separate legal parcel has been recorded in the Official Records of the City and County of San Francisco, and applicable appeal periods for such approvals and the environmental clearances for such approvals have expired without appeal, or if there has been an appeal, a final non-appealable judgment has been entered in a court or administrative agency of competent and final jurisdiction affirming the approvals and environmental clearances that were issued for the building site;

2. The Lot has been graded and soil compacted in accordance with the grading plans approved by the Agency, including necessary elevations;

3. The Lot is served by the Infrastructure described in this Infrastructure Plan with respect to the Lot;

4. The Lot is in the environmental regulatory condition required by the DDA based upon the proposed use of the Lot; and

5. All other obligations outside the boundaries of the Lot as required by all applicable Governmental Agencies have been fulfilled, or appropriate guarantees, bonds and/or subdivision improvement agreements acceptable to the City are in place, to enable a Vertical Developer to obtain a building permit to commence construction on the Lot.

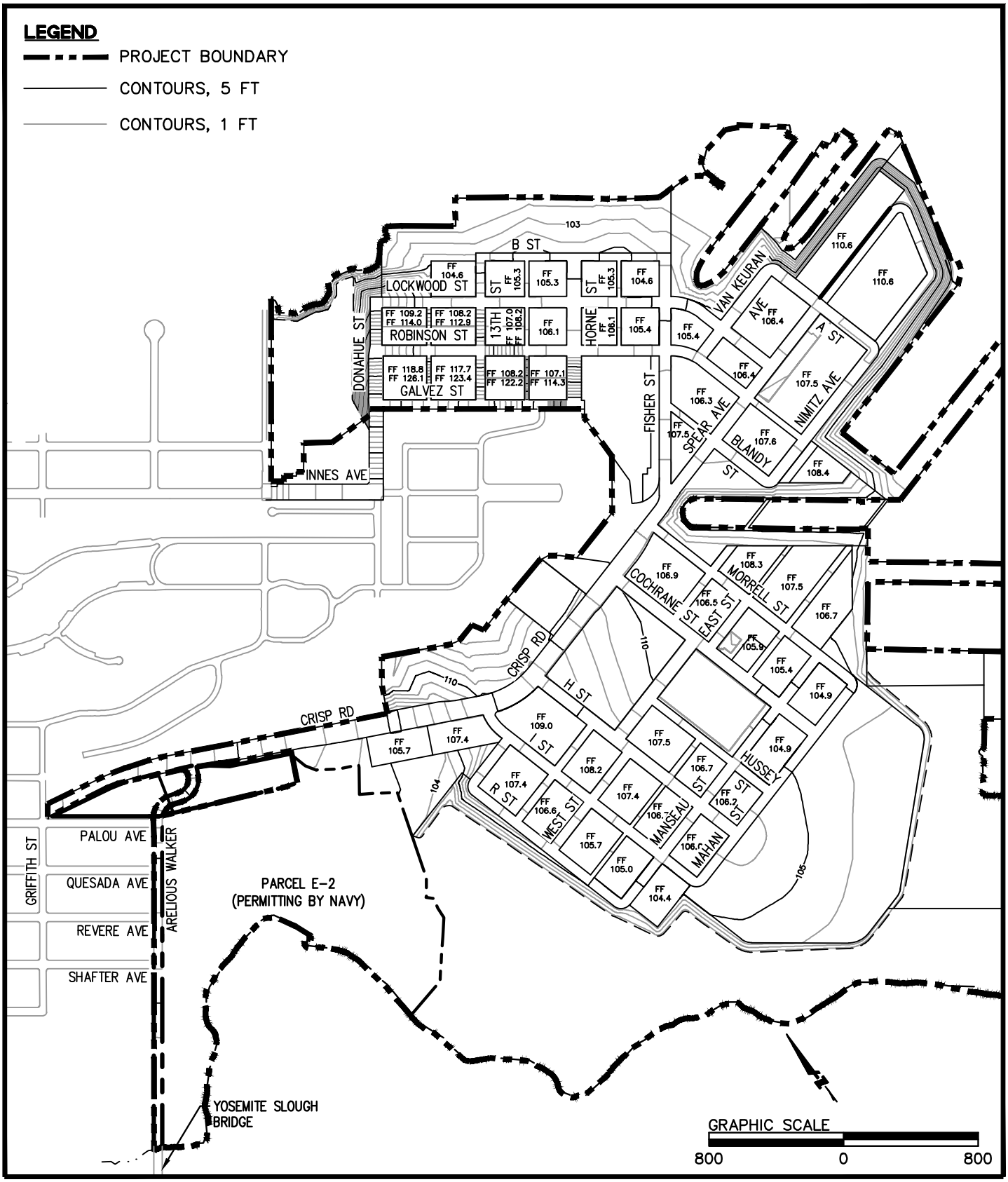
With respect to the Open Space Parcels, in addition to creating Developable Lots as set forth above, Developer shall also complete the surface improvements and utilities in accordance with the Park and Open Space Plan.

5.9 HILLPOINT PARK PATH

The Developer shall provide a pedestrian path from Hillpoint Park in the Hunters Point Shipyard Phase I area to the Spear / Crisp / Horne Street area as specified in California Senate Bill 792 and the Public Trust Exchange Agreement.

5.10 TRANSPORTATION MANAGEMENT SYSTEM

In conjunction with the roadway facilities and transportation improvements described herein, a transportation management system will be implemented. The system will allow for the coordination of signals at over 25 intersections in the Project area and surrounding area using fiber-optic or equivalent technology.

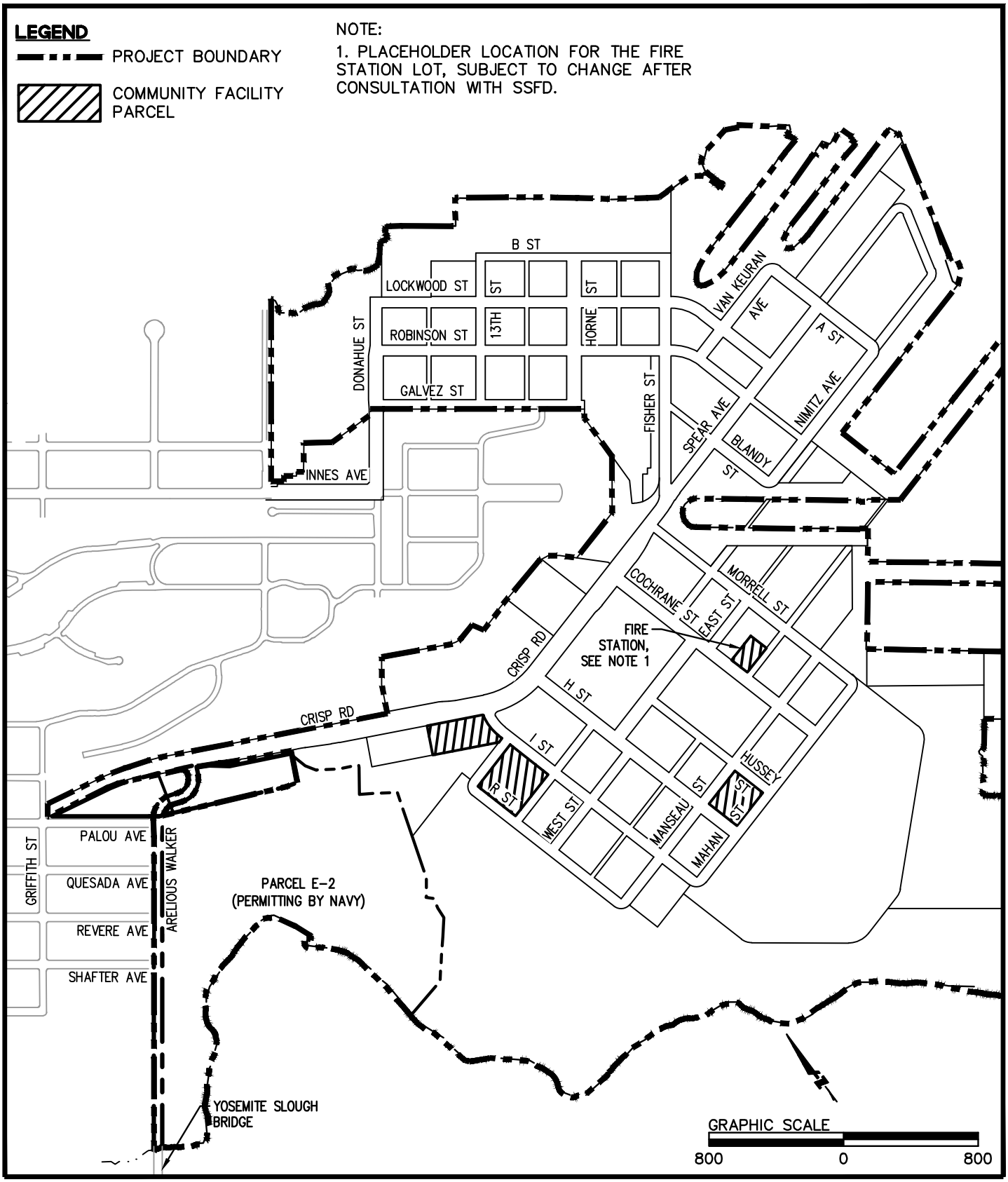


BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

PRELIMINARY SITE GRADING

FIGURE 5.6.1



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

COMMUNITY FACILITIES
LOT LOCATIONS

FIGURE
5.8.1

6. INFRASTRUCTURE PHASING METHODOLOGY

6.1. INFRASTRUCTURE PHASING

Infrastructure improvements will be constructed in accordance with the development phasing plan presented in the DDA. Improvements will be constructed in accordance with the Adjacency principle or based on cumulative development requirements as described more fully below.

6.1.1 ADJACENCY

Adjacency is a primary underlying principle of the phasing of improvements described in this HPS2 Area Infrastructure Plan, and unless otherwise specifically provided in the DDA and Plan Documents, Infrastructure will be constructed based on this principle. When development occurs in a Major Phase, Sub-Phase, or for a discrete portion of the development (Block) therein, the adjacent Infrastructure necessary for access and for utilities, such as streets (including Infrastructure Improvements therein, if any), curbs, gutters, sidewalks and open space will be constructed. Adjacent Infrastructure refers to Infrastructure which is near to and may share a common border or end point with a Major Phase, Sub-Phase or Block but which may not be immediately adjoining or contiguous with a Major Phase, Sub-Phase, or Block. Infrastructure will be constructed in accordance with the adjacency principle, unless other specific criteria described below applies.

Similarly, the construction of low pressure water, recycled water, storm drainage (including LID measures), sewer, and other utility facilities will be constructed as part of the roadway infrastructure. Infrastructure improvements necessary to make the utility facilities operable, whether located in the HPS2 Area or off-site, are required to be constructed in unison. Unless specifically agreed to otherwise, segments of adjacent infrastructure required for a Major Phase, Sub-Phase, or Block shall be no less than complete street sections (back of sidewalk to back of sidewalk) for at least one continuous block (intersection to intersection).

The conceptual limits of the existing Infrastructure to be demolished as well as conceptual layouts of the permanent and/or temporary infrastructure systems for each Development Parcel will be provided as part of the construction document submittals for that Development Parcel or Phase. Repairs and/or replacement of the existing facilities necessary to serve the Development Parcel will be designed and constructed by the Developer.

Proposed infrastructure improvements are anticipated to be constructed by the adjacency principle, with the exception of the following improvements:

- Development of Residential Blocks 6 and 9 - Construct Galvez Street adjacent to development and extend to existing artist buildings east of intersection with Horne Street.

6.1.2 CUMULATIVE DEVELOPMENT REQUIREMENTS

The second principle of Infrastructure phasing is "cumulative development requirements". Due to the effect of cumulative traffic growth, some key intersections or street segments may begin to reach congested conditions before development occurs on sites adjacent to those intersections or street segments, and before improvements would be constructed due to Adjacency.

Therefore, thresholds have been established for each applicable traffic Infrastructure improvement, based on the number of p.m. (evening) peak hour vehicle trips that are likely to cause one or more intersections in the HPS2 Area to deteriorate to unacceptable levels of service. As part of the review process for each Project, the number of p.m. peak hour vehicle trips generated will be estimated using the trip rates shown in Table 6.1.1, and added to the total calculated number of p.m. peak hour vehicle trips already generated by the developed portions of the CP/HPS2 Project, using the same trip rates. This number will determine which infrastructure Improvements must be implemented, other than those already required by the adjacency principle.

Table 6.1.1 Effective PM Peak Hour Vehicle Trip Generation Rates
Hunters Point Shipyard Phase 2

Land Use	Amount Provided	Unit	Effective PM Peak Hour Trip Generation Rate (Auto Trips Per Unit of Development)[a]
Residential	3,454	units	0.25
Neighborhood Retail	225	ksf	1.62
Regional Retail	100	ksf	5.81
Hotel	175	rooms	0.31
Community Services	50	ksf	1.33
Park	238	acres	0.03
R&D	4,265	ksf	0.33
Maker's Space	75	ksf	1.37
Artist Studios	255	ksf	0.19
School[b]	264	students	0.07

SOURCE: Fehr & Peers, 2017.

a. The effective rates are the total number of person trips forecasted to be generated by each use, with the mode split forecasts developed as part of the project's transportation impact study. The rates are based on the trip generation methodology used in the traffic analysis which includes reductions due to the Project's land use mix and estimated transit mode share. The number of auto trips generated per unit of development is dependent on both the size of development and the mix of uses proposed. As the project uses change, the vehicle trip generation rates per unit of development may not be constant. Thus, the rates presented in this table should be used cautiously.

b. The effective rate accounts for different school types (public and private) and a range in student grade (elementary through high school).

Tables 6.1.2 and 6.1.3 identify the street intersections and street segments Improvements, respectively, that are subject to cumulative development requirements and show the approximate amount of p.m. peak hour vehicle trips (or other metric, as applicable) that establish the need for each such Improvement. The number of p.m. peak hour vehicle trips shown in Tables 6.1.2 and 6.1.3 could result from a variety of project development schemes and land use combinations. The trip rates shown in Table 6.1.1 will be used to establish if a given mix of land use development requires Improvements to the street intersections and street segments listed in Tables 6.1.2 and 6.1.3, respectively.

Transit service improvements shall be gradually increased to anticipate development build-out as described in the Transit Operating Plan.

Table 6.1.2 Project Intersection Improvements

Hunters Point Shipyard Phase 2

Intersection	Improvements	Traffic Volume Trigger?[a]	Trigger[b]
Project Improvements			
Crisp Road / Arelious Walker Drive	New Traffic Signal	No	Construction of the Yosemite Slough Bridge / BRT
Crisp Road / Donahue Street	New Traffic Signal	No	Adjacency[c]
Crisp Road / H Street	New Traffic Signal	No	Adjacency[c]
Crisp Road / Cochrane Street	New Traffic Signal	No	Adjacency[c]
Crisp Road / Spear Avenue / Fisher Street	New Traffic Signal	No	Adjacency[c]
Spear Avenue / Robinson Street	New Traffic Signal	No	Adjacency[c]
Spear Avenue / Lockwood Street	New Traffic Signal	No	Adjacency[c]
Fisher Street / Robinson Street	New Traffic Signal	No	Adjacency[c]
Fisher Street / Lockwood Street	New Traffic Signal	No	Adjacency[c]
Robinson Street / Donahue Street	New Traffic Signal	No	Adjacency[c]
Innes Avenue / Donahue Street	New Traffic Signal	No	Sub-Phase HP-01
Palou Avenue / Griffith Street / Crisp Avenue	New Traffic Signal / Reconfiguration[d]	No	Sub-Phase HP-01
Palou Avenue / Hawes Street	New Traffic Signal	Yes	Sub-Phase HP-05
Palou Avenue / Ingalls Street	New Traffic Signal	Yes	Sub-Phase HP-05
Palou Avenue / Jennings Street	New Traffic Signal	Yes	Sub-Phase HP-05

Intersection	Improvements	Traffic Volume Trigger?[a]	Trigger[b]
Palou Avenue / Keith Street	New Traffic Signal	Yes	Sub-Phase HP-05
Palou Avenue / Lane Street	New Traffic Signal	Yes	Sub-Phase HP-05
Palou Avenue / Ingalls Street	New Traffic Signal	Yes	Sub-Phase HP-05
Ingalls Street / Carroll Avenue	New Traffic Signal / Reconfiguration[e]	Yes	Sub-Phase CP-04 (Approximately 3,200 PM Peak Hour Vehicle Trips (CP & HP)[i]
Ingalls Street / Thomas Avenue	New Traffic Signal / Reconfiguration[f]	Yes	Sub-Phase CP-04 (Approximately 3,200 PM Peak Hour Vehicle Trips (CP & HP)[i]
Hunters Point Boulevard / Evans Avenue / Jennings Street	New Traffic Signal / Reconfiguration[g]	No	Sub-Phase HP-01
Pennsylvania Avenue / 25th Street	New Traffic Signal	Yes	1,926 PM Peak Hour Vehicle Trips
Mitigation Measures			
Amador / Cargo / Illinois	Reconfiguration[h]	Yes	2,121 PM Peak Hour Vehicle Trips

SOURCE: Fehr & Peers, 2017

a. Assumes other background traffic increases as same rate as build-out of the Project.
b. Where multiple triggers are provided, the trigger shall be whichever event occurs first. When a Sub-Phase is listed as the trigger, the improvement shall be fully constructed and operational prior to occupancy of the Sub-Phase.
c. Intersection improvements, such as traffic signals, will be constructed with construction of roadway and/or intersection.
d. The Project will reconfigure the intersection based on traffic studies, on coordination and feedback from the SFMTA, and to conform to recently constructed improvements coordinated by SFDPW.
e. The Project will reconfigure Carroll Avenue to provide two travel lanes and a bicycle lane in each direction. This will allow for a shared left turn and through lane, and a shared through and right turn lane at both the east- and westbound approaches. The southbound approach will be reconfigured to allow for two approach lanes: a left turn lane, and a shared through and right turn lane. The reconfiguration of the southbound approach will require displacement of about 200 feet of on-street parking/loading on the west side of Ingalls Street.
f. The Project will reconfigure the westbound approach of Thomas Avenue to Ingalls Street to provide two lanes, a left turn lane, and a shared through and right turn lane. Thomas Avenue will be reconfigured to provide two travel lanes in each direction and on-street parking on both sides of the street.
g. The Project will reconfigure the existing three travel lanes on Evans Avenue in both the eastbound and westbound approaches to provide a shared through/left turn lane, a through lane, and a right turn lane. The Project will also reconfigure the southbound approach on Jennings Street to provide a southbound left turn pocket, a shared southbound through lane, and a right turn lane.
h. Reconfigure the southbound approach to the intersection to provide one dedicated left-turn lane and one dedicated right turn lane. City is currently evaluating the feasibility of this mitigation measure.
i. Combined total from CP and HP.

Table 6.1.3 Project Street Segment Improvements
Hunters Point Shipyard Phase 2

Intersection	Improvements	Traffic Volume Trigger[a]	Trigger
Project Improvement			
Palou Avenue, Griffith Avenue to Third Street	Resurface and Restripe, Streetscape Amenities	No	Sub-phase HP-05
Thomas Avenue, Ingalls Street to Griffith Street	Resurface and Restripe, Streetscape Amenities	Yes	Sub-phase HP-01 (Reconstruction of Crisp Avenue)
Griffith Street, Thomas Street to Palou Street	Resurface and Restripe, Streetscape Amenities	Yes	Sub-phase HP-01 (Reconstruction of Crisp Avenue)
Innes Avenue, Donahue Street to Earl Street	Resurface and Restripe, Streetscape Amenities	No	Sub-phase HP-01
Innes Avenue / Hunters Point Boulevard / Evans Street, Earl Street to Jennings Street	Resurface and Restripe, Streetscape Amenities	No	Sub-phase HP-01
Crisp Road, Palou Avenue to Fischer Street	Resurface, Restripe, Realign	No	Sub-phase HP-01
Mitigation Measures			
Palou Avenue, Crisp Avenue to Third Street	Narrow sidewalks to 12-feet, transit only lane in both directions	TBD	Supplemental study to determine if transit travel times have degraded
Evans Street, Jennings Street to Napoleon Street	Convert one lane in each direction to transit only	TBD	Supplemental study to determine if transit travel times have degraded
Third Street, Thomas Avenue to Kirkwood Avenue	Provide exclusive LRT right-of-way, remove parking as needed	TBD	Supplemental study to determine if transit travel times have degraded

SOURCE: Fehr & Peers, 2017

a. Assumes other background traffic increases as same rate as buildout of the Project.

Another type of Improvement subject to the cumulative development principle relates to overland flow facilities. As development in certain regions of the planning area increases, storm runoff due to increases in impervious land areas will also increase. Streets will often provide the drainage corridors for these flows, but it is possible that temporary or permanent drainage pipes, basins or swale corridors will need to be constructed in various locations in the HPS2 Area until ultimate drainage systems are completed.

6.2. Specific Additional Factors and Criteria Influencing Infrastructure Phasing

Several other factors or specific criteria will affect the timing and nature of Infrastructure construction. Except as provided below, the general phasing principles in this Section as well as those described in the DDA shall control the construction of Infrastructure Improvements.

6.2.1 Interim Operational Requirements

The interim operational requirements as described above in Sections 6.1 and 5.2 shall be provided as necessary to adequately serve a Major Phase or Project therein, until such time as the final or permanent Infrastructure Improvements are constructed. These interim Improvements may be removed and/or abandoned, as determined by the Department of Public Works, when the balance of development occurs.

6.2.2 Intersection & Street Segment Improvements

Intersection Improvements

Table 6.1.2 identifies the approximate levels of cumulative development that produces the number of vehicle trips to require the implementation of the HPS2 Area intersection Improvements at each intersection. Even if not required by the land use intensity threshold shown in Table 6.1.2, the principle of Adjacency will require the construction of intersection Improvements with development of an adjacent Project, regardless of the amount of overall cumulative development. In some cases, interim Improvements may be constructed until such time as the ultimate Improvements are warranted. Intersections will remain stop sign controlled until signal analysis criteria warrant signalization.

Street Segments

Table 6.1.3 identifies the approximate levels of cumulative development that would require the implementation of the HPS2 Area street segments Improvements. Even if not required by the land use intensity threshold shown in Table 6.1.3**,** the principle of Adjacency will require the construction of street segments with the development of an adjacent Project as described above.

6.2.3 Open Space

Timing of open space development will be delineated by the schedule of performance outlined in the DDA.

6.2.4 Interconnecting Infrastructure

The following interconnecting Infrastructure systems should be provided based upon cumulative development requirements as follows: low pressure water, recycled water, separated sanitary sewer, separated storm drainage, electric power facilities and joint trench utilities.

6.2.5 Northside Park

Subject to the Navy parcel conveyance schedule, installation of the stormwater treatment infrastructure serving the Hunter's Point Phase 1 Hilltop development shall be installed concurrently with the first Sub-Phase of Phase II Infrastructure development in Parcel B.

7. PROJECT ALTERNATIVES

7.1 ALTERNATIVE INFRASTRUCTURE UTILITIES

A number of alternative infrastructure utilities have been considered for the project, including district heating and cooling, automated waste collection, and on-site wastewater treatment. These systems have been evaluated for use on the project, but have not been formally adopted as of the date of this Infrastructure Plan. Upon mutual agreement between the City and the Developer, future implementation of any of these systems could be integrated into the project design as project approvals progress, subject to environmental review. The infrastructure plans presented in this Infrastructure Plan would not preclude the future implementation of any of these systems. Infrastructure facilities to provide for the generation of on-site non-potable water are required to comply with Article 12C of the San Francisco Health Code.

7.2 HISTORIC STRUCTURE PRESERVATION

7.2.1 HUNTERS POINT COMMERCIAL DRY DOCK AND NAVAL SHIPYARD HISTORIC DISTRICT

Dry Docks 2, 3, and 4, and four existing buildings (Buildings 140, 204, 205, and 207) in the Hunters Point Commercial Dry Dock and Naval Shipyard Historic District, as defined in the EIR, are identified as historic resources on the National Register of Historic Places. In addition, Buildings 208, 211, 224, 231 and 253 have been identified as being eligible for listing under the California Register of Historic Resources.

7.2.2 HISTORIC PRESERVATION STRATEGY

The Project and the Project Alternative both propose to stabilize and preserve Dry Docks 2, 3 and 4 and Buildings 140 and 205 consistent with the Secretary of Interior Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. In addition Buildings 204, 207, and 208 will be retained as features of the cultural landscape.

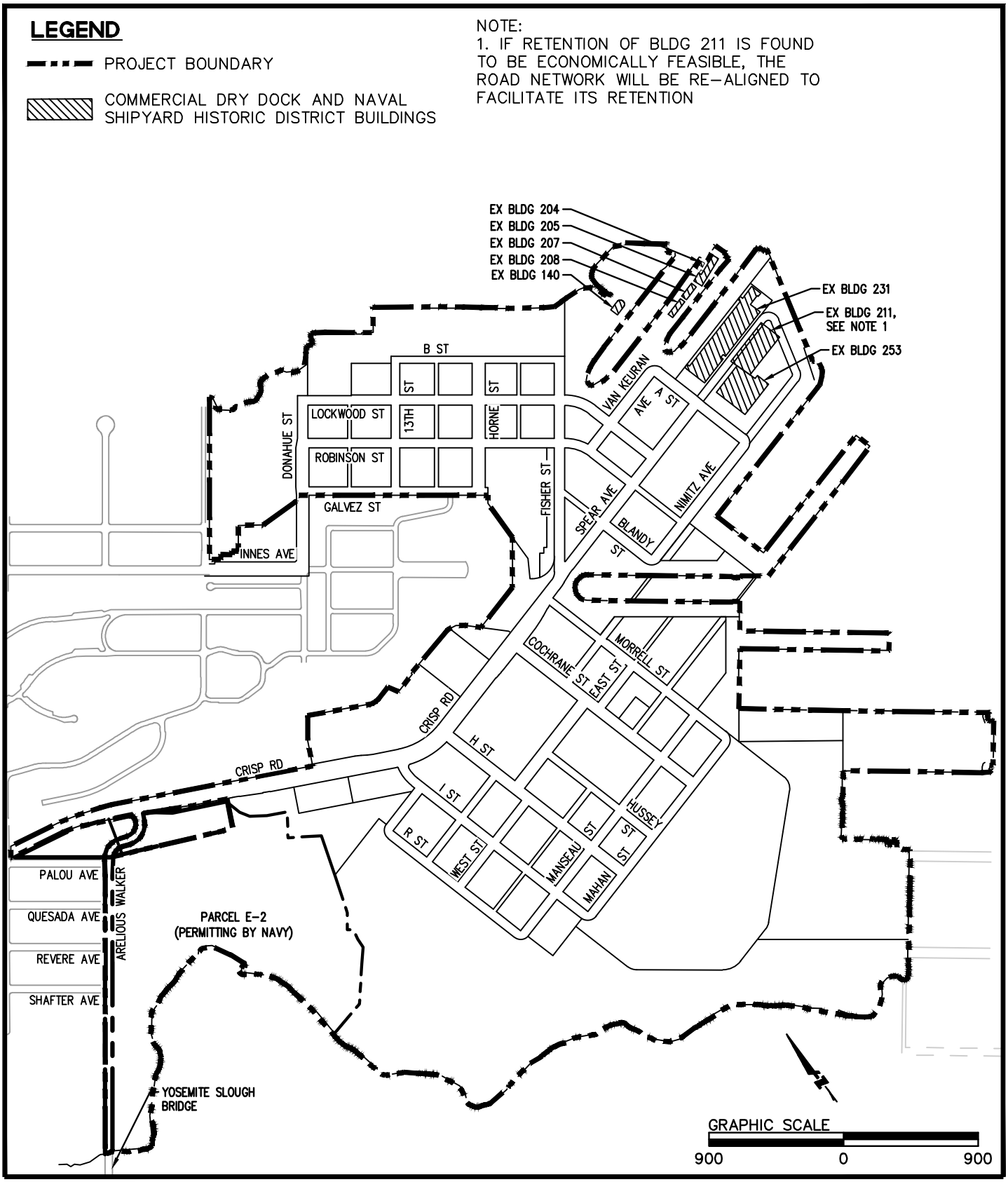
Per the DDA, the economic feasibility for rehabilitating Buildings 211, 224, 231 and 253 will be studied and determined prior to their development. Under the Project Alternative, four Navy buildings within the Shipyard R&D District will be considered for retention, subject to an economic and physical feasibility analysis that will be undertaken in conjunction with the selection of the Project Alternative. The four buildings considered for full or partial retention are Building 211, Building 224, Building 231, and Building 253. Refer to Figure 7.2.1 for the locations of the existing buildings proposed to remain, subject to economic feasibility, within the Commercial Dry Dock and Naval Shipyard Historic District.

Historic Buildings 211, 231 and 253 are proposed to remain with adjacent grades elevated above the existing finished floors to meeting grading requirements defined by Table X.1 in Attachment 4 within Appendix C of the Project Subdivision Regulations. Should economic studies associated with rehabilitating Buildings 211, 231 and 253 indicate that is not feasible to preserve the buildings or raise the grade adjacent to the buildings while maintaining the building(s) integrity, the project may pursue an alternative grading and drainage strategy that includes maintaining existing grades and revise the Hunters Point Shipyard Phase II Development Grading and Storm Drain System Master Plan for review and approval by the SFPUC.

7.3 Sea Level Rise Strategy

While improvements that are to be constructed as part of the HPS2 development are required to be a minimum of 66 inches above the existing base flood elevation to mitigate for SLR (as detailed in Section 3), all of the buildings in the proposed Historic District will remain at their current elevations, below this minimum criterion. The new development area will be accessed from the Historic District via a landscaped grading transition zone.

In addition to the SLR measures described in Section 3, barriers will be constructed to mitigate for SLR at the Historic District and to protect its buildings from flooding. The barriers will be designed to provide protection for up to 24 inches of SLR. To minimize the disruption of access and views from the Historic District to the shoreline, a higher level of protection will not be constructed during the initial phase of the project; however, an easement will be provided to allow future expansion of the barriers as needed to provide protection from more than 24 inches of future SLR as part of the AMP. Storm drainage improvements may be required to support implementation of the AMP. Such storm drain Improvements shall be constructed and financed by, or caused to be constructed and financed by, the entity responsible for implementing the AMP.



BKF 100+ YEARS
ENGINEERS . SURVEYORS . PLANNERS

HUNTERS POINT SHIPYARD
PHASE II DEVELOPMENT

COMMERCIAL DRY DOCK AND NAVAL SHIPYARD HISTORIC DISTRICT

FIGURE 7.2.1

PARKS & OPEN SPACE PLAN AMENDMENTS

SUMMARY

The Parks and Open Space Plan is Exhibit J of the HPS2/CP DDA, and complements the Infrastructure Plan in detailing Developer obligations to construct parks and open spaces in the Project area.

The proposed amendments to the Parks and Open Space Plan (the "Amendments") primarily relate to parks and open spaces in Hunters Point Shipyard Phase 2, but also include some changes to parks and open spaces in Candlestick Point. The Amendments have been reviewed by, and incorporate the comments of, staff of San Francisco Recreation and Park, the SFMTA, and the San Francisco Planning Department in addition to OCII staff.

Scenarios for parks and open space development are reduced from three to one. The current Parks and Open Space Plan contains three development scenarios: (1) a primary scenario including a stadium at Hunters Point Shipyard; (2) Non-Stadium Option 1 ("NS 1"), and (3) Non-Stadium Option 2 ("NS-2"). Scenarios NS-1 and NS-2 provide slightly different configurations of parks and open space, based on different options for configuring Project streets and development parcels. Because a stadium is no longer planned, and the Developer is now proposing only one scenario for the configuration of Project streets and development parcels, the Amendments proposed a single scenario for the development of parks and open spaces.

Areas for centralized treatment of stormwater are added to Northside Park, Waterfront Promenade North, the Community Sports Field Complex, and Grasslands Ecology Park. These will treat a mix of stormwater runoff from public rights of way and stormwater runoff from private parcels. They provide an alternative to treating stormwater in smaller, more numerous facilities located in streetscapes, reducing conflicts between such facilities and the placement of street trees and making it less likely that street trees will need to be removed during the course of detailed streetscape design. The centralized stormwater treatment areas will be publicly owned. The centralized stormwater treatment area in Northside Park will be maintained by the City; the maintenance of the centralized stormwater treatment areas in Waterfront Promenade North, the Community Sports Field Complex, and Grasslands Ecology Park will be a private responsibility of the Developer.

Parks in the southern part of Hunters Point Shipyard Phase 2 are reconfigured. As compared with the NS-1 Scenario of the current Parks and Open Space Plan, three parks are removed: Hunters Point Park Blocks (4.5 acres), Hunters Point Wedge Park (2.6 acres), and Innovation Plaza (2.1 acres). In the same general area, one large park is added: the Green Room (8.1 acres), which will be a privately owned open space accessible to the public.

Several changes are made to Water Room Plaza/Dry Dock 4, the park located at Dry Dock 4. Seating is placed along the edge of Dry Dock 4. A pedestrian and bicycle bridge crosses Dry Dock 4 at Nimitz Avenue, and a potential pedestrian bridge is identified which would cross Dry Dock 4 where it meets the Bay. A potential water taxi landing is identified in Dry Dock 4. Park space at the inland end of Dry Dock 4 is enlarged to create a rectangular plaza park of 7.3 acres called the Water Room, which includes a plaza, a café pavilion with restroom, a sculptural art figure, trees and native plant gardens.

Waterfront Promenade North, a shoreline park in the northern part of Hunters Point Shipyard Phase 2, is increased in size from 7.1 acres to 13.3 acres. This results from the conversion of approximately five blocks

from vertical development parcels to part of Waterfront Promenade North. Much of the additional area is devoted to areas for centralized treatment of stormwater.

The Community Sports Field Complex is reconfigured. Under the NS-1 Scenario of the current Parks and Open Space Plan, the sports fields in the Community Sports Field Complex were located along the southwest edge of the development parcels. They are now placed further to the southeast, along the southern edge of the development parcels. Two parts of the Community Sports Field Complex are now treated as separate parks: the Multi-Use Open Space and the Maintenance Yard. The total area of these open spaces has decreased from 63.1 acres to 54.7 acres. The number of baseball fields (four) and large multi-use fields (four) remains the same. Small multi-use fields are reduced from three to two; the area of the third field is converted to an area for sports courts, to be determined in future design stages.

Grasslands Ecology Park is increased in size from 82.1 acres to 106.8 acres.

The Shipyard Hillside Open Space concept design has been refined and made more detailed. A pedestrian route in this park was previously identified, traversing the hillside between Crisp Road and Hillpoint Park, but the concept design was not detailed. A more detailed design is now proposed, consisting of two parallel staircases about 140 feet apart, with a series of ramps zig-zagging up the hill between the staircases, and accompanying landscape improvements.

Several park designs are updated to reflect design changes that have been made by the Developer in collaboration with OCII and other City departments in the course of park design review and community engagement processes. A Muni operators' restroom and a PUC pump station are added to Bayview Gardens/Wedge Park at Candlestick Point. A centralized stormwater treatment facility located in Mini-Wedge Park at Candlestick Point is reconfigured to facilitate maintenance and to allow a dog run, a children's play area, and a lawn in that park to be co-located for user convenience. Following consultation with OCII and community stakeholders, the Alice Griffith Community Garden is relocated to the Hillside Open Space at Candlestick Point. Alice Griffith Neighborhood Park is reconfigured so that the park's active uses (a children's play area, a dog run, and a basketball court) are co-located and the basketball court is reduced in size to a half court. The acreage of several parks at Candlestick Point (Bayview Gardens/Wedge Park and Mini-Wedge Park) is updated to reflect more accurate measurements of park area established by the enactment of Vesting Tentative Subdivision Map No. 7878 in 2014.

In addition to the significant changes noted here, assorted changes are made reflecting design collaboration between OCII, City departments, and the Developer. Other changes not directly impacting parks and open space are made so that Parks and Open Space Plan content conforms to updated development proposals by the Developer which are detailed primarily in other Project documents, including the Transportation Plan and the Infrastructure Plan.

As a net result of the changes detailed above, as compared with the NS-1 scenario of the current Parks and Open Space Plan, parks and open space acreage at Hunters Point Hunters Point Shipyard Phase 2 would be increased by 9.8 acres, from 222.2 acres to 232.0 acres; and parks and open space acreage at Candlestick Point would be increased by 0.9 acres, from 104.8 acres to 105.7 acres.

DETAILED AMENDMENT OVERVIEW

General Amendments

- The current Parks and Open Space Plan presents three scenarios for parks and open spaces: the Stadium option, Non-Stadium Option 1 (NS-1), and Non-Stadium Option 2 (NS-2). Because a stadium is no longer planned, the proposed Amendments present a single scenario for parks and open spaces.
- References to the stadium are removed from the document.
- State Trust boundaries have been revised.
- Boulevard Parks have been removed from the park system and are now part of the public right-of-way (ROW).
- The Green Room has been added to the HPS project. It will be a privately owned public open space (POPOS).
- The 2010 Waterfront Promenade South park has been broken up into 3 parks: Waterfront Promenade South – North Pier, Water Room Plaza / Dry Dock 4, and Waterfront Promenade South – South Pier.
- Community Sports Field Complex was relocated to the southern side of the development parcels in the southern part of Hunters Point Shipyard Phase 2.
- Hunters Point Park Blocks was removed. The programming in this park was relocated to the Green Room and other HPS parks.
- Hunters Point Wedge Park was removed. The programming in this park was relocated to the Green Room and other HPS parks.
- Innovation Plaza was removed. The programming in this park was relocated to the Green Room and other HPS parks.
- The Shipyard Hillside Open Space (SHOS) is now classified under *Community Parks* and has its own section, removing it from the section Hillside Open Space where it was classified under *Habitat & Ecology Parks*.
- New centralized stormwater treatment areas are located in Northside Park, Waterfront Promenade North, Community Sports Fields Complex, and Grasslands Ecology Park.
- As with other elements of the Project, parks and open spaces are to be constructed in three Major Phases, reduced from four Major Phases under the currently approved Project documents.

Northside Park

- In collaboration with OCII and Recreation and Park Department staff, the Developer has completed community engagement on the park design, and plans to submit the Schematic Design Application in the coming months.
- The proposed design contains three multi-use courts and two informal/active open spaces, revised from the current design which contains three tennis courts and three basketball courts.
- Centralized stormwater treatment areas added.

Waterfront Promenade North

- Centralized stormwater treatment area added. Treatment areas will be publicly owned and accessible but privately maintained.
- Added two dog runs.
- Added a tot lot.
- Added an exercise area.
- Open lawn reconfigured and located in the center of park

Horne Boulevard Parks

- The Horne Boulevard Parks are now part of the public right-of-way and are no longer part of the HPS park network.

Cultural Heritage Park

- Added an exercise area.

Waterfront Promenade South – North Pier

- Added an exercise area.
- Added a dog run.

Water Room Plaza / Dry Dock 4

- Enlarged park space at the inland end of Dry Dock 4 to create a plaza (Water Room)
- Added amphitheater seating around Dry Dock 4.
- Added a pedestrian and bike bridge across Dry Dock 4.
- Added a potential pedestrian bridge at the end of Dry Dock 4, pending feasibility.
- Added a water taxi landing in Dry Dock 4, pending feasibility.
- Added a sculptural art feature at the Dry Dock 4 plaza.

Waterfront Promenade South – South Pier

- Added an exercise area.

Waterfront Recreation and Education Park

- Relocated the Bay Nature Interpretive Play here from the Grasslands Ecology Park.

Re-gunning Crane Pier Habitats

- No programming revisions were made to the Re-gunning Crane Pier Habitats.

Multi-use Open Space

- Added an exercise area.
- Added a dog run.
- Relocated ornamental gardens here from the Waterfront Recreation and Education Park.

Community Sports Field Complex

- Centralized stormwater treatment area added. Will be publicly owned and accessible but privately maintained.
- Replaced a small soccer field with a flexible sport court area, use to be determined during schematic design.
- Added a parking lot.

Grasslands Ecology Park

- Centralized stormwater treatment area added. Treatment areas will be publicly owned and accessible but privately maintained.
- Added a dog park.
- Added a dog run.
- Relocated a children's play area here from the 2010 Plan's Hunters Point Park Blocks.
- Relocated two tennis courts and one basketball court here from the 2010 Plan's Hunters Point Park Blocks.

Maintenance Yard

- No programming revisions were made to the Maintenance Yard.

Green Room

- This new privately owned public open space (POPOS) includes programming previously located in the HP Park Blocks, HP Wedge Park, and Innovation Plaza.

Shipyard Hillside Open Space

- Added an overlook terrace.
- Added ADA accessible ramps and stairs.

Parks, Open Space, and Habitat Concept Plan

Candlestick Point and Hunters Point Shipyard Phase II
San Francisco, CA

DRAFT
March 29, 2018

FIVEPOINT™

Approved by Office of Community Investment and Infrastructure
Resolution No. xx-xxxx
xxxx, 2010

Cover image: View from The Neck area of the Candlestick Point State Recreation Area

Contents

Vision 6
Plan Highlights 8

Introduction

Background 13
- 2018 Amendment 13
- Purpose of the Document 13
- Project Summary 13
- Setting 13
- Planning Background and Development Program 15

Existing Resources & Setting 17

Natural & Cultural Resources 17
- Land, Water, and Climate 17
- Vegetation and Wildlife 19
- History and Culture 22

Candlestick Point and Hunters Point Shipyard Today 24
- Current Ownership and Land Uses 24
- Access 32
- Parks and Recreation 35

Planning Issues & Concerns 40
- Habitat and Ecology 40
- History and Culture 40
- Programming and Partnerships 42
- State Trust 43
- Sea Level Rise 44
- Hazardous Material Clean-up 45
- Relationship of this Plan with other Project Plans 45
  - Sustainability 45
  - Urban Design 45
  - Transportation & Streetscape 45
  - Utilities & Infrastructure 45

The Proposal

The Park System 47

Goals and Principles 47

Park & Open Space Framework 49
- Community Parks 49
- Cultural / Heritage Parks 49
- Waterfront Promenades 49
- Sports & Multi-Use Fields 49
- Habitat & Ecology Parks 49

Privately Owned Public Open Spaces (POPOS) 51
Centralized Stormwater Treatment Parcel 51
Boulevard Parks & Streetscapes 51
State Recreation Area 51
Bay Trail 51

The Parks 52

Hunters Point Shipyard 54
Northside Park 54
Waterfront Promenade North 58
Cultural Heritage Park 62
Waterfront Promenade South - North Pier 66
Water Room Plaza / Dry Dock 4 70
Waterfront Promenade South - South Pier 74
Waterfront Recreation and Education Park 78
Re-gunning Crane Pier Habitats 82
Multi-Use Open Space 86
Community Sports Field Complex 90
Grasslands Ecology Park 94
Maintenance Yard 98
Green Room 102
Shipyard Hillside Open Space 106
Alice Griffith Neighborhood Park 110
Candlestick Point North Neighborhood Park 114
Wedge Park 118
Mini-Wedge Park 122
Bayview Hillside Open Space 126
Candlestick Point State Recreation Area 132

Ecology & Habitat 138

Park & Shoreline Access Improvements 145

Sea Level Rise Strategy 149

Materials & Elements 151
Planting 151
Materials 151
Furnishings 151
Hunters Point Shipyard Furnishings & Materials Aesthetic 152
Candlestick Point Furnishings & Materials Aesthetic 153
Centralized Stormwater Treatment 154

Phasing 155

Acknowledgements 157

Vision

Candlestick Point and Hunters Point Shipyard—long-neglected and under-utilized lands—will soon be transformed by new neighborhoods and land uses. Key to the plan is an exceptional park system that provides amenities for the existing and new communities and links the life of the City with the ecological and experiential qualities of the Bay. Inspired by people and place, the park system integrates social and ecological factors to support a just, livable, and sustainable urban environment that reflects the full diversity of community members and users.

View from the Last Rubble area of the Candlestick Point State Recreation Area

Plan Highlights

Extensive Parkland

Approximately 340 acres will be dedicated to new and improved parks, open space, and habitat areas. These areas cover nearly half the site's acreage and represent San Francisco's largest park development since Golden Gate Park.

Neighborhood Parks

New neighborhood parks will serve existing and future neighborhood residents with places for community gathering and a broad range of outdoor recreation and leisure activities.

Sports Field Complex

A new Community Sports Field Complex will help to meet the City's unmet demand for lit sports fields. The sports fields will accommodate youth, high-school, and adult field sports and will be able to host regional tournaments.

Cultural Heritage Park

The Heritage Park will relate the history of Hunters Point to visitors from throughout the Bay Area and beyond. Historic buildings will be retained and may be used as museum spaces.

Trails Network

The San Francisco Bay Trail / San Francisco Blue Greenway will provide a continuous recreational multi-use trail along the Candlestick and Hunters Point waterfront filling a gap in the regional network planned to eventually encircle the entire Bay. Similarly, kayak and windsurf launch points will enhance access to the regionally-planned Bay Area Water Trail. For commuters and neighborhood cyclists, a secondary network of off-street multi-use trails will link parks and neighborhoods with the on-street bicycle network.

Candlestick Point State Recreation Area

Major renovation of the Candlestick Point State Recreation Area will transform it into the "Crissy Field" of southeast San Francisco with restored habitat areas and public access to the Bay.

Habitat Enhancements

New parks, open space, and habitat restoration areas will support the biodiversity and ecology of the San Francisco Bay shoreline. The plan features new native grasslands, wetlands, extensive planting of native trees and shrubs, and a net removal of bay fill.

Green Infrastructure and Urban Sustainability

Parks and open space will be designed as "green infrastructure" integrating urban design and infrastructure with natural systems. Elements of this system include, ecological stormwater treatment systems, and streetside and boulevard parks.

Parks, Open Space, and Habitat Concept Plan

Proposed Parks and Open Space

		Acres
	HUNTERS POINT SHIPYARD PHASE II	
	New Parks	
1	Northside Park	12.8
2	Waterfront Promenade North	13.3
3	Cultural Heritage Park	15.5
4	Waterfront Promenade South - North Pier	10.5
5	Water Room Plaza / Dry Dock 4	7.3
6	Waterfront Promenade South - South Pier	5.3
7	Grasslands Ecology Park	106.8
8	Shipyard Hillside Open Space	2.4
	Subtotal	173.9
	New Sports Fields and Active Urban Recreation	
9	Community Sports Fields Complex	28.7
10	Waterfront Recreation & Education Park	3.4
11	Multi-use Open Space	20.5
12	Maintenance Yard	5.5
	Subtotal	58.1
	Total	***232.0***
	CANDLESTICK POINT	
	New Parks	
13	Alice Griffith Neighborhood Park	1.4
14	Candlestick Point North Neighborhood Park	3.1
15	Wedge Park	3.7
16	Mini-Wedge Park	0.8
	Subtotal	9.0
	New and Improved State Parkland (CPSRA)[a]	
17	Last Port (includes 0.4 acres of new State Parkland)	14.6
18	The Neck (includes 3.8 acres of new State Parkland)	4.9
19	The Heart of the Park (includes 1.5 acres of new State Parkland)	15.4
20	The Point	6.1
21	Wind Meadow	11.4
22	The Last Rubble	24.5
23	Bayview Gardens	9.5
24	Grasslands South	10.3
	Subtotal	96.7
	Total	***105.7***
	Other Parks & Open Space (*excluded from Total Acreage)	
25	Regunning Crane Pier Habitats	9.2
26	Green Room (Privately owned, publicly accessible)	8.1
27	Bayview Hillside Open Space	7.1
28	Yosemite Slough - Wetland Restoration	34.0
	Subtotal	58.4
	TOTAL PARKS AND OPEN SPACE	
	New Parks	182.9
	New Sports Fields and Active Urban Recreation	58.1
	New and Improved State Parkland	96.7
	Total	***337.7***

a. The 120.2-acre State Parkland within the CP-HPS Project Area would be reduced by 29.2 acres, and increased by 5.7 acres for a net reduction of 23.5 acres. The Neck, The Heart of the Park, and The Last Port are the three locations where new State Parkland would be added.
b. Total park and open space acreage includes the acreage associated with centralized stormwater treatment facilities and associated infrastructure.

Proposed Parks and Open Space

Introduction

Background

2018 Amendment

In 2018, the urban design and land use plan for the Hunters Point Shipyard was re-configured in order to potentially preserve and adaptively re-use a greater number of existing buildings. As a part of this change, updates were made to the parks and open space system at the Shipyard.

Purpose of the Document

The purpose of this document is to describe the intent of the parks and open space system of the Candlestick Point and Hunters Point Shipyard Phase II development project. Building on the *Candlestick Point/Hunters Point Shipyard Phase II Urban Design Plan*, the *Parks, Open Space, and Habitat Concept Plan* highlights aesthetic, social, recreational, and ecological opportunities and provides a framework for public parks, open spaces, and natural areas. This Plan is consistent with the analysis of environmental impacts provided in the 2010 *Candlestick Point-Hunters Point Shipyard Phase II Environmental Impact Report* and subsequent Addenda thereto (FEIR), including the Mitigation Monitoring and Reporting Program adopted together with the FEIR. This plan has been approved by the San Francisco Office of Community Investment and Infrastructure and attached as part of the Disposition and Development Agreement between the Office of Community Investment and Infrastructure, and CP Development Co., LLC.

Project Summary

The proposed Candlestick Point and Hunters Point Shipyard Phase II development project (CP-HPS2) is a 702-acre master-planned urban infill project proposed in the southeastern waterfront of San Francisco. The proposed development envisions two neighborhoods (Candlestick Point and Hunters Point Phase II) including housing, commercial, retail and R&D/office uses along with approximately 340 acres of parks and open space. Adjoining the existing Bayview and Hunters Point neighborhoods and bounded by San Francisco Bay, the plan emphasizes an extensive parks and open space system, including waterfront parks and trails along approximately 9 miles of shoreline.

Project vicinity

Setting

The Candlestick Point and Hunters Point Shipyard project site is located at the southeastern corner of the City and County of San Francisco, bounded by the San Francisco Bay to the east, India Basin to the north, Bayview Hill Park to the south, and the Hunters Point/Bayview community to the west. The site is the former location of Candlestick Park (the home of the San Francisco 49ers),

Project area and Bayview / Hunters Point neighborhood area

N

0' 2000'

Scale: 1" = 2000'

Candlestick Park State Recreation Area and the former Hunters Point Naval Shipyards. The site is located in close proximity to Highway 101 (Bayshore Freeway) and is approximately 8 miles from downtown San Francisco.

Four major site adjacencies inform the future development of the Shipyard & Candlestick Point site. To the west, the Bayview Hunters Point neighborhood is a predominantly residential and industrial area and home to a diverse and transitioning population. The neighborhood grew dramatically during the Second World War, as predominantly African American workers came to the shipyard for Navy-related jobs. The area has historically been under serviced.

To the east, the San Francisco Bay creates a well-defined natural edge to the project area.

Finally, both the Bayview Hill, and Hunters Point Hill create unique geographical limits to development. Much of Bayview Hill is a city park, with a trail that winds to the top overlooking the entire site. Hunters Point Hill is currently being developed as both the Hilltop and Hillside Phase I developments of Hunters Point Shipyard. The southeastern portion of the Hunters Point Hill is currently being developed as a park, which will link into the proposed Shipyard Phase II development.

Planning Background and Development Program

The City's plan to revitalize the Hunters Point Shipyard and Candlestick Point is one of the most important development projects in the City's modern history because of both its scale and the scope of public benefits that it will deliver to an under-served community. For more than 30 years, both of these largely abandoned sites have done little to benefit the Bayview Hunters Point community or the City.

After more than a decade of planning efforts relating to these sites, in 2010 the then San Francisco Redevelopment Agency Commission and the City approved amendments to the Hunters Point Shipyard Redevelopment Plan and Bayview Hunters Point Redevelopment Plan, and the Redevelopment Agency and CP Development Co., LP entered into a Disposition and Development Agreement (DDA) and related documents implementing the proposed development program. Since that time, the Redevelopment Agency has been dissolved pursuant to state law and replaced by OCII, and the development program initially adopted in 2010 has been modified to accommodate the off-site relocation of the proposed NFL stadium included in the 2010 preferred development program. OCII, the City and CP Development Co., LLC have entered into an amendment to the DDA and related documents, and OCII and the City have approved further amendments to the Redevelopment Plans and related documents, both implementing a non-stadium revised development program for the two sites. This development program remains consistent with the community-based "Conceptual Framework" for the integrated redevelopment of the two sites adopted in 2007 and Proposition G, the Bayview Jobs, Parks and Housing Initiative adopted in 2008 by San Francisco voters. The revised development program encompasses the following elements:

- Housing: Approximately 10,672 units throughout the site, including a mix of rental and for-sale homes, both below market-rate (about 32%) and market-rate. The affordable units will be built largely by the City's Redevelopment Agency to serve very-low to moderate-income households.
- Reconstruction of the Alice Griffith Public Housing Development: This project will provide one-for-one replacement of existing units and will serve the same income levels as the current residents. This will ensure that eligible Alice Griffith occupants have the opportunity to move into new units.
- Research and Development / Office Space: Approximately 4.3 million square feet of research and development space is proposed for the Shipyard. Approximately 150,000 sq. ft. of office space is proposed on Candlestick Point.
- Regionally-focused retail: Approximately 635,000 sq. ft. on Candlestick Point and 100,000 sq. ft. on the Shipyard.
- Neighborhood-focused retail: Approximately 226,000 sq. ft. on the Shipyard, including a retail town center, as well as an additional 125,000 sq. ft. on Candlestick Point.
- Maker Space: Approximately 75,000 sq. ft. on the Shipyard.
- Hotel: 150,000 sq. ft. (220 rooms) on Candlestick Point and 120,000 sf. ft. (175 rooms) on the Shipyard.
- Institutional Space: Approximately 410,000 sq. ft. of institutional space on the Shipyard.
- Artist studio space: Permanent new and renovated space for Shipyard artists.
- Community Use: 50,000 sq. ft. of community use space on both Candlestick Point and the Shipyard.
- Parks: Approximately 340 acres of new and restored parks, open space and wildlife habitat.
- Marina: 300 slips on the Shipyard.
- Performance space: 75,000 sq. ft. of venue space on Candlestick Point.

Existing Resources & Setting

The places we know today as Candlestick Point and Hunters Point Shipyard have been shaped by many factors – both natural and cultural. These existing resources inform the development plan which seizes the extraordinary opportunity for new and improved parks, open space, and habitat restoration.

Geology & groundwater basins, circa 1850
Source: Creek & Watershed Map of San Francisco, SFPUC

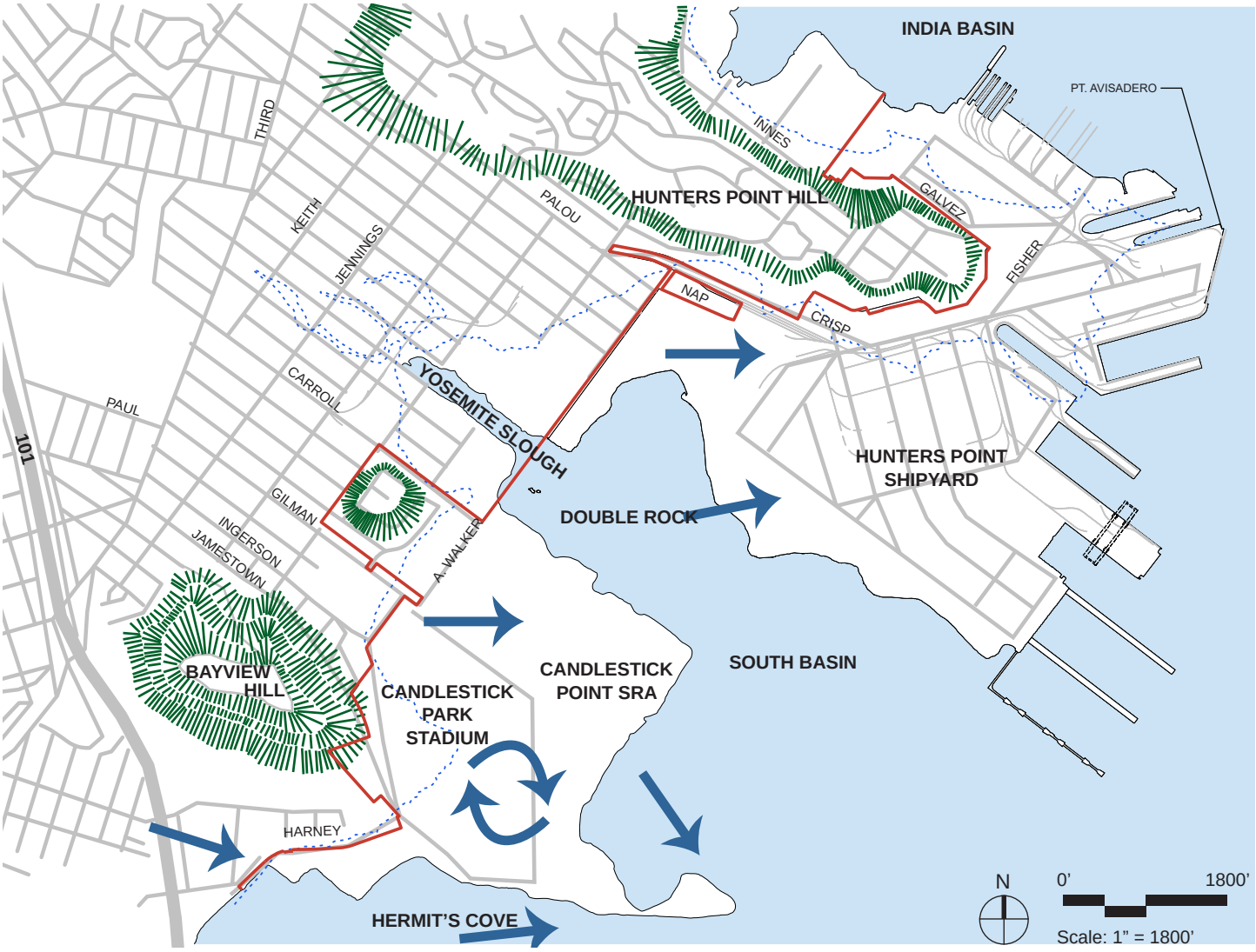
Natural & Cultural Resources

Land, Water, and Climate

Like many San Francisco neighborhoods, Candlestick Point and Hunters Point Shipyard are strongly defined by dramatic hills and the water's edge. Candlestick Point and Hunters Point are each peninsulas jutting out into the San Francisco Bay. Much of the area is bay fill surrounding the natural promontories of Bayview Hill and Hunters Point Hill. The fill areas are relatively flat and close to sea level. Bayview Hill, at over 400 feet above sea level is the most significant topographical feature in the southeast portion of the city. The south end of Hunters Point Hill rises to approximately 120 feet above sea level.

San Francisco historic map, 1860
Source: Creek & Watershed Map of San Francisco, SFPUC

Natural Features – Land, Water, & Wind

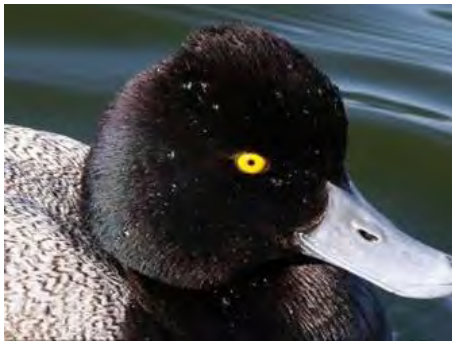


LEGEND

- Project Boundary
- Historic Shoreline
- Adjacent Landforms with Steep Slopes over 3:1
- Water
- Predominant Winds

Candlestick Point grasslands

California ground squirrel



Lesser scaup

Between these peninsulas lies an open water area known as the South Basin. Yosemite Slough extends west of the South Basin and is the largest remnant of the extensive wetlands that existed along San Francisco's eastern shore prior to filling and urbanization. A small rock island called Double Rock sits at the southwest end of the South Basin near the mouth of Yosemite Slough.

The flatter lands of the site were largely constructed by filling of the Bay. The shoreline is a major defining element of the site and is currently a mix of natural areas, most of which are part of the Candlestick Point State Recreation Area and industrial waterfront areas that are a remnant of the previous shipbuilding and naval activities of Hunters Point.

The form of the landscape contributes to the specific micro-climates – the south end of Candlestick Point is renowned for its winds which are funneled through gaps in the hills to the west. Hunters Point is more protected and is one of the warmer parts of the City.

Vegetation and Wildlife

Much of Candlestick Point and Hunters Point Shipyard are urbanized, and the areas with the most natural vegetation and wildlife use are at the Candlestick Point State Recreation Area and the South Basin.

Candlestick Point State Recreation Area

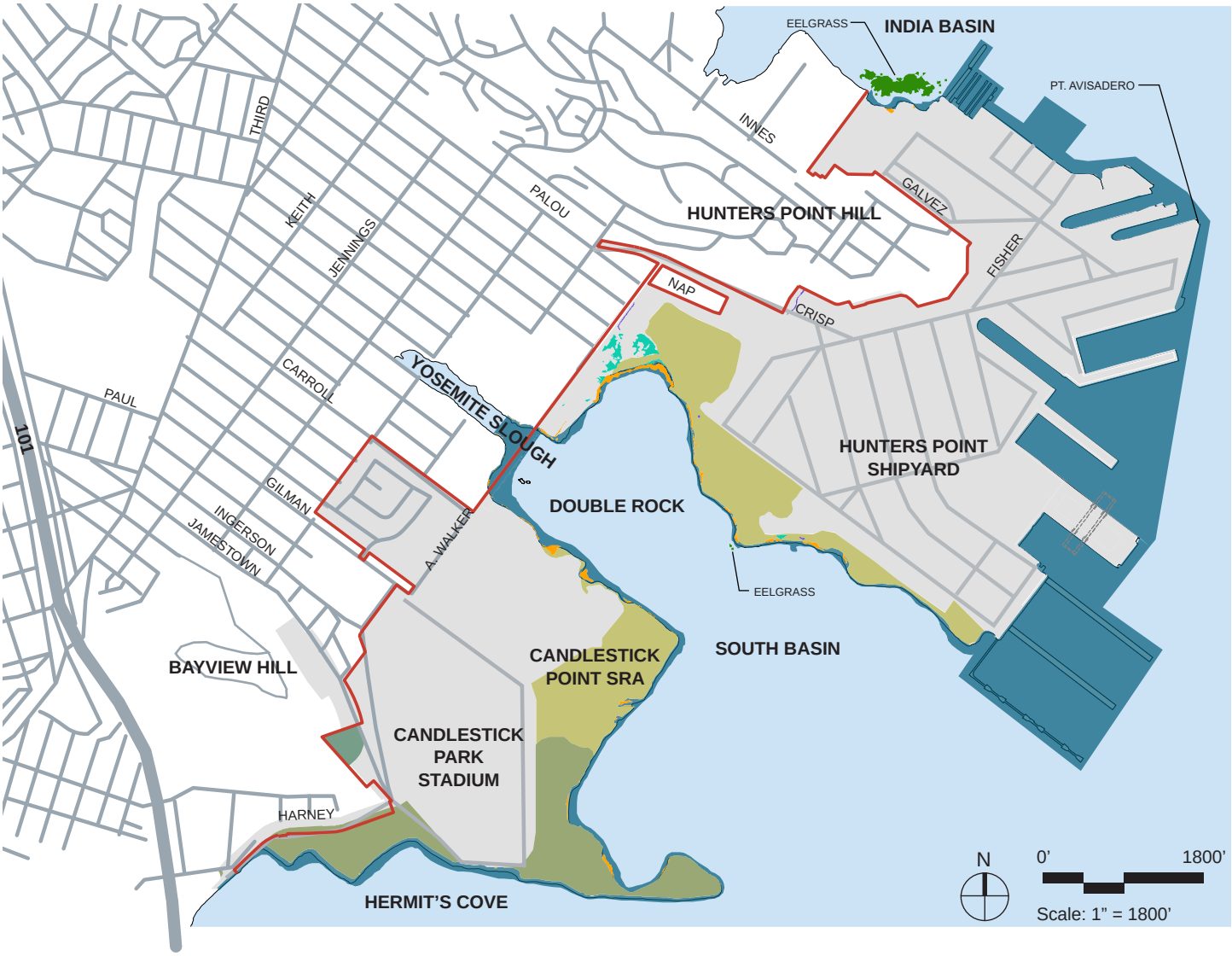
Trees at the Candlestick Point State Recreation Area, mostly Monterey Pine and Monterey Cypress, provide nesting and foraging habitat for birds. The majority of birds nesting in these trees are common, urban-adapted species. During spring and fall, small numbers of migrant songbirds have been recorded foraging in these trees. California ground squirrels are common in the ruderal (human-disturbed) habitats at Candlestick Point, and the surrounding waters provide foraging habitat for grebes, ducks, gulls, terns, double-crested cormorants, and California brown pelicans.

South Basin

The South Basin provides aquatic foraging and loafing habitat for a number of waterbird species. Ducks, such as surf scoters, greater scaup, and lesser scaup, dive for shellfish and other benthic (bay-bottom) organisms, while western grebes, Clark's grebes, double-crested cormorants, California brown

View near mouth of Yosemite Slough and South Basin with Double Rock Island

Study Area Habitats Map



LEGEND

- Project Boundary
- Fresh Water Wetland
- Nontidal Salt Marsh
- Tidal Salt Marsh
- Landscaped/Ornamental
- Non-Native Annual Grassland
- Non-Native Forest and Shrub
- Urban
- Mudflats / Open Water
- Eelgrass
- NAP Not-a-Part

Tidal wetland at the Shipyard, north of Yosemite Slough

Brown pelican

East side of Bayview Hill

pelicans, and Caspian terns hunt for fish in these waters. Great blue herons and snowy egrets forage in the shallows. Intertidal mudflats are limited in extent, and occur primarily near the mouth of Yosemite Slough. These mudflats provide foraging habitat for many of the same shorebird species occurring in Yosemite Slough.

The small island known as “Double Rock” in the northwestern part of South Basin supports 10-15 pairs of nesting western gulls. Black oystercatchers forage, and may nest, on this island, and they feed on small rocky islands elsewhere along the edge of South Basin as well. Due to the presence of riprap and other debris along most of the shore of South Basin, beaches and tidal marsh are limited to small remnants. A few areas of tidal marsh, the broadest being along the Hunters Point shoreline north of the mouth of Yosemite Slough, are dominated by cordgrass, pickleweed, and marsh gumplant. These marsh remnants provide habitat for terrestrial garter snakes and foraging habitat for shorebirds and wading birds, but they are too small and isolated to support marsh-nesting species such as California clapper rails, salt marsh harvest mice, San Francisco common yellowthroats, and Alameda song sparrows.

Bayview Hill

Above the project site, Bayview Hill contains a diverse array of habitats such as grasslands, shrub and tree-dominated areas, and a large number of sensitive plant species. The area provides wildlife habitat for a variety of resident and migratory bird species, as well as reptiles, mammals, and amphibians. It is also home to one of only a few populations of the endangered mission blue butterfly. Bayview Hill has been identified as an important natural area and is managed under the SF Department of Parks and Recreation’s Natural Areas Program. A small portion of Bayview Hill’s southwestern slope (2.3 acres of the park’s 44 acre total) is within the CP-HPS project area. This area has been significantly graded with quarry faces and terraces with thin, rocky soils over bedrock, with stands of non-native, invasive blue gum eucalyptus and french broom. The lowest portion of the site contains a small parking area.

History and Culture

The Candlestick Point and Hunters Point Shipyard area has a rich history and a diversity of people have lived and worked here at the Bay's edge. The earliest known human presence in the Bay Area began nearly 12,000 years ago, and in the San Francisco area, nearly 6,000 years ago. The most common physical evidence of early indigenous culture is found in shellmounds, sites typically located at the Bay's edge near the mouth of streams where a variety of plant and animal resources were abundant. When the first Europeans arrived in the Bay Area, the project area was within the traditional territory of the indigenous Ohlone people.

When European settlement at Candlestick and Hunters Point began in the late 1840s/early 1950s the areas were primarily used as pastureland. The 1849 gold rush brought rapid growth to the City, and the City's maritime industry and boat building expanded south to India Basin. Italian and Chinese farmers moved into the Hunters Point area to farm vegetables to sell in the City center. The Chinese also established fish and shrimp farms along Hunters Point. By 1900, Hunters Point became established as a center for maritime activities and included shipyards and dry docks. The Navy's use of these facilities increased and it purchased the Bethlehem Steel dry docks in 1939. The Navy Shipyard expanded dramatically during World War II, leveling parts of Hunters Point Hill and filling the Bay to create new land between Hunters Point and Yosemite Creek. The existing African American community grew as many African Americans moved from the South to work at the shipyards. After World War II, the Shipyard became a center for the Navy's nuclear research. After it closed in 1974, the Naval Shipyard operated as a private ship-repair operation until 1986 when the Navy began current ongoing remediation efforts.

As part of the Hunters Point Shipyard Phase I project, a Cultural and Historical Recognition Program was developed for the Hilltop, Hillside and the northern portion of the Shipyard. The program suggests a framework for using interpretive features such as public art, kiosks, plaques, signage, and street furniture to tell a variety of stores from the original Ohlone settlements through the African-American community that predominates in the Bayview today. Key topics for interpretation could be the integration and expansion of the workforce, innovations in social service, migration and resettlement, and wartime mobilization. The CP-HPS Phase II project presents an opportunity to expand this program to address all of both Candlestick Point and the Shipyard. One element of this program will include a Cultural History Walk along the Hunters Point Shipyard waterfront.

Re-gunning Crane

Drydock 4

Bird's-eye view of Hunters Point

India Basin shipyards

Chinese shrimping village

The Shipyard

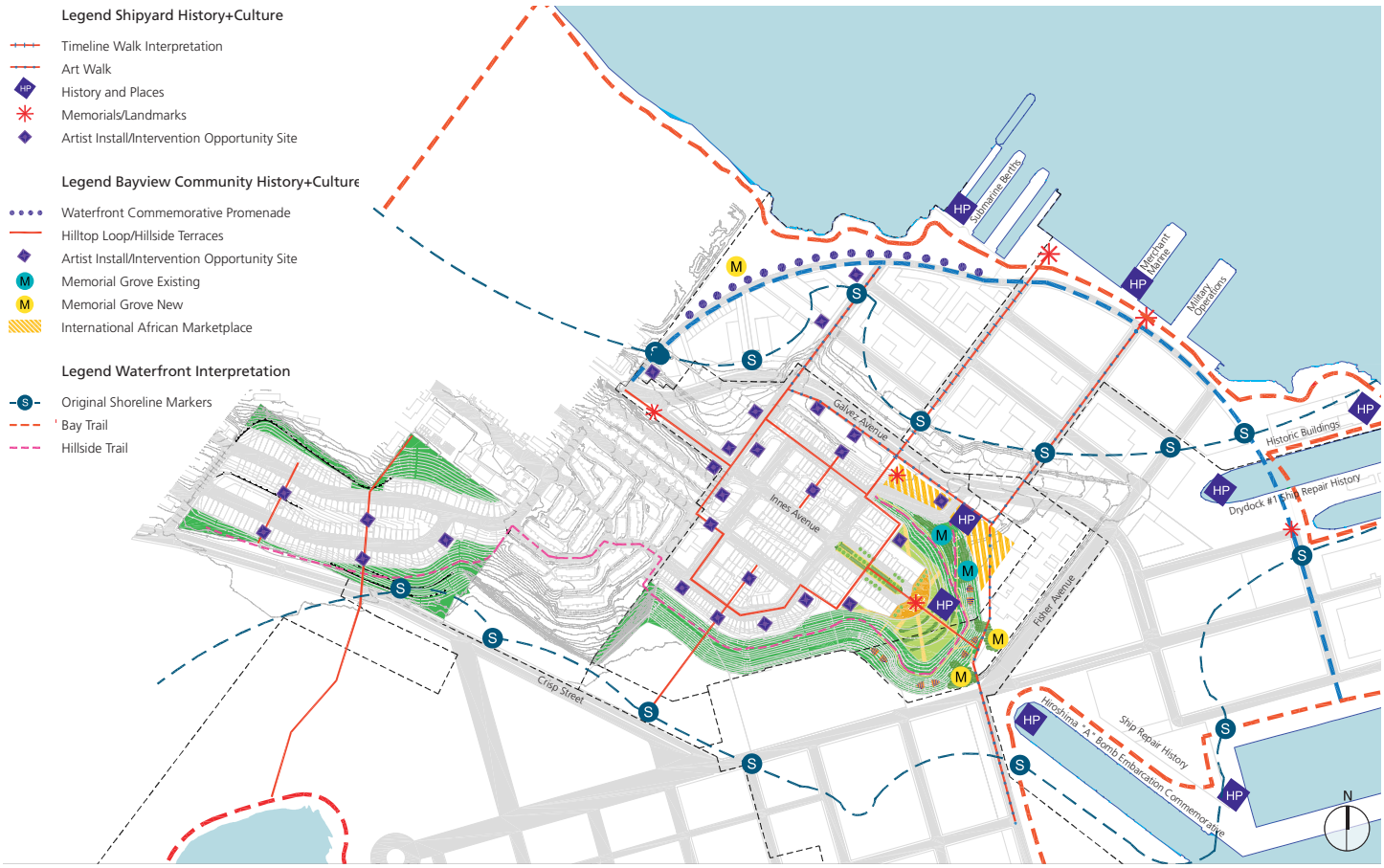


Figure from HPS Phase I Parcel 'A' Open Space & Streetscape Master Plan illustrates some possible cultural and historic recognition elements and potential locations.

Candlestick Point and Hunters Point Shipyard Today

Current Ownership and Land Uses

Hunters Point Shipyard (HPS)

The Hunters Point Shipyard Phase II area is currently under the jurisdiction of the US Navy, which is performing a clean-up of the site. Once complete, the Navy will convey the land to the City for development. For planning purposes, the Navy property has been sub-divided into smaller parcels (A-F), based on the timeline of the Navy clean up.

HPS includes 421 acres of dry land that contain several structures associated with World War II era uses: ship repair, storage and trucking, light manufacturing, construction, laboratories, scrap metal recycling, administrative and other former Navy uses. Several former Navy buildings are currently leased and occupied as studios by approximately 250 tenant artists. HPS Phase II also includes dry docks, piers and wharves, as well as repair berths.

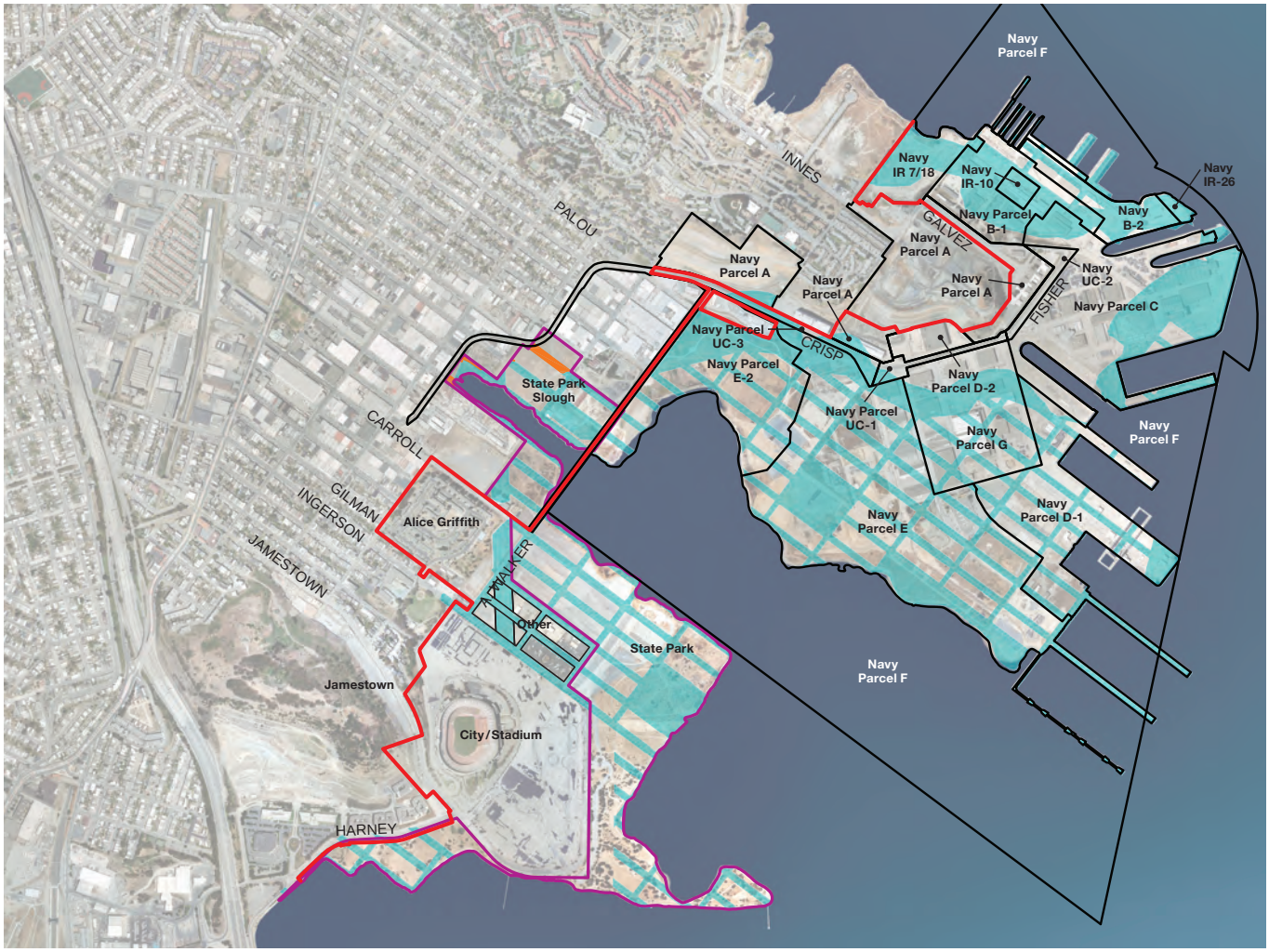
Bordered by San Francisco Bay to the south, east, and north, land uses at India Basin to the west are varied. Innes Avenue, the northern gateway to the shipyard from India Basin, is adjoined by light industry and residences. A significant portion of the property in India Basin adjoining the shipyard is vacant, though the India Basin Shoreline Park meets the HPS property near the Bay edge. The border to the southwest of the HPS Phase II area are neighborhoods with multi- and single-family housing.

Candlestick Point

The 281-acre Candlestick Point Area is generally bounded by Hawes Street to the northwest, Candlestick Cove and the San Francisco Bay to the south, Jamestown Avenue to the southwest, and South Basin to the east. The site includes residences, public open space, and was home to the former Candlestick Park football stadium.

The area is bordered by two existing communities—Bayview to the north and Executive Park to the west. The Bayview community was developed during the 1950s and 1960s and is characterized by two and three-story single family and duplex dwellings west of Gilman and light industrial buildings generally east of Gilman. Gilman Park and Bret Harte Elementary School are located in the blocks between Gilman and Ingerson, north of Giants Drive. The Executive Park development began in 2004 and includes several office buildings and a four-story condominium project near Highway 101.

Previous Planning Boundary Map and State Trust Configuration



Legend
- Project Boundary
- Previous State Parks Planning Boundary
- Previous City Right-of-Way at Yosemite Slough
- Previous State Trust Lands

N

0' 1800'

Scale: 1" = 1800'

City Ownership

Several Candlestick Point parcels are or were currently owned and operated by departments of the City and County of San Francisco. The San Francisco Housing Authority owns and manages 256 units of public housing at the Alice Griffith site. The City's Department of Recreation and Parks managed the Candlestick Park Stadium. The 70,000-seat stadium and related surface parking lots was the home of the San Francisco 49ers professional football team. The facility was also used occasionally throughout the year for concerts and other performances.

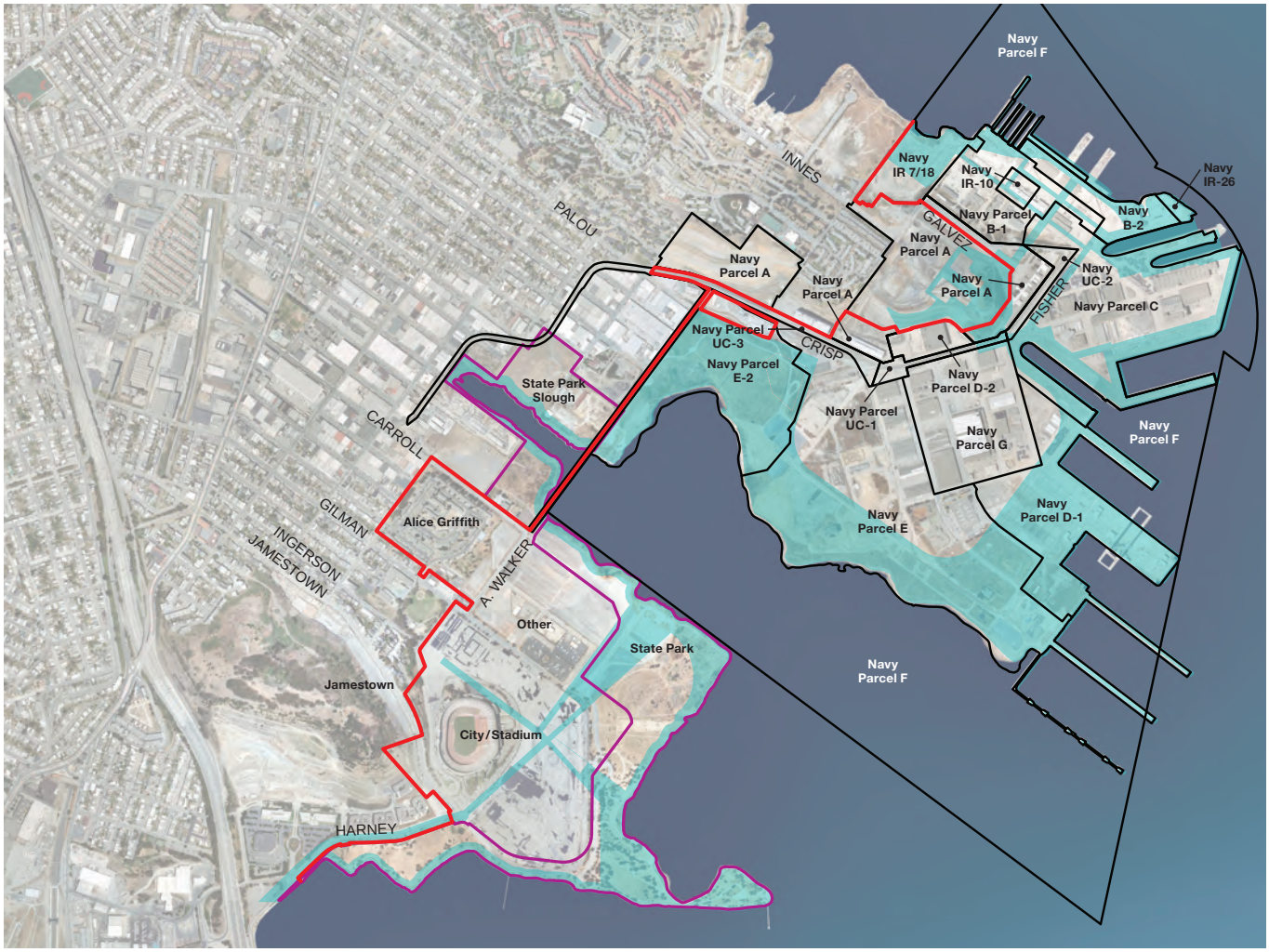
Other City lands include the streets and right of ways managed by the Department of Public Works.

State Trust

Certain land and water areas within the project are "State Trust Lands." Early in its history, the California Legislature transferred tide and submerged lands in trust to cities and counties, which were then required to develop harbors to further state and national commerce. The State Lands Commission ensures that the areas held in trust by the City and County of San Francisco are available for the benefit of the people of California for uses that promote navigation, fisheries, waterborne commerce, natural resource protection, and water-related uses that attract the public to use and enjoy the waterfront. Recent state legislation, Senate Bill 792, provides for the reconfiguration of State Trust lands in the area.

Parks and open space in the Trust must be designed so that their uses are consistent with the purpose of the Trust. Park lands that are within the State Trust must be designed to serve visitors from throughout the region and beyond, and may not be designed primarily to serve city or neighborhood users. Park uses that are consistent with the Trust include passive parks and open space with views of the bay, and features which highlight the maritime history, local bay ecology, or provide access to bay-related recreation such as boating.

2011 Planning Boundary Map and State Trust Reconfiguration



Legend
- Project Boundary
- State Parks Boundary Reconfiguration
- 2011 State Trust Lands Reconfiguration

N

0' 1800'

Scale: 1" = 1800'

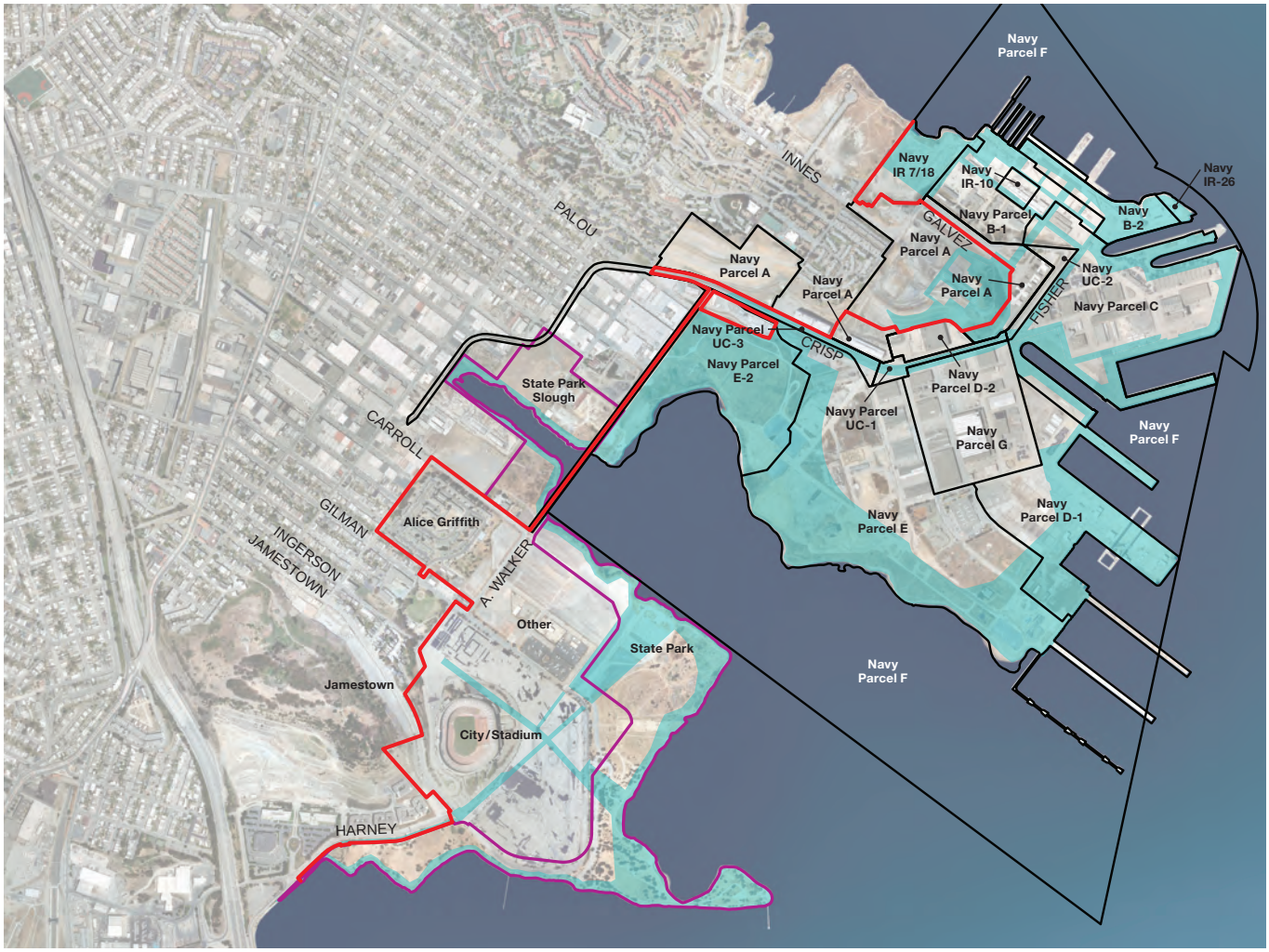
State Parks

The 154-acre Candlestick Point State Recreation Area (CPSRA) is a part of the California State Parks System. The CPSRA contains approximately 72 developed acres along the shoreline with a network of paved and dirt paths, restroom structures, picnic facilities, two fishing piers, paved lookout points, and a boat launch facility. The remaining acres have not been developed and are, in part, used for overflow stadium parking. Recent legislation, Senate Bill 792, authorized a reconfiguration of the CPSRA in exchange for project-provided park improvements and operating funding.

Private

Privately held lands include the lands north of the former stadium. The private parcels north of the former stadium accommodate a 165-space RV site.

Proposed Planning Boundary Map and State Trust Reconfiguration



Legend
- Project Boundary
- State Parks Boundary Reconfiguration
- Proposed State Trust Lands Reconfiguration

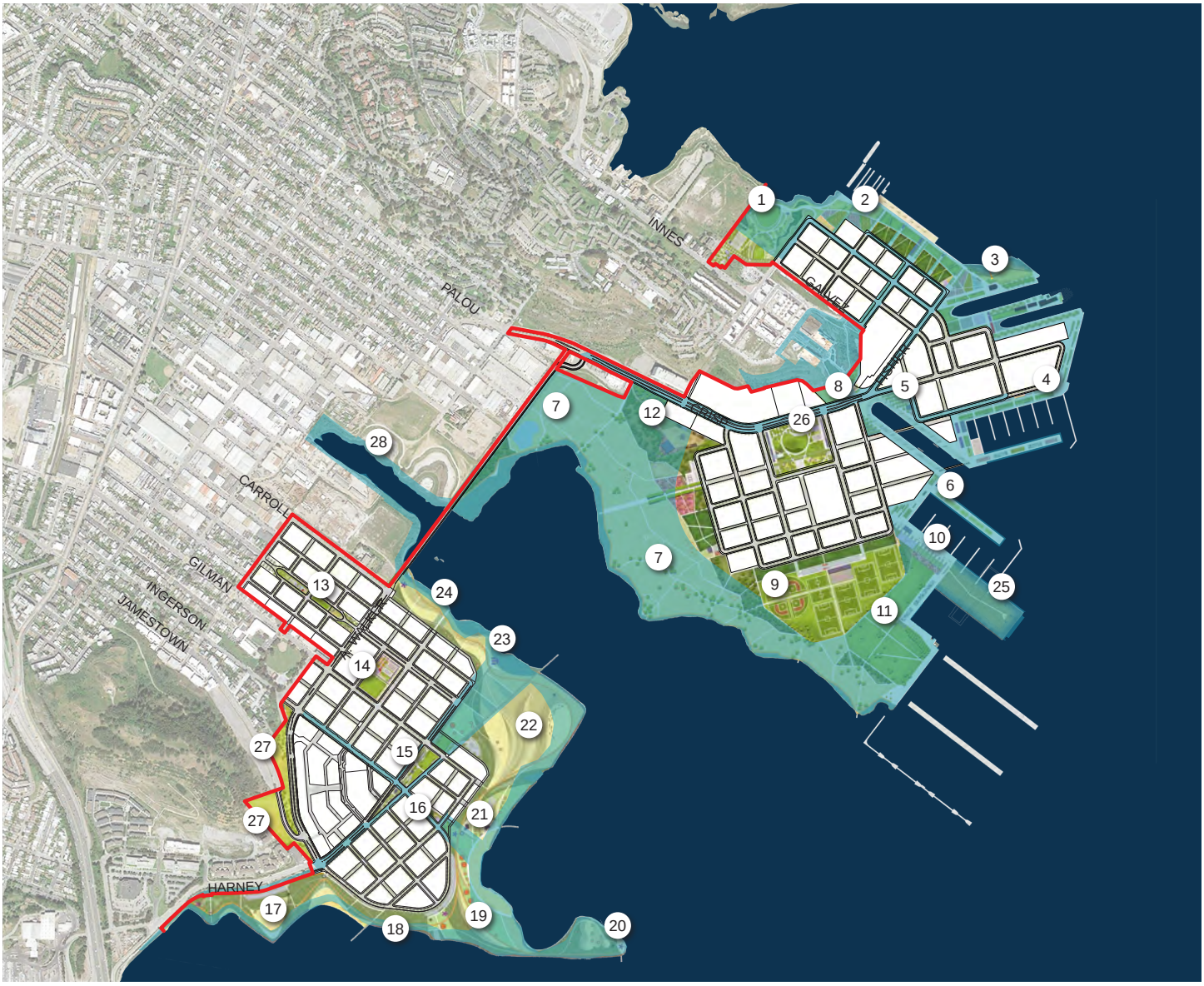
N

0' 1800'

Scale: 1" = 1800'

	Land Use	Trust Restricted	Non-Trust Restricted	Total
	New Parks			
1	Northside Park	8.9	3.9	12.8
2	Waterfront Promenade North	9.6	3.7	13.3
3	Heritage Park	15.5	-	15.5
4	Waterfront Promenade South - North Pier	10.4	0.1	10.5
5	Water Room Plaza / Dry Dock 4	7.3	-	7.3
6	Waterfront Promenade South - South Pier	5.3	-	5.3
7	Grasslands Ecology Park	97.0	9.8	106.8
8	Shipyard Hillside Open Space	2.4	-	2.4
13	Alice Griffith Neighborhood Park	-	1.4	1.4
14	Candlestick Point Neighborhood Park	-	3.1	3.1
15	Wedge Park	1.0	2.7	3.7
16	Mini-Wedge Park	0.3	0.5	0.8
	Sub-Total	*157.7*	*25.2*	*182.9*
	New Sports Fields, Waterfront Recreation & Education			
9	Community Sports Field Complex	-	28.7	28.7
11	Waterfront Recreation & Education	3.4	-	3.4
10	Multi-Use Open Space	20.4	0.1	20.5
12	Maintenance Yard	4.3	1.2	5.5
	Sub-Total	*28.1*	*30.0*	*58.1*
	New & Improved State Parkland (within Project Area)			
17	Grasslands South (improved)	4.4	5.9	10.3
18	Bayview Gardens (improved)	9.5	-	9.5
19	The Last Rubble (improved)	10.1	14.4	24.5
20	Wind Meadow (improved)	5.8	5.6	11.4
21	Heart of the Park (new & improved)	12.5	2.9	15.4
22	The Point (improved)	6.1	-	6.1
23	The Neck (new & improved)	2.9	2	4.9
24	Last Port (new & improved)	5.7	8.9	14.6
	Sub-Total	*57.0*	*39.7*	*96.7*
	Other			
25	Regunning Crane Pier Habitats	9.2	-	9.2
26	Green Room (privately owned, publicly accessible)	-	8.1	8.1
27	Bayview Hillside and Jamestown Walker Slope	-	7.1	7.1
28	Yosemite Slough (State Parks, outside FivePoint Improvement Area)	9.3	24.7	34.0
	Sub-Total	*18.5*	*39.9*	*58.4*

Proposed Park Areas Subject to State Trust Use Restrictions after SB 792 Trust Land Exchange and Subsequent Revisions



Project Boundary
Proposed State Trust Lands

N

0' 1800'

Scale: 1" = 1800'

Access

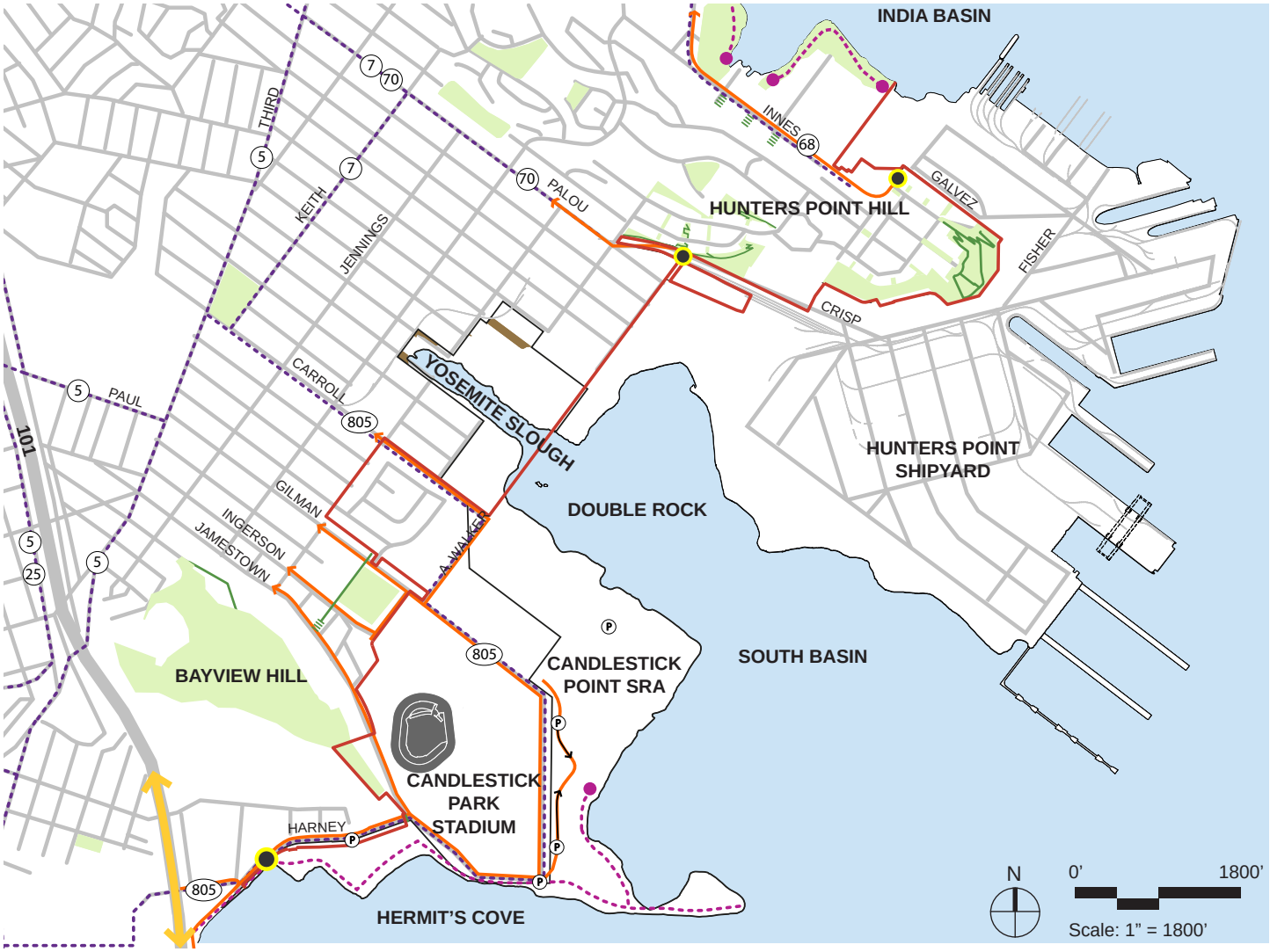
Hunters Point Shipyard

Historically, access to the site was controlled for safety and security reasons, and most of the site remains fenced off, prohibiting public access from surrounding neighborhoods. There are currently two roadway entrances into the shipyard, a northern gateway at Innes and Donahue and a southern gate near Palou and Crisp, separated by Hunters Point Hill. From the north the primary route into the center of the shipyard is via Innes, Donahue and Robinson streets. From the south, Crisp, Fisher, and Spear lead to the center of the shipyard. Much of the HPS Phase II site lacks pedestrian amenities, such as sidewalks, crosswalks and pedestrian lighting.

Candlestick Point

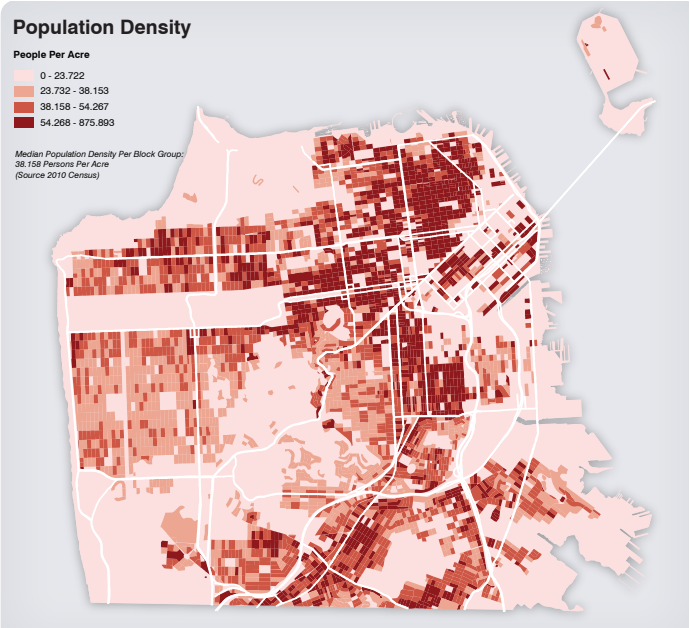
Access to most of Candlestick Point is limited to arterial roads (Harney Way/ Gilman Avenue/Jamestown Avenue/Ingerson Avenue) that encircles the former Candlestick Park stadium and parking lot. Carroll Avenue and Arelious Walker Drive provide access to the Alice Griffith housing complex. However, most non-arterial streets from the residential neighborhoods to the west of Candlestick Point reach a dead end before entering the site. Streets within the Alice Griffith housing complex are internally oriented, and for the most part, do not connect to surrounding streets. In addition, Bayview Hill creates a physical barrier to the south, limiting access from this direction, except at Harney Way. The lack of street connectivity, combined with the site's large, barren parcels, lack of sidewalks, and low level of on-site activity, make Candlestick Point relatively unwelcoming to pedestrian use.

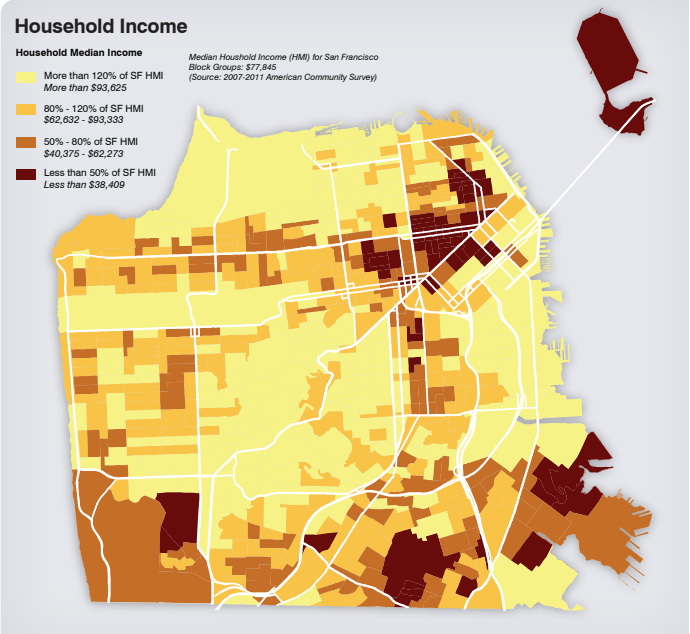
Existing Access and Circulation

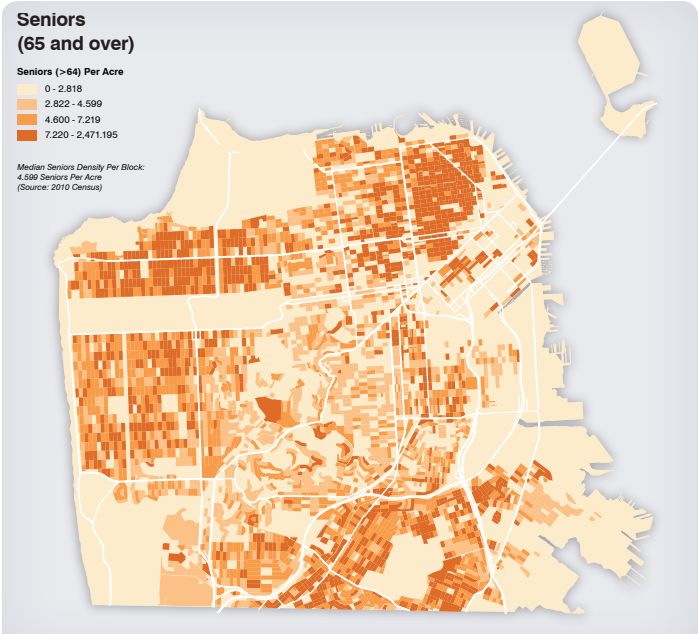


Legend

- Project Boundary
- Existing State Parks Planning Boundary
- Existing City Right-of-Way at Yosemite Slough
- Vehicular Circulation
- Highway 101
- Gateways
- Parking
- Transit Lines
- Bay Trail
- Bay Trail Terminus
- Bicycle Network
- Pedestrian Trails and Paths
- Stairs

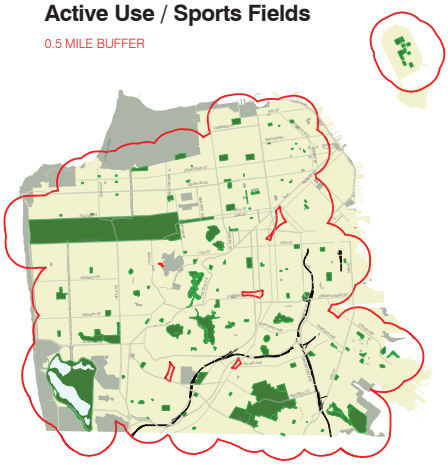




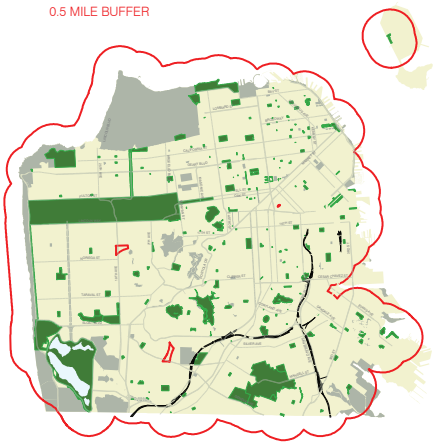


Park Needs Analysis from Final 2014 Recreation and Open Space Element (ROSE) of the City General Plan illustrates a need for access to walkable open space at CP-HPS. The open space will serve the adjacent underserved low-income communities that have a high number of children and youth and seniors as well as the anticipated increase in population density with the arrival of the new CP-HPS development.

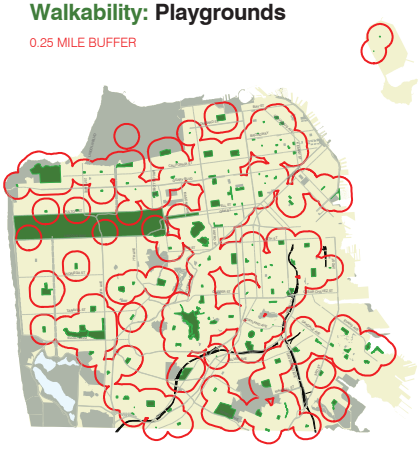
Walkability:
Active Use / Sports Fields
0.5 MILE BUFFER



Walkability:
Passive Use / Tranquil Spaces
0.5 MILE BUFFER



Walkability: Playgrounds
0.25 MILE BUFFER



Walkability Analysis from Final 2014 Recreation and Open Space Element (ROSE) of the City General Plan

Parks and Recreation

Citywide, the ability to construct new parkland has been constrained by San Francisco's population density and small land area. As identified in the Recreation and Open Space Element (ROSE) of the City General Plan, the entire eastern side of the City has a lack of large open spaces within walking distance of many of its residents. The ROSE also notes that many parts of the City lack playground space and that the demand for sports fields is often greater than existing parks can provide. Furthermore, the ROSE identifies a number of factors such as household income and population density of youth and children that create a greater need for park and recreation facilities in the south east of the City.

In spite of its striking geographic location, much of the parkland acreage that exists at Candlestick Point (Candlestick Point State Recreation Area, and Candlestick Point Stadium) is underutilized, not completed, or in need of repair. When owned by the City Department of Recreation and Parks, the Candlestick Point Stadium served large event uses only and did not provide everyday recreational use. The Candlestick Point State Recreation Area has only been partially developed – containing approximately 42 acres of barren gravel parking lots and an abandoned boat ramp area used only for parking during events at the stadium. Access to these park areas is limited by poor pedestrian connections linking the parks to the nearby neighborhoods.

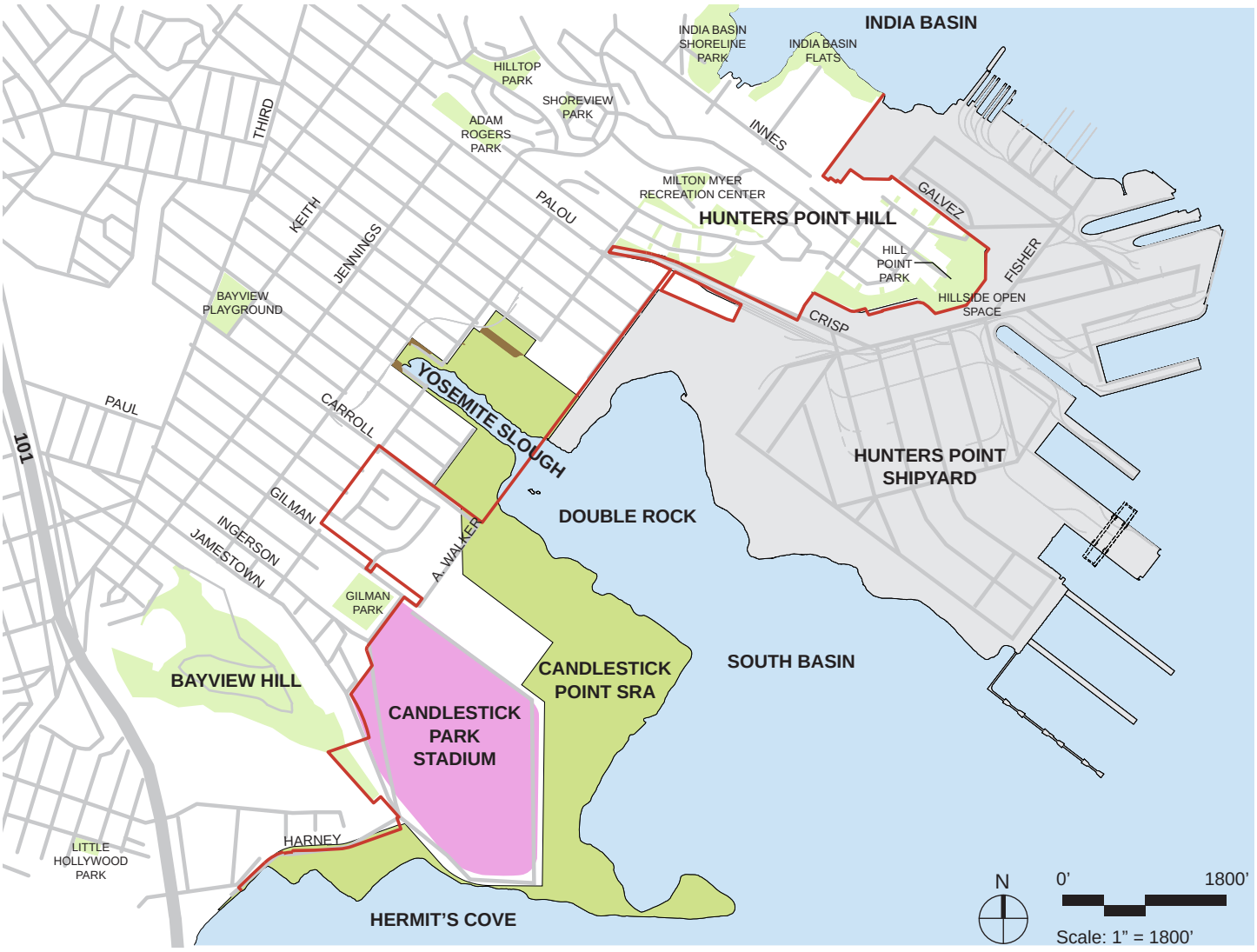
Given its size, the redevelopment of the Candlestick Point and Hunters Point Shipyard offers an extraordinary opportunity to contribute to new and revitalized parks that will benefit existing neighborhood residents, new residents, and the larger community of San Francisco and the region.

Existing Parks

The project site includes: 120 acres of the 154-acre Candlestick Point State Recreation Area (CPSRA) owned by the California Department of Parks and Recreation, and approximately 2.3 acres of the 44-acre Bayview Hill Park owned by the City and County of San Francisco Department of Parks and Recreation (SFDPR). In addition, the SFDPR owned the former 77-acre Candlestick Point Stadium. Existing users of these facilities include the residents and employees in the Bayview Hunters Point neighborhood, as well as visitors from other parts of the City and the Bay Area. Recreational visitors from outside the neighborhood include windsurfers who use the CPSRA shoreline for Bay access.

CPSRA is a former landfill on the shoreline of Candlestick Point that was purchased by the State in 1977 for development as a State recreation area. CPSRA includes picnic areas, a fitness course, a bike path, shoreline access to the Bay for water-dependent recreation, and recreational trails. The CPSRA provides neighborhood residents with access to open space along the Bay, but the recreational and aesthetic potential of this park is constrained by the industrial character of adjacent land uses and the availability of state resources. Much of the land at the CPSRA is unimproved. For example, land to the north and east of the Candlestick Park stadium are currently being used for stadium parking. Other portions of the site contain construction rubble and debris. As a

Existing Parks



Legend
- Project Boundary
- Existing City Park
- Existing State Parks Planning Boundary
- Existing City Right-of-Way at Yosemite Slough
- Existing Stadium Site

result, existing CPSRA facilities are not utilized to their full potential as places for recreation and habitat. The community has expressed strong support for the restoration of Yosemite Slough, and design for this restoration initiative is underway. While Yosemite Slough is part of the CPSRA, it is not within the area to be improved by this project.

Bayview Hill Park offers dramatic views of San Francisco, San Bruno Mountain and across the San Francisco Bay to the East Bay Hills. The single existing entry to Bayview Hill Park is at the terminus of Key Avenue, on the hill's northwestern slope. With no developed facilities other than its paved pathways, the park is primarily used by walkers. Home to a diverse range of habitats, including sensitive species, the park is part of the SFDPR's Natural Areas Program and receives regular attention from volunteer groups. A small portion of the park that is within the project boundary contains a small parking lot that is used during stadium events, and an in-accessible steep, terraced hillside.

The SF Recreation and Parks Department leased Candlestick Park to the San Francisco 49ers National Football League team. The former stadium, built in 1960, seated 70,000 and was used for football games and other non-football entertainment events. However, most of the year the stadium and its parking lots were vacant and unused.

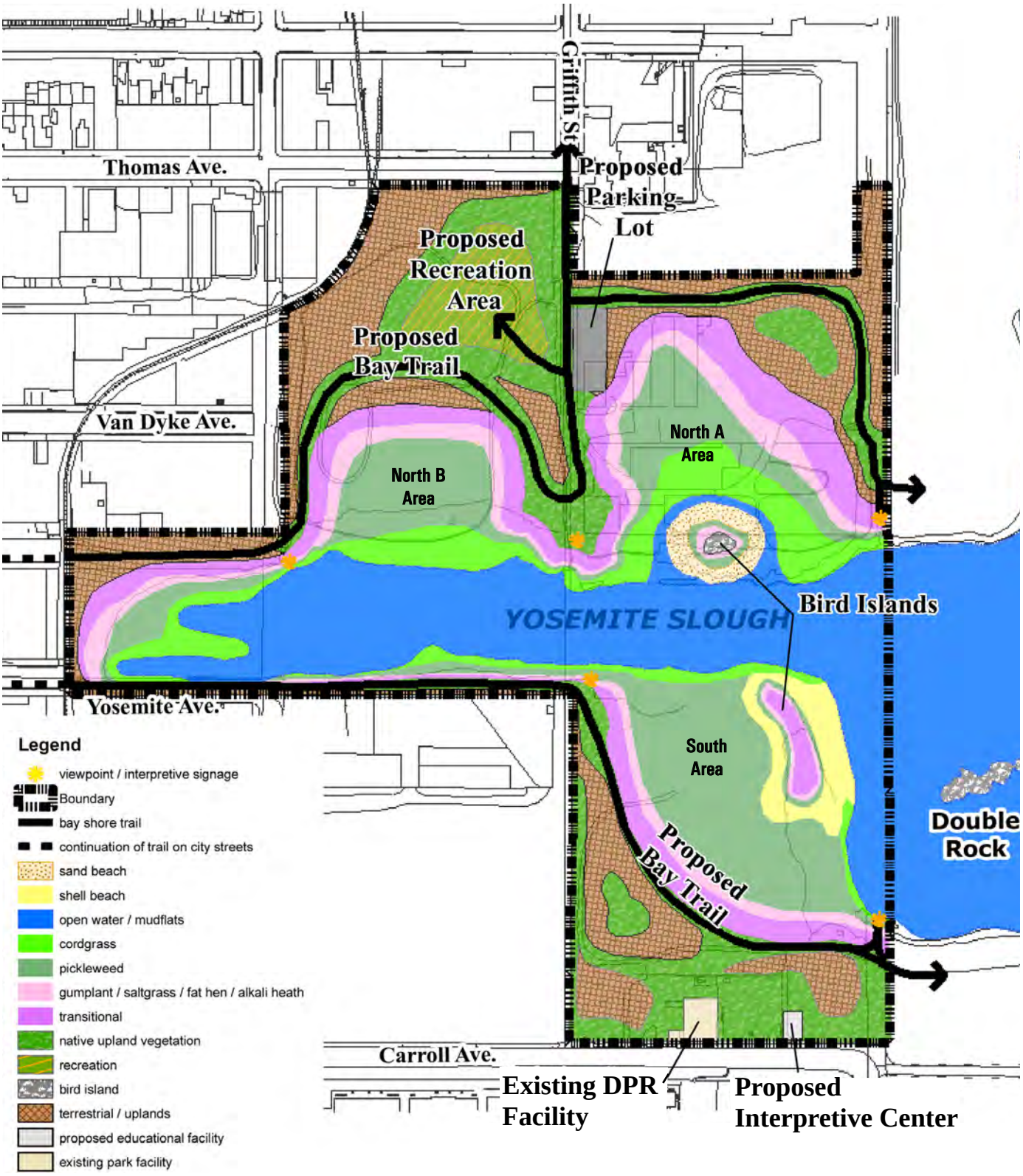
Other Parks Improvements and Initiatives

In addition to the CP-HPS Phase II improvements, a number of other projects are underway in the larger Bayview Hunters Point neighborhood and the City's southeast waterfront.

Hunters Point Shipyard Phase I (Parcel 'A') is currently under construction. This project includes two sites on Hunters Point Hill, "Hilltop" and "Hillside," that will be linked with the overall CP-HPS parks system. Ramped pathways will connect Hilltop's Innes Court Park and Hillpoint Park with the HPS Phase II boulevard parks and Water Room / Dry Dock 4 park with connections to the greater parks system. At Hillside, ramped paths will descend from the neighborhood's Central Park and pocket parks, connecting with Crisp Road near the Phase II Grasslands Ecology Park.

With significant community involvement and support, the State Parks Foundation and the California Department of Parks and Recreation are restoring the 34-acre Yosemite Slough area of the State Park, creating the largest contiguous wetland area in San Francisco. The project will restore wildlife habitat, improve water quality, and prevent erosion along the shoreline of the mostly urbanized bay shoreline of San Francisco. The slough restoration project will also enhance shoreline access from the Bayview community, providing opportunities for nature education and viewing of wildlife habitat.

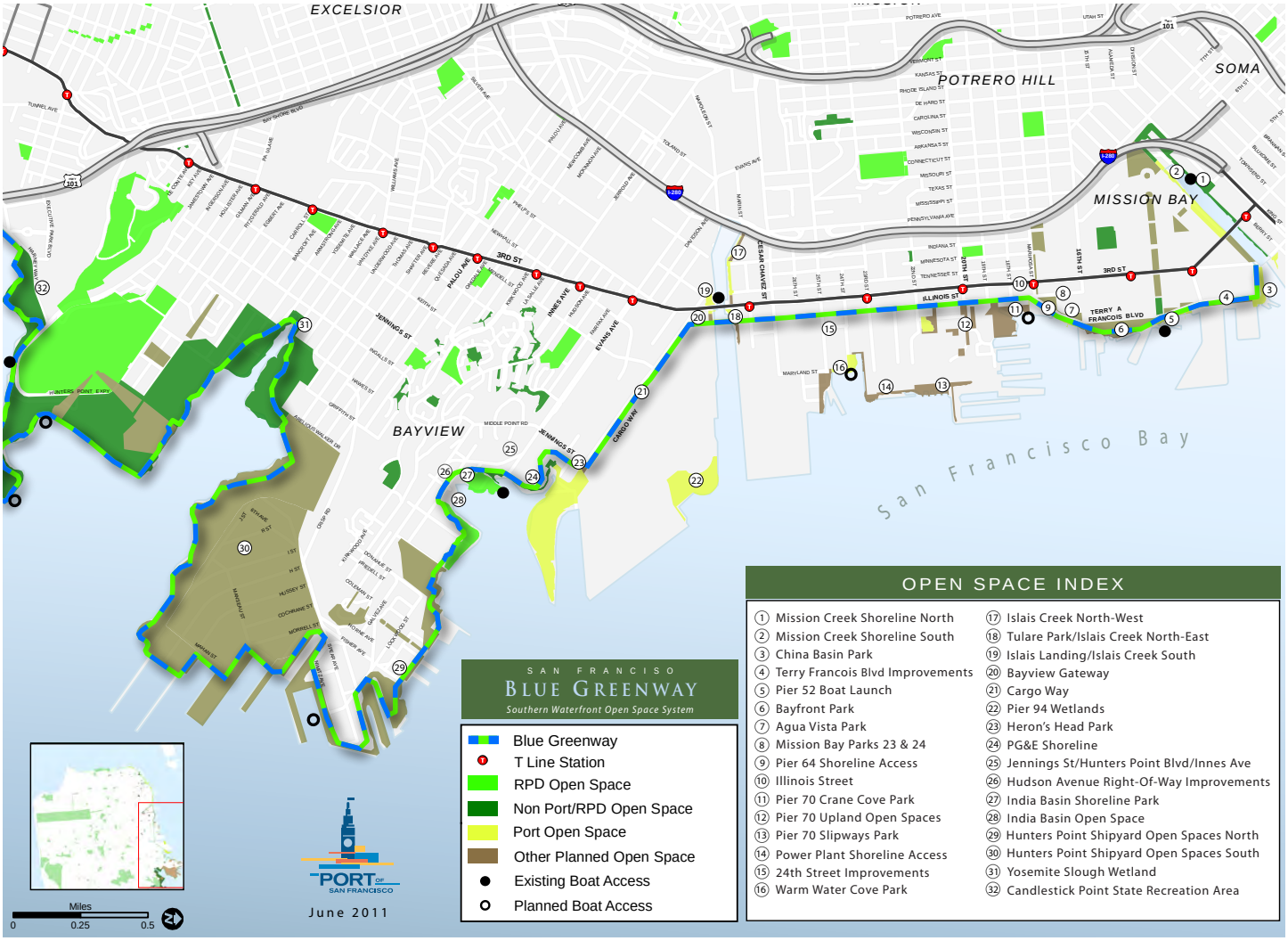
The San Francisco Bay Trail is a regional multi-use recreational trail that, when complete, will encircle San Francisco and San Pablo Bays with a continuous 400-mile network of bicycling and hiking trails. Immediately to the north of Hunters Point Shipyard, the Bay Trail runs along India Basin Shoreline Open Space, through India Basin, and Heron's Head Park. In addition, a segment of the trail runs from southeastern end of Candlestick Park south to Highway



Yosemite Slough Restoration Project Plan
WRA

101. The shorelines of the undeveloped CPSRA areas, and the Shipyard are inaccessible and create gaps in the shoreline Bay Trail Network. Currently the connection between these two existing segments runs inland, more than half a mile from the shoreline, on streets without or with only minimal bicycle and pedestrian facilities.

On the southeast waterfront of San Francisco, the Neighborhood Parks Council (NPC) is promoting the "Blue Greenways" program to coordinate development of the Bay Trail and other neighborhood linkages. The Blue Greenway project envisions a trail corridor that provides an easily accessible waterfront trail for recreation, bay access, and enjoyment of public art.



Blue Greenway Open Space System Map

Planning Issues & Concerns

There are a number of key issues related to the parks planning that have been identified by the project team and through input from public meetings, community organizations, individuals, and coordination with public agencies.

Re-gunning Crane

Drydock 4

Habitat and Ecology

Although much of the site is occupied by urban land uses, and more natural areas are dominated primarily by non-native vegetation, the site is located in an ecologically important location along the San Francisco Bay shoreline, and it currently supports a number of wildlife species. The design of parks and open space needs to protect the natural qualities of the site while enhancing conditions for native plants and animals. Park and open space design can help manage pollutants in stormwater runoff, minimize the use of potable water for irrigation, restore native-dominated plant communities, and enhance habitat conditions for wildlife. Key issues include management of invasive plants, incorporation of native vegetation in restoration and landscaping, creation of a diverse array of habitats, and protection of plants, animals, and ecological processes during construction, maintenance, and increased human use of the site. In addition, it is important the project provide opportunities for interpretation and for people to explore nature, learn about global climate change, and acquire environmental literacy.

History and Culture

History

There are many stories to be told about the history of the area. These include Native American life at the Bay's edge, settlement of the area after the arrival of Europeans, Chinese fishing and shrimp harvesting, maritime development, and Navy history. A comprehensive interpretive plan will be developed to guide the telling of these stories. In addition to museum exhibits, the history of the site may be expressed and revealed in the landscape through art, signage, and the preservation and re-use of historic landscape features.

The most visible history today is that of the maritime development and the Naval Shipyard, evidenced in historic buildings, drydocks, the re-gunning crane, and other structures.

While many of these features are in a state of disrepair, the project will coordinate with the Navy to retain and reuse these features, as feasible, so that this sense of history is not erased. The area around Dry Docks 2 and 3 is planned as a cultural heritage park, and here the project will make a special effort to preserve and rehabilitate historic structures and to incorporate interpretive elements and historic markers that highlight significant, structures, events, and public figures. In addition, features and materials such as light standards, rail spurs, crane tracks, dry docks, bollards, and cleats may be retained and incorporated or re-used in the design of parks and open spaces.

Hunters Point Phase I Parks and Open Space
CMG Landscape Architecture

Legend
Parcel Boundary
Private Open Space

N

0' 600'
Scale: 1" = 600'

Hill Point Park rendering
CMG Landscape Architecture

Neighborhood Identity

Also important to the neighborhood is the expression of its African American cultural heritage. As park designs are developed there should be opportunities for the community to engage with designers to incorporate these themes into the park designs. The Northside Park at Hunters Point Shipyard will be developed with space for the International African Marketplace and the park design will need to be coordinated with the operational needs of the market.

The Arts

With an outstanding landscape setting, a rich and layered history, and the thirty years presence of the Shipyard artist community, the project is committed to ensuring that the Shipyard retains its distinction as a thriving center for the arts. This will be accomplished through the preservation and replacement of artist studios, the establishment of an “Arts District,” and the incorporation of the arts in parks, and public spaces. Consistent with the *Redevelopment Plan,* development of commercial space will contribute a fee to support public art. The Blue-Greenway Plan has also identified public art as a key component of the Bay Trail systems along the City’s southeastern waterfront. The Hunters Point Shipyard Cultural and Historic Recognition Program is currently underway and artists have been selected for the first phase of art installations. As the project

develops, additional programs and opportunities for artists will be incorporated into the design of the parks and streetscapes. The parks and open space design will also include spaces for outdoor performing arts such as music, dance, and theatre.

International African Marketplace

Art studios

Programming and Partnerships

The development of parks, open space, and habitat areas will be enlivened by the participation of a variety of groups and organizations which may use these spaces. As park designs develop, there are opportunities for coordination and partnerships with organizations and projects such as the following:

- Community / neighborhood groups
- Local park advocacy groups
- Outdoor field sports groups and leagues
- Marina operators
- Small boat, kayak, and windsurf organizations
- Community ecology and restoration groups
- Bicyclists and skaters (rental, bike-sharing programs)
- Museums / historical societies
- Existing Shipyard artists and community artists
- International African Marketplace
- Café / restaurant / cart vendors
- Community garden / urban agriculture organizations
- Dog owners
- Local businesses
- Outdoor performance and event programmers

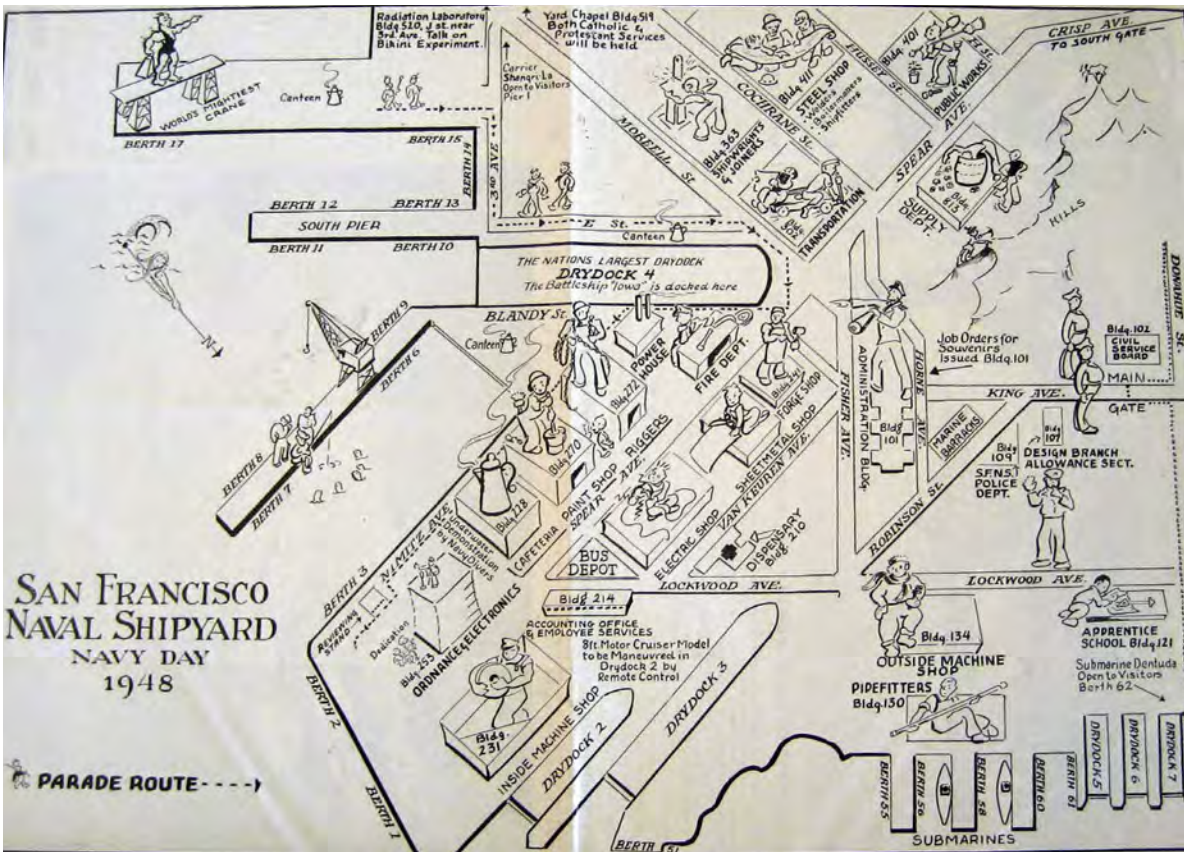
In addition to the types of community organizations listed above, the park design will also include coordination with a variety of public agencies, including the Bay Conservation and Development Commission (BCDC), the Association of Bay Area Governments Bay Trail Project, California Department of Parks and Recreation, and the State Lands Commission.

Planning for the Candlestick Point State Recreation Area will be tightly coordinated to create an interface between the State Parks system and the urban park and development that creates a synergy between them. While State Parks will produce a new master plan for the CPSRA, the development of the CPSRA and the other parks will be linked as part of a complete park system. For further discussion of this topic, see State Parks description under ‘The Proposal’ section.

Opportunities for recreational open space and habitat areas also exist on private parcels. As described in the Design for Development documents, developers of private parcels are also required to provide private common open space within their parcels. Developers are encouraged to use these spaces creatively to add to the overall range of opportunities available. For example, podium and rooftop spaces could be used for sports courts, dog runs, tot lots, and living roofs may be designed to provide habitat.

State Trust

The overlay of State Trust designation on the parks, open space, and street network constrains the types of uses that can occur in these areas. Park lands that are within the State Trust must serve visitors from throughout the region and beyond, and may not be designed primarily to serve city or neighborhood users. Uses that are consistent with the Trust include passive parks and open space with views of the bay, features which highlight the maritime history, local bay ecology, or provide access to bay-related recreation such as boating. Interpretive and educational play areas that are related to the site's maritime history or bay ecology are trust-consistent as are parking and roadways that connect interior areas to shoreline areas. Neighborhood, City-serving, and active uses such as sport courts, athletic fields and playgrounds will need to be located outside of State Trust areas.



Shipyard map, 1948

Sea Level Rise

Forecasts show that climate change and sea level rise are inevitable. While the severity and speed of sea level rise remains an area of some uncertainty, it is prudent for new development in low-lying areas to consider sea level rise strategies that offer a degree of protection and the flexibility to adapt over time.

At the time of the CP-HPS project planning and the development of the 2010 *Parks, Open Space, and Habitat Concept Plan*, there were no policy or mandates related to incorporating sea level rise (SLR) on projects. Recognizing the potential for sea level rise to impact the project area in the future, Moffatt & Nichol shoreline engineers studied the project site to develop planning and design guidance. The study was based on an exhaustive review of the literature, recent guidance from regional agencies, and knowledge of coastal processes of San Francisco Bay. In almost all of the science reviewed, a sea level rise increase greater than 36 inches would not be reached until after 2100.

Since 2010, the National Research Council issued its landmark report – *Sea Level Rise for the Coasts of California, Oregon and Washington: Past, Present, and Future*. It utilized the body of literature generally accepted by the scientific community, and currently represents the best available science for California. NRC estimates for SLR for San Francisco Bay are shown in the table below.

Year	**Projections** (most likely estimates)	**High** (assumes large scale ice melt)
2030	6” ± 2”	12”
2050	11” ± 4”	24”
2100	36” ± 10”	66”

Subsequently, local, regional and state agencies utilized the projections and findings of the NRC report and issued specific guidance related to accommodating SLR on waterfront projects, and in many cases, it has mandated it as policy. The most relevant guidance documents for the project are:

1. California Natural Resources Agency: *2009 California Climate Adaptation Strategy.*

2. Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT): *State of California Sea-Level Rise Guidance Document*, March 2013 update.

3. San Francisco Bay Conservation and Development Commission: *Living with a Rising Bay*, October 2011.

4. City and County of San Francisco Sea Level Rise Committee: *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco*, September 2014.

In planning for SLR at the park and shoreline edge, design considerations include: habitat, shoreline erosion, protection of park features, flooding, and the experiential quality of the Bay edge. The Project *Infrastructure Plan* and the

Sea Level Rise Strategy section of this Parks and Open Space Plan discuss the revised SLR strategy in greater detail.

Hazardous Material Clean-up

The US Navy is responsible for the clean-up of its lands and state and federal regulators are responsible for making sure that the Navy's clean-up is safe for people and the environment. Coordination between the Navy's clean-up and the park programming and design will require ongoing communication and cooperation as plans evolve.

Relationship of this Plan with other Project Plans

There are a number of key issues and concerns that are not completely addressed in this document, but are more fully addressed in other project plans:

Sustainability

The design of the parks and open space system is closely related to many project-wide sustainability issues including: Economic Opportunity, Community Identity & Cohesion, Public Well-Being, Safety & Quality of Life, Accessibility & Transportation, Resource Efficiency, and Ecology. A framework for these issues, including goals, strategies, commitments and aspirational targets are fully discussed in the *Sustainability Plan*.

Urban Design

Urban design, the form, shape, and aesthetics of the development, have an important relationship to the design of the parks, open space, and habitat system. For more detail on these issues, refer to the *Candlestick Point* and *Hunters Point Shipyard Design for Development* documents.

Transportation & Streetscape

Certain components of the park system such as bike and pedestrian trails and pathways are also a component of the transportation system. Conversely, some of the streets are designed with enhanced streetscapes which function as small linear "boulevard parks." Public transportation and automobile access are also important to the park system. A complete description of the project's transportation system is found in the *Candlestick Point & Hunters Point Shipyard Phase II Transportation Plan*. The *Streetscape Plan* will include more detail on the boulevard park streets, and streetscape design features.

Utilities & Infrastructure

Some aspects of the park system are closely linked with infrastructure, for example: low-impact design stormwater treatment features and street design. For detail on the infrastructure system refer to the *Infrastructure Plans for Candlestick Point Development and Hunters Point Shipyard Phase II Development*.

The Proposal

The Park System

Goals and Principles

The *Parks, Open Space, and Habitat Concept Plan* has been developed to address the following goals and principles. These principles are organized in relation to *planning*, *design*, and *process*.

Planning

These goals and principles relate to the organization, size, shape, and arrangement of parks.

- **Connectivity**

  Create connections between parks and to regional open spaces including the State Park and regional trail networks.

- **Accessibility**

  Provide public open space within a short walking distance of neighborhood residents and employees and ensure parks are easily accessible by transit.

- **Variety**

  Pursue opportunities to enhance existing and create new open spaces that include large public open spaces as public plazas, and streetside pocket parks.

Design

These goals and principles relate to the form and program of individual parks.

- **Flexibility**

  Develop open space designs that allow multiple outdoor opportunities to occur within the same space.

- **Diversity**

  Provide a contrast of open space scale, design, and program so each open space is unique to the character of its context.

- **Character**

  Create unique spaces that reflect the character of the community and that support family and neighborhood gatherings as well as informal socializing.

- **Resource Efficiency**

  Use materials and resources efficiently to minimize environmental impact and cost.

Process

These goals and principles relate to adaptation, growth, change, and organic evolution of the plans.

- **Community Involvement**

  Involve the community in the design process for individual parks and opportunities to accommodate community-based programs and partnerships.

- **Integration with Development**

  Work with developers to integrate park, open space, and habitat concepts within private development areas. For example, children's play areas, dog runs, and greenroofs on private development help maximize the open space potential of the project.

- **Interpretation and Education**

  Provide park facilities and opportunities that support learning about cultural history, ecology, and urban sustainability, and provide for discovery and personal connection with the natural and cultural resources and to achieve environmental literacy.

- **Ecological Infrastructure**

  Integrate urban infrastructure with natural process to support urban sustainability. Parks and open spaces are a part of the city's 'green infrastructure' and will help regulate climate, control storm-water, cleanse air and water, and provide habitat.

- **San Francisco Bay Ecology**

  Enhance wildlife habitat to support the ecology of the San Francisco Bay, its wetlands, and the adjacent uplands.

Precedent - Ecological stormwater management

Park & Open Space Framework

There are number of broad programmatic goals that are included in a complete park system. These include: recreation and leisure; historical remembrance, education, and celebration of culture; stewardship; and sustainability. Aspects of these broad park programs may be present in each park. However, based on opportunities, location, and needs, the park system has been designed to include the following eight components.

Community Parks

Community parks offer a mix of active and passive areas of open lawns, dog runs, play areas, community gardens, court games, and environmental education opportunities. These parks will serve the adjacent local neighborhood and will draw regular users from within a 10-minute walking radius. The community parks adjacent to the waterfront, impressed with the State Trust, will also attract visitors from other parts of San Francisco and beyond.

Cultural / Heritage Parks

The historical and cultural elements of these parks are designed to attract a broad range of visitors. In addition to regular neighborhood use, these parks, impressed with the State Trust, draw visitors from throughout San Francisco, the Bay Area, and beyond.

Waterfront Promenades

The waterfront promenades are linear, urban spaces along the waterfront. They offer continuous waterfront access, connecting to other urban areas and larger parks. With views of the bay and historic shoreline structures, they offer features for discovery and amenities for resting and gathering. These parks, within the State Trust, will attract visitors from throughout the regions, in addition to neighborhood residents, nearby workers, and passers-through on foot and bicycle.

Precedent - Sports fields

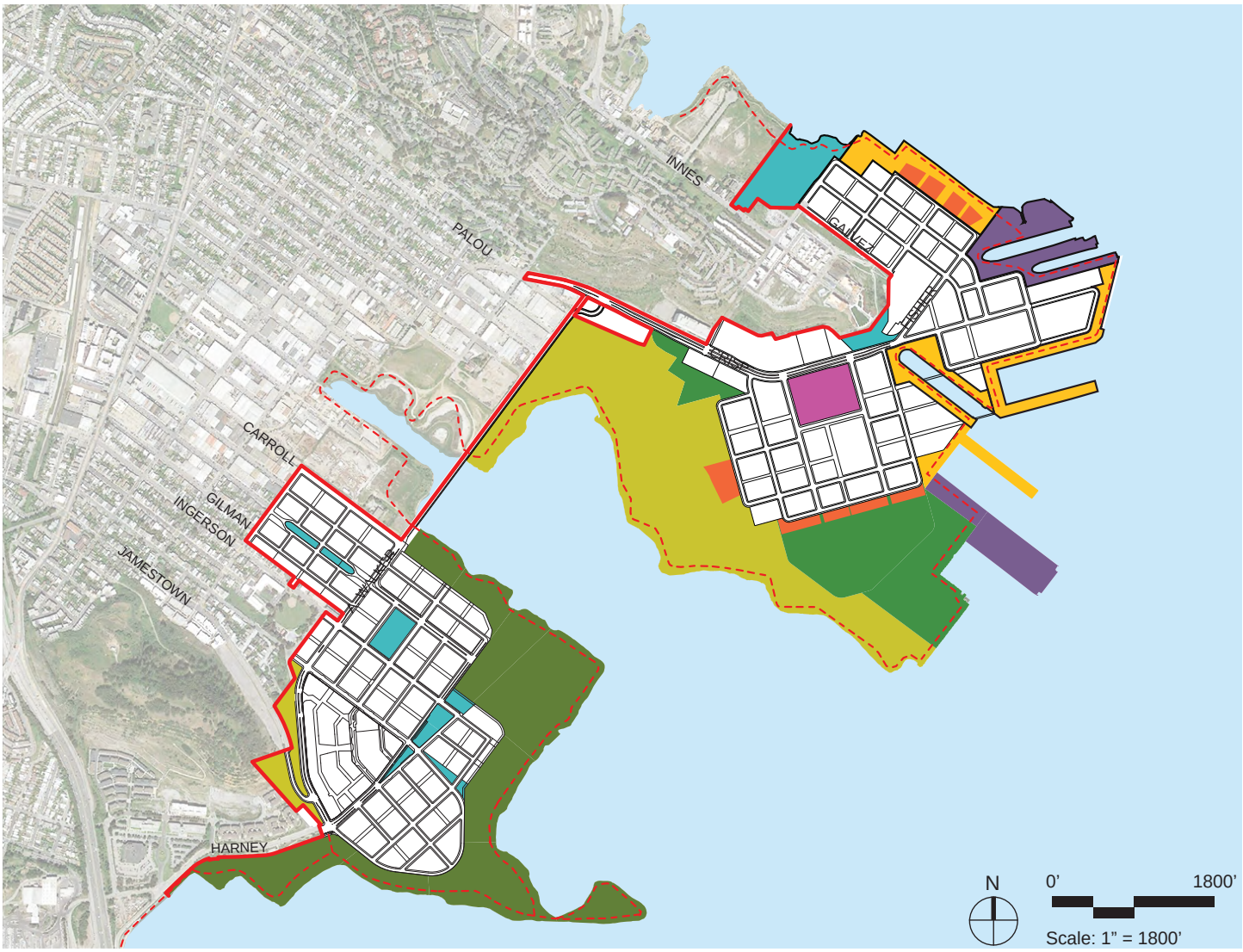
Sports & Multi-Use Fields

The Sports Field Complex will serve organized play for youth, high-school, and adult intramural sports. While soccer may be the most popular use, the fields can accommodate other sports such as football, ultimate frisbee, and cricket. The Multi-Use Fields, closer to the bay edge and within the State Trust, offer expansive open space for more informal uses such as kite-flying and picnicking, as well as accommodating larger organized festivals and events.

Habitat & Ecology Parks

These parks and open spaces facilitate the co-habitation of wildlife and humans in the city. While some areas may be designed to protect sensitive plants and wildlife, other sections may include trails, boardwalks, and overlooks, and provide facilities for nature education and picnicking. Within the State Trust, these waterfront parks will enhance the ecological quality of the site and offer

Park & Open Space Framework



LEGEND

- Community Parks
- Cultural / Heritage Parks
- Waterfront Promenades
- Sports & Multi-use Fields
- Habitat and Ecology Parks
- Privately Owned Public Open Space (POPOS)
- Centralized Stormwater Treatment Parcel
- State Recreation Area
- Bay Trial
- Project Boundary

visitors from throughout the region opportunities to experience nature at the Bay's edge.

Precedent - Boulevard parks

Privately Owned Public Open Spaces (POPOS)

Some parcels within the project will be Privately Owned Public Open Spaces (POPOS). While privately owned, these spaces are required to be open and accessible to the public. These spaces include the "Green Room" park at the Shipyard. The private owner is responsible for ongoing maintenance of the POPOS rather than the City and County of San Francisco. The acreage of Privately Owned Public Open Spaces is counted separately from and is in addition to the approximately 340 acres of public open space improvements provided by the project.

Centralized Stormwater Treatment Parcel

Portions of other parks will be designed as rain gardens to centrally treat stormwater runoff from the public streets and private parcels of the development ("Centralized Stormwater Treatment parcels"). Centralized treatment in Hunters Point Shipyard Phase II parks with the exception of Northside Park will be public with private maintenance. The Centralized Stormwater Treatment parcels will be designed to seamlessly integrate with the design of the adjacent park parcels.

Boulevard Parks & Streetscapes

Streets are important spaces in the life of the City. The boulevard parks are a special street type that includes expanded sidewalk areas that function as mini-parks – providing spaces for neighborly socializing, games and play, and gardens. Boulevard parks and other streets will link regional waterfront amenities and parks (see page 29 for streets located in the within the State Trust). Streetscapes and boulevard parks will be described in greater detail in the *Candlestick Point Streetscape Master Plan* and *the Hunters Point Shipyard Streetscape Master Plan*. The boulevard parks will be a part of the public street right-of-way and will not be counted as a part of the overall park system acreage calculations.

State Recreation Area

Managed by the California State Parks Department, the State Recreation Area is focused on providing places for bay and nature-related outdoor recreation, education, and preservation and enhancement of natural habitats.

Bay Trail

While not a separate "park," the Bay Trail strings together the entire bayside park system, providing a linear park experience that is complete in itself. Some users may experience the entire parkland mainly from the perspective of the trail. For others, the Bay Trail will provide points of entry into specific parks within the Candlestick Park and Hunters Point park system.

The Parks

The following descriptions provide a framework for and suggestion of the programmatic potential of the individual parks based on site opportunities, constraints, and project commitments. It is, however, expected that the final park designs will evolve through a process of dialogue and engagement with existing and future residents and state resource agencies. Program elements may be added or adjusted as needed, within the constraints of the individual sites. Park designs should take into consideration site and project utility requirements as defined in the Master Utility Plan and as refined in detailed construction documents.

The following individual park descriptions are organized approximately from north to south, Hunters Point Shipyard then Candlestick Point.

Proposed Parks and Open Space

		Page
	HUNTERS POINT SHIPYARD PHASE II	
1	Northside Park	54
2	Waterfront Promenade North	58
3	Cultural Heritage Park	62
4	Waterfront Promenade South - North Pier	66
5	Water Room Plaza / Dry Dock 4	70
6	Waterfront Promenade South - South Pier	74
7	Waterfront Recreation and Education Park	78
8	Re-gunning Crane Pier Habitats	82
9	Multi-Use Open Space	86
10	Community Sports Fields Complex	90
11	Grasslands Ecology Park	94
12	Maintenance Yard	98
13	Green Room	102
14	Shipyard Hillside Open Space	106
	CANDLESTICK POINT	
15	Alice Griffith Neighborhood Park	110
16	Candlestick Point North Neighborhood Park	114
17	Wedge Park	118
18	Mini-Wedge Park	122
19	Bayview Hillside Open Space	126
20	Candlestick Point State Recreation Area	132

Park Description Key Map

N

0' 1800'

Scale: 1" = 1800'

Hunters Point Shipyard

Northside Park

Concept: Gathering of Community

Located at the north entry to the Shipyard, this park is a community meeting ground, linking the India Basin, Hilltop, and Shipyard communities with a place for sport, active recreation, leisure, discovery, and sustenance. Celebrating the community's cultural heritage and promoting ethnic diversity and awareness, the theme of the African Diaspora may be expressed in stylized park structures, and interpretive features and elements in paving, seat walls, or sculptural signage markers. The International African Marketplace activates the park with a "market street" promenade.

Activities & Program

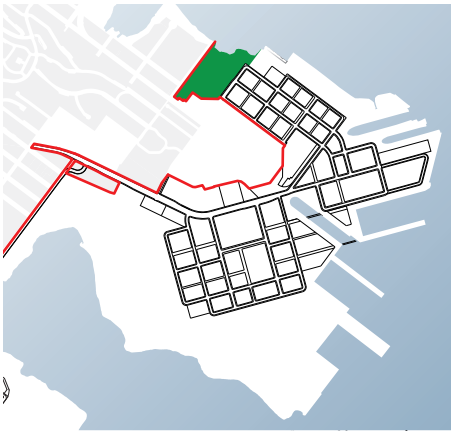
The Northside Park provides a full set of active and passive uses. The most active park uses are located on the southwestern side of the park. This area includes water-wise ornamental gardens, basketball, tennis, and a children's playground. Additional active recreation amenities may be included in the park. The open-air International African Marketplace forms an east-west promenade bringing visitors and activity into the heart of the park. The lower half of the park, featuring more passive uses, is within the State Trust Lands. This area of the park may also feature active recreation uses, in coordination with the California State Lands Commission. There are many opportunities to enjoy the bay edge. A large open lawn and grassy slope provides a flexible multi-use space. The City View Cafe and terrace deck offers a concession opportunity along the Bay Trail, providing a place to meet friends and find refreshment during a visit to the park or as a stopping point for passers through on the Bay Trail. The cafe will also include public restrooms. Another location for public restrooms, cafe, and storage could also be incorporated in the development facing the park to the southeast. The Cultural History Walk will offer interpretive opportunities and will include historic shoreline markers, didactic information on Chinese shrimping villages, discussions of African American contributions to the Shipyard, and art installations. Northside Park also provides connections to cultural elements located on the Hilltop.

Access & Circulation

The park has multiple entry points linking it with the adjacent neighborhoods. Extending from the intersection of the HPS neighborhood streets, a series of paths cross through the park. The Bay Trail will connect through the park from India Basin Park Shoreline Park south to the Waterfront Promenade.

Connecting from Innes, pathways ramp down through gardens to the court games area. A possible future bike/pedestrian route through India Basin along the Hudson right-of-way may connect through the Northside Park, linking with bicycle lanes on Robinson creating another link between the India Basin and Hunters Point neighborhoods.

For regional visitors arriving by car, streetside parking is provided along Innes, Donahue, Robinson, and Lockwood.



Park Location

Precedent - Cove

Precedent - Steps to the bay

Precedent - Cafe pavilion

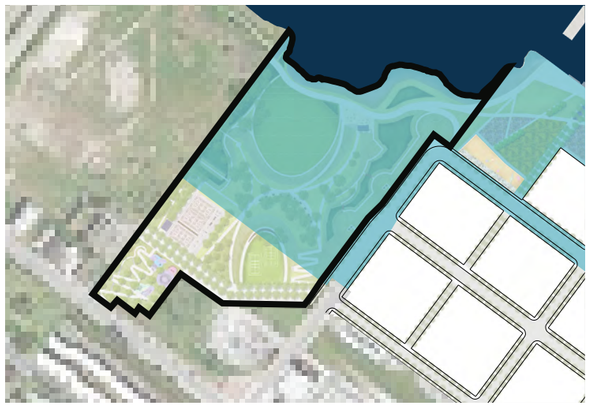
Northside Park

Approximate Park Area: 12.8 acres
Comparable in size to Dolores Park: 13.4 acres

1. Accessible Path with Overlook
2. Waterwise Gardens
3. Adventure Play (5-12 yrs)
4. Nature Walk
5. Playground (0-5 yrs)
6. Promenade
7. International African Marketplace
8. Bike Path
9. Storage and 4 Restroom Stalls
10. Multi-use Courts
11. Outdoor Fitness Area
12. Informal/Active Open Space
13. Overlook
14. Picnic Grove
15. Group BBQ
16. Lawn
17. Donahue Lookouts
18. Centralized Stormwater Treatment
19. Forested Buffer
20. Kiosk with Outdoor Seating and 2 Restroom Stalls

Bay Trail
Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension

Notes:
- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Precedent - Wet and dry gulch

Precedent - Sports courts

Open-air International African Marketplace Promenade, with color and pattern expressing African Diaspora cultural theme

Sustainability Features

The park plan proposes native plantings near the bay's edge and ornamental, water-wise, demonstration gardens along the hillside. Centralized Stormwater Treatment areas along the northeastern and northwestern edges of the park will ecologically treat stormwater runoff from park hardscapes and adjacent development areas in rain gardens.

Site Development Constraints

The Navy is responsible for the preparation of the site making it safe for use. The Navy, with the input of a variety of regulatory agencies, will design and install a remediation of the site as well as prepare plans for controlling land use, maintenance and operation of the site. The Navy's currently proposed plan is to cover remaining soil containing hazardous substances to prevent exposure with a soil cap. The soil cap would consist of one foot of clean fill over existing native soils, an orange geotextile demarcation layer, and additional two feet of clean, compacted, imported fill. The top surface would be planted to prevent erosion of the cap. At the shoreline, the Navy would install a rip rap revetment to protect the site from erosion.

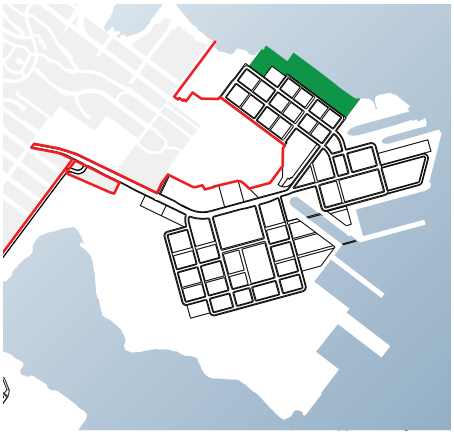
The park design and operation will need to abide by design, land use, and operations and maintenance requirements developed by the Navy and regulatory agencies.

Implications for park design could include a site grading strategy that is composed of fill only, without cutting into the existing grade. Additionally, future detailed plans by the Navy may specify requirements for future park infrastructure such as water, sewer and irrigation lines. Footings for fencing, retaining walls, boardwalks, and other structures may also need to be designed with shallow footings so as to avoid excavating beneath the soil cap. Restrictions may also be placed on the construction of enclosed, occupied structures such as restrooms.

Waterfront Promenade North

Concept: Weaving Urban Neighborhoods with the Bay-front Promenade

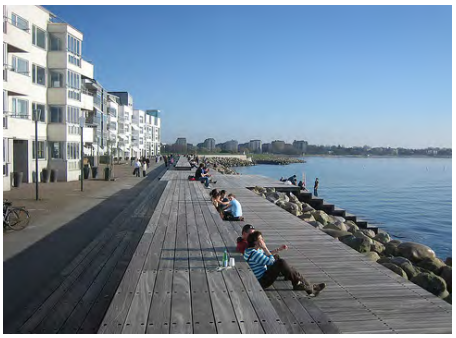
The design of this park space weaves two primary influences: the continuity of the Bay Trail and the new Shipyard neighborhoods. This once active industrial waterfront will become a sequential landscape of outdoor urban rooms. Renovation of the existing wharf and the retention of industrial artifacts along the promenade will reinforce the historic qualities of the waterfront. Meanwhile, new landscape features such as small tree groves, native grasslands, and native rain gardens will interlace a sense of the past with the present as residents and visitors walk, run, bike, sit, play and reflect.



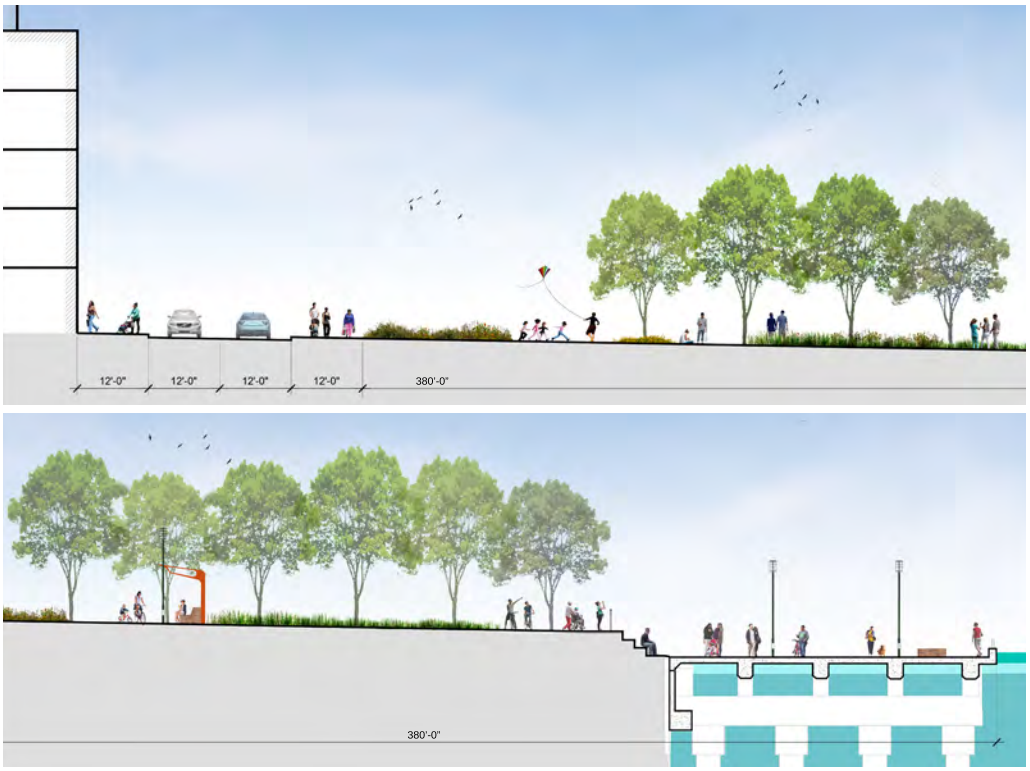
Park Location

Activities & Program

In addition to cycling, strolling or skating along the waterfront, the Waterfront Promenade North will provide places for rest, gathering, and leisure activities. Between the urban backdrop and the open bay, these spaces may include open lawns, gardens, seating areas, plaza spaces, fishing decks with fish-cleaning stations, picnic/barbecue areas, and places for informal recreation and games serving both residents and regional waterfront visitors. Native gardens will showcase native plants of the San Francisco Bay region. The Cultural History Walk will extend along the waterfront recalling the presence of the indigenous inhabitants and later the arrival of the Italian and Chinese immigrants and their influence on local agriculture and fishing. Additional interpretive walk opportunities include a discussion of the Navy submarine drydocks and berths. Memorials and Landmarks at the termini of Timeline and Art Walks might also occur along the Waterfront Promenade North.



Precedent - Promenade with wooden boardwalk and seating



Typical section through Parcel B Waterfront Promenade

Waterfront Promenade North

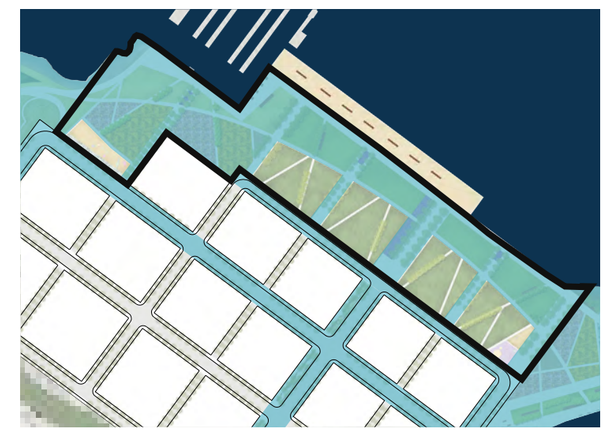
Approximate Park Area: 13.3 acres
Approximate Stormwater Treatment Acreage: 3.5 acres
Comparable in length to the Marina Green at: 1770'

1. Tables
2. Interpretative Grasslands
3. Native Plant Garden
4. Lawn
5. Centralized Stormwater Treatment
6. Plaza
7. Picnic / Seating Area
8. Promenade
9. Dog Run
10. Tot Lot
11. Exercise Area
12. SS Pump Station (Location to be refined)
13. SD Pump Station (Locations to be refined)

Bay Trail
Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension
Centralized Stormwater Treatment

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- Centralized Stormwater Treatment areas will be public with private maintenance.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

13th St.
B St.
Lockwood St.
Horne St.
Robinson St.
Fisher St.
1,730'
330'

N

0' 150' 300'

Scale: 1" = 150'

Precedent - Promenade picnic area with re-use of existing paving and new tree groves

Access & Circulation

Access to the waterfront is provided at small plazas at the terminus of perpendicular streets and pedestrian mews, bringing pedestrian movement toward the waterfront. The grandest of these connections is at the Horne Street boulevard parks. Extending from Galvez Street, the pedestrian paths and native gardens of the boulevard parks culminate here at the Waterfront Park's central plaza space, and merge with the circulation of the waterfront promenade. For regional visitors arriving by car, streetside parking is provided along Horne, 13th Street, Fisher, B Street, Robinson, and Lockwood.

Circulation along the promenade consists of series of main pathways running parallel to the water's edge: a Class 1 bicycle and pedestrian pathway adjacent to the urban edge, the Bay Trail closer to the bay edge, and paths along the wharf.

Sustainability Features

This park will contain publicly owned and accessible Centralized Stormwater Treatment parcels designed integrally as a part of the overall park, but maintained by the development and not the City and County of San Francisco. These parcels will contain rain gardens to ecologically treat stormwater from the surrounding public streets and private development parcels. Interpretive elements will highlight these green infrastructure features and the integration of urban and natural process.

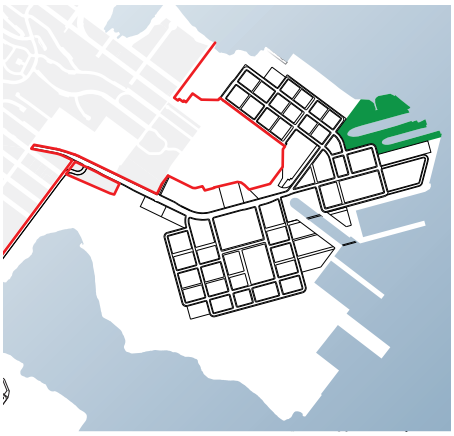
Reducing waste and consumption of new materials, the park design will seek to re-use and re-purpose historic materials and structures to the extent feasible. Plantings will focus on native and climate-adapted species that require minimal irrigation and provide habitat for insects and birds.

The Waterfront Promenade near the end of Horne boulevard park

Cultural Heritage Park

Concept: The Heart of Shipyard / Life and Work on the Waterfront

At the end of the Fisher Street neighborhood commercial corridor, and the nexus between the North Shoreline neighborhood and the Wharf District, the Cultural Heritage Park is the heart of the Shipyard. Here, the working history of the waterfront is evident in the historic structures and the grand scale of Drydocks 2 and 3. The park is a place to recognize the Shipyard's importance to the people who worked there, and its significance to the nation, San Francisco, and the Bayview Hunters Point neighborhood. There are many stories that can be told here: stories of the Bay and its first people, the Chinese fishing communities, the Shipyard and its workers, and the site's long Navy history. The design of this park will retain and reuse historic buildings, structures and materials as much as possible to preserve the spirit and essence of the place, and new design elements will have a modern, industrial character.



Park Location

Activities & Program

As part of the State Trust, the park's main program is for educational and cultural activity related to the site's history, and will attract visitors from throughout the Bay Area and beyond. Users of the park can orient themselves to experience a specific historical use, scale, and aesthetic of the waterfront at the shipyard. Through sculptural interpretive signage, kiosks, and other landscape elements in an outdoor setting, the Cultural History Walk will describe the site's history, focusing on historic naval buildings such as the pump stations, Machine Shop and Ship Repair Shop, the location of the historic shoreline, and a discussion of indigenous people's relationship to the land and the Bay. Play areas for children will be interpretive and educational in nature, reinforcing the site's maritime past. The historic buildings may be used for visitor centers, museums, or cafes, giving the park a distinct character and linking past and present uses. Storage to support parks operation and maintenance may also be included within the existing buildings or a new shed. Space for a docked historical ship would further support the maritime experience.

Pumphouse at Drydock 3

Plaza spaces adjacent to the urban development can support a variety of outdoor event events and gatherings. A number of platform spaces support performance, gathering, informal seating and other spontaneous uses to occur simultaneously. Areas of open lawn provide flexible spaces and maintain open views to the grand scale of the dry docks which are the central feature of the park.

Historic building between Drydock 2 & 3

Cultural Heritage Park

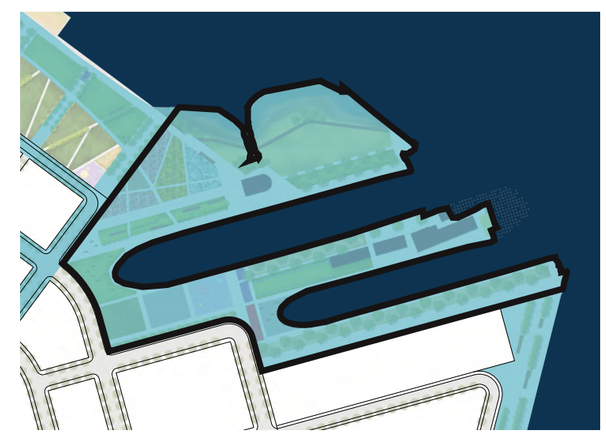
Approximate Park Area: 15.5 acres
Comparable in size to San Francisco Maritime National Historic Park: approximately 13.5 acres

1. Shoreline Revetment
2. Native Planting
3. Historic Building/Visitor Center and/or Cultural Center
4. Tree Grove
5. Gardens
6. Exercise Area
7. Lawn with Seating Plinths
8. Entry Plaza with Signage Pylon
9. Sculptural Landform
10. Multi-use Event Area
11. Maritime Educational Area
12. Tree Grove in Recycled Concrete and Gravel Paving
13. Kiosk/Pavilion
14. Interpretive Plaza
15. SS Pump Station (Location to be refined)

Bay Trail
Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

N

0' 150' 300'

Scale: 1" = 150'

Precedent - Interpretive signage, Rosie the Riveter Memorial, Richmond, CA

Examples of shipyard historic landscape elements to be retained and integrated into site design

Access & Circulation

Access into the Cultural Heritage Park is multidirectional and accentuated by the meeting of two opposing city street grids at the Park's entrance. From the Bayview neighborhood, primary access to the park is by way of Crisp and Fisher, the HPS neighborhood commercial street and from Crisp and Spear through the Wharf District. Access from within HPS is possible via streets that terminate at the northeast and western boundaries of the park. The Bay Trail and Waterfront Promenades are integrated with the circulation of the Heritage Park and link it to other parks along the San Francisco Bay.

Sustainability Features

The design of the park will preserve and re-use historic structures and materials such as paving and rails as much as possible. The ground plane may incorporate existing concrete slabs or recycled broken or crushed concrete. These features support the site's industrial character while diverting waste from landfills. Beyond these environmentally sustainable features, the park's central sustainable feature is about cultural sustainability – supporting the remembrance of the past with an understanding of how lives, land, and water, were shaped and reshaped here.

Precedent - Pier promenade and picnic area with remnant pilings

Waterfront Promenade South - North Pier

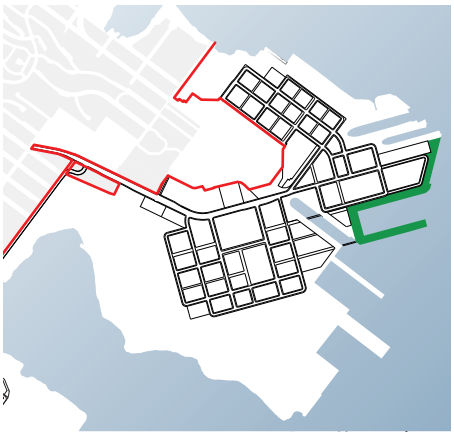
Concept: Mingling and Promenade

The promenade provides a place for the interweaving of activities and visitors, future and past. The promenade is a sequential series of outdoor rooms, ecological gardens (raised planting beds emphasizing a native horticultural aesthetic and beauty), small tree groves, sculpture gardens, and sloped lawn panels for lounging and picnicking. Historic landscape elements such as bollards and rails will be retained and reused where possible to retain a sense of the site's history. Adjacent to the green R&D center, the landscape program may also highlight green-tech features in the landscape.

Activities & Program

Located within the State Trust, activities and uses here are primarily related to views of and access to San Francisco Bay and because of the surrounding site uses, will be a destination for a broad range of users. A proposed 300-slip marina may include a harbor master's office, small boat house, classroom facility to teach sailing, as well as restrooms, showers, and other support facilities. Other recreation-supporting concessions are also possible, such as bike and skate rental, cafes, and fishing bait supply. Fishing along the piers and sea walls will be supported by fish-cleaning tables. The Cultural History Walk will continue along the promenade highlighting the maritime activities through on-site materials and historic buildings, and historic shoreline markers. A dog run may be provided, offering a place for area residents and workers to run their dogs off-leash. The Bay Trail will bring regional visitors to the site. In the future, the site may also accommodate a ferry landing.

Along the promenade one may encounter fishermen and sailors socializing near entries to the marinas. Visitors and hotel guests, exploring neighborhood streets and shopping along Fisher Avenue, stroll along the promenade or to an event at the Cultural Heritage Park. Workers from the green R&D center eat lunch, take a break, gather inspiration, or begin an after-work jog. The variety of adjacent uses, beauty of the site, and comfortable places for seating and gathering accommodate serendipitous and spontaneous interaction among unlikely groups and friends, creating a truly successful urban place.



Park Location

Precedent - Shaded seating

Precedent - Fish cleaning table

Waterfront Promenade South - North Pier

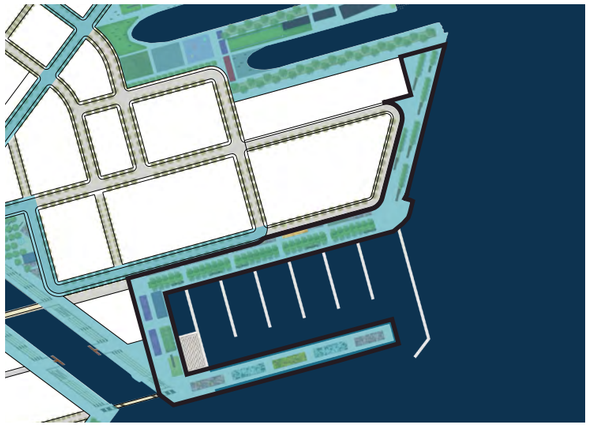
Approximate Park Area: 10.5 acres
Comparable in width to Rincon Park at Embarcadero: 180'

1. Waterfront Promenade
2. Seating Plinths
3. Lawn with Rows of Trees
4. Marina
5. Native Plant Gardens
6. Marina Support Facility and Storage Shed
7. Exercise Area
8. Dog Run

Bay Trail
Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

N

0' 150' 300'

Scale: 1" = 150'

Precedent - Wooden seating

Precedent - Sheltered seating

Precedent - Waterfront "Wind Garden" and native planting

Precedent - Raised planting and shade grove

Access & Circulation

The Waterfront Promenade South - North Pier links the Cultural Heritage Park, green R&D center, marina, and the Water Room. Connections to the promenade occur at adjacent parks, streets, and development blocks. These intersections connect with a series of pathway spaces parallel to the waterfront – bicycle and pedestrian paths, and the Bay Trail.

Sustainability Features

Sustainable features include native plant design, and the reuse of existing materials as much as possible.

Site Development Constraints

The existing, 40' wide wharf along the east end of Parcel C has deteriorated to unsafe conditions in many places, and further investigation will determine to what extent the wharf can be preserved for public access and use. Additionally, the relatively low elevation of the wharf makes it susceptible to wave inundation during extreme storm events, and as sea level rises, this condition will occur more frequently. As such, the wharf area is not included in the calculation of park acreage.

Water Room Plaza / Dry Dock 4

Concept: Land and Water Connections

The Water Room will be a bustling, 4-acre civic square that weaves the most striking shoreline features into heart of the Hunters Point Shipyard development. Nestled equally between retail, residential flats, hospitality/tourist zones, artist studios, makerspaces and research and development uses, the location is primed to serve a large variety of public interactions.

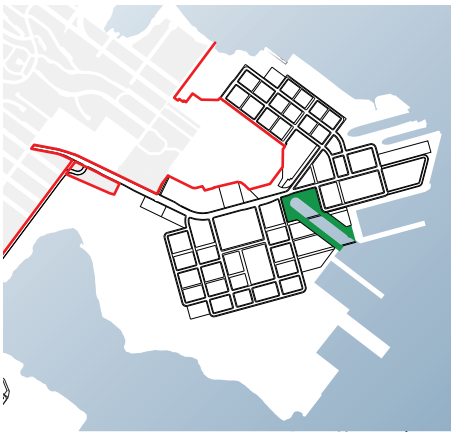
It is a civic space with a natural center; Dry Dock 4, the largest of the remaining naval artifacts, intersects the water room to become a built-in, central water feature, and the design of the shoreline edge supports this overlap. The shoreline will be preserved and lightly improved with rows of amphitheater seating, turning the dry dock into a public stage drawing from its industrial heritage to frame the natural bay views. It is this configuration that concentrates the Water Room's programming at the perimeter near the most active entry points.

Bridging the dry dock is a low pedestrian bridge stitching the Wharf District with the Warehouse District. A gateway between these two neighborhoods, the Water Room's design features naturally transition between the adjacent residential, retail, and R&D parcels.

Activities & Program

The Water Room is the front porch of its surrounding parcels. From temporary fairs to art installations, the plaza allows for both casual gathering and formal events, all anchored by the persistent tranquility of the water. During larger events, the adjacent Shipyard Hillside Open Space provides seating for displays that occur above and throughout the Water Room.

Space is reserved within the park for one or more small pavilions serving neighborhood necessities – as the demands change through the full master plan build-out, these pavilions can adjust to accommodate its evolving needs. The Cultural History Walk will continue along the promenade highlighting the maritime activities through on-site materials and historic buildings, a Hiroshima "A" Bomb Embarcation Commemorative, and historic shoreline markers.



Park Location

Precedent - Water at the center

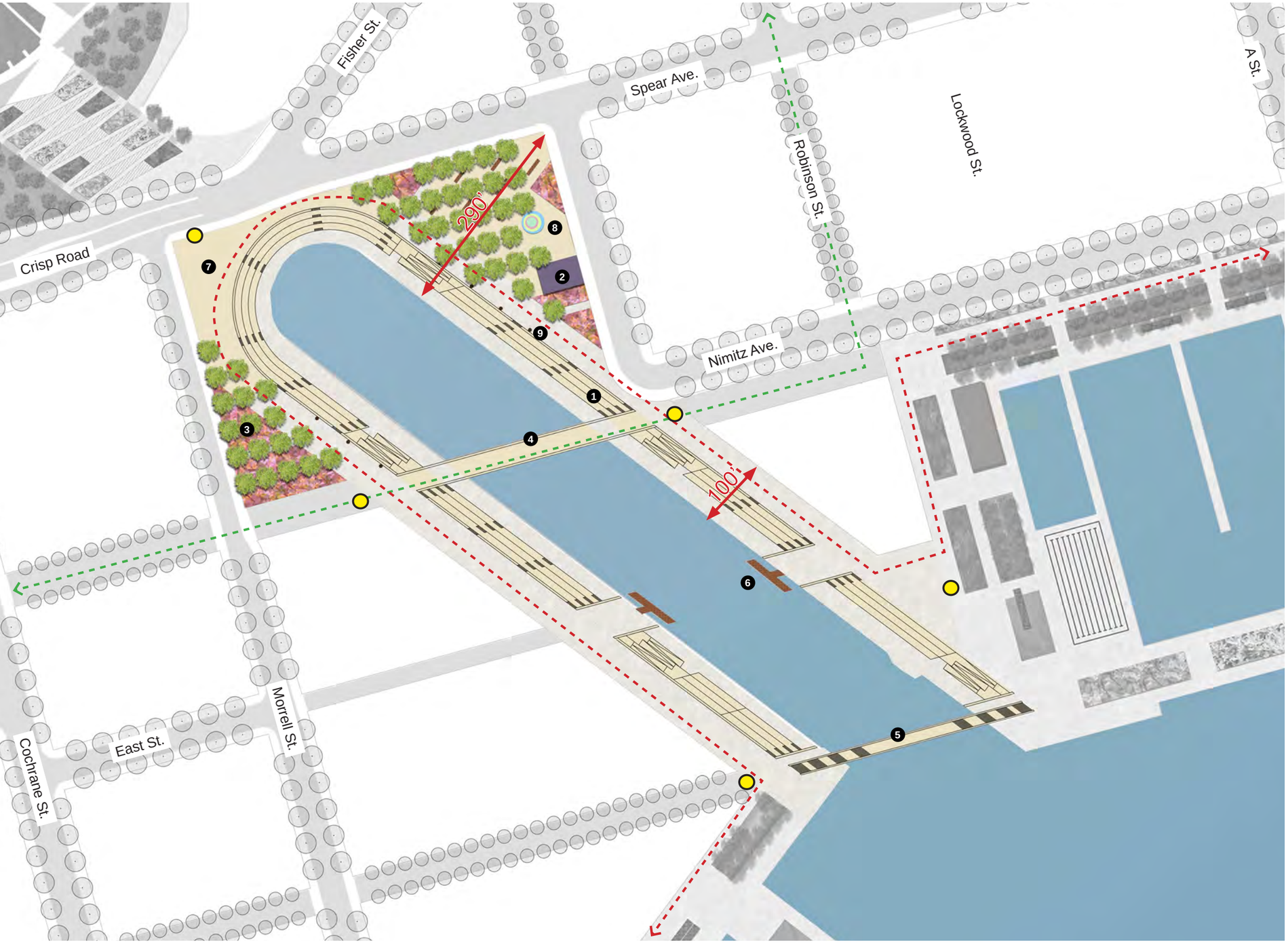
Precedent - Steps to water

Precedent - Amphitheater seating

Water Room Plaza / Dry Dock 4

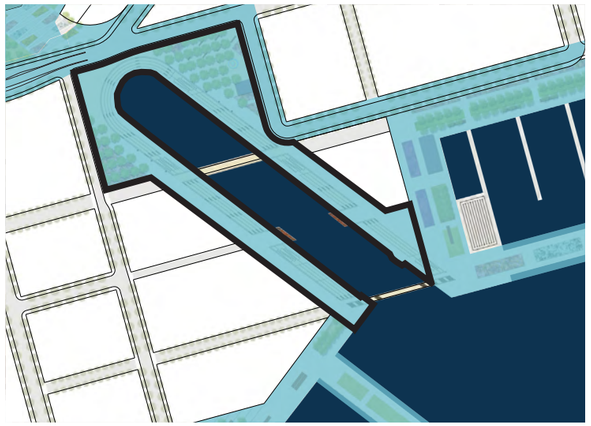
Approximate Park Area: 7.3 acres
Comparable in width to Sue Berman Park near the Embarcadero: 300'

1. Amphitheater Seating
2. Restroom/Café/Concessionaire Pavilion with Storage
3. Native Plant Gardens
4. Pedestrian and Bike Bridge
5. Pedestrian Bridge (potential)
6. Water Taxi Landing (potential)
7. Plaza
8. Sculptural Art Feature
9. Historic Bollard



Bay Trail
Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension

Notes:
- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Precedent - Amphitheater seating

Access & Circulation

The dry dock's location within this square allows for a unique access experience. A plaza with water at its center, the Water Room provides pedestrian access around its perimeter, supporting access to the programs flanking the civic space. A pedestrian bridge on its southeast side permits a continuous pedestrian retail walk that stitches the Water Room into the greater master plan. Pending feasibility, a potential pedestrian bridge at the east end of Dry Dock 4 provides a second means of crossing Dry Dock 4. A potential water taxi landing, pending feasibility, also allows for arrival and departure from the park by water.

By bike, the Bay Trail bike path extends through the Water Room around the dry dock perimeter, and a class I commuter bike path crosses through at the pedestrian bridge, providing easy access to both commuters and recreational bikers. Public transportation by buses and water taxis are nearby, allowing for easy access to the larger San Francisco area. Just off the primary spine road, the Water Room provides automobile access on the north, east, and west edges, and convenient parking is located nearby.

Sustainability Features

The existing, concrete naval shoreline will be incorporated as a central feature to the Water Room. This area will be coordinated with the proposed master plan grade level changes to produce a shoreline that retains existing naval features and respects the naval heritage.

Planting design will feature native and climate-adapted planting to provide habitat and minimize water use.

Site Development Constraints

The park design and operation will need to abide by design, land use, and operations and management requirements developed by the Navy and regulatory agencies. Site design strategies will focus on fill over existing site grades, minimizing cuts into existing grades to avoid contaminated soils. The San Francisco Bay shoreline extends into the Water Room, and therefore a 100' band around the dry dock shoreline is under BCDC jurisdiction.

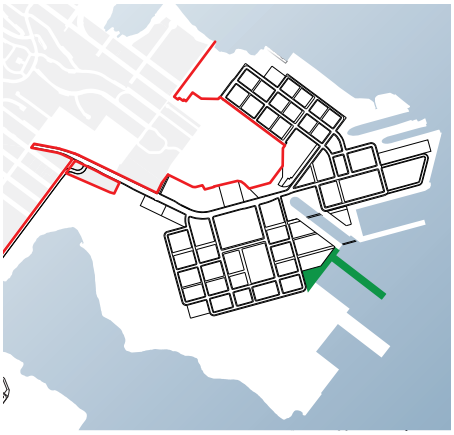
Waterfront Promenade South - South Pier

Concept: Neighborhood Entry & Promenade

This park provides a comfortable, neighborhood scale entry to the waterfront promenade. Terraced seat steps transition from development grade down to the waterfront promenade. Seating in sun and shade provide casual places for gathering and socializing, and to observe the activity along the Bay Trail and marina. In addition to the terraced entry plaza, the park includes ecological gardens (raised planting beds emphasizing a native horticultural aesthetic and beauty), small tree groves, sculpture gardens, and sloped lawn panels for lounging and picnicking. Historic landscape elements such as bollards and rails will be retained and reused where possible to retain a sense of the site's history.

Activities & Program

Located within the State Trust, activities and uses here are primarily related to views of and access to San Francisco Bay. Active uses include walking, running, and cycling along the Bay Trail. A space will also be provided for more stationary outdoor exercise with views to the water. Other activities may include picnicking, and fishing from the South Pier.



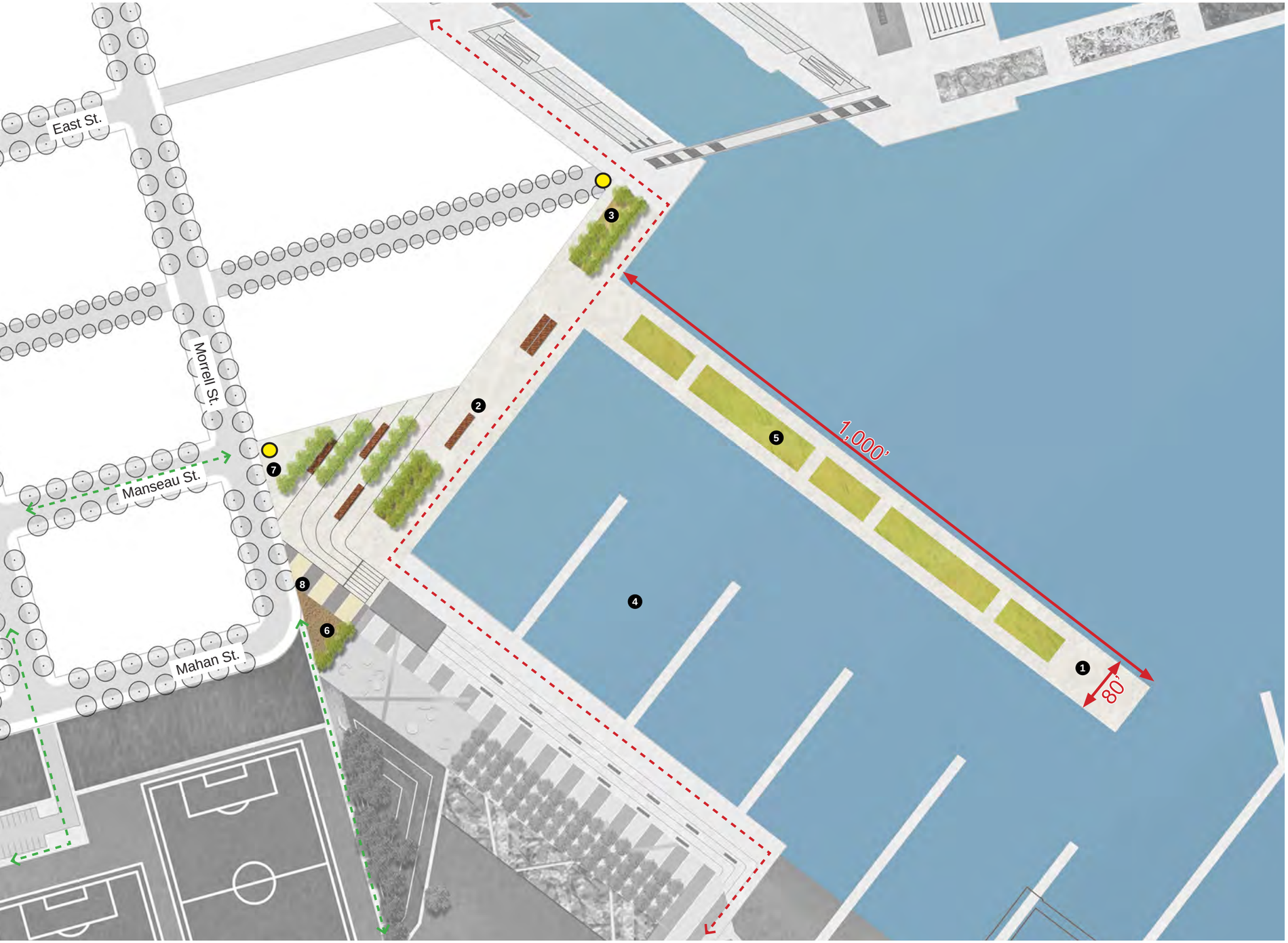
Park Location

Precedent - Terraced seating

Waterfront Promenade South - South Pier

Approximate Park Area: 5.3 acres
Comparable in width to Rincon Park at Embarcadero: 180'

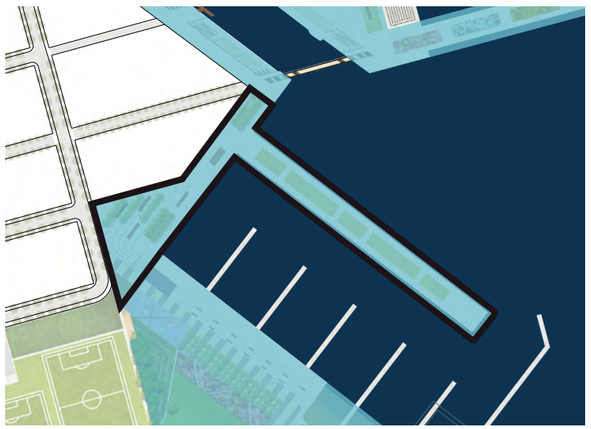
1. Waterfront Promenade
2. Seating Plinths
3. Tree Grove in Recycled Concrete and Gravel Paving
4. Marina
5. Native Plant Gardens
6. Exercise Area
7. SS Pump Station (Location to be refined)
8. SD Pump Station (Location to be refined)



Bay Trail
Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension

Notes:

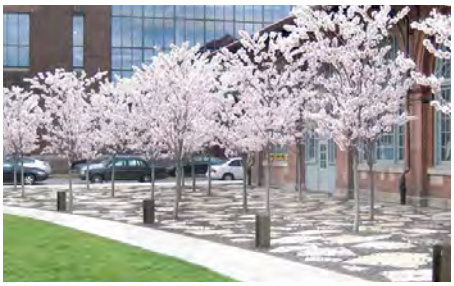
- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Precedent - Wooden seating

Precedent - Waterfront "Wind Garden" and native planting



Precedent - Tree grove in recycled concrete and gravel paving

Access & Circulation

The Waterfront Promenade South - South Pier creates a continuous link between the Water Room, the Warehouse District neighborhood, Waterfront Recreation and Education Park, and the Sports Field Complex. A main entry point from the adjacent neighborhood is located at a plaza at the intersection of Morrell Street between Manseau Street and Mahan Street.

Sustainability Features

Sustainable features include native plant design, and the reuse of existing materials as much as possible.

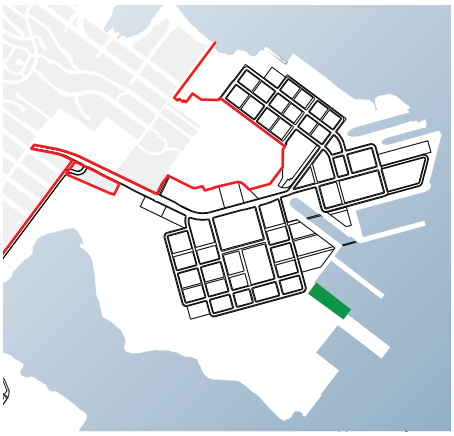
Waterfront Recreation and Education Park

Concept: Engaging the Bay

Visually framed by the massive 'Re-gunning Crane' beyond, the Waterfront Recreation and Education Park and connected is a place dedicated to learning about the bay.

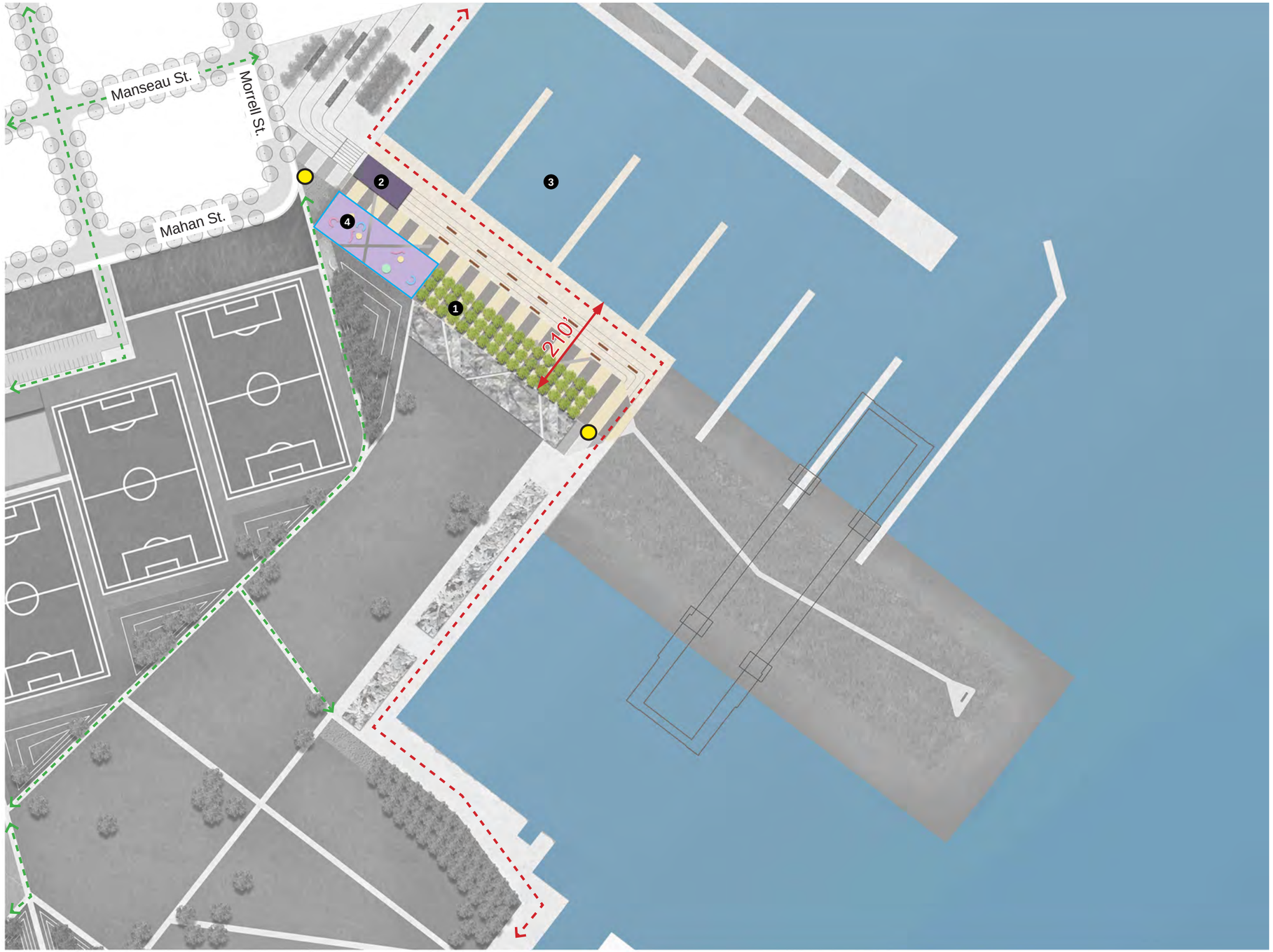
Activities & Program

A Waterfront Recreation and Education Center building will house bay-related recreation and education programs such as natural history, marine technology and industry, boating, and water-related sports. The building space may include spaces for exhibits, events, learning activities, program offices, and storage and will include restrooms serving all park visitors. A broad plaza and seat steps extend the exhibit, event, and learning activity spaces outdoors. The space can also be used to support large festivals and events at the adjacent Multi-Use Open Space green. For children, an interpretive play area will provide a fun and educational space linked to dynamic bay nature themes such as tides, waves, wind, and marine life. Within the State Trust, this Bay-related learning park will be a regional destination. The Cultural History Walk will continue along the promenade highlighting the maritime activities through on-site materials and historic shoreline markers.



Park Location

Precedent - Tree grove and seating



Waterfront Recreation and Education Park

Approximate Park Area: 3.4 acres

1. Tree Grove and Seating
2. Waterfront Recreation & Education Center and Storage Shed
3. Marina
4. Bay Nature Interpretive Play

Bay Trail

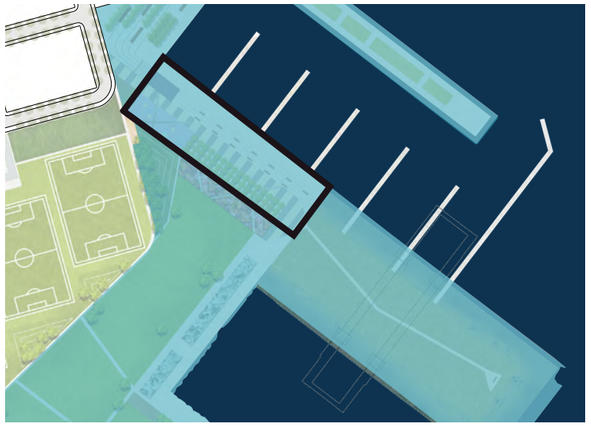
Major Bike / Pedestrian Connection

Park Entry Points

Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

N

0' 200' 400'

Scale: 1" = 200'

Access & Circulation

The primary entry is through the plaza near the intersection of Morrell Street and Mahan Street that is a part of the Waterfront Promenade South – South Pier park. Access through the site is also provided via the Bay Trail and smaller paths connecting directly to the adjacent parks. Parking is available at the Sports Field Complex parking lot, as well as on surrounding roads and parking garages in the Warehouse District neighborhood.

Sustainability Features

Planting areas for plaza trees will be constructed using techniques such as soil trenches or sub-surface soil cells to create ample soil volume that will support healthy mature trees to provide shade and shelter from the wind.

Re-gunning Crane Pier Habitats

Concept: Retaining an Industrial Landmark, Restoring Bay Nature

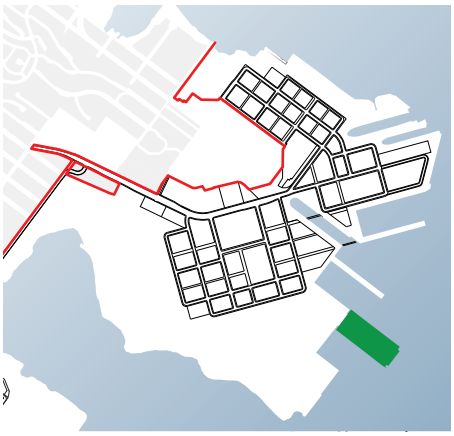
This park preserves the massive ‘ Re-gunning Crane’ that forms the most powerful landmark in the cultural landscape of the Shipyard. Beneath it, the eroding pier is transformed into new bay habitat, shaped by changing bay water levels and ecological process. As tidal wetlands and upland habitats take hold the crane will seem to emerge from the water, and the giant machine will become a “gateway” to the bay and its ecology. Juxtaposing industrial artifact with bay nature, this park is a garden of industry, nature, and time on a grand scale.

Activities & Program

The park intent is described below, but note that the specific design elements and site access may be constrained by Navy remediation plans and site restrictions.

Within the State Trust, the primary activity of the site is related to providing public access to the Bay’s edge and for learning about the site’s history and ecology. A trail will lead visitors under and through the crane to overlook points providing visitors with opportunities to view Bay wildlife. The Cultural History Walk may extend across this site, providing further opportunity to discuss the historic role of the Re-gunning Crane as well as the restored habitat’s relationship to earlier site inhabitants. Interpretive displays will explain the history of the shipyard, and the ecology of the bay that was filled to create this man-made landmass. The site is intended to be used by small classes of students, birdwatchers, and introspective visitors.

While the Re-gunning Crane is on a solid foundation and will be left in place, the pier that surrounds it is eroding. The pier walls will be removed and the ground laid back to allow water to create a fluid boundary for the former pier. The Re-gunning Crane pier will be modified to produce a mixture of new open water, tidal wetlands, and upland habitats. The walls of the pier will be removed down to the existing mudline and the ground will be laid back to provide a gentle gradient consisting of open water and intertidal areas. Along portions of the shoreline protected from wind-wave action, wetland soils will be placed at appropriate elevations. Although native tidal salt marsh vegetation will likely colonize the site naturally, some planting with native salt marsh species will be performed to increase the rate of marsh establishment. Portions of the pier subject to greater wave action will remain un-vegetated, providing substrate for benthic organisms such as oysters and foraging habitat for black oystercatchers and other shorebirds of rocky intertidal zones. The salt marsh/rocky intertidal zones will transition upward to a mosaic of dune sub-shrub, scrub, and grassland vegetation that will be planted on upland surfaces of the pier after appropriate soils are imported. These target plant communities consist of short-statured species that have low water-use requirements to facilitate water conservation and that will provide habitat for sparrows and other landbirds, as well as some small mammals. The Re-gunning Crane will be left in place and will continue to provide a nesting site for peregrine falcons, which have nested on the crane for several years.



Park Location

Precedent - Wetland Trail

Re-gunning Crane

Re-gunning Crane Pier Habitats

Approximate Park Area: 9.2 acres

1. Tidal Wetlands
2. Interpretive Walk
3. Re-Gunning Crane
4. Upland Habitats

Bay Trail

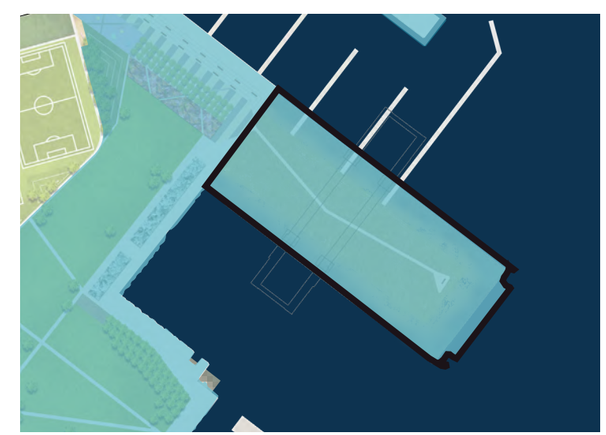
Major Bike / Pedestrian Connection

Park Entry Points

Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

N

0' 200' 400'

Scale: 1" = 200'

Access & Circulation

The Re-Gunning Crane is accessible along the Bay Trail and from the Warehouse District neighborhood via Morrell Street and Mahan Street and connections through the Waterfront Recreation and Education Park. While a pedestrian trail is intended to traverse the length of the Re-Gunning Crane pier and approach the water's edge, access may need to be limited or prohibited pending feasibility based on Navy site constraints, sensitive habitat protection, and changing bay water levels.

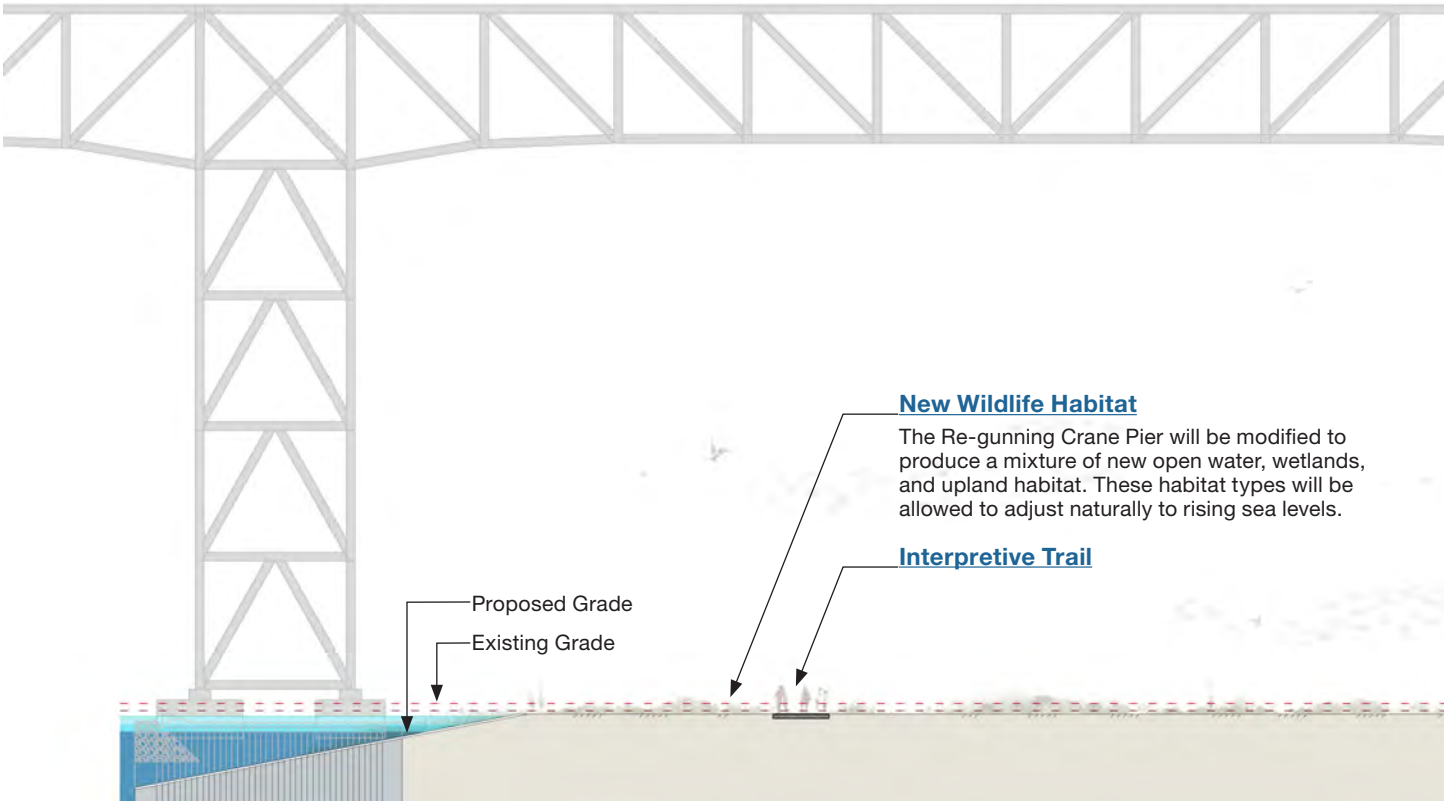
Sustainability Features

This park area focuses on the use of native plants of the Bay and displays reconstructed habitats. The site's most important cultural feature – the Crane – is preserved and showcased as a monument to the past uses of the land. Nearby, Piers 1, 2, and 3 will be cut off from the mainland providing a roosting place for waterbirds safe from predators.

Site Development Constraints

The Navy is responsible for the preparation of the site making it safe for use. At this time, Navy site preparation plans are not fully known. The park design and operation will need to abide by any design, land use, and operations and maintenance requirements developed by the Navy and regulatory agencies.

Implications for park design could include limiting site access, or developing plans that do not require cutting back the existing eroding bulkhead walls of the Re-Gunning Crane pier.



Re-gunning Crane Pier Section

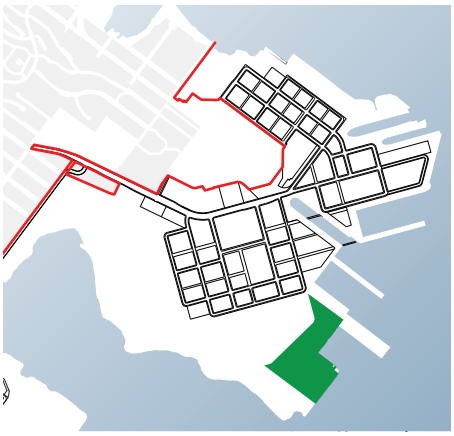
Multi-Use Open Space

Concept: Great Lawn

The Multi-Use Open Space will be a large, open lawn on the waterfront inviting every day uses as well as large, organized events.

Activities & Program

Within the State Trust, the Multi-Use Open Space will provide visitors from throughout the region with an expansive green for informal waterfront uses such as kite-flying and picnicking, as well as accommodating larger organized festivals and events. The Bay Trail passes through the site along the Bay's edge. The edge zone may also include space for a dog run, more structured exercise activity areas, and places for seating in sun and shade from which to enjoy waterfront views. The Cultural History Walk will continue along the promenade highlighting the maritime activities through on-site materials and historic shoreline markers.



Park Location

Precedent - Open lawn for events

Multi-use Open Space

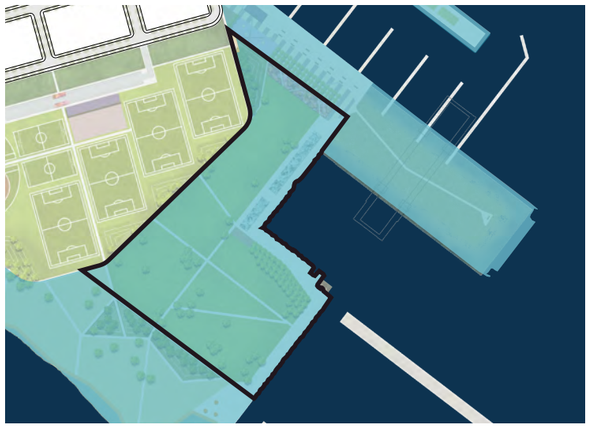
Approximate Park Area: 20.5 acres
Similar in size to Golden Gate Park's Big Rec. Area: 15 acres

1. Open Lawn
2. Native Grasslands
3. Ornamental Gardens
4. Exercise Area
5. Seating Grove
6. Water Bird Habitat Piers
7. Dog Run

Bay Trail
Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

N

0' 200' 400'

Scale: 1" = 200'

Access & Circulation

Primary entries to the site are located near the corner of Mahan Street and Morrell Street and along the Waterfront Education and Recreation Park promenade. Secondary entries exist from the Sports Field Complex and the Grasslands Ecology Park, with pedestrian paths encircling the site and crossing over the great lawn at key locations. At the waterfront edge, the Bay Trail is a significant pedestrian and bicycle route. Parking is available at the Sports Field Complex parking lot, as well as on surrounding roads and parking garages in the Warehouse District neighborhood.

Sustainability Features

The great lawn soils and grass planting will be designed to withstand heavy use while minimizing maintenance and water use to the greatest extent possible. Native and climate-adapted plantings will be used in other non-lawn areas in order to provide habitat and minimize water use.

Community Sports Field Complex

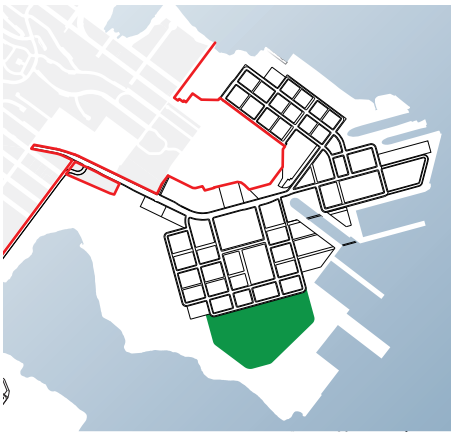
Concept: Regional Sporting Destination

The Sports Field Complex will provide much-needed community sports fields in one large complex, making it a destination for organized youth, high-school, and adult intramural sports.

Activities & Program

The sports fields will serve organized play for youth, high-school, and adult intramural sports. The park design anticipates soccer, softball, and baseball fields, however, the specific mix of athletic fields will be further refined through a further community and stakeholder outreach process. The Sports Field Complex could also be designed to accommodate other sports such as American football, Gaelic football, Australian rules football, lacrosse, field hockey, ultimate frisbee, and cricket. Flexible-use, paved surfaces could be included for sports such as bicycle polo or street hockey.

A field house with restrooms, food concessions, and meeting space will support league uses and regional events. Field lighting will support evening use. The critical mass of the fields in combination with the adjacent waterfront parks, trails, picnic and barbecue areas and other leisure offerings make this an ideal sporting complex.



Park Location

Precedent - Sport field with adjacent plaza picnic area

Community Sports Field Complex

Approximate Park Area: 28.7 acres
Approximate Stormwater Treatment Acreage: 3.8 acres
Approximately two times the size of Golden Gate Park's Big Rec. Area: 15 acres

1. Multi-use Sports Fields
2. Softball / Baseball Fields
3. Field House (Approx. 10,000sf) with Restroom and Storage Shed
4. Accessible Parking
5. Parking Structure (to be located in R&D)
6. Centralized Stormwater Treatment
7. Flexible Sport Court Area
8. SD Pump Station (Location to be refined)

Bay Trail
Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension
Centralized Stormwater Treatment

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- Centralized Stormwater Treatment areas will be public with private maintenance.
- For legend information, refer to the CPHPS illustrative (p. 9).

State Trust Land Restrictions

N

0' 200' 400'

Scale: 1" = 200'

Access & Circulation

In addition to automobile parking, an access drive and parking lot located of Mahan Street will also provide space for bus drop-off and bicycle parking. Additional automobile parking will be available on surrounding streets and parking garages within the Warehouse District neighborhood. Pedestrian and light maintenance vehicle circulation is provided along perimeter pathways as well as an east-west and north-south cross axis.

Sustainability Features

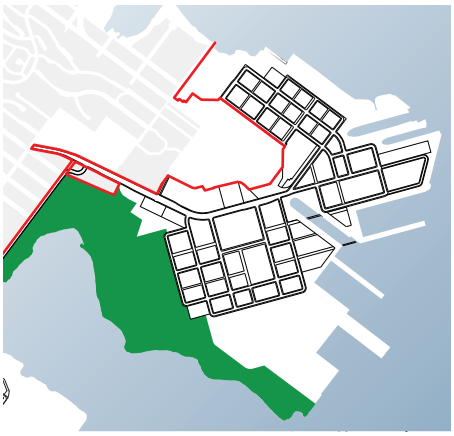
The sport fields soils and turf planting will be designed to withstand heavy use while minimizing maintenance and water use to the greatest extent possible. In addition to living turf fields, artificial turf fields utilizing non-toxic infill materials may also be considered to better accommodate heavy, year-round play while minimizing water use. Native and climate-adapted plantings will be used in other non-lawn areas in order to provide habitat and minimize water use.

This park will contain publicly owned and accessible Centralized Stormwater Treatment parcels designed integrally as a part of the overall park, but maintained by the development and not the City and County of San Francisco. These parcels will contain rain gardens to ecologically treat stormwater from the surrounding public streets and private development parcels. Located along Mahan Street, these rain gardens will also provide a noise and light buffer between the sports fields and the Warehouse District neighborhood.

Grasslands Ecology Park

Concept: Grasslands Ecology

Building on the restoration project at Yosemite Slough, the Grasslands Ecology Park will transform contaminated Navy lands on the north shore of the South Basin with vast new habitat areas, supporting biodiversity and the Bay ecosystem. Sculpted landforms, native grasslands, freshwater wetlands, shoreline mudflats and tidal wetlands, coastal scrub, and tree groves add to the diversity of habitats. The existing natural landscape is supplemented by designed landscape components such as clustered windbreaks and viewing mounds, shoreline overlooks and a network of pathways that support passive recreation uses. In addition, an interpretive native plant garden is designed to accommodate large outdoor classes creating a setting for the study of bayside habitats and ecology. These landscape strategies provide places from which to seek respite from the intensity of the city and connect with nature at the Bay's edge.



Park Location

Activities & Program

This park, within the State Trust, is programmed for passive recreation related to enjoyment of the waterfront and the restoration of native habitats. Activities will include walking and bike riding along the Bay Trail, picnicking, sitting aside windbreaks, and observation and study along the water's edge. Interpretive signage along the Cultural History Walk will focus on the ecology of the site and the Naval Radiological Defense Laboratory previously situated nearby. The southern end of the park also provides an opportunity to connect to the Interpretive Hilltop Loop and Hillside Terraces walks.

Precedent - Seating along waterfont trail

Within the Grasslands Ecology Park, at least 43 acres of native grassland will be restored by the removal of non-natives and planting of native grass and forb species. Trail setbacks, habitat fencing, screening, and signage will be used where needed to protect sensitive wildlife habitat and flora. Although trees and shrubs may be planted elsewhere within the Grasslands Ecology Park to provide a mosaic of habitats, woody plants that are planted or allowed to establish naturally within the grasslands will be limited to a few small, scattered patches of low-growing coastal scrub plants such as coyote brush, which will provide cover for wildlife that may otherwise forage in the grasslands.

Access & Circulation

The entrances to the park are informal in character, with numerous paths extending from 'R' Street and continuing in multiple directions. Park users can choose a direct path toward the waterfront or a route that encompasses the organic layout of the Park. The Bay Trail experience is characterized by wetlands and the shoreline edge, bringing park users within close view of Bay wildlife and offering a discernibly less urban park condition. 'R' Street offers ample street-side parking for regional visitors and for families traveling to the Park and unloading bicycles for use along the Bay Trail, and elderly visitors needing accessible waterfront connections.

Precedent - Grasslands at the Bay's edge

N

0' 450' 900'

Scale: 1" = 450'

Grasslands Ecology Park

Approximate Park Area: 106.8 acres
Approximate Stormwater Treatment Acreage: 2.4 acres
Similar to Crissy Field - Yacht Road to Warming Hut and between Mason street and The Bay: 105 acres

1. Picnic "Pod" and Shelters
2. Viewing/Windbreak Mound
3. Overlook Terrace
4. Native Grasslands
5. Interpretive Center / Restroom
6. Centralized Stormwater Treatment
7. Native Plant Gardens
8. Viewing Pier
9. Freshwater Wetland (to be constructed by Navy)
10. Tidal Wetland (to be constructed by Navy)
11. Amphitheater / Outdoor Classroom
12. Tennis Courts
13. Basketball Court
14. Exercise Area
15. Dog Run
16. SS and SD Pump Stations (Location to be refined)

Bay Trail

Major Bike / Pedestrian Connection

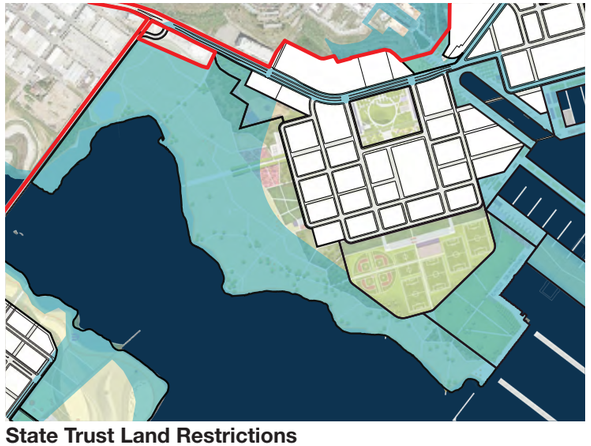
Park Entry Points

Park Dimension

Centralized Stormwater Treatment

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- Centralized Stormwater Treatment areas will be public with private maintenance.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Sustainability Features

A main focus of this park is to create new habitat areas and bring the experience of nature to urban dwellers and to support nature education. Native plantings will also minimize the need for irrigation.

This park will contain publicly owned and accessible Centralized Stormwater Treatment parcels designed integrally as a part of the overall park, but maintained by the development and not the City and County of San Francisco. These parcels will contain rain gardens to ecologically treat stormwater from the surrounding public streets and private development parcels. Interpretive elements will highlight these green infrastructure features and the integration of urban and natural process.

Site Development Constraints

The Navy is responsible for the preparation of the site making it safe for use. The Navy, with the input of a variety of regulatory agencies, will design and install a remediation of the site as well as prepare plans for controlling land use, maintenance and operation of the site. The Navy's currently proposed plan is to cover remaining soil containing hazardous substances to prevent exposure with a soil cap. At the shoreline, the Navy would install a rip rap revetment to protect the site from erosion, though in some areas tidal wetlands will also be constructed.

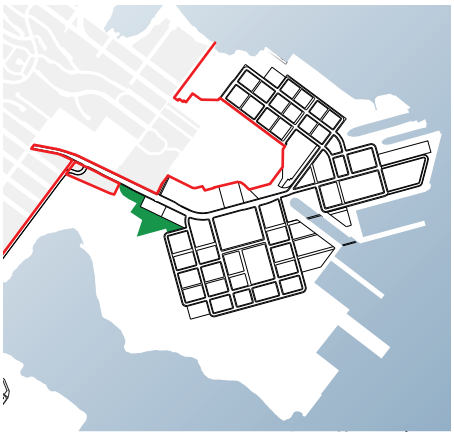
The park design and operation will need to abide by design, land use, and operations and maintenance requirements developed by the Navy and regulatory agencies.

Implications for park design could include a site grading strategy that is composed of fill only, without cutting into the existing grade. Additionally, future detailed plans by the Navy may specify requirements for future park infrastructure such as water, sewer and irrigation lines. Footings for fencing, retaining walls, boardwalks, and other structures may also need to be designed with shallow footings so as to avoid excavating beneath the soil cap. Restrictions may also be placed on the construction of enclosed, occupied structures such as restrooms.

Maintenance Yard

Concept: Sustaining Parks

The Maintenance Yard is a centralized facility to efficiently support the maintenance of all of the Candlestick Point and Hunters Point Shipyard parks. The facility is visually screened from surrounding parks and development by large, forested landscape berms.



Park Location

Activities & Program

The parks maintenance facility will include:

- Office, garage, and workshop building
- Equipment storage and parking
- Outdoor materials storage
- Composting
- Small plant nursery space

Access & Circulation

Service vehicle access will be provided off of Crisp Road and will be coordinated with streetscape design to ensure the safety of all road users. Service vehicle access may also be provided directly from the path system of the Grasslands Ecology Park.

Sustainability Features

The Maintenance Yard will include large-scale composting facilities for managing green waste generated by the parks system.

Maintenance Yard

Approximate Park Area: 5.5 acres
Compare to Golden Gate Park Structural Maintenance Division & Nursery: approx. 11 acres

1. CP-HPS Park Maintenance Facility
2. SS Pump Station (Location to be refined)

N

0' 200' 400'

Scale: 1" = 200'

Bay Trail

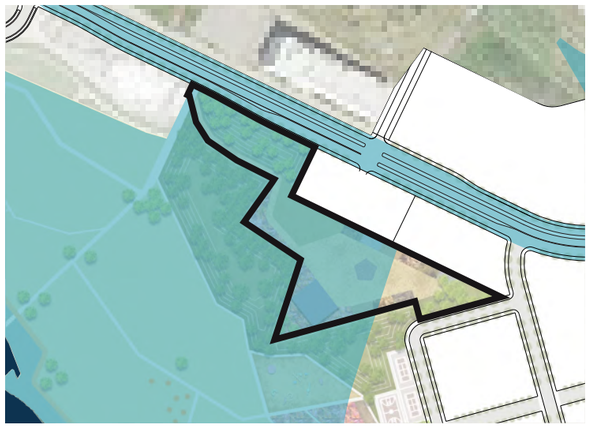
Major Bike / Pedestrian Connection

Park Entry Points

Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Access & Circulation

In addition to containing its own dedicated parking areas, the site shares a parking structure with the Warehouse District. Circulation within the site is primarily organized along the inner and outer ring roads, with additional connections provided by interior pathways.

Sustainability Features

Sustainability features include highly efficient irrigation and lighting systems. The CP-HPS parks' Maintenance Yard which is included in Sports Field Complex area will serve as a central maintenance facility from which to efficiently manage the parks. The Maintenance Yard will include large-scale composting facilities for managing green waste.

Green Room

Concept: Central Repose

The Green Room is a park in two parts: at once a singular new public space for a burgeoning community and part of the pedestrian threads stitching together the surrounding neighborhoods, the Green Room allows for a variety of programmatic engagements year-around.

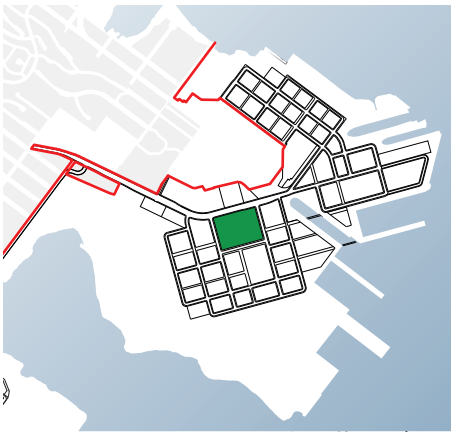
Designed as a place of respite from the surrounding area's predominant bay winds, the Green Room acts as one of the two publicly accessible outdoor "rooms" connecting the community and promoting cross-cultural experiences. The Green Room anchors the Shipyard character amidst key legacy buildings (411 and 813) and opens up key views to these markers of naval history. Because the Hunters Point Shipyard site is surrounded on most sides by open water and is susceptible to winds, the Green Room provides a quiet respite away from the airiness of the perimeter parks. This promotes and supports much of the activity that passes through.

Its strong geographical prominence within the first major phase boundaries enables the Green Room to be an immediate gathering space to launch the phased development – both a destination and a result of major placemaking coordination, the Green Room holds a prominent and intentional position at the entry of major modes of transportation. The park scale is calibrated to match parks that are of relative scale in the city and occupy the space of 4 city blocks; common across the city and provides a public outlet for the varied program surrounding the site. Lined with retail, schools, residential units of varying types, research and development offices, and markets, the Green Room is a civic backdrop to community users of all backgrounds and income levels. The park is primed to engage local cultural organizations by providing the infrastructure needed for temporary pavilions, tents, informal gatherings and festivals alike.

Activities & Program

The Green Room is surrounded on three sides by retail and flanked on two sides with research and development buildings. Because of this immediate adjacency, the park is well suited to serve a variety of user types existing within the Shipyard community. Along with its consistent activation by the adjacent residential parcels, this diversity will allow the park to be an active participant in daily life across all hours and seasons.

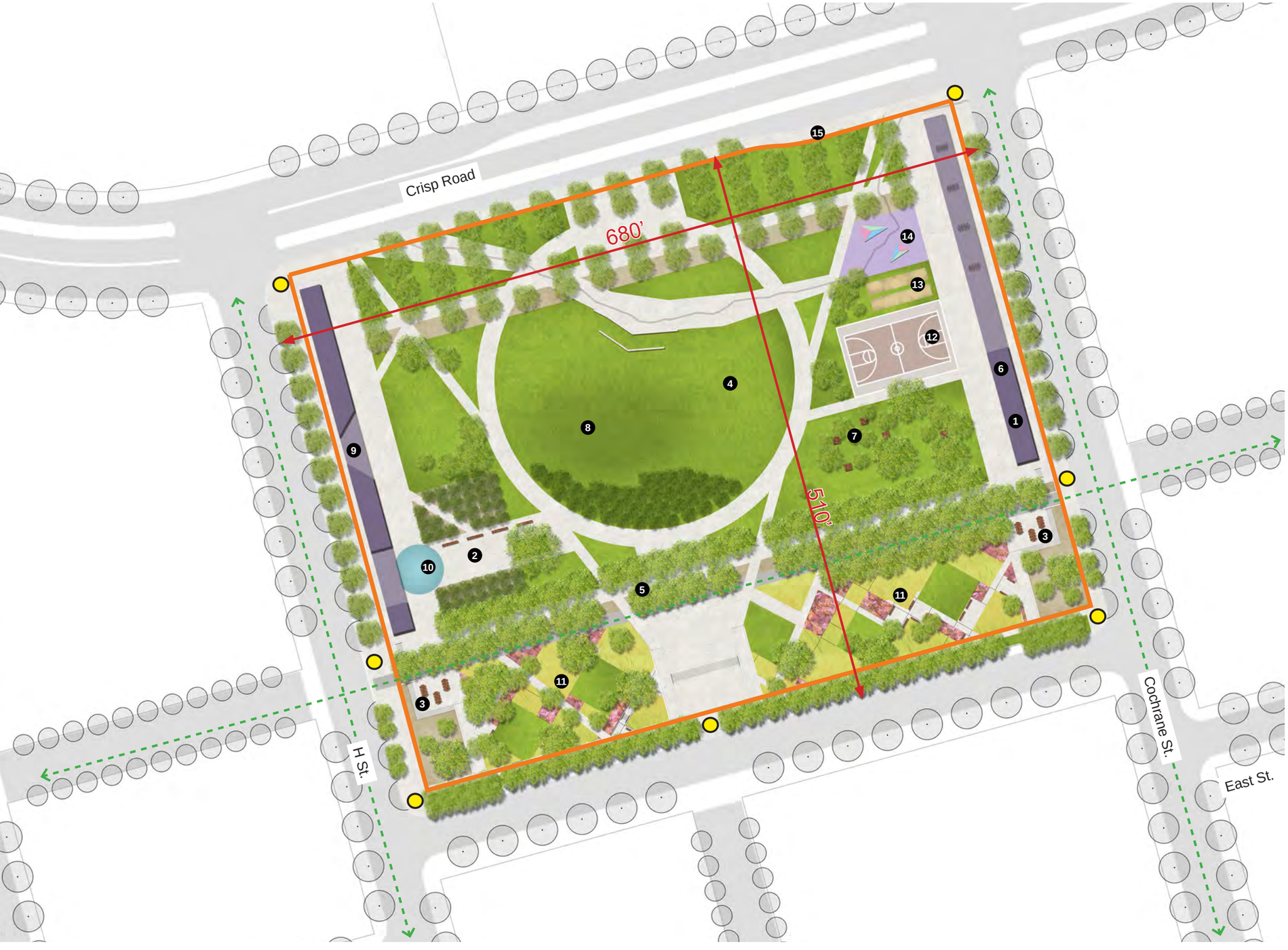
Each corner hosts the infrastructure needed to support and reinforce the park's civic prominence. Programmatic zones are concentrated to maximize public open space; reserving this space for both the mind and body, the park will preserve space for a variety of use.



Park Location

Precedent - Children's play area

Precedent - Pavilion



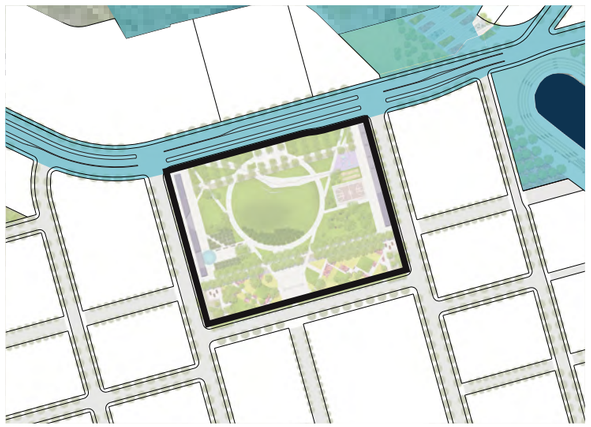
Green Room

Approximate Park Area: 8.1 acres
Compare to Civic Center Plaza: 5.2 acres

1. Utility Pavilion
2. Plaza
3. Shaded Grove and Picnic Tables / Seating
4. Open Lawn
5. Promenade / Pedestrian and Bike Path
6. SS Pump Station (Location to be refined)
7. Picnic Areas
8. Slope Seating
9. Pavilion
10. Reflecting Pool
11. Gardens
12. Basketball Court
13. Bocce Court
14. Children's Play Area
15. BRT stop

Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension
Publicly Accessible Private Parcel

Notes:
- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- The Green Room will be private property with a public access easement.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Precedent - Urban community farm

Precedent - Semi-urban zone

Access & Circulation

The Shipyard development plan includes a primary access road (The Spine) linking Hunters Point back into the Bayview neighborhood and beyond by means of BRT, automobile, bicycle, and pedestrian networks. The Green Room terminates the key vistas along the entry from the Spine road and is therefore a critical visual and functional centerpiece of the development. The Spine road enters the effective boundaries of the Green Room and incorporates the transportation system into a more complete and inclusive vision of public space. The park areas will prioritize accessible features and will promote equal access to all residents and visitors, regardless of age or ability.

The northeast corner of the park lies adjacent to a key stop along the BRT route, allowing the Green Room, as Hunters Point's modern cultural hub, to be the point of entry to visitors and residents alike. Access to the Green Room is available with a 5-minute walk or less from any parcel within Hunters Point South.

Sustainability Features

The groundscape design provides topographic relief with mounds providing slightly elevated views of the surrounding park and urban fabric. Native and climate-adapted planting will provide habitat and minimize water use. The introduction of new trees, vegetation, and permeable surfaces will moderate the site microclimate and reduce stormwater runoff.

Site Development Constraints

The Green Room Park is located over several zones identified as containing contaminated soils and which may require land use controls. The Navy, with the input of a variety of regulatory agencies, will design the remediation of the site as well as prepare plans for controlling land use, maintenance and operation of the site. The park design and operation will need to abide by design, land use, and operations and maintenance requirements developed by the Navy and regulatory agencies.

Shipyard Hillside Open Space

Concept: Vertical Gardens

The Shipyard Hillside Open Space (SHOS) connects the Shipyard waterfront to the Hunters Point Hilltop neighborhood above with iconic landscape terraces, stairs, and pathways. The majority of the site is impressed with the State Trust and, as a regional serving open space with views of the water and historic shipyard facilities, provides for Trust-consistent uses. The design of SHOS is predicated on a few simple design ideas that in combination create a rich and varied environment.

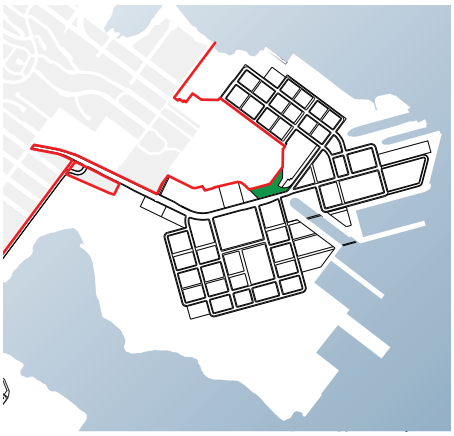
It is at once a path and a destination; the park equally serves pedestrians in transition and park dwellers taking in the bay view panorama. The park exists on the largest waterfront elevation change in the Hunter's Point / Bayview area, allowing for sweeping views over and between the future development sites. Reflecting the site's special opportunity to connect Hillpoint Park with the new Shipyard, and anticipating potential future installations of a strong architectural feature, the current SHOS plans cohere the evolving phases of HPS and provide visual connection up, down, and across the hillside.

Activities & Program

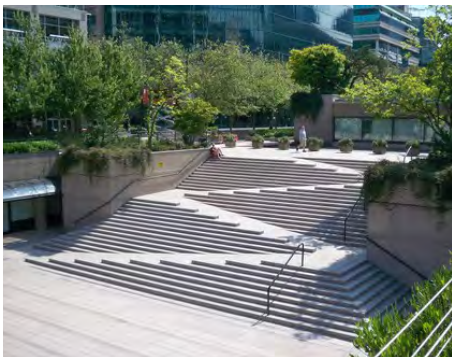
During a walk up or down the pathways and stairs, incredible panoramic vistas of San Francisco Bay, the Shipyard, Candlestick Point, the East Bay and Mount Diablo are prominently visible. The low-incline switchbacks turn a typical walk into an enjoyable experience with places to pause and linger, amidst the Shipyard and the broader view. Grand community events such as concerts and fireworks at Dry Dock 4 may occur, solidifying the Shipyard Hillside Open Space as a pivotal location for adjacent neighborhood and regional gatherings.

Access & Circulation

The fundamentals of the SHOS design are rooted in the conviction that pedestrians of all abilities have equal access and views. A series of hillside ramps and stairs (all less than 1:20) help to create a park on an incline.



Park Location

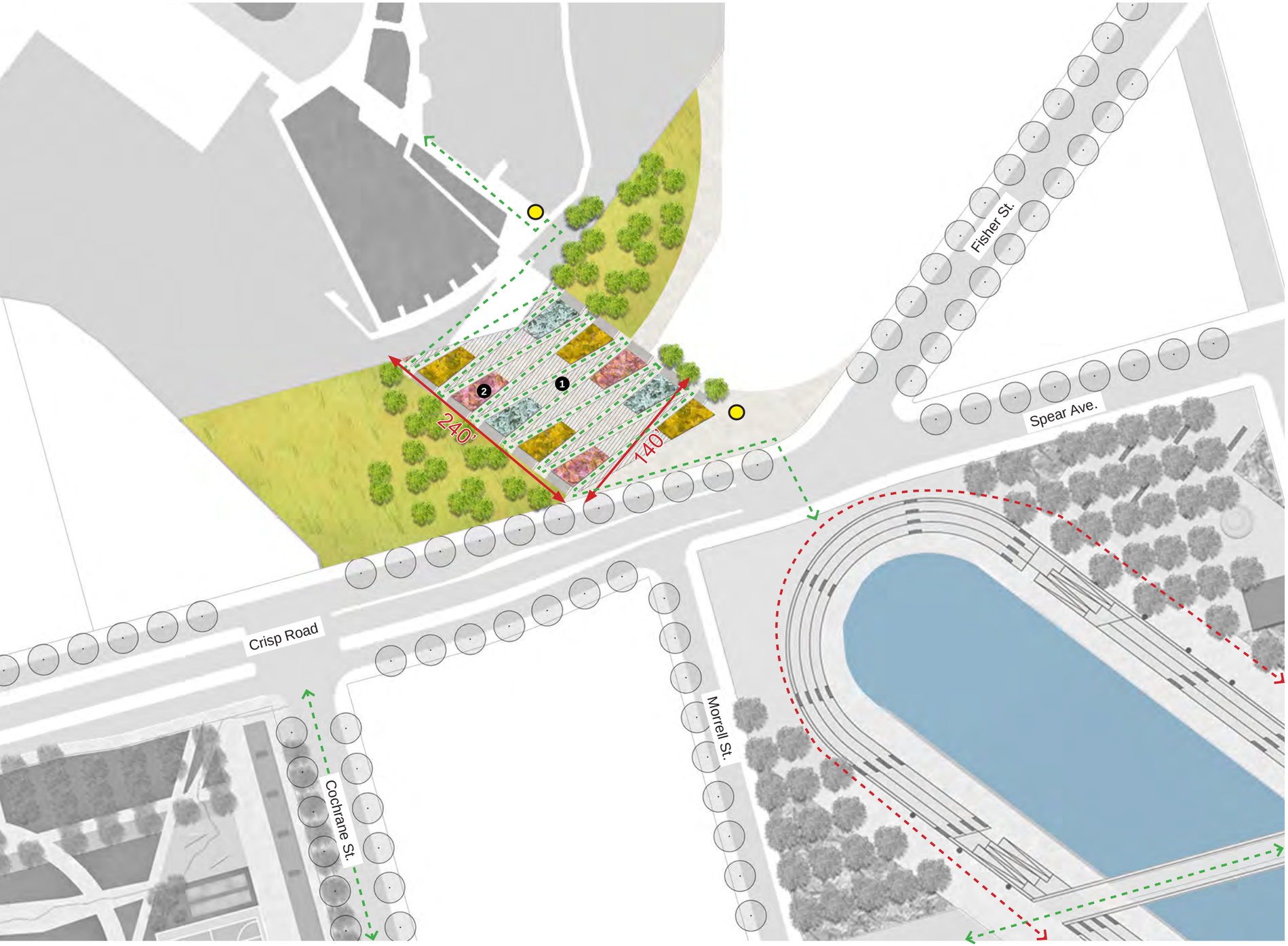


Precedent - Pathways and stairs

Shipyard Hillside Open Space

Approximate Park Area: 2.4 acres

1. Overlook Terrace
2. Native Planting Garden



Bay Trail

Major Bike / Pedestrian Connection

Park Entry Points

Park Dimension

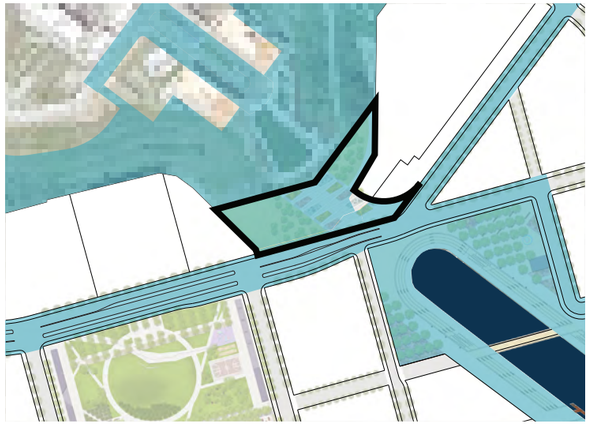
Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- Program Items in red are new additions from the 2010 Plan.
- For legend information, refer to the CPHPS illustrative (p. 9).

N

0' 100' 200'

Scale: 1" = 100'



State Trust Land Restrictions

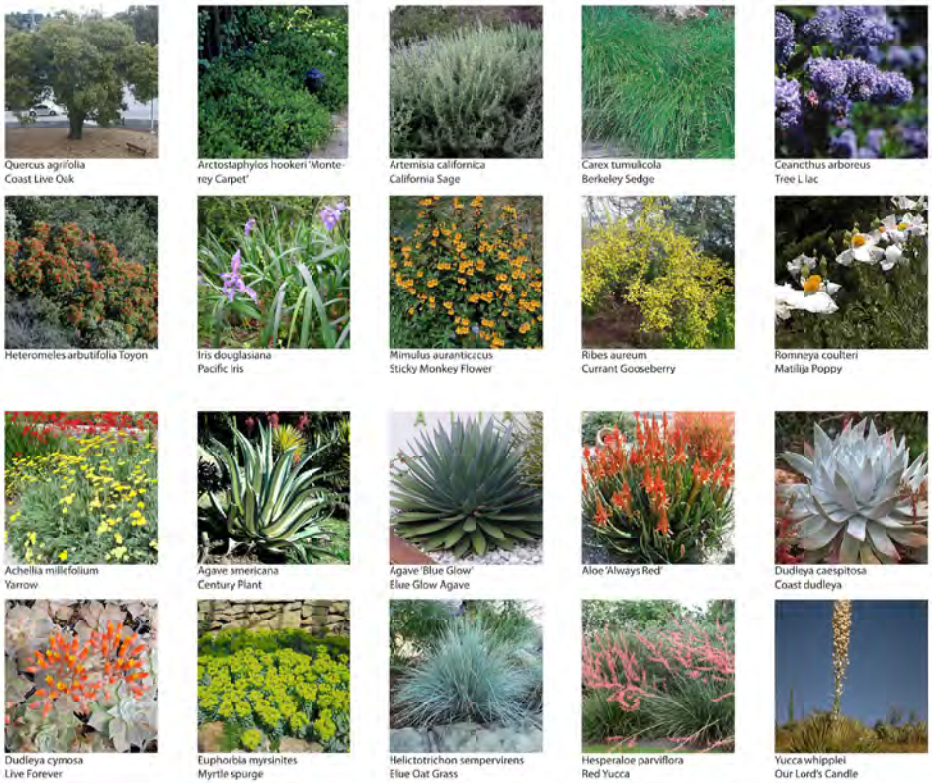
Sustainability Features

The oak woodland knoll and the serpentine rocks of this hillside reveal the remnant native ecology of Hunters Point. Proposed native plant habitats reinforce the native ecologies. Oak woodland planting reinforces the existing woodland knoll and wraps around the sides of the new stair system, framing and holding the formal edges of the stair. In between the scissoring pathways, native succulent plantings provide a beautifully detailed garden to enjoy while walking up or down the Hillside.

Site Development Constraints

Much of the hillside is composed of exposed serpentinite, a native rock containing naturally occurring asbestos. To protect public health, work on the hillside must comply with Article 31 of the San Francisco Department of Public Health Code.

SHOS navigates a 66-foot elevation change between elevation 175.5 at Hillpoint Park and a proposed elevation of 109.0 at Crisp Road. Stairs connect down the hill, and each landing is connected by less than 1:20 pathways. Additionally, the park boundary is nestled between several civic boundaries, and phasing of the park features reflect this nature.



Planting concepts: Oak woodland hillside and serpentine succulent garden

Candlestick Point

Alice Griffith Neighborhood Park

Concept: Neighborhood Commons

Alice Griffith Neighborhood Park serves as the community commons for the renewed Alice Griffith neighborhood. It is designed to become the outdoor living room of the community, where neighbors get to know each other, socialize and celebrate their commonalities and differences. The park's east-west orientation is purposeful – it acts as a link between the existing Bayview neighborhoods and the rebuilt Alice Griffith housing development, and it is hoped that the existing adjacent community will use this open space to connect with their new neighbors.

Activities & Program

Similar in width to the San Francisco's South Park, the Alice Griffith Neighborhood Park has a key mix of uses that will draw users of all ages and interests. The park offers a mix of active and passive uses including two multi-purpose open lawn areas, a playground and tot lot, a fenced running area for small dogs, a shade pavilion with barbecue and picnic tables, and a basketball court. A community garden with fruit trees, garden plots, and tool shed will serve as a replacement for the existing Alice Griffith Community Garden.

Park Location

Precedent - Community gardens and tool shed

Precedent - Tot lot

Alice Griffith Neighborhood Park

Park Area: 1.4 acres
Comparable to South Park in Width: 80.' Approximately twice the length.

1. Specimen Tree
2. Playground / Tot Lot
3. Flowering Tree Grove with Seating
4. Bioswale
5. Lawn
6. Pathway
7. Pavilion
8. Community Gardens
9. Tool Shed
10. Basketball / Tennis Court
11. Dog Run

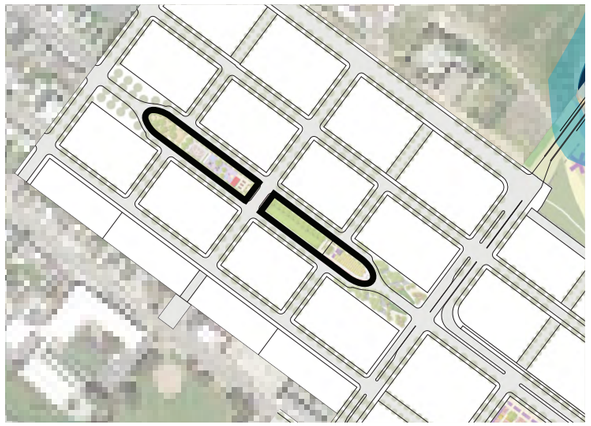
Major Bike / Pedestrian Connection

Park Entry Points

Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Access & Circulation

Centrally located to allow the neighborhood streets system to intersect the park in an even rhythm, the park is approachable and accessible from all sides. Entrances are highlighted at each intersection with benches and shade groves, and a continuous east-west path links the park sections that span four blocks.

Sustainability Features

The community garden offers a central sustainable feature, providing opportunities to grown local food and connect with neighbors. Additionally, rain gardens may filter stormwater and demonstrate how designed interventions can mitigate some of the impacts of urbanization.

Candlestick Point North Neighborhood Park

Concept: Neighborhood Recreation

Candlestick Point Neighborhood Park is designed to become the focal point of the new Candlestick North neighborhood. It will serve as the common “yard” of the high density development that will surround it, where recreation and socializing are key community offerings.

Activities & Program

The Neighborhood Park offers a mix of active and passive areas for users of diverse ages and interests. It includes a large multipurpose open lawn, available for frisbee, soccer, and kite flying, playgrounds for tots and school age children, community gardens, seating areas, basketball courts and garden beds. A shade pavilion with adjacent picnic tables and barbecue will also be provided. A perimeter walk with benches will also allow a more passive interaction with the park, where it will be possible to enjoy the outdoors in a more introspective and quiet fashion.

Park Location

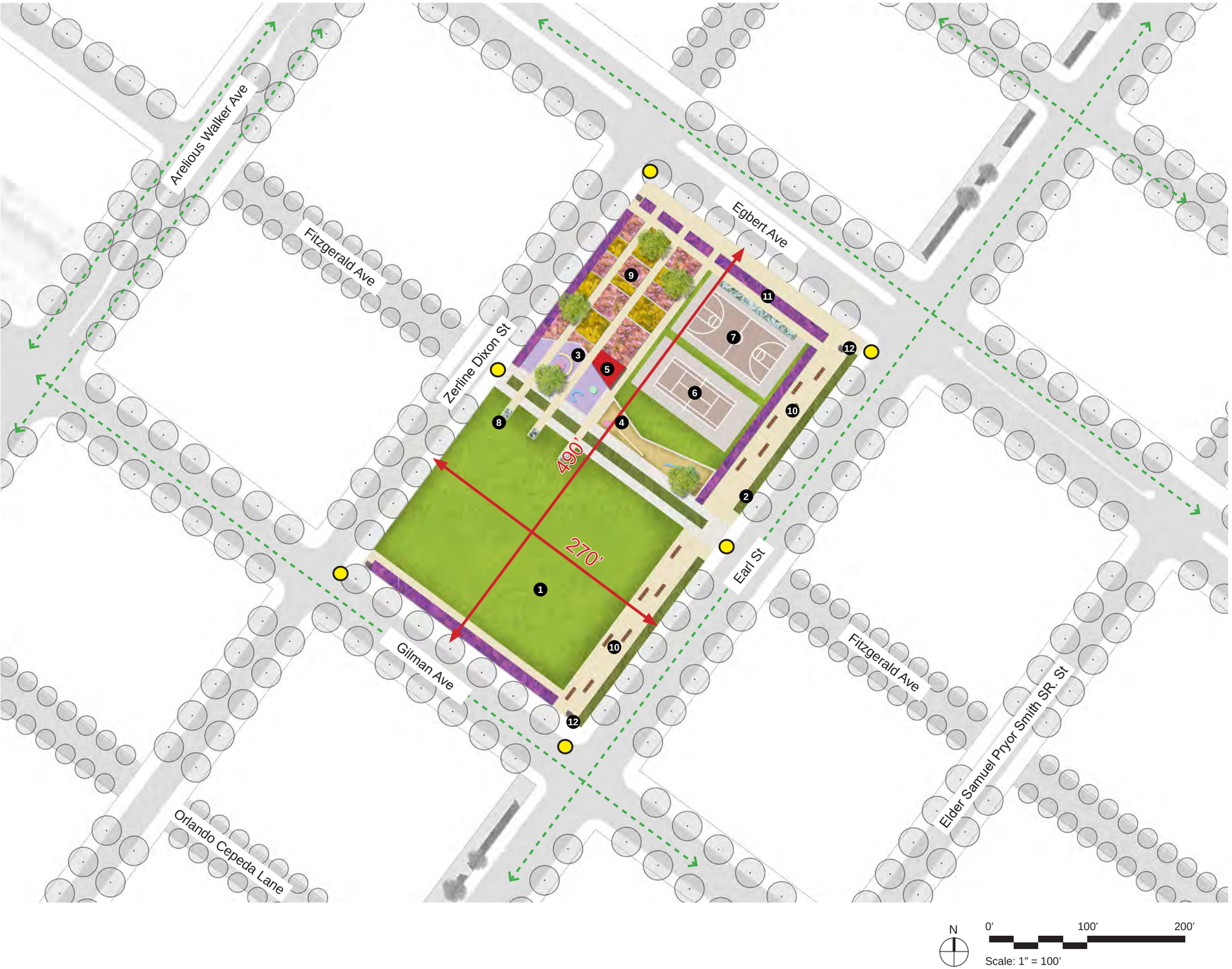
Candlestick Point Neighborhood Park

Precedent - Sidewalk grove

Candlestick Point Neighborhood Park

Park Area: 3.1 acres
Comparable in size to Victoria Manalo Draves Park: 2.5 acres

1. Open Lawn
2. Bioswale
3. Playground
4. Small Dog Area
5. Shade Pavilion
6. Tennis Court
7. Basketball Court
8. Monolithic Wood Seating Plinths
9. Community Gardens
10. Seatings
11. Perimeter Garden
12. Park Entry Pylon on Each Corner



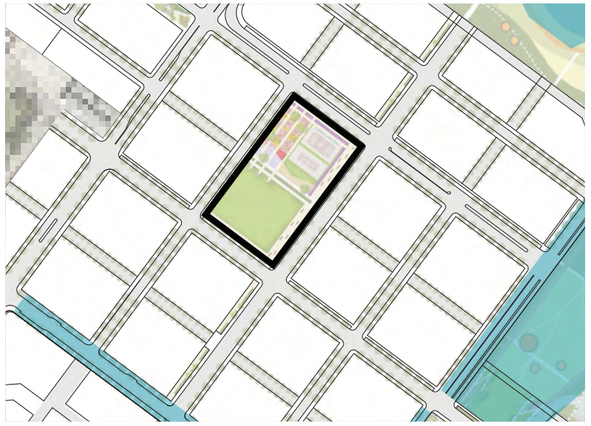
Major Bike / Pedestrian Connection

Park Entry Points

Park Dimension

Notes:

- Exact location of this park is subject to change, but size will remain 3.1 acres.
- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Access & Circulation

The park is centrally located and can be reached by a few minute walk from anywhere within the CP North neighborhood. Adjacent Boulevard Park Streets provide connections to Alice Griffith Neighborhood Park two blocks to the west, and the State Park, two blocks to the north, and also two blocks to the east.

Sustainability Features

A central organizing feature of the park is a rain garden that filters on-site and adjacent street water. Climate-adapted garden beds can be organized as water-wise demonstration gardens. Community garden plots give urban dwellers a place to get their hands dirty and enjoy the pleasures of growing fresh food and flowers.

Wedge Park

Concept: "Central Square"

The Bayview Gardens/Wedge Park is the "Central Square" for Candlestick Point. Opening up from the Harney Way retail street, it provides dramatic views of Hunters Point and the Bay and provides a strong link between the urban development and the State Park.

Activities & Program

The park's uses are primarily focused on community gathering and neighborhood socializing. The park includes a children's play area that may expressed via rotating sculptural / interpretive installations, providing creative play for children as well as a comfortable and sophisticated place for older generations – a central square where one comes to promenade, socialize, and people watch. Across from the proposed arena and retail center, the southernmost section of the park is a dynamic urban plaza a hub of activity centered around the bus rapid transit stop and café. To the north an interactive play fountain is the pivot point of the park, while ornamental gardens, and storm water rain gardens provide a sense of enclosure on the west side. Lawn areas with edge paths allow the set up of community fairs, farmers markets, music festivals, and art and food festivals. The design is intended as a flexible canvas that will encourage a variety of programs. The northernmost section of the park, within the State Trust, provides open lawn and native planting providing a flexible open space near the gateway to the Candlestick Point State Recreation Area.

Park Location

Precedent - Play area with iconic and sculptural forms

The Wedge Park / Bayview Gardens

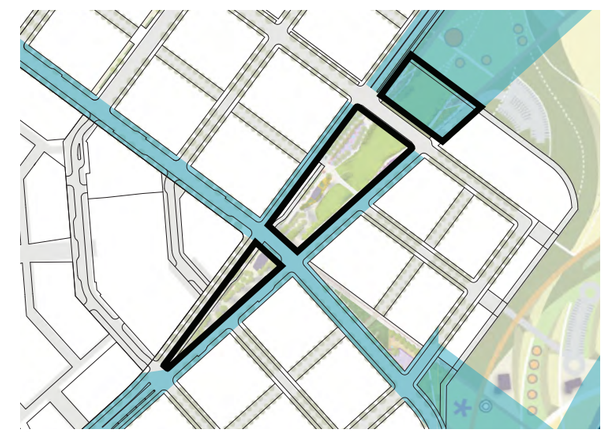
Bayview Gardens / Wedge Park

Park Area: 3.7 acres
Comparable in size to Union Square: 2.6 acres

1. Planting Area
2. Plaza
3. Bus / BRT Shelter
4. Cafe / Information Kiosk
5. Lawn
6. Ornamental Gardens
7. Interactive/Sculptural Children's Play Area

Major Bike / Pedestrian Connection
Park Entry Points
Park Dimension

Notes:
- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

N

0' 120' 240'

Scale: 1" = 120'

Access & Circulation

Located at the seam of the two urban grids of the new development, the Wedge Park can be easily accessed from all directions. The park is a key feature of the urban plan that stitches the urban neighborhoods together with the State Park. This interface brings urbanity to the park core, and the park to the urban heart of the new development.

Sustainability Features

Sustainability features include storm water gardens, drought tolerant garden beds, shaded seating areas, and a broad extension of the urban forest into the center of the development.

Precedent - Geometric planting structure

Precedent - Contrast between turf and informal planting

Mini-Wedge Park

Concept: Bayfront Connection

The Mini-Wedge Park serves as a primary connection between the urban core of the new Candlestick Point and the State Park beach area. A range of programs within an intimate setting produces a space that enlivens the neighborhood while also providing a critical connection between the urban parks and the bay edge.

Activities & Program

The park's program strategy is focused on generating interaction among neighbors and visitors by providing varied activities within a relatively intimate scale. The programmatic gradient flows from active to passive as users move from the urban edge toward the water. A tot lot and dog run on the northwest side provide families with program-specific spaces. As visitors move toward the southeast, a generous lawn with trees promotes gathering, conversation and picnics. The easternmost section of the park, within the State Trust, provides open lawn and native planting providing a flexible open space near the gateway to the Candlestick Point State Recreation Area.

Park Location

Precedent - Shade pavilion

Mini-Wedge Park section

0' 32' 64'

Scale: 1" = 32'

Mini-Wedge Park

Park Area: 0.8 acres
Comparable in size to Mission Playground: 1.3 acres

1. Tot Lot
2. Dog Run
3. Lawn
4. Centralized Stormwater Treatment

Bay Trail

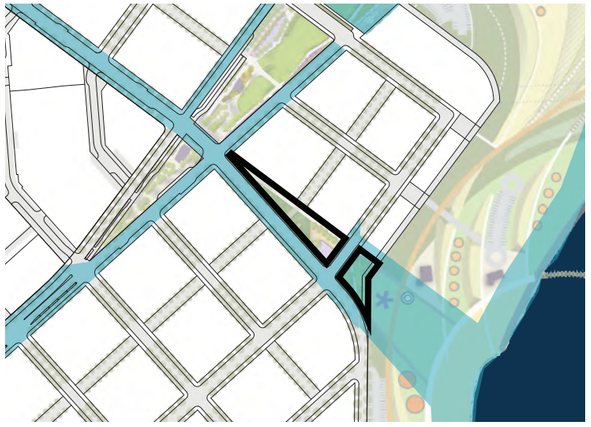
Major Bike / Pedestrian Connection

Park Entry Points

Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Access & Circulation

Long linear paths run through the center of the park and along its northern edge, and carry pedestrians from neighborhood streets to the State Park waterfront. The wedge shape opens vistas from the density of the urban neighborhood into the expansive spaces and sweeping arc of the water's edge.

Precedent - Water feature

Sustainability Features

A focus on sustainable stormwater management provides both an ecological and formal organizational structure for this park. The tip of the park will contain a publicly owned and accessible Centralized Stormwater Treatment area designed integrally as a part of the overall park, but maintained by the development and not the City and County of San Francisco. This area will contain rain gardens to ecologically treat stormwater from the surrounding public streets and private development parcels.

Bayview Hillside Open Space

Within the project boundary there are two hillside open space areas at Candlestick Point.

- **Jamestown / Walker Slope**

  The Jamestown / Walker slope contains a small portion of land that is part of the larger Bayview Hill Park, as well as a vegetated slope that is part of the Candlestick Stadium site. The roadways here will be reconfigured, and the site will require significant terracing and retaining walls. Where planting is possible, the slope and terraces will be planted with native plants.

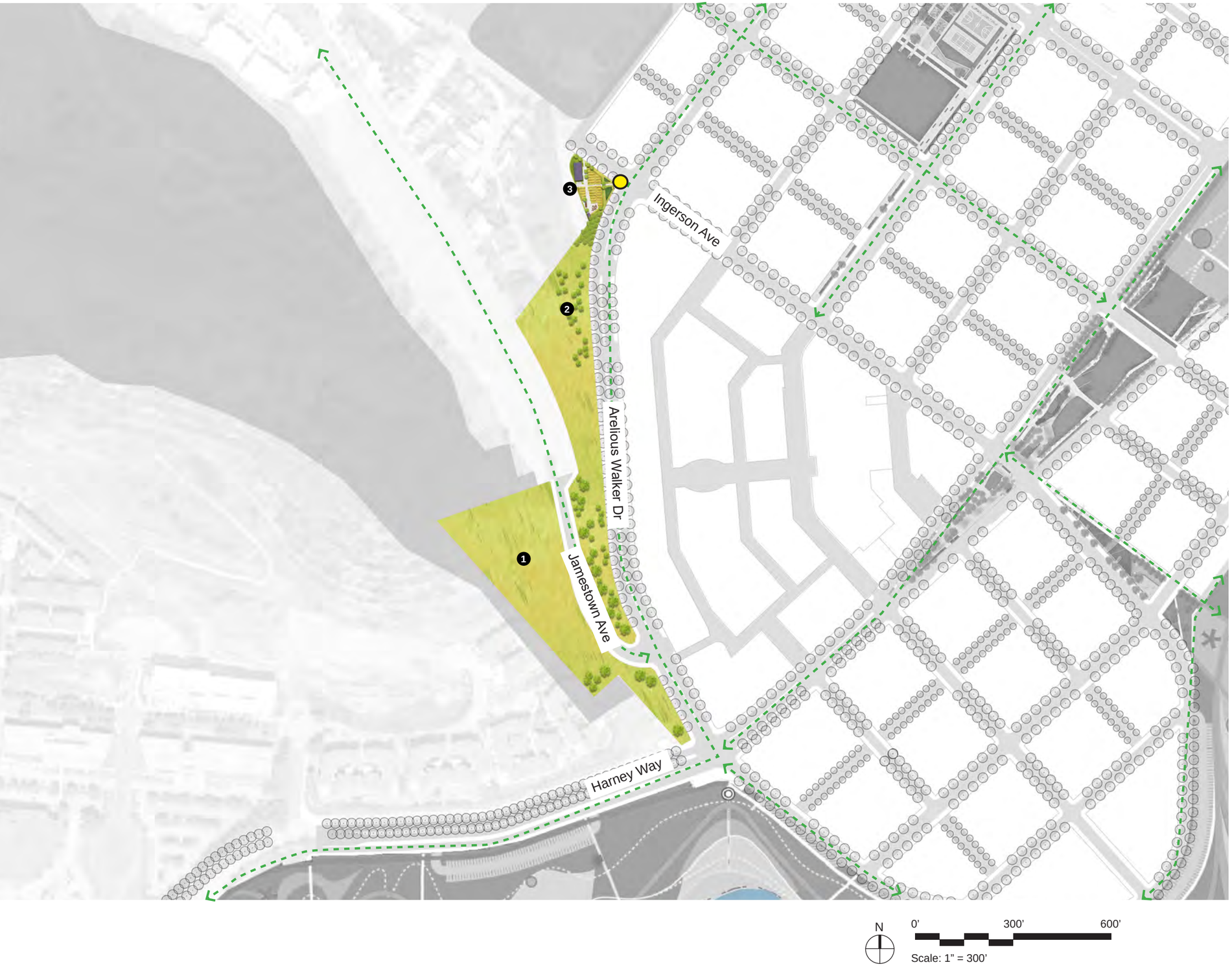
  The redevelopment of the Alice Griffith neighborhood requires the relocation of the Alice Griffith Community Garden, as housing will take the place of the original garden. The garden is currently located at an interim site within Alice Griffith. Ultimately, the garden will be located at the corner of the Jamestown Walker Slope open space parcel at the corner of Arelious Walker Drive and Ingerson Avenue.

Park Location

Hillside Open Space

Park Area: 7.1 acres

1. **Bayview Hill Southeast Slope**
2. **Jamestown / Walker Slope**
3. **Alice Griffith Community Garden**



Bay Trail

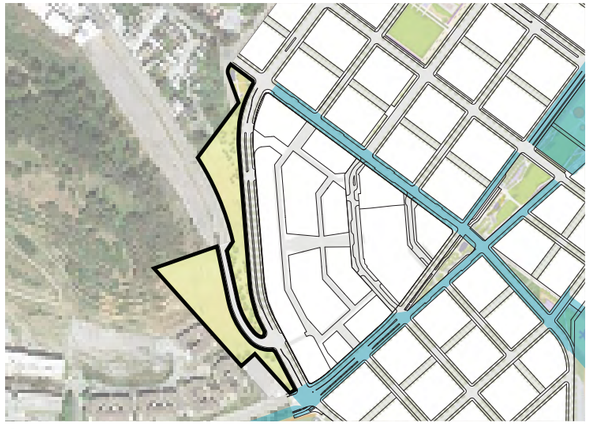
Major Bike / Pedestrian Connection

Park Entry Points

Park Dimension

Notes:

- The park design, including the paths and park circulation, is conceptual and will be further developed in schematic design phase.
- For legend information, refer to the CPHPS illustrative (p. 9).



State Trust Land Restrictions

Alice Griffith Community Garden

1. Entry Plaza
2. Bioretention Basin
3. Aquaponic Greenhouse
4. Planter Boxes
5. Storage Shed
6. Orchard
7. Picnic Area

N

0' 50' 100'

Scale: 1" = 50'

Existing revegetation on the southeast slope of Bayview Hill

- **Bayview Hill Southeast Slope**

  Above the project site, Bayview Hill contains a diverse array of habitats such as grasslands, shrub and tree-dominated areas, and a large number of sensitive plant species. The area provides wildlife habitat for a variety of resident and migratory bird species, as well as reptiles, mammals, and amphibians. It is also home to one of only a few populations of the endangered Mission blue butterfly. Bayview Hill has been identified as an important natural area and is managed under the SF Department of Parks and Recreation's Natural Areas Program.

  A small portion of Bayview Hill's southwestern slope (2.3 acres of the park's 44 acre total) is within the CP-HPS project area. This area has been significantly graded with quarry faces and terraces with thin, rocky soils over bedrock, with stands of non-native, invasive blue gum eucalyptus and french broom. The lowest portion of the site contains a small parking area.

  Following the recommendations of the Bayview Hill Natural Areas Plan, this park area will be enhanced with new native plantings to increase that habitat value of the site and to help to create a better habitat link between Bayview Hill and the Bay.

Candlestick Point State Recreation Area

Vision

The Candlestick Point State recreation area is a unique opportunity in the State Park system and along the San Francisco Bay shoreline to create a model urban recreation area that links city residents and regional visitors to the diversity of estuary and upland habitats of the Bay and demonstrates integrated sustainable design principles for reclaiming fill areas for park uses.

This *Concept Plan* proposes an integrated parks and open space system with improvements to the Candlestick Point State Recreation Area that will support the State Park's goals of preserving and protecting the environment while encouraging urban dwellers to experience nature at the bay edge and providing opportunities for place-based outdoor recreation. With a seamless design approach, the park's existing well-used areas will be revitalized and new undeveloped bay edge parklands will be developed. Note that the habitat and ecology parks shown on CPSRA are proposed concepts only, as the SRA's general plan will make final decisions regarding use and management of the SRA.

The park improvements will finally complete the original vision of Candlestick State Recreation Area – to bring the values of the State Park system to the city, to provide recreational and cultural facilities, and to connect urban dwellers with the natural environment. Furthermore, the State Park is poised to be one of the state's finest urban waterfront parks, at the forefront of urban ecological design, managing urban stormwater while creating habitat and providing environmental education.

Park Location

Design Coordination

While the State Parks Department will perform their own master planning process for the CPSRA, these plans will be coordinated with the City to realize the potential of this vision. The follow principles are proposed by the City and County of San Francisco to guide the planning and design of the park:

- Design city parks and state recreation areas to feel from a user perspective as one park system, despite potential programmatic and operational differences between jurisdictions.
- Develop a park that is programmed and designed for safe and active 18-24 hour daily use by the public.
- Design a pedestrian and bike accessible transition zone between all private development parcels and the park to create a continuous route close to the developed edge.
- Develop frequent routes into the park from the neighborhood aligning with the planned street network with major linkages with transit stops, bike routes, and linear greenway features.
- Create a mixture of passive and active spaces that activate the open space drawing neighbors and visitors to the waterfront.

Candlestick Point State Recreation Area

Park Area: 96.7 acres (within project boundary)

1. Open Picnic Lawn
2. Native Grasslands
3. Overlook Terrace
4. Interpretive Play
5. Bio-filtration / Wetland Area
6. Native Eco-gardens
7. Interpretive Center
8. Ranger Station
9. Parking
10. Great Meadow
11. Viewing Windbreak Mound
12. Picnic "Pod" and Shelters
13. Viewing Pier
14. Restroom
15. Beach / Kayak and Windsurf Launch
16. Amphitheater
17. Viewing Tower
18. Fishing Pier

*Note: This map illustrates one potential concept for the Candlestick Point State Recreation Area. However, the California Department of State Parks will determine the specific programming and design of this park through its General Plan process.

- Bay Trail
- Major Bike / Pedestrian Connection
- Park Entry Points
- Park Dimension

State Trust Land Restrictions

- Provide duplicative trail systems including linkage to a Class I bike and multi-use recreation trail as a transition between the neighborhood and State Park, a continuous Bay Trail close to the water, and multiple linkages between.
- Install multiple human-powered boat access points including facilities for windsurfers south of Bayview Hill.
- Preserve and expand the existing pocket beach.
- Integrate stormwater treatment systems with the neighboring development to provide model/demonstration sustainability systems and habitat spaces.
- Utilize sustainable design principles through park planning to expand the ecological functions of the recreation area and minimize resource consumption by park facilities, programs, and users.
- Introduce limited commercial uses to provide food and recreational services for visitors.
- Balance dedicated parking facilities for the recreation area with available on and off-street parking provided in the neighboring development and transit access to the area.
- Upgrade existing and install additional fishing and viewing piers into the bay.
- Provide multiple picnicking and barbecuing facilities to accommodate family and social gathering in multiple areas of the park, and consider larger scaled gathering opportunities for events.

Design Potential

The following describes the design potential for the CPSRA. The description of the park program that follows provides one possible concept for the CPSRA. The California Department of Parks and Recreation will determine the specific program and improvements for this park through its own planning process leading to CPSRA General Plan Amendment.

An extensive trail network, including the San Francisco Bay Trail will link areas within the park with the adjacent urban neighborhoods and the waterfront as envisioned by the Candlestick Point/Hunters Point planning effort. Park visitors will enjoy open lawns and meadows, picnic areas, interpretive exhibits, outdoor classrooms, and community gardens. Overlooks, fishing piers, wetlands boardwalks, beaches, and windsurf and kayak launches invite visitors to the water's edge.

The State Park's design will feature a simple, sensitive, and expressive palette of landscape materials to allow the park to grow incrementally over time. Native grasslands, meadows, wooded groves, and more formal 'eco-gardens' will provide a system for choreographing the landscape experience. Landforms and windbreak plantings will structure the experience of place, framing views of the water, and offering refuge from wind and fog. Though identifiable as a State Park, distinct from the other city waterfront parks, the State Park has a strong role in the overall park network, linking and connecting with a variety of other city, neighborhood and community parks.

The State Park is divided into many smaller sub-areas, described below.

Grasslands South

This area of the existing State Park is largely undeveloped and has been used for game-day stadium parking. A new Grasslands South area could be improved with native grasslands, glade lawns, and earthworks shaped to provide shelter from the wind and enhance views. Site features could include overlooks, restrooms, and parking.

Bayview Gardens North

Formerly developed as a boat launch, siltation of the South Basin has caused this use to be abandoned. The existing paved parking area is used for game-day stadium parking. Located between the bay and the proposed Bayview Gardens / Wedge Park, the Bayview Gardens North area offers the greatest integration of urban and naturalized open spaces anywhere in the open space system and will be a strong visual gateway to the State Parks and the bay. Bioswales, storm water 'Eco-Gardens,' and a potential salt-marsh restoration are central features of this area.

The Last Rubble

Until recently, the Last Rubble area was characterized by large piles of rubble and debris, remnants of the site's previous use as a dumping ground. The California Integrated Waste Management Board completed a rubble and debris removal project in April 2009. As a result of this, the majority of the rubble and debris was either removed or crushed on site. This area of the State Park remains underutilized and is not currently programmed for recreation, with the exception of a walking path. As the Last Rubble Area will be located adjacent to a substantial urban population, this area could be transformed into a new center for the State Park, with a wide variety of program elements.

The park ranger station/visitor's center could be located here as well as a "Great Meadow" for passive recreation and park events. Other features may include parking, picnic areas, overlook terraces, restrooms, and a restaurant/café.

Wind Meadow

The Wind Meadow includes part of the existing State Park, including the Main Beach. This area will be reconfigured to meet the new urban development edge and interface with the Mini-Wedge Neighborhood Park. This area will contain a secondary entry and parking lot, and gateway entry kiosk for the State Park. Features here may include new restrooms, picnic areas, waterfront overlooks, expanded tidal wetlands, and access to the water.

Heart of the Park

The Heart of the Park is part of the existing developed State Park. New park area will be added and the existing landscape structure will be retained and enhanced. Planting and overall aesthetics will be improved, pedestrian pathways will be renewed and added, and program areas will be developed for

greater use. Site features could include upgraded restrooms, overlook terraces, large and small group picnic areas, and an interpretive amphitheater.

The Point

The landscape of the Last Port will be revitalized with improvements focused on pedestrian circulation, safety and way finding; intensifying areas for increased use; improving the overall park aesthetics and landscape ecology; and reconnecting visitors to the bay shoreline. Native grasslands and shorelines will be restored and stabilized, providing areas for activities such as strolling, picnics, kite flying, and fishing.

The Neck

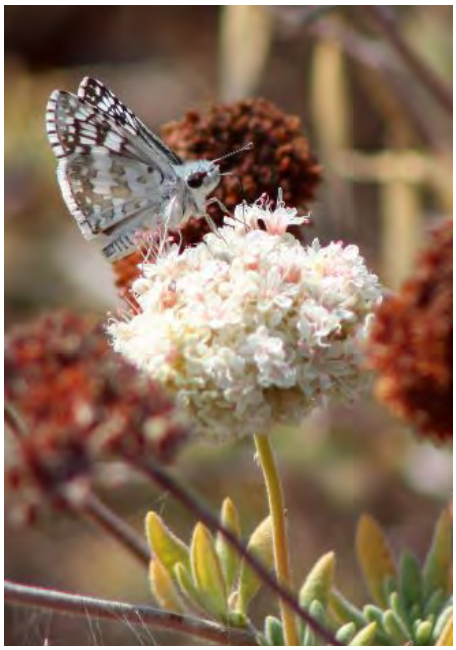
The existing Neck area is a narrow, eroded section of the State Park that includes a beach and pier. Park area will be added here to increase the width of the park and provide a continuous park experience along the shoreline. New features here could include a parking lot, windsurf/kayak launch, overlook, and picnic areas.

Last Port

The landscape of the Last Port will be revitalized with improvements focused on pedestrian circulation, safety and way finding; intensifying areas for increased use; improving the overall park aesthetics and landscape ecology; and reconnecting visitors to the bay shoreline. Native grasslands and shorelines will be restored and stabilized, providing areas for activities such as strolling, picnics, kite flying, fishing, and direct access to the bay for swimming, kayaking, and windsurfing.

View near Bayview Gardens / Last Rubble area of the Candlestick Point State Recreation Area

Golden-crowned sparrow



Checkered skipper

Fiery skipper

Ecology & Habitat

Prior to development, industrialization, and fill of the Bay, the margins of the San Francisco Bay contained extensive wetlands, grasslands, and aquatic habitats, teeming with wildlife and rich in biodiversity. Despite the urbanized nature of most of the site, the site also contains non-native annual grasslands, landscaped areas, tidal and non-tidal salt marshes, freshwater wetlands, mudflats, and open water habitat that support a wide variety of birds as well as other wildlife adapted to urbanized areas. As environmental sustainability is a central theme of the development project, this plan seeks to enhance the natural systems on the site and improve its value for wildlife. The transformation of degraded and non-native weedy habitat, abandoned piers, and the creation of an extensive shoreline park system offers a significant opportunity to improve the site's biodiversity and habitat quality. Additionally, the design of urban parks, streetscapes, and development parcels can also support the site's ecology and biodiversity through features such as native plantings, greenroofs, and ecological stormwater management features. The presence of nature and wildlife in the City also offers a valuable benefit for city dwellers – a chance to observe, experience, learn, and connect with nature.

Habitat Enhancement Measures

A number of measures will be implemented to enhance wildlife habitat conditions within the Project site. Wildlife enhancements would occur primarily in open space areas such as the Grasslands Ecology Park and other parks on the site. Enhancements such as removal of non-native invasive plants and planting of trees and shrubs will occur at scattered locations throughout the park as well. These enhancement measures will focus on areas outside the CPSRA, since the Project will neither impact directly, nor have control over enhancements in, the portion of the CPSRA that is not subject to the land transfer agreement. However, these or similar measures are recommended for the CPSRA as well to enhance habitat conditions there.

- **Control of non-native invasive species:**

  Most of the Project site is currently dominated by non-native plants. Several of these species, including acacias, wild oats, black mustard, bromes, iceplant, and pampas grass, are listed on the California Invasive Plant Council's Invasive Plant Inventory Database (http://www.cal-ipc.org/ip/inventory/weedlist.php). These species are particularly invasive, having the potential to out-compete native plants, expand over large areas, and significantly reduce the ecological value of natural areas on the site. These invasive, non-native species would be removed during initial habitat enhancement efforts to provide areas for creation of higher-quality habitats and to prevent their spread into restored native habitats. Monitoring and ongoing removal/control of these species would be implemented to ensure against the re-establishment and spread of these species on the Project site.

- **Restoration of grasslands:**

  To maintain habitat for grassland-associated wildlife species on the site, grasslands extensive enough to support such species would be maintained

and enhanced through the restoration of native grasses. Within the Grasslands Ecology Park, at least 43 acres of native grassland will be restored by the removal of non-natives and restoration, through seeding and/or plugs, of native grass and forb species. Such grassland habitat would not be well manicured or regularly mown (e.g., it will have the appearance of native grassland, not lawn), and signage will be erected discouraging use of this area for recreational purposes. Although trees and shrubs will be planted elsewhere within the Grasslands Ecology Park to provide a mosaic of habitats, woody plants that are planted or allowed to establish naturally within the grasslands will be limited to a few small, scattered patches of low-statured coastal scrub plants such as coyote brush, which will provide cover for wildlife that may otherwise forage in the grasslands. These grasslands would be monitored annually for evidence of the presence of undesirable levels of woody and invasive plants, which will be removed when found to maintain dominance by native grasses and forbs.

Red-tailed hawk

Detailed design of the grassland restoration area will be performed by a qualified restoration ecologist. The planting palette for grassland areas will be developed after the precise location of the grasslands is determined and following a thorough examination of soil conditions (which may be modified by the Navy's remediation on HPS), drainage, and other factors. Examples of native grasses and forbs that could be included in planting plans for these grasslands include the following:

Yarrow (*Achillea millefolium*)

California brome (*Bromus carinatus*)

Paintbrush (*Castilleja subinclusa*)

Blue wildrye (*Elymus glaucus*)

Golden yarrow (*Eriophyllum confertiflorum*)

California poppy (*Eschscholzia californica*)

Red fescue (*Festuca rubra*)

Purshing's lotus (*Lotus purshianus*)

Miniature lupine (*Lupinus bicolor*)

Arroyo lupine (*Lupinus succulentus*)

California melic (*Melica imperfecta*)

Purple needlegrass (*Nassella pulchra*)

One-sided bluegrass (*Poa secunda*)

Chia (*Salvia columbariae*)

Bee plant (*Scrophularia californica*)

Checkerbloom (*Sidalcea malvaeflora*)

Blue-eyed grass (*Sisyrinchium montanum*)

Western meadowlark

Yellow warbler

Goldenrod (*Solidago spathulata*)

Three weeks fescue (*Vulpia microstachys*)

- **Increase in tree/shrub cover:**

Approximately 10,000 net, new trees, or more than four times the number currently present in the Project area, will be planted throughout the Project area. While some of these trees will be planted as street trees or for ornamental purposes, a large number will be planted specifically with wildlife habitat in mind. In conjunction with tree planting, numerous shrubs, forbs, and ground cover will be planted and maintained. Within parks such as the Grasslands Ecology Park (outside of the designated grassland restoration areas), trees, shrubs, and ground cover will be planted in clusters to provide dense, multi-layered clumps of vegetation that will provide food, cover, roosting, nesting, and foraging sites for a variety of wildlife species. Though these areas are expected to be used by mammals, reptiles, amphibians, and a variety of invertebrates, these plantings will be particularly beneficial as foraging and nesting habitat for birds. Increases in foliage height, diversity, and vegetation volume resulting from the planting of numerous trees and shrubs on the site, most of which currently supports little woody vegetation, would result in increases in the diversity and abundance of breeding and migratory birds.

Because the majority of the Project site is located on fill material derived from a variety of sources, soil quality is not optimal for plant growth in many areas. Additionally, project grading (necessary for site drainage, road and parcel development, and sea level rise strategies) will expose or place additional soils that are not optimal for plant growth. Where possible, high-quality topsoils should be preserved and re-used in planting areas. Placement of problem or poor-quality soils should be avoided where they could affect the growth of desired plant species. Prior to planting, the soils in a given area will be examined by a qualified soils scientist or horticulturist, and soil amendments or imported topsoils will be provided as needed to ensure suitable conditions for growth of the desired plant species. On portions of HPS Phase II (e.g., the former landfill), planting of deep-rooted vegetation may be constrained by capping of the landfill. The cap may physically inhibit root growth, and piercing of the cap by roots would be undesirable to maintain the integrity of the cap. If necessary, soil would be imported into such areas to provide contoured mounds and ridges which would serve as planting substrates for deeper rooted trees. Detailed design of native revegetation areas will be performed by, or in consultation with, a qualified restoration ecologist.

Gopher snake

Native vegetation shall always be favored in determining the appropriate trees, shrubs, and other vegetation to plant in certain areas. Native plant species often require less fertilizer, irrigation, and pesticides than many non-natives, and native plant species tend to provide more of the structural and dietary resources required by native animals than do non-native plants. The planting palette for particular areas will be developed on a site-specific basis, taking into account the target wildlife species, the size of the planting area,

constraints on deep-rooted plants, the desire to maintain cover for habitat connectivity purposes, and other factors. Examples of native trees and shrubs that could be included in planting plans on the Project site include the following:

Big-leaf maple (*Acer macrophyllum*)

California buckeye (*Aesculus californica*)

Western redbud (*Cercis occidentalis*)

Coast live oak (*Quercus agrifolia*)

Valley oak (*Quercus lobata*)

Coast redwood (*Sequoia sempervirens*)

Toyon (*Heteromeles arbutifolia*)

Blue elderberry (*Sambucus mexicana*)

Chamise (*Adenostoma fasciculatum*)

California sagebrush (*Artemisia californica*)

Coyote brush (*Baccharis pilularis*)

California lilac (*Ceanothus thyrsiflorus*)

Buckwheat (*Eriogonum fasciculatum*)

Silk tassel (*Garrya elliptica*)

Silver bush lupine (*Lupinus albifrons*)

Sticky monkey-flower (*Mimulus aurantiacus*)

California wax myrtle (*Myrica californica*)

Coffeeberry (*Rhamnus californica*)

Lemonade berry (*Rhus trilobata*)

Fuchsia-flowering gooseberry (*Ribes speciosum*)

Black sage (*Salvia mellifera*)

However, site-appropriate non-native species that provide food or structural resources that are particularly valuable to native wildlife may also be considered. For example, flowers of eucalyptus trees and bottlebrush shrubs provide abundant nectar that is used by a variety of native birds, and that attracts insects that in turn serve as food for birds. Palm trees provide cavities (between the petioles of old fronds) that can serve as nesting sites for species such as barn owls and American kestrels. Monterey pine and Monterey cypress are not native to San Francisco, but both are native to limited areas along the Central California Coast. These hardy species are thus well adapted to climatic conditions on the Project site. Judicious incorporation of specific non-native plants within the native-dominated

Precedent - Trails through re-vegetated native grassland

Opportunities for viewing wildlife

planting palette will allow for wildlife diversity to be maximized within the new planting areas. Non-native species used in landscaping will be species that are adapted to local conditions so that they also will require minimal irrigation, fertilizers, and pesticides.

- **Maintenance of habitat connectivity:**

  Maintenance of habitat connectivity will be important for small and/or less mobile wildlife species, such as small mammals, reptiles, and amphibians, whose dispersal around the project site may be impeded by the construction of new features such as roads and curbs, increased vehicular traffic, and increased use of the site by humans and domestic animals following project implementation. General principles for maintaining connectivity include providing means by which such species can cross over, under, or through potential impediments (e.g., undercrossings under roads or gaps in median barriers); providing patches of relatively natural habitat in sufficiently close proximity to promote movement of individuals among habitat patches; providing suitable vegetative cover for dispersing animals to allow them to move safely throughout the site; and minimizing “pinch points” in which suitable habitat is restricted to very narrow areas. For some species, particularly larger ones such as black-tailed jackrabbits, individual animals may move long distances around the site. For smaller species, such as lizards and salamanders, individuals may move much shorter distances over the lifetimes; for these species, habitat connectivity is important to allow the exchange of genes and individuals throughout the site over generations, rather than to allow individuals to move among distant habitat patches.

  To help maintain habitat connectivity through the site, at least along the southern edge of HPS Phase II, in light of the roads, trails, and buildings that will be constructed in the Project area, vegetated areas providing cover for dispersing mammals, reptiles, and amphibians would be provided. In some areas, restored tidal marsh will provide some habitat connectivity along the shoreline. “Hardened” shoreline treatments, such as rock, will provide interstitial spaces that provide cover for these small animals as well. In addition, landscaping along the landward side of the shoreline treatments will provide vegetation that can serve as cover for these animals. To the extent feasible, potential obstacles to movement of small animals, such as fences, walls, curbs, and roads will be designed to allow for passage of animals across or through these features. On Candlestick Point, the SRA will be widened along the southwestern shoreline at an existing “pinch point”. Revegetation of this area, and maintaining vegetation all along the CPSRA shoreline, would maintain habitat connectivity along the Candlestick Point shoreline as well.

Sanderling, Western sandpipers

- **Maintenance of refugia for waterbirds:**

  Waterbirds such as egrets, herons, and shorebirds forage along the Candlestick Point shoreline and along the southern shore of HPS Phase II. At low tide, these birds forage on exposed mudflats and beaches, while at high tide, they may congregate in areas providing high-tide roosting and/or foraging habitat. In planning for future trails, vistas, and other features/

facilities that might concentrate human activities along the waterfront, it is important that human access to shoreline areas not be so pervasive that there are no undisturbed high-tide roosting areas for these birds. Therefore, at least one shoreline area where waterbirds can roost at high tide would be provided that is at least 200 feet from the nearest formal trail or shoreline observation area. Here, waterbirds would be able to roost on riprap, beach, or some other open area removed from concentrated human activity.

In addition, the bases of the three piers in the southeastern corner of HPS Phase II will be removed to prevent mammals from accessing these piers. The remainder of each of these three piers will be left in place to provide roosting sites for gulls, cormorants, pelicans, and terns. Shorebirds and herons may roost on these structures as well. While waterbirds currently use these piers for roosting, the number of birds using these piers, particularly at night when mammalian predators such as raccoons are most active, may be limited by the ability of mammalian predators to access these piers. Removal of the bases of these piers will prevent the ability of mammals to access roosting birds. The increased security of the piers may also encourage some waterbirds to begin nesting on the piers. If birds show interest in using these piers as nesting sites, addition of nesting substrate such as gravel or shells in certain areas could further encourage nesting by waterbirds.

- **Provision of nest boxes:**

  Nest boxes for birds will be placed in appropriate locations on Hunters Point. Nest boxes will range in size from larger boxes that will be suitable for use by barn owls and American kestrels to smaller boxes that would provide nest sites for chestnut-backed chickadees, tree swallows, and other birds.

- **Creation of tidal marsh and high beach habitat**

  There are several opportunities for creating tidal marsh or high beach/dune habitat in the project area. Along the southern shoreline of HPS Phase II and portions of the shoreline of Candlestick Point that are not subject to high wave action, marsh soils will be placed on the outboard side of shoreline revetments that will be constructed to protect the shoreline. With limited planting of native salt marsh plants, but primarily through natural recruitment, narrow bands of tidal salt marsh will be created in these areas. More extensive tidal marsh could be created in a few “pockets” along the northern and eastern shores of Candlestick Point, where laying back the slope along the shoreline could allow for the creation of broader marsh that would transition upslope to dune scrub and upland habitats. These habitats will contribute organic matter to intertidal and subtidal habitats nearby, enhancing benthic animal populations and so improving foraging habitat for fish, shorebirds, and diving ducks. These vegetated bands would also provide foraging habitat for some small birds and cover for mammals.

- **Increase in open water habitat**

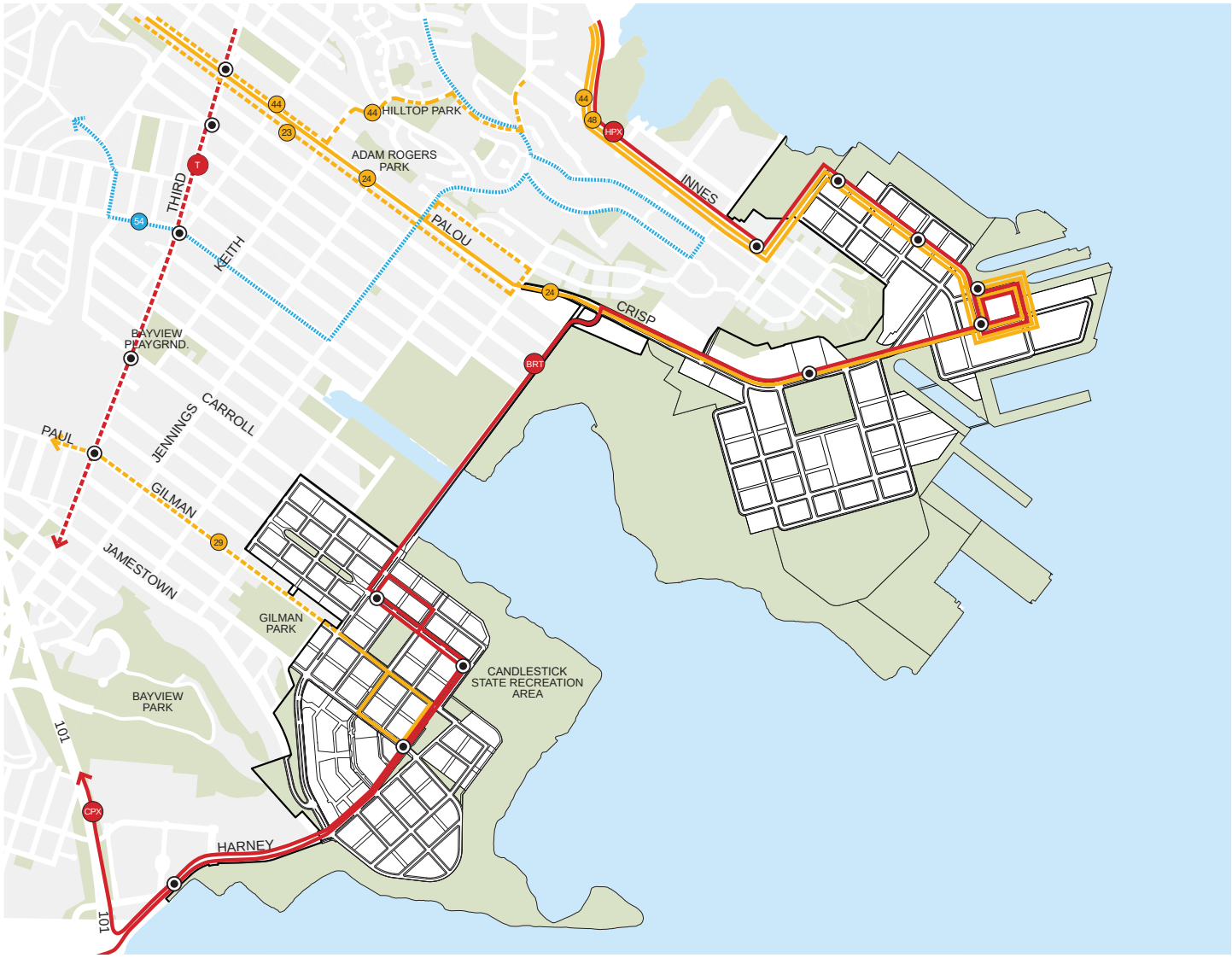
  Although the project includes the placement of fill in some wetlands and aquatic habitats for the purpose of constructing shoreline improvements, the Yosemite Slough bridge, and a marina, the project also includes the removal

of fill and structures that currently exist in some locations. For example, along much of the eastern shoreline of HPS Phase II, existing pier walls will be removed and the edges of the existing shoreline “laid back”. As a result, new subtidal and intertidal habitat will be created along portions of the shoreline currently occupied by fill, and the project as a whole will result in a net increase of 8 acres of open water that can serve as habitat for fish and benthic organisms.

Park & Shoreline Access Improvements

New parks and public spaces will be easily accessible to existing neighborhoods and visitors from other parts of the City and beyond. New pedestrian, bicycle, and transit improvements will provide healthy and sustainable modes of park access. Bike and pedestrian access throughout and between park areas will be coordinated to provide seamless connections. Note that in some places, such as Bayview Hill, extreme topographic challenges prevent direct bike and pedestrian trail connections.

Transit Network



LEGEND

- Project Boundary
- Parks & Open Space
- Community Route

Light Rail, Express, BRT

- Route
- New / Extended Portion
- Major Transit Stop

Crosstown Traffic

- Route
- New / Extended Portion

Note: Transit stops subject to change.

N

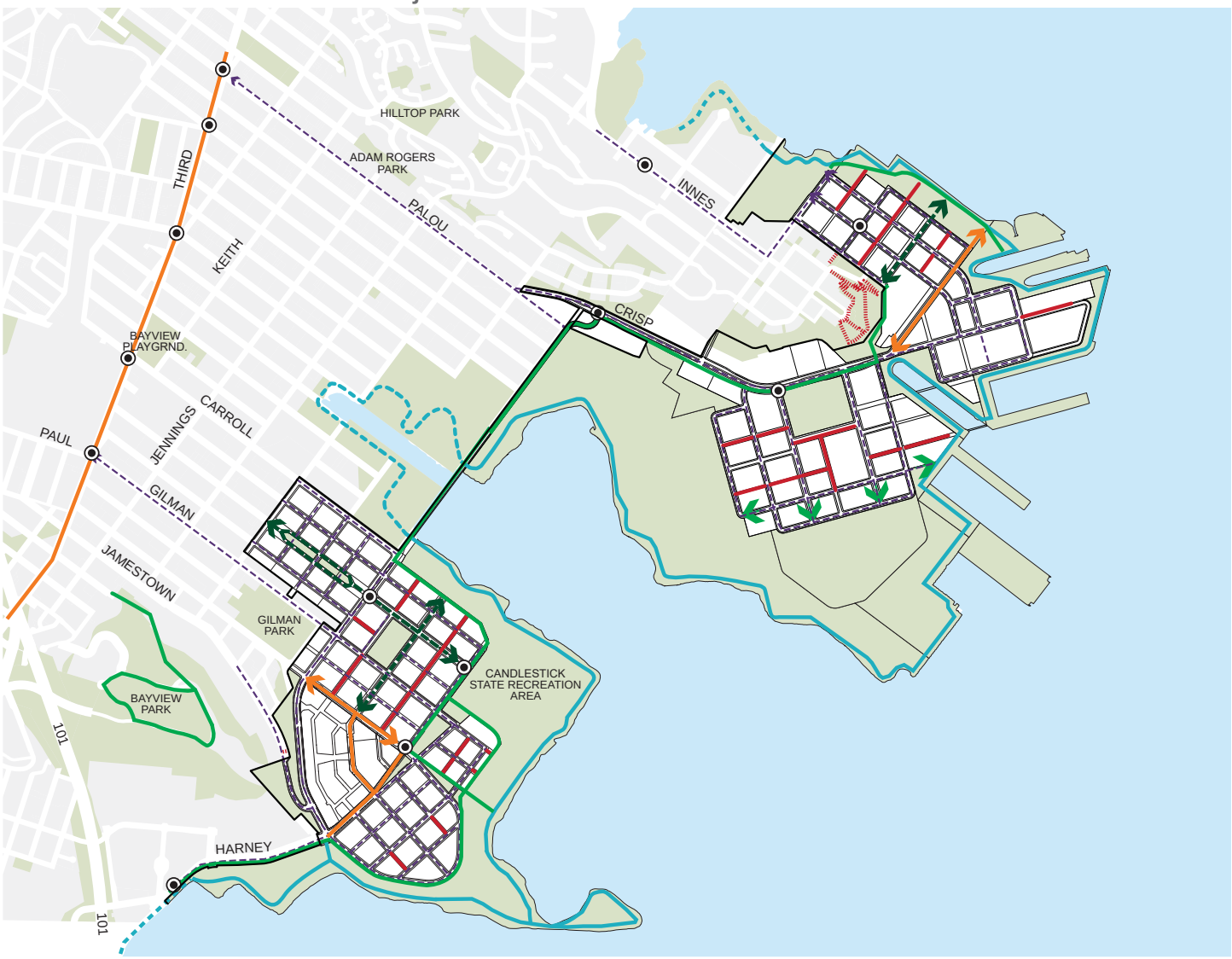
0' 1800'

Scale: 1" = 1800'

Parking facilities at the State Park, Sports Field Complex, and Marina will be provided for visitors arriving from more distant areas with large groups, and recreational gear and supplies.

As one means of creating a quieter, healthier and more sustainable city, in some places there will be no automobile roadways between public and private

Pedestrian Network with Major Trails



LEGEND

- Project Boundary
- Parks & Open Space
- SF Bay Trail
- SF Bay Trail–Outside of Project Boundary
- Pedestrian / Multi-use Path
- Mews / Pedestrian Street
- Hillside Path
- Boulevard Park Streets (Wide Sidewalk & Median Parks and Park Connections)
- Neighborhood Commercial St.
- Sidewalks, New & Enhanced
- Major Transit Stops

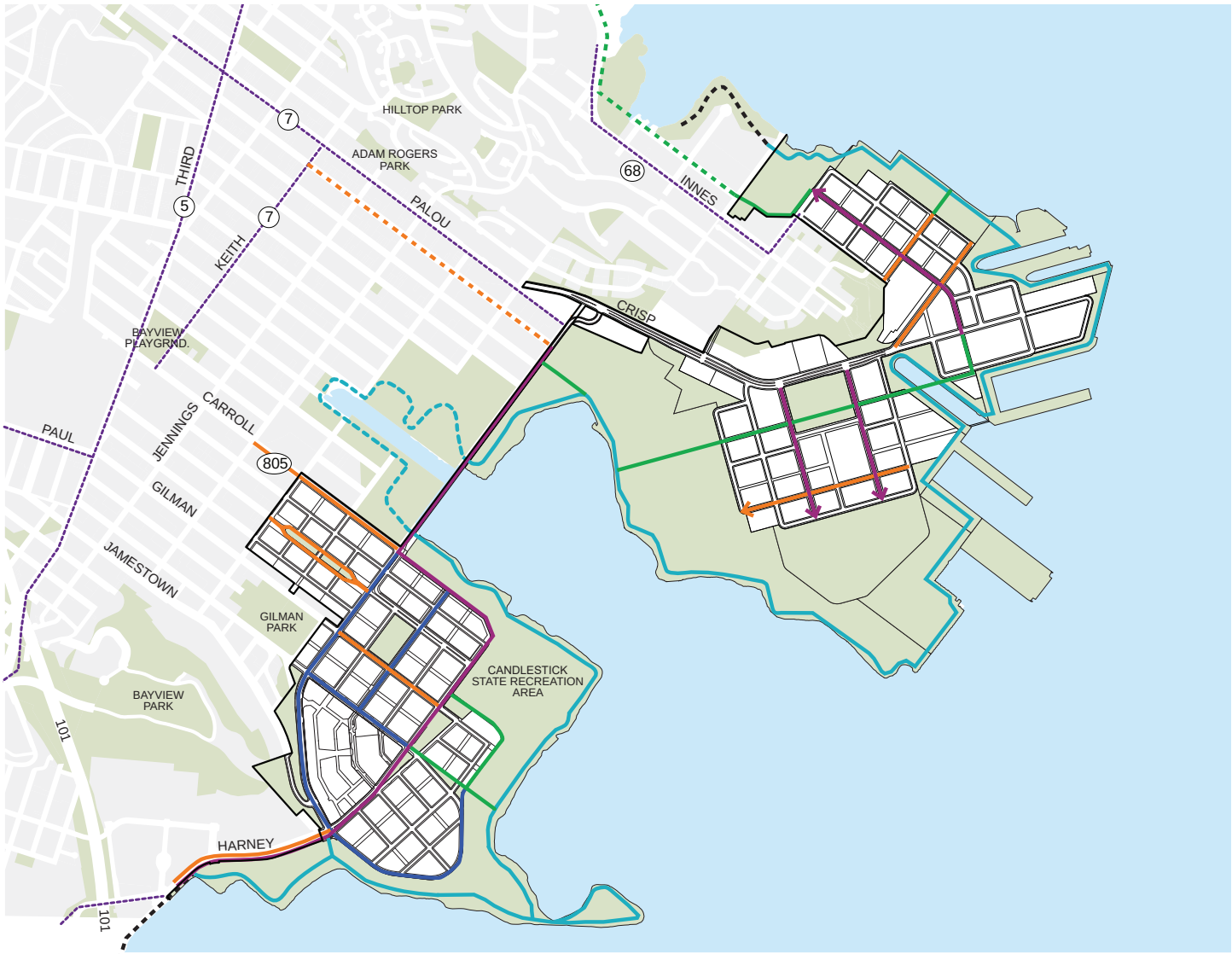
N

0' 1800'

Scale: 1" = 1800'

property. In these places, this edge will be carefully designed to create a clear delineation of public and private space, while encouraging full access and use of the public space – refer to the *Candlestick Point* and *Hunters Point Shipyard Design for Development* documents for further details.

Bicycle Network



LEGEND
- Project Boundary
- Parks & Open Space

Project Proposed Bikeways
- Bay Trail
- Bicycle or Multi-use path, Class I
- Bicycle lane, Class II
- Bicycle route, Class III
- Bicycle route, Class IV

Other Proposed Bikeways
- (outside of project area)
- Bay Trail, Yosemite Slough Project, California State Parks

Existing Bicycle Facilities
- Bay Trail
- Bicycle route, Class III

N

0' 1800'

Scale: 1" = 1800'

Sea Level Rise Strategy

Objectives

The basic objectives of the project's sea level rise strategy are to:

- Protect the shoreline edge from high waves with sea level rise.
- Protect development areas from flooding.
- Design storm drain systems to work with higher Bay water levels.
- Plan an adaptive, flexible shoreline edge that provides maximum public access and views to the bay and allows for wetland habitat to move inland in select areas.

Design Criteria

Based on recent policies and guidelines referenced in the 'Introduction' section of this plan (pages44), design criteria for project elements have been revised as described below.

- Since building structures are immovable, the **development areas** will be elevated to accommodate worst-case, end-of-century SLR estimates of 66". Thus, development pads and streets will be raised to have a 66" allowance above the highest water surface elevation that tides and storm surges can produce in the adjacent waterway (San Francisco Bay in the vicinity of the project in this case).
- The **perimeter of the project site and adjacent open space** (shoreline areas) have higher adaptive capacity and resilience compared to development areas, and will therefore be elevated to accommodate worst-case, mid-century SLR estimates of 24". These areas will be raised to have a 24" allowance above the wave-influenced water surface elevation (wave runup) along the shoreline.
- The **storm drain system** will be designed with adequate capacity and sufficient freeboard above the top of pipes such that the system would operate under gravity at least until such time that a sea level rise of 24-inches has occurred. After that, relatively simple adaptation measures such as adding storm drain pumps to the system would be implemented
- An **Adaptation Strategy for Future Improvements** will be developed, to address future sea levels that exceed the allowances built during initial construction, to make the open space areas and storm drain system resilient to higher sea levels.
- A **stream of funding** will be identified to construct the future improvements as part of the Adaptation Strategy.

Materials & Elements

Planting

Plant selection will be specific to each location, based on microclimate and soil conditions and the program of the park. In general, park and open space plant selection will focus on native and climate-adapted species that require minimal water use and maintenance. Other factors that may influence plant selection include aesthetics, cultural significance, and habitat value.

Materials

Materials for paving, pathways, and park structures will be selected to reinforce and heighten the sense of place, minimize environmental impact, and maximize durability, longevity and ease of maintenance. These materials may include recycled and salvaged materials such as reclaimed crushed or slab concrete, reclaimed wood, and re-purposed steel bollards and rails. New materials may include concrete, asphalt, decomposed granite, corten steel, and stainless steel.

Furnishings

Park furnishings include elements such as site lighting, trash receptacles, bicycle racks, drinking fountains, signage, and benches. The set of furnishings may vary by park type (City Park, State Park, Ecology Park, Waterfront Promenade) as appropriate to heightening the sense of place. In general, furnishings will reflect a simple, modern, and timeless style. Like other materials, they will also be selected to minimize environmental impact, and maximize durability, longevity, and ease of maintenance.

Hunters Point Shipyard Furnishings & Materials Aesthetic

Site furnishings, materials, and elements for the Hunters Point Shipyard will reference the site's maritime industrial character. Materials may include corten steel, faux corten, heavy timber, and concrete. Where possible, the site's existing industrial features should be re-used or re-purposed as part of the landscape and streetscape design.

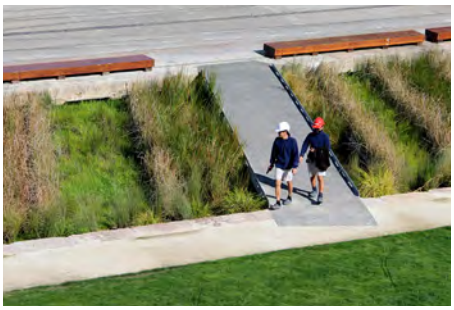
Candlestick Point Furnishings & Materials Aesthetic

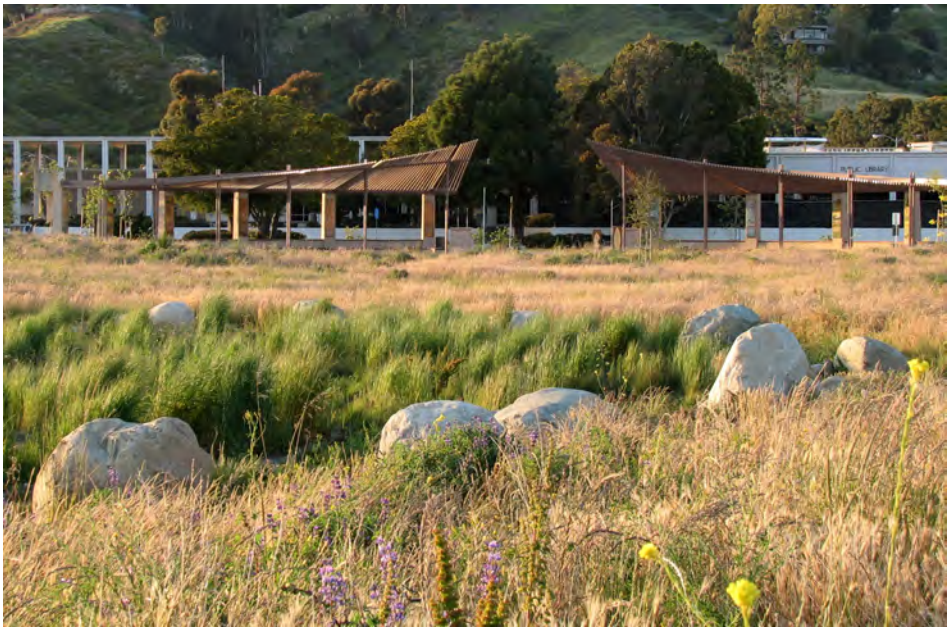
Site furnishings, materials, and elements for the Candlestick Point will be contemporary and modern; materials may include stainless steel, wood, and concrete.

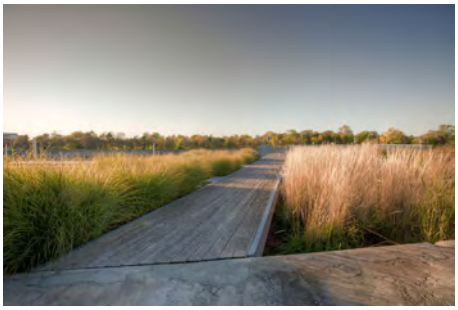
Centralized Stormwater Treatment

Some spaces within the parks and open space system will be designated as Centralized Stormwater Treatment areas. These areas will contain bio-retention rain gardens (green infrastructure) to ecologically treat stormwater from surrounding areas. At Hunters Point Shipyard these Centralized Stormwater Treatment areas will treat stormwater from both the public streets and private development parcels. In this case, the Centralized Stormwater Treatment areas at Hunters Point Shipyard will be publicly owned and accessible, but maintained by the development and not the City and County of San Francisco.

Integrally designed as a part of the adjacent open space system, these stormwater features will be designed for multiple benefits – cleansing stormwater, creating habitat, making natural process visible, educating people about the integration of urban and natural process, and providing places of beauty.



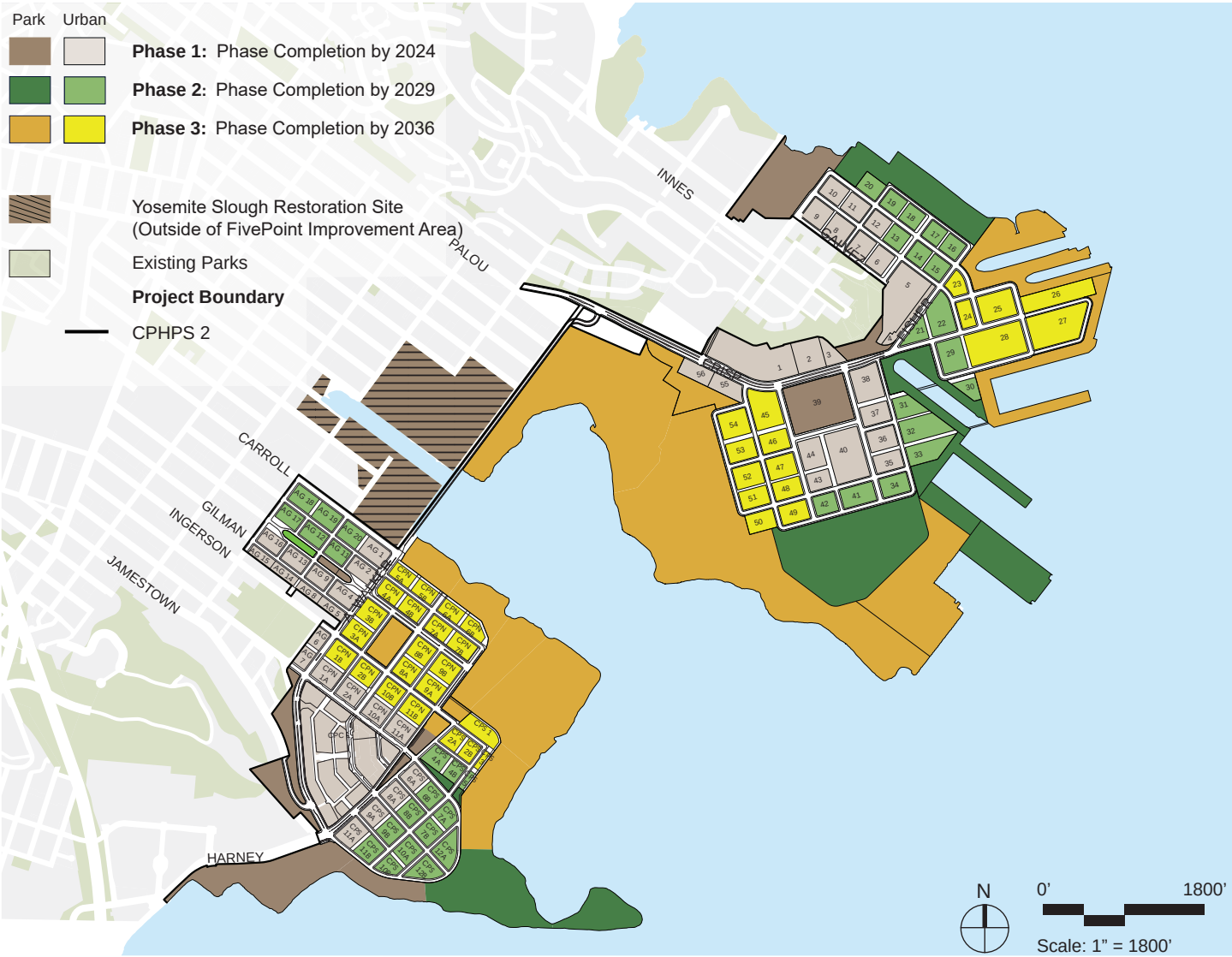




Precedents - Centralized Stormwater Treatment rain gardens integrated into park design

Phasing

After starting construction in 2014, full build out is projected by 2036 – an approximately 22-year construction schedule. To create new places that feel "whole", phasing of parks and open space will be closely matched with development of housing and commercial uses. During the development period, certain areas of the project site may be inaccessible due to clean-up, construction activities, and other safety issues. However, a continuous trail through the project site is desirable to create recreational and commuting connections that link with existing and planned facilities beyond the project boundary. Where feasible, the project will utilize interim bicycle and pedestrian routes through the project site. Additionally, there may be opportunities to



Public Parks & Open Space Schedule

partner with community groups to utilize undeveloped park spaces and development parcels for interim uses such as community gardens, an urban farm, or a plant nursery for native plants and street trees that could be used on the project or elsewhere in San Francisco.

Acknowledgements

FivePoint

IBI Group

Adjaye Associates

RHAA

Thomas Balsley Associates

HT Harvey & Associates

Moffatt & Nichol

Winzler & Kelly

BKF

ARUP

FIVEPOINT™

SUSTAINABILITY PLAN AMENDMENTS

SUMMARY

The Sustainability Plan is Attachment K-1 to Exhibit K of the HPS2/CP DDA. The Sustainability Plan discusses aspirational goals relating to Project sustainability (the "Sustainability Goals"). Pursuant to DDA Exhibit K, the content of the Sustainability Plan does not define obligations of the Developer or any other party to the DDA. The amendments to the Sustainability Plan (the "Amendments") have been reviewed by, and incorporate the comments of, staff of the San Francisco Department of the Environment and OCII.

The Sustainability Plan is updated to include a discussion of potential electric vehicle charging infrastructure is added. References to the Stadium development alternative which is no longer being pursued are removed.

The document is also updated to reflect the Developer's currently proposed development program. Discussion is added of newly proposed utility systems for water recycling, district-scale solar photovoltaic facilities, and a district heating and cooling system, which the Developer has collectively termed the "Eco-Grid". The Eco-Grid is a network of district scale, sustainable utility and building systems that has the potential to create a more sustainable community for the Project. Three primary components make up the Eco-Grid: district scale solar power generation and storage, recycled water production and distribution for non-potable uses, and geothermal district scale heating and cooling of the buildings on site. Taken together, these elements, and others that areadded if feasible, will increase the efficiency and resiliency of the Project. Financial and regulatory challenges need to be addressed. As such, implementation of the Eco-Grid is a goal of the project, not a requirement.

The Sustainability Plan is shortened and simplified, while retaining essential content. This is done by revising the form of the Sustainability Plan to match the form of the Sustainability Plan Briefing Document (the "Briefing Document"). The Briefing Document is a concise version of the Sustainability Plan which omits contextual and non operative information such as description of the Project neighborhood; references to existing community, City and State plans and policies; discussion of potential costs and savings associated with sustainable development; and information captured in other Project documents such as the Design for Development, the Parks and Open Space Plan, and the Mitigation, Monitoring and Reporting Program.

DETAILED AMENDMENT OVERVIEW

Sections retained

- Sustainability Plan At a Glance
- About this Document
- Project Overview
- Development Project Summary
- Meeting Community Needs
- Sustainability Strategy

Sections not retained

- **Financing Sustainability:** This brief appendix summarized the City of San Francisco's efforts in 2010 to develop a program that could assist with the financing of energy efficiency and renewable energy measures. Given the ongoing nature of the work, the information in the appendix was out of date, so the appendix was removed.
- **Affording Sustainability:** This brief appendix provided a summary of the financial savings residents would experience based on the Sustainability Plan goals.
- **Implementation Plan:** The information in this section is better captured in other Project and non-Project documents including the Phasing Plan, the Disposition and Development Agreement, the Design Guidelines, the Design for Development, the Redevelopment Plan, LEED ND certification documents, and Green Building Specifications.
- **Green Building Guidelines:** The information in this section is better captured in the San Francisco Building Ordinance
- **LEED ND Checklist:** This checklist was out of date, and will continue to evolve as the project is built out. Complete and accurate LEED ND checklists will become available as the project is certified for LEED ND in phases.
- **Sustainability Obligations:** These obligations are captured in Exhibit K to the DDA— Incorporated Sustainability Requirements and Sustainability Goals.
- **Abbreviations:** Abbreviations are now defined in text rather than placed in a separate section.

General Amendments

- References to stadium alternative removed
- Land use plan and program updated
- Figures updated
- References to United Nations Global Compact Center removed
- Job creation and economic activity figures updated based on Project's revised economic impact report
- Struck references to Sustainability Plan originally from the Briefing Document, as this is now the Sustainability Plan
- References to Lennar replaced with CP Dev Co, to more accurately reflect the Developer
- References to San Francisco Redevelopment Agency (SFRA) replaced with the Office of Community Investment and Infrastructure (OCII)

Other Amendments

- List of partners in various sections updated to reflect name changes and to remove organizations that no longer exist
- HB 1: **Bold** text added to the plan: "Protect and enhance existing wetland habitats within the site Restore and enhance tidal marsh and high beach habitats **for wildlife benefits and overall**

community ecological resilience, climate adaptation and preparedness in the face of sea-level rise."

- Development Project Summary: Reference to LEED ND Platinum revised to LEED ND Gold for consistency with Project plan
- Accessibility and Transportation: Aspirational reference to electric vehicle charging infrastructure included
- Resource Efficiency-General: Aspirational reference to the Eco Grid added to the document. The Eco Grid is a network of sustainable, district scale utilities comprised of solar power and storage, geothermal heating and cooling, and recycled water supply and distribution.
- Resource Efficiency-Water: Potable water demand reduction figure removed as it no longer applied to the proposed plan
- Resource Efficiency-Waste: Clarified language about San Francisco's Zero Waste goal at the request of SF Environment
- Habitat: **Bold** text added: "Protect and enhance existing wetland habitats within the site Restore and enhance tidal marsh and high beach habitats **for wildlife benefits and overall community ecological resilience, climate adaptation and preparedness in the face of sea-level rise.**"

Sustainability Plan

Candlestick Point/Hunters Point Shipyard
April 2018

About this Document

This Briefing Document summarizes how the Candlestick Point / Hunters Point Shipyard II (CP/HPS) Project will develop in a sustainable manner. The document is laid out to enable readers to find information quickly and gain a holistic understanding of how existing Bayview Hunters Point (BVHP) residents as well as future Project residents will benefit from the various and interrelated aspects of the project.

At the front of the document is the At a Glance Table, which is a useful reference for understanding the sustainability strategies, associated Project elements and targets, and expected benefits that result from Project implementation.

The main body of the document describes the Project, explains how the Project has been designed to meet community needs, and then covers the various sustainability principles and strategies and how they will impact and ultimately benefit the community.

Contents

	Sustainability Plan At a Glance	02
1	Introduction	08
2	Project Summary	12
3	Meeting Community Needs	16
4	Sustainability Strategy	20

Alice Griffith Mural

All mural photography © Randy Olaes/Arup

Sustainability Plan At a Glance

The following table summarizes the targets and benefits of the strategies that will be implemented under the Sustainability Plan. Each strategy has a variety of accompanying targets selected to ensure project performance relative to local, regional and national benchmarks.

	Strategy	Key Elements & Targets	Responsibility	Benefits
Economic Vitality and Affordability: An affordable community with new employment and business opportunities				
Economic Development	EV 1 Create jobs for local residents	Make a good faith effort for 50% of new construction hires to be San Francisco residents with first priority given to BVHP residents	CP Dev Co/City/Third Parties	Creates new temporary and permanent jobs for local residents
		Make a good faith effort for 50% small business enterprise participation for suppliers, construction work and professional services	CP Dev Co/Private partners	Prepares residents with skills needed to take advantage of new employment and business opportunities
		Provide $8.925 million for a Workforce Development Fund to support job training (with an equivalent match from the City of San Francisco in workforce development and training services)	CP Dev Co/City	Gives residents a chance to work in the neighborhood they live in
		Establish Community Builder, Real Estate Broker and Construction Assitance programs to help local business gain access to valuable opportunities and experiences	CP Dev Co/City	Existence of local opportunities for employment reduces the need for commuting
	EV 2 Plan and design development to spur economic revitalization	Achieve a balanced jobs to housing ratio of 1:1	Private and public organizations	Creates opportunities for new businesses
		Establish 4.265 million sq. ft. of research and development space for office uses, including technology, green technology and creative industries.	CP Dev Co/City	Grows local economy and boosts local income levels and tax base Utilizes local base of workers of all skill levels Creates 'green collar', high quality jobs
		Dedicate up to approximately 526,000 sq. ft. to neighborhood-serving retail and maker space, including food service grocery	CP Dev Co/Private partner/City	Enables residents to access basic retail services without relying on a car Addresses local need for access to healthy foods
Affordable Housing	EV 3 Provide new affordable housing	Construct 3,345 units of below market-rate and public housing (32% of total), a portion of which will be rental units reserved for households earning 60% or less of the Area Median Income; this number includes the replacement of 256 public housing units at Alice Griffith	CP Dev Co/City/OCII	Prevents displacement of current residents Provides opportunities for working class residents, such as school teachers and firefighters, to become homeowners
		Contribute $28.7 million to Community First Housing Fund which provides financing to qualified low-income homebuyers	CP Dev Co	Increases local homeownership

	Strategy	Key Elements & Targets	Responsibility	Benefits
Community Identity & Cohesion: A strong community that takes pride in its culture, history and diversity				
Community Development	C 1 Actively engage the community in the redevelopment process	Use formal groups--Citizens Advisory Committee (CAC) --with community representation to provide input to the project	City/CAC	The project results in a community that meets the needs of BVHP
	C 2 Plan and design development to spur sense of community and place	Design community such that households have access to a variety of safe, civic spaces within a short walk	City/CP Dev Co	Creates opportunities for neighbors to meet and socialize
		Provide a range of housing to meet community needs, including housing designed for seniors, special needs residents and families	CP Dev Co	Improves quality of life for residents Helps build a vibrant community full of people from all different walks of life
		Establish a $10 million Education Improvement Fund, a $3.5 million Scholarship Fund and a $2 million fund for a pediatric health and wellness center	CP Dev Co	
		Provide 65,000 gsf for Community Facilities Space	CP Dev Co	
Historic Preservation	C 3 Preserve local culture and historic identity	Strive to preserve and rehabilitate as many buildings designated as historically significant as financially feasible	CP Dev Co	Maintains connection with history of the community
		Designate a permanent location for the International African Marketplace	CP Dev Co	Enhances local cultural diversity
Arts	C 4 Support the local Artist Community	Renovate and build 225,000 gsf of existing artist space and provide 10,000 gsf for an artist center	CP Dev Co	Enables artist community to continue to thrive and contribute to the distinctive culture of the community
		Build space for entertainment uses and performing arts	CP Dev Co/Third Party	Creates new opportunities to enjoy arts and culture Supports new artistic endeavors within the community
Public Wellbeing, Safety & Quality of Life: An attractive, pleasant and safe community				
Open Space and Recreation	PQ 1 Provide quality open space and recreational facilities	Provide approximately 340 acres of new and improved city neighborhood and waterfront parks within the project area	CP Dev Co/City	Provides attractive spaces, accessible to the all BVHP residents, for relaxation and recreation
		Provide approximately 97 acres of new and improved State parkland	State Parks/CP Dev Co	Enables residents to lead an active, healthy lifestyle and enjoy the outdoors
		Design community such that most residents have a recreational facility and a natural setting within a 5 minute walk	CP Dev Co	Improves public health and quality of life
		Replace and restore community gardens affected by the CP/HPS Project	CP Dev Co	Improves local air quality and enhances aesthetics of local environment
Public Safety	PQ 2 Improve Public Safety	Incorporate mix of uses that keeps streets active and alive at day and night	CP Dev Co	Creates a more pleasant and comfortable living environment
		Ensure adequate street lighting is provided for pedestrians	CP Dev Co	Reduces crime and vandalism
		Establish minimum standards for maintenance and upkeep	City/Home Owners	

	Strategy	Key Elements & Targets	Responsibility	Benefits
Accessibility and Transportation: A community designed around pedestrians, cyclists and public transportation				
Design and Accessibility	T 1 Minimize need for travel outside the community	Design the community so that residents don't need to travel outside for work, entertainment, shopping or to access basic services	CP Dev Co	Reduces dependency on and need for private automobiles
		Design the community so that 90% of households can access neighborhood serving retail within 1/4 mile walking distance of their home	CP Dev Co	Reduces commute distances and times Improves community health and air quality
	T 2 Maximize pedestrian and bicycle travel	Design the community to be dense and compact, with some pedestrian-only streets and sidewalks on all streets	CP Dev Co	Creates a more pedestrian-friendly environment
		Facilitate biking by including marked bike routes signage and route maps along major roadways, and requiring bike parking in all non-residential and multi-family buildings	CP Dev Co	Enables residents of all ages to safely traverse the neighborhood by bike or on foot Helps build a community that is safe, enjoyable and welcoming to families By reducing dependency on private automobiles, helps households reduce transportation costs Improves community health and air quality
	T 3 Expand and improve public transit services	Expand and extend Muni regular and express bus service to the CP/HPS; establish a new bus rapid transit (BRT) service connecting to SamTrans, BART, Caltrain and Third street rail station	City	Enables the community to take advantage of convenient and reliable public transportation
		Provide local transit service within 1/4 mile of most residences	CP Dev Co/City	Improves connection with the City and other neighborhoods and reduces isolation of the area
		Target 55% of weekday afternoons trips at peak hour to be by transit, walking or cycling vs current 34%	City	Reduces dependency on private automobiles
		Provide transit priority corridors to allow fast transit access to regional transit hubs and employment centers, such as downtown	CP Dev Co/City	
	T 4 Improve roadway access to site	Expand and improve roadways in the area, as identified in the Transportation Plan	CP Dev Co/City	Helps to reduce traffic congestion Improves roadway safety for vehicles and pedestrians
	T 5 Utilize low-to-zero emission transit vehicles to serve the site	All transit vehicles servicing the site to utilize low-emission or zero emission technologies	City	Reduces pollutants and greenhouse gas emissions associated with transit vehicles Improves community health and air quality
Transportation Demand Management	T 6 Implement transportation demand management plan	Employ a full-time transportation coordinator to promote walking, cycling, carpools and public transportation	CP Dev Co/City/SFMTA	Creates a variety of transportation options and services that meet the diverse needs of residents and businesses
		Implement off-street parking maximums of 1 parking space per residential unit	CP Dev Co/City	Makes it easy for residents and business to take advantage of car-sharing, carpool and public transit options
		Provide web-based real-time public transit information	City	Reduces dependency on private automobiles
		Attract a car sharing service with vehicles conveniently located near residences	CP Dev Co/car-share partner	Improves community health and air quality

	Strategy	Key Elements & Targets	Responsibility	Benefits
	Resource Efficiency			
Energy	E 1 Reduce building energy demand and consumption	Achieve energy efficiency performance target of 15 percent below the energy efficiency standards for regulated loads as articulated in Title 24, Part 6 of the 2008 California Code of Regulations	CP Dev Co	Households expected to enjoy average savings of about $188 per year on their energy bill Efficiency produces on-going energy savings for residents and businesses Reduces emissions that contribute to climate change Reduces dependence on fossil fuels
		Include plug load efficiency requirements to further reduce total energy use (e.g. require Energy Star appliances)	CP Dev Co	
	E 2 Explore the viability of a district heating and cooling system	Partner with a third party to deploy and deliver district energy services should district heating and/or cooling be technically and financially viable	CP Dev Co/utility provider/City	
	E 3 Maximize on-site energy generation from renewable sources	Provide opportunities for implementing solar thermal water heating, solar photovoltaic panels and/or urban wind generation	CP Dev Co/utility provider/City	
Water	WT 1 Reduce overall water demand	Reduce potable water demand from the San Francisco Green Building Ordinance scenario by 51% (upon availability of reclaimed water sources)	CP Dev Co/utility provider/ tenant	Households expected to enjoy average savings of about $101 per year on their water bill Ensures a reclaimed water source for landscaping to keep the neighborhood beautiful Improves water quality in the Bay Creates and protects natural habitat Allows the community to live within its natural water budget (consumes less than what falls on the site) Reduces project impact on municipal potable water facilities
		Reduce building potable water demand by 30% compared to the baseline described in LEED 2.2 for New Construction	CP Dev Co/utility provider/ tenant	
	WT 2 Use alternative water sources	Reduce open space potable water demand by 50% compared to the Model Water Efficient Landscape Ordinance (MWELO)	CP Dev Co	
		Install reclaimed water infrastructure (purple pipe) necessary to serve the development for non-potable uses on site	CP Dev Co	
		Provide reclaimed water for non-potable uses on-site	CP Dev Co/utility provider	
		Use recycled water for all dust suppression requirements during construction (if available)	CP Dev Co	
	WT 3 Treat wastewater efficiently	Reduce wastewater flow by up to 26 percent compared to similar developments built to California Codes	CP Dev Co	
	WT 4 Implement a low impact stormwater management system	Capture and treat 100% of onsite storm water eliminating use of the existing combined sewer/storm water system	CP Dev Co	
Solid Waste	SW 1 Minimize waste during planning, design and construction	Divert 75% of construction and demolition waste from landfills	CP Dev Co/contractors	Reduces greenhouse gas emissions associated with solid waste Fewer hazardous materials in the community Fewer trash collection trucks on the streets, resulting in reduced diesel truck emissions and noise No trash bins out on street curbs Reduced pest problems
		Maximize the reuse of materials	CP Dev Co/contractors	
	SW 2 Minimize waste during operation	Divert 85% of residential, commercial and hotel waste from the landfill (short-term), 100% long-term	Recology	
	SW 3 Collect and manage/dispose all hazardous wastes generated from "The Point"	Assign space for a neighborhood drop-off to ensure better collection of hazardous materials	CP Dev Co/Recology	
	SW 4 Explore options for an Automated Waste Collection System	Provide efficient, clean, and less invasive waste collection for the same cost as traditional waste collection	City/CP Dev Co/Recology	

	Strategy	Key Elements & Targets	Responsibility	Benefits
	Ecology			
Environment	ENV 1 Promote healthy air quality	Use materials indoors that are low-VOC and formaldehyde-free	CP Dev Co/contractors	Improves resident health
		All buses servicing the site to use zero emission / ultra-low emission technologies	SF MTA	Improves regional air quality
				Improves groundwater quality
	ENV 2 Clean the site so it is safe for residents and visitors	Contaminated areas of the site will be made safe for residents, visitors and neighbors of the development	Navy	Improves site safety
	ENV 3 Reduce the release of toxic pesticides into the environment	No toxic chemicals used for pest control except under limited circumstances for the control of invasive species or for public health purposes	CP Dev Co/contractors/ HOAs	Improved indoor air quality
				Improved working and living conditions
		Restrict pesticides to those listed on the DOE's Reduced Risk Pesticide List	CP Dev Co/contractors/ HOAs	Reduces contribution to climate change
Habitat	HB 1 Protect and enhance existing wetland habitats within the site	Restore and enhance tidal marsh and high beach habitats for wildlife benefits and overall community ecological resilience, climate adaptation and preparedness in the face of sea-level rise.	CP Dev Co	Increases ecological value of the land
				Increases biodiversity
				Improves public amenity
		Avoid impacting and mitigate any unavoidable impacts to important habitats, including Eelgrass beds and Essential Fish Habitat	CP Dev Co	Improves regional air quality
		Create new habitat and protect Bay waters through stormwater treatment wetlands	CP Dev Co	Attracts beneficial species, particularly those that can contribute to the Integrated Pest Management Plan
	HB 2 Create new areas of natural habitat value within the site	Create and restore new upland grasslands	CP Dev Co	
		Remove non-native invasive plant species (e.g. common reed, iceplant, French broom, pampas grass, etc) from open space	CP Dev Co/State Parks	
		Encourage CA State Parks to plant native, regionally appropriate, and not invasive species	State Parks	
	HB 3 Protect and enhance urban habitats	Ensure the trees planted within the CP/HPS project area are native or regionally appropriate	CP Dev Co	
	HB 4 Migratory Bird Protection/Enhancement Measures	Improve migratory stopover habitat	CP Dev Co	
		Ensure intended migratory stopover habitat is sufficiently separated from tall buildings and incorporate bird-friendly building design elements	CP Dev Co	
	HB 5 Environmental Education	Provide more sensitive species, for suitable habitat while providing the public with educational and recreational opportunities		
Climate	CC 1 Minimize the impact of the development on global climate change	Meet the City of San Francisco's 'Two Ton Challenge' by reducing per capita carbon emissions from the development by at least two tons compared to the business-as-usual development scenario	CP Dev Co/City	Reduces risk of future flooding
				Reduces insurance premiums
		Achieve per capita carbon emissions of 4.5 tons CO_2e/day	CP Dev Co/City	Reduces carbon footprint of the project
		Plant 10,000 new trees	CP Dev Co	
	CC 2 Design the development to accommodate the effects of a changed climate in the future	Design the development to accommodate the effects of a sea level rise with finished floor elevations 66" above a 100 year flood event. Provide for an adaptive management strategy for future increases in sea level.	CP Dev Co	
		Where technically feasible and schedule permitting, use concrete that contains 30% or more fly ash or slag	CP Dev Co/Contractors	

	Strategy	Key Elements & Targets	Responsibility	Benefits
	Advanced Information and Communications Technologies: A wired community where technology improves quality of life			
Connected Urban Development	ICT 1 Empower residents to save money and make low-carbon decisions	Build a "smart" network that provides real-time information about energy use, Muni service (next-bus information), traffic and more	Utility provider/City/ OCII	Provides residents with information they can use to plan their travel journeys Helps residents to reduces energy and water use and better manage their utility expenses
		Incorporate "smart-metering", building management systems and feedback panels into homes	Utility provider/City/private partners/OCII	
	ICT 2 Provide next-generation broadband connectivity	Develop an ultra-high broadband and mobile network (e.g. 4G)	CP Dev Co/private partner	Bridges digital divide Helps residents access information about jobs, education, healthcare and government services Boosts economic development and attracts residents
		Free (or affordable), ubiquitous Wi-Fi that is provided by the City or through the private sector	CP Dev Co/utility/private partner	
	ICT 3 Provide a digital information portal for residents, visitors and newcomers	Develop and operate a community web portal	CP Dev Co/City	Enables residents to better engage and participate in their communities Helps residents access information about jobs, transportation, community events, etc. Generates revenue for local businesses
		Install and maintain digital information kiosks	CP Dev Co/City	
		Provide real-time transit information at transit nodes	SFMTA	

	Overarching Strategies			
Neighborhood Development	OS 1 Obtain third party certification	Achieve a Gold rating from the US Green Building Council based on LEED™ for Neighborhood Development.	CP Dev Co	Provides credibility to the sustainable approach taken by the developer and City

STAY IN SCHOOL

1 Introduction

Overview of the project, the existing community and sustainability

1 Introduction

The redevelopment of Candlestick Point/Hunters Point Shipyard (CP/HPS) will create **a vibrant, healthy, attractive community of approximately 41,000 people** in one of the City's most underinvested areas.

It will transform a contaminated, underutilized area into **two waterfront neighborhoods** that resound with **activity, innovation, vitality, art and nature**.

Taking pride in the area's strong heritage, rich history and diverse tradition, **the new community will echo the diversity, vibrancy and values of the local area**.

Featuring a high proportion of **affordable and green housing**, as well as **parks and open space**, the community will embody the **values of social equity** and living in balance with nature and resources. The project is **expected to generate over 16,000 permanent jobs** for workers of all skill levels, and to create a new hub for green businesses and clean technology. It will demonstrate how tackling local and global challenges—from lack of affordable housing to reducing carbon emissions —can be achieved in a way that **strongly benefits the community** and **provides hope to its youth for a better tomorrow**.

The Context

The Project is located in the Bayview area of San Francisco and encompasses the former site of San Francisco 49ers stadium at Candlestick Point and the site of the now closed Hunters Point Naval Shipyard.

The Opportunity

The redevelopment presents a tremendous opportunity to create a vibrant community that offers a high quality of life and an exciting range of employment opportunities for the residents of the larger Bayview community. Sustainability is at the heart of the redevelopment plan, emerging from a deep need and strong commitment to create a community that is in balance across the triple bottom line—social equity, economic vitality and environmental restoration. Through strong public and private partnerships, long term commitments, innovative financing and advanced technology, the new community will be able to realize the true promise of sustainability: sustaining better lives for generations to come in a place that is renewed, inclusive and renown for its opportunities to live, work and recreate.

Residents will enjoy opportunities to upskill and earn a living wage, participate in the green tech movement and raise a family in a safe, affordable and healthy environment, while reaping benefits from living in harmony with natural resources and contributing positively to global sustainability challenges. This document presents a summary of the strategy to transform this neighborhood into a vibrant green community. It is based on a comprehensive Sustainability Plan developed for the project.

STAY IN SCHOOL

2 Development Project Summary

A summary of the development plan for Candlestick Point and Hunters Point Shipyard

2 Development Project Summary

The CP/HPS Project is a 702-acre site that includes the second phase of the Hunters Point Shipyard Redevelopment Project and Candlestick Point.

The combined areas include provisions for a mixed-use community comprising residential, retail, office, research and development, civic and community uses, and parks and recreation open space. The masterplan for the combined community is designed to create a **compact, pedestrian-friendly development with approximately 50% of the gross project area dedicated to open space and parks**. In addition, a number of active outdoor recreation amenities such as sports fields and community gardens will provide opportunities to be outside for social, health and recreational benefit.

The urban design facilitates distinct neighborhoods that are well connected to one another, BVHP and the rest of San Francisco via multiple transit modes. Approximately 32% of the proposed housing will be below-market rate and public housing.

Candlestick Point

Detailed plans for Candlestick Point include the following:*

- 7,218 new residential units:
- The redevelopment of the San Francisco Housing Authority's Alice Griffith site (also known as "Double Rock" Housing), replacing 256 units at a one to one ratio
- A 635,000 sq. ft. regional retail center
- 75,000 sq. ft.performance venue/film arts center
- 220 room hotel (150,000 sq. ft.)
- Approximately 106 acres of parks and open space
- 50,000 sq. ft. of community use
- 125,000 sq. ft. of neighborhood serving retail
- 150,000 sq. ft. of office space

Hunters Point Shipyard

Detailed plans for the Hunters Point Shipyard include the following:*

- 3,454 new residential units:
- 226,000 sq. ft. of neighborhood-serving retail
- 100,000 sq. ft. neighborhood-serving retail and/or regional retail
- 75,000 sq. ft. of maker space
- 4,265,000 sq. ft. of research and development / office space that could serve the clean tech industry
- 410,000 sq. ft. of insitutional space
- 255,000 sq. ft. of space for artists
- Approximately 230 acres of parks and open space
- 50,000 sq. ft. of community use
- 175 room hotel (120,000 sq.ft.)

DID YOU KNOW ...

The project is targeting a gold rating under LEED® for Neighborhood Development.

LAND USE
RESIDENTIAL DENSITY I (15-75 UNITS PER ACRE)
RESIDENTIAL DENSITY II (50-125 UNITS PER ACRE)
RESIDENTIAL DENSITY III (100-175 UNITS PER ACRE)
RESIDENTIAL DENSITY IV (175-285 UNITS PER ACRE)
ARTIST (ART)
COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
INFRASTRUCTURE / UTILITY (I / U)
PARKING (SP)
COMMUNITY USE (CU)
PARKS AND OPEN SPACE
RETAIL* (RT)
HOTEL* (HT)
PERFORMANCE VENUE (PV)
NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LAND USES PERMITTED.
4. BLOCK 36B IS A PLACEHOLDER FOR THE FIRE STATION LOT, SUBJECT TO CHANGE AFTER CONSULTATION WITH SFFD.
* GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)
PROJECT BOUNDARY
HPS 1
HPS 2, CP
0 500 1000 2000
MAP GENERATED APRIL 4, 2018

3 Meeting Community Needs

Summarizes how the project has been designed with the Bayview Hunters Point community in mind

3 Meeting Community Needs

The redevelopment of CP/HPS presents a **tremendous opportunity** to create a better life and future for local residents. It has been planned to create **significant, lasting real benefits** to the future residents of the new community as well as existing residents in Bayview/ Hunters Point.

1 Creating new jobs for local residents of all skill levels

The planning, design and construction of the new community will require significant professional and skilled labor–it is critical that the local community be able to take part in and benefit from the economic growth spurred by the new development. The project has committed to making a good faith effort for 50% of new construction hires to be San Francisco residents with first priority given to BVHP residents and for 50% of suppliers, construction work and professional services to be small business enterprises.

The development plan includes a new 4,265,000 sq. ft. green tech R&D center, which will enable local residents to access a variety of quality green collar jobs. A Workforce Development Fund will be established with the city to support job training and capacity development so that residents can be adequately prepared for the green jobs that come their way.

The land use program includes up to 526,000 sq. ft. of new neighborhoodserving retail and maker space, which will provide both employment and business opportunities for local residents. Space will also be set aside for artists and community programs.

The existing BVHP business community will benefit from improvements to streets and public transportation in the area, reduced congestion and from having a large new population next door.

2 Better education opportunities

The redevelopment will bring improved schools and community resources to the area, and support lifelong learning opportunities. Several funds have been created to support the community, which include: a $28.7 million community First Housing fund, a $10 million Education Improvement fund, a $3.5 million Scholarship fund, a $2 million fund for a pediatric health and wellness center and an $8.9 million Workforce Development fund with an equivalent match from the City in workforce development and training services. Further training will be supported by Community Building, Real Estate Broker and Construction Assistance programs. The green technology corridor will give residents a first-hand opportunity to develop skills in a fast-growing and innovative sector of the economy.

3 A healthy environment

The new community at CP/HPS will provide a wide variety of health benefits. The long-contaminated superfund site at HPS will be cleaned by the Navy to appropriate public health standards. Over 330 acres of parks and open space will be created, including a contiguous park between both sites and bike paths connecting to regional bike network. Residents will be able to enjoy the outdoors and new recreational areas. The new community will be designed to be safe and enjoyable for pedestrians and cyclists. Residents will be able to access new retail and community services in walking distance.

4 Better quality of life

By accessing good job opportunities in the local area, residents will be able to reduce their commuting time, leaving more time for family,relaxation and recreation. Those that do need to commute will have access to more diversity and frequency of public transit and dedicated bike lanes, reducing reliance on the automobile. New parks and open space, plus 10,000 new native trees, will add to the enjoyment of the new community. Residents will have a number of retail and entertainment options at their doorstep. A strong sense of community and improved maintenance and safety measures means residents of all ages can enjoy the neighborhood. All new homebuyers and renters will be able to enjoy modern, efficient, attractive housing.

5 A lower cost of living

About 32% or 3,345 housing units will be belowmarket rate or public housing. Efficient homes with Energy Star appliances will mean less water and energy bills–a typical household will save up to $290 annually. Having jobs, retail services, arts, entertainment and recreation close by also means much less spending on transportation.

6 Preserving and strengthening the existing community spirit

The unique, positive aspects of the current area will be maintained, so that the spirit of the community can continue to flourish. A large number of housing units will be available to accommodate families and seniors. The African Market will find a new home at CP/HPS. New studios will be provided to the artist community and space will be dedicated to a new arts center. A 75,000 sq. ft. performing arts venue will be built in the Candlestick Point neighborhood.

STAY IN SCHOOL

4 Sustainability Strategy

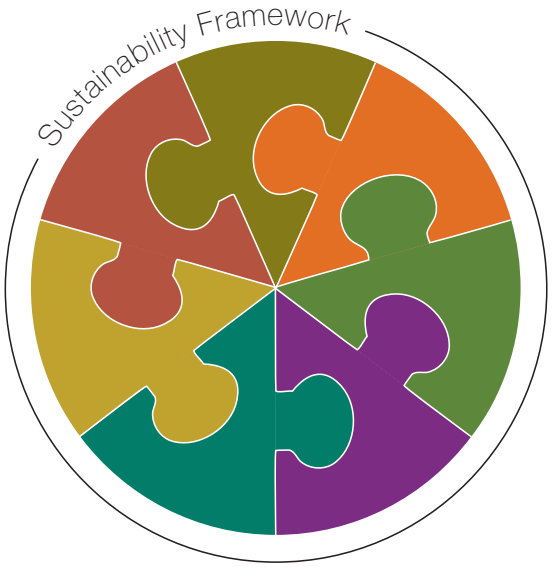
This section describes what sustainability is and how the project is embracing it from multiple angles

4 Sustainability Strategy

A **comprehensive sustainability strategy** has been developed for CP/HPS to demonstrate how the project will provide the Bayview community with amenities that they have not historically enjoyed: opportunities for local jobs for all skill levels; **local retail options; a safe, walkable community; and a variety of parks and open spaces.**

The sustainability strategy for CP/HPS also describes measures that will minimize the impact of the development on local infrastructure, resources and the environment, and measures to **preserve the unique culture and diversity that define the area.**

The strategy has **7 key components**, as shown in the illustration on page 23; each has its own set of underlying goals, strategies, benefits and potential implementation partners.



Economic Vitality & Affordability

Enhance the competitiveness of the region by fostering a vibrant local economy and supporting a mixed-income community

Community Identity & Cohesion

Create a strong sense of community by integrating the new neighborhood with the rich culture and diverse history of the existing neighborhood

Public Well-Being & Quality of Life

Provide a healthy and safe neighborhood with sufficient community facilities, parks, essential services and public spaces to engender a high quality of life for residents of all ages and abilities

Accessibility & Transportation

Significantly improve accessibility to the site and reduce traffic impacts on the surrounding area; promote walking and cycling as the primary modes of transportation within the development

Resource Efficiency

ENERGY Implement a whole-systems approach to energy conservation/efficiency, and sustainable supply that minimizes the need for fossil fuels

WATER Provide an integrated urban water system that reduces demand for potable water, captures/treats/recycles wastewater locally and manages stormwater onsite in a low impact manner, enabling the community to live within its natural water budget

WASTE Reduce, reuse and recycle appropriate solid waste materials, with a special emphasis on reusing construction materials and recycling organic wastes in an effort to divert as much waste as possible from landfills

Ecology

ENVIRONMENT Protect and improve soils, water bodies and air basins

HABITAT Design to protect and enhance wetlands and other natural habitats

CLIMATE Significantly reduce greenhouse gas emissions of residents and business

Information & Communications Technology

Integrate Information and Communications Technology (ICT) such as “smart grid” and cellular broadband infrastructure into the development to allow residents to better manage their utilities, bolster local economic activity, improve access to real-time information and facilitate community communications and activities.

4 Sustainability Strategy

Economic Viability & Affordability

Goal

Enhance the competitiveness of the region and foster a vibrant local economy around a community-serving town center and regional scale commercial activities, and create a premier destination for the clean technology industry. This economy will be supported by an appropriately skilled, local workforce.

Over 16,000 new permanent jobs and up to 500 temporary jobs per year will be created at Hunters Point

The Opportunity

Use the cleanup and construction of CP/HPS as an opportunity to create new, temporary and permanent jobs; establish the area as a clean technology hub; create new businesses in the area; and provide affordable homes.

Strategies

1. Create jobs for local residents

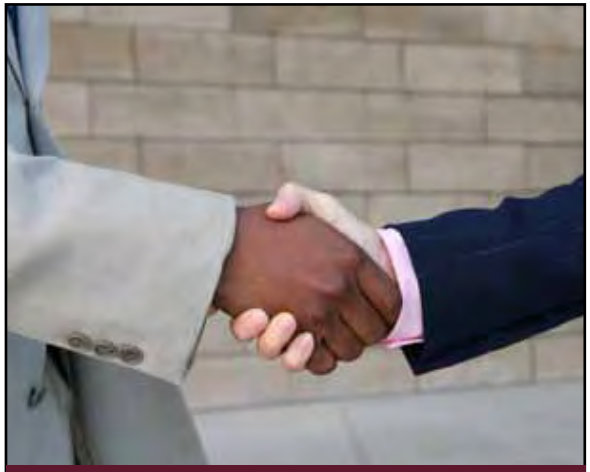
- Enable the local community to take part in the economic growth spurred by the new development
- Make a good faith effort for 50% of new construction hires to be San Francisco residents with first priority given to BVHP residents
- Make a good faith effort for 50% small business enterprise participation for suppliers, construction work and professional services
- Establish an $8.9 million Workforce Development Fund that will receive an equivalent match from the City in workforce development and training services.
- Establish Community Asset Builder, Real Estate Broker and Construction Assistance programs to help BVHP residents and local business gain access to valuable opportunities and experiences

2. Plan and design development to spur economic revitalization

- Create over 16,000 new jobs through new retail areas, research park and offices, equivalent to a balanced jobs to housing ratio of about 1:1
- Establish 4,265,000 sq. ft. center for research and development space that could include green technology
- Dedicate up to 526,000 sq. ft. to neighborhood serving retail, including food service grocery

3. Provide new affordable housing

- Build 3,345 units of below-market rate and public housing (32% of total), a portion of which will be rental units reserved for households earning 60% or less of the Area Median Income
- Replace 100% of current Alice Griffith public housing units on a 1-to-1 ratio for current residents (included in above total)
- Contribute $28.7 million to Community First Housing Fund, which provides financing to qualified low-income home buyers



It is estimated that business at the CP/HPS project will eventually output $7 billion annually of direct, indirect, and induced economic impacts. This will significantly bolster local spending and job growth.

Benefits

- Creates new jobs for residents
- Reduces need for commuting out of community
- Prepares residents to take advantage of new employment and business opportunities
- Grows local economy, income levels and tax base
- Utilizes local base of workers at all skill levels
- Creates 'green collar' high quality jobs and other high quality jobs
- Helps attract businesses that are needed in the community
- Improves access to healthy foods
- Prevents displacement of current residents
- Provides affordable, below market and public housing to local community
- Increases local homeownership
- Modern, efficient homes reduce energy and water bills

Partners

- Hunters Point Shipyard Citizens Advisory Committee
- City Build
- San Francisco Office of Economic Workforce Development
- San Francisco Mayors Office of Housing
- ADIO
- Bayview Merchants Association
- Renaissance Entrepreneurship Center
- City of SF Green Tech Program
- Habitat for Humanity
- San Francisco Housing Authority
- Office of Community Investment and Infrastructure, Sucessor Agency to the San Francisco Redevelopment Agency
- Neighborhood Jobs Initiative Round Table
- Young Community Developers, INC.
- Small Business Enterprise Program
- BOMA SF (training partner)

4 Sustainability Strategy

Community Identity and Cohesion

Goal

Create a strong sense of community by integrating the new neighborhood with the rich culture and diverse history of the existing neighborhood.

A $28.7 million fund will be established to provide financing to qualified low-income homebuyers

The Opportunity

The project presents a great opportunity to make real improvements to strengthen the community fabric, while preserving the culture and history of the area.

Strategies

1. Actively engage the community in the redevelopment process

- Use formal groups–Citizens Advisory Committee (CAC) –to provide input to the planning and implementation of the project

2. Plan and design development to spur sense of community and place

- Design community such that households have access to a variety of safe, civic spaces within a short walk
- Provide a range of housing to meet community needs, including housing designed for seniors, special needs residents and families
- Establish a $10 million Education Improvement Fund, a $3.5 million Scholarship Fund and a $2 million fund for a pediatric health and wellness center

3. Preserve local culture and historic identity

- Strive to preserve and rehabilitate as many buildings designated as eligible for the National Register of Historic Places (NRHP) as financially feasible
- Designate a permanent location for the International African Marketplace

4. Support the local Artist Community

- Renovate and build 255,000 gross sq. ft. of arts center space and existing artist space
- Build a 75,000 sq. ft. performing arts center
- Provide a parcel of land for an Arts Center, or, at the Developer's discretion, a Warm Shell space, per the Disposition and Development Agreement.

The project will be home to a new 75,000 square foot performing arts center

Benefits

- Urban design of community creates opportunities for neighbors to meet and socialize
- Maintains connection with history of the community
- Improves quality of life
- Creates new opportunities to enjoy arts
- Enhances local cultural diversity
- Enables artist community to continue to thrive

Partners

- Bayview Hunters Point Community Advocates
- California Department of Parks and Recreation
- National Park Service
- San Francisco League of Urban Gardeners
- Southeast Health Center
- BVHP Multipurpose Senior Center
- Artscape
- SF Arts Commission
- The Point
- Shipyard Trust for the Arts
- Baycat
- California Lawyers for the Arts

4 Sustainability Strategy

Public Wellbeing & Quality of Life

Goal

Create a strong sense of community by integrating the new neighborhood with the rich culture and diverse history of the existing neighborhood.

The Opportunity

The combined project area provides an excellent opportunity to create a large scale regional park and continuous green space between CP and HPS. It will transform a largely industrial, neglected area into a vibrant, lively, healthy and safe community for all to enjoy.

Within the project area, there will be approximately 14 acres of open space per 1000 residents (vs 5.5 City-wide)

Strategies

1. **Provide quality open space and recreational facilities**
   - Provide approximately approximately 340 acres of open space, comprised of approximately 240 acres of new city neighborhood and waterfront parks and 97 acres of new and improved State Parkland; within the project area, there will be approximately 14 acres of open space per 1000 residents (vs 5.5 City-wide)
   - Design community such that most residents have a recreational facility and a natural setting within a ¼ mile (5 minute) walk
   - Replace and restore community gardens affected by the CP/HPS Project
2. **Improve Public Safety**
   - Incorporate mixes of uses that keep streets active and alive at day and night
   - Ensure adequate street design and lighting is provided for pedestrians
   - Require properties to uphold minimum standards for maintenance and upkeep
   - (through homeowner or neighborhood business associations)
   - Establish new essential services, such as police, fire and rescue

Benefits

- Provides attractive spaces, accessible to all BVHP residents, for relaxation and recreation
- Enables residents to lead an active, healthy lifestyle and enjoy the outdoors
- Reduce opportunities for crime and vandalism

Partners

- Neighborhood Parks Council
- Bayview Hunters Point Escort Patrol and Crime Prevention Services
- Coastal Conservancy
- Project for Public Spaces
- San Francisco Recreation and Park Department
- San Francisco Police Department
- San Francisco League of Urban Gardeners
- Trust for Public Land

LEGEND
Meadow Open Space
Grasslands
Native Gardens
Beach
Kayak Launch
Boulevard Park
Overlook
Freshwater Wetland
Viewing Mound
Parking
Dual-Use Parking
Shade Structure
Building-Restrooms and Educational Centers
Dog Run
Playground/Tot Lot
Youth Maritime Interpretive Play
Picnic Pod
Bay Trail
1 Northside Park
2 City View Plaza
3 Waterbird Piers
4 Waterfront Promenade
5 Heritage Park
6 Water Room Plaza
7 Hillside Open Space
8 Green Room*
9 Marina
10 Community Sports Field Complex
11 Gunning Crane Pier Habitats
12 Multi-Use Open Space
13 Waterfront Recreation and Education Park
14 Grasslands Ecology Park
15 Parking Space
16 CP-HPS Park Maintenance Facility
* Note: Green Room is privately owned and publicly accessible.
** Note: Map #19 indicates the approximate location of CP Neighborhood North Park. The precise location will be determined at a later date, however, it will be located within the CP North neighborhood.
17 Yosemite Slough Parkway Bridge
18 Alice Griffith Neighborhood Park
19 Candlestick Point North Neighborhood Park**
20 Wedge Park
21 Mini-Wedge Park
Candlestick Point State Recreation Area
22 Yosemite Slough - Wetland Restoration (Improvement is a separate project by others, not included in CP-HPS project)
23 Grasslands South
24 Bayview Gardens
25 The Last Rubble
26 Wind Meadow
27 The Heart of the Park
28 The Point
29 The Neck
30 Last Port
Approximately 340 acres of parks, recreation fields and open space will be established

4 Sustainability Strategy

Accessibility and Transportation

Goal

Significantly improve accessibility to the site, and promote transit, walking and cycling as the primary modes of transportation within the development to reduce congestion and pollution impacts on the surrounding area.

The Opportunity

Through appropriate land use and transportation planning, the new community can enjoy much improved accessibility and transportation, including on foot or by bike. The density and compact nature of CP/HPS means that bus rapid transit and other express buses can provide quick access to destinations within the City of San Francisco and employment centers on the peninsula.

Strategies

1. Maximize internal trip capture

- Design the community so that residents don't need to travel outside for work, entertainment, shopping or to access basic services
- Design the community so that most households can access neighborhood serving retail

2. Maximize pedestrian and bicycle travel

- Design the community to be dense and compact, with some pedestrian-friendly streets and sidewalks on all streets
- Facilitate biking by including marked bike routes signage and route maps along major roadways, and requiring bike parking in all non-residential and multi-family buildings

3. Expand and improve public transit services

- Expand and extend Muni regular and express bus service to the CP/HPS; establish a new bus rapid transit (BRT) service connecting to SamTrans, BART, Caltrain and Third Street Light Rail Station
- Provide local transit service within 1/4 mile of most residences
- Target 55% of weekday afternoons trips at peak hour to be by transit, walking or cycling vs. current 34%
- Provide transit priority corridors to allow fast transit access to regional transit hubs and employment centers, such as downtown

4. Improve roadway access to site

- Improve roadways that lead into the project site

5. Utilize low-to-zero emission transit

- Public transit vehicles servicing the site to utilize low-emission or zero emission technologies
- Where feasible and as permitted by City agencies, the Project will endeavor to include electric vehicle charging infrastructure to support the expansion and accessibility of Zero Emission Vehicles (ZEVs).

CP-HPS Phase II Development Planned Transit Service

An integrated and robust transit system, including two new express buses to downtown SF, will greatly improve mobility within the project and surrounding areas.

6. Implement transportation demand management plan

- Employ a full-time transportation coordinator to promote walking, cycling, carpools and public transportation
- Implement parking maximums of 1 parking space per residential unit
- Provide web-based, real-time public transit information
- Attract a car sharing service with vehicles conveniently located near residences
- Implement at least one “Smart Kiosk” that will help visitors navigate the public transit system and learn about local destinations

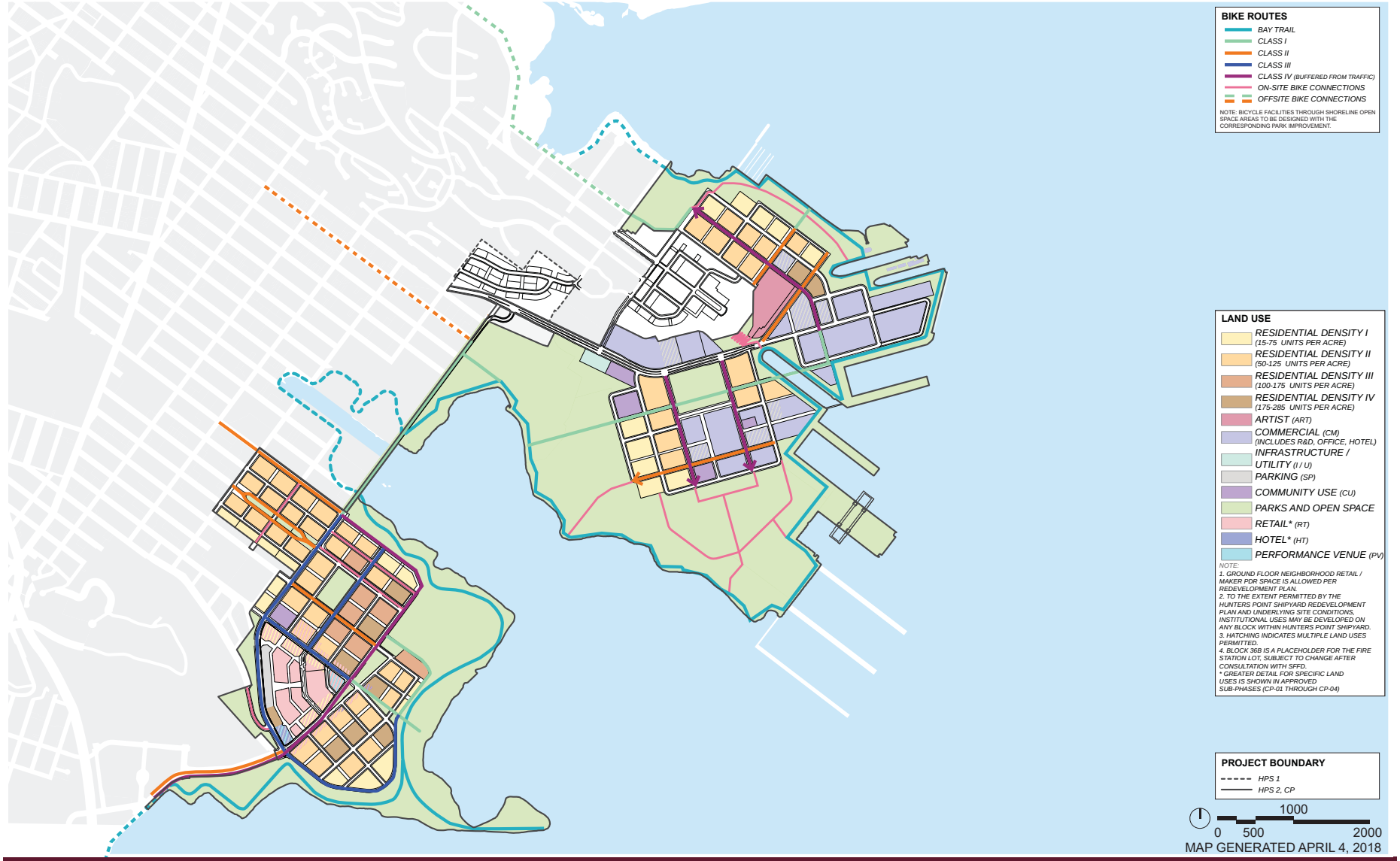
New bike routes, trails and storage facilities will be established all over the CP/HPS community

Benefits

- Reduces traffic congestion and travel times
- Enables community to take advantage of convenient and reliable public transportation
- Connects and expands safe and convenient bicycle network
- Reduces dependency on and need for private automobiles
- Improves roadway safety
- Helps residents reduce transportation expenditure
- Improves connection with the City and other neighborhoods
- Reduces pollutants and greenhouse gas emissions associated with transit vehicles

Partners

- San Francisco Municipal Transportation Agency
- Transportation Management Association (TMA) and proposed Transportation Coordinator
- Zipcar or other car sharing services
- San Francisco Bicycle Coalition
- San Francisco Department of Environment



Access to neighborhood-serving retail shops will be within ½ mile from all residents

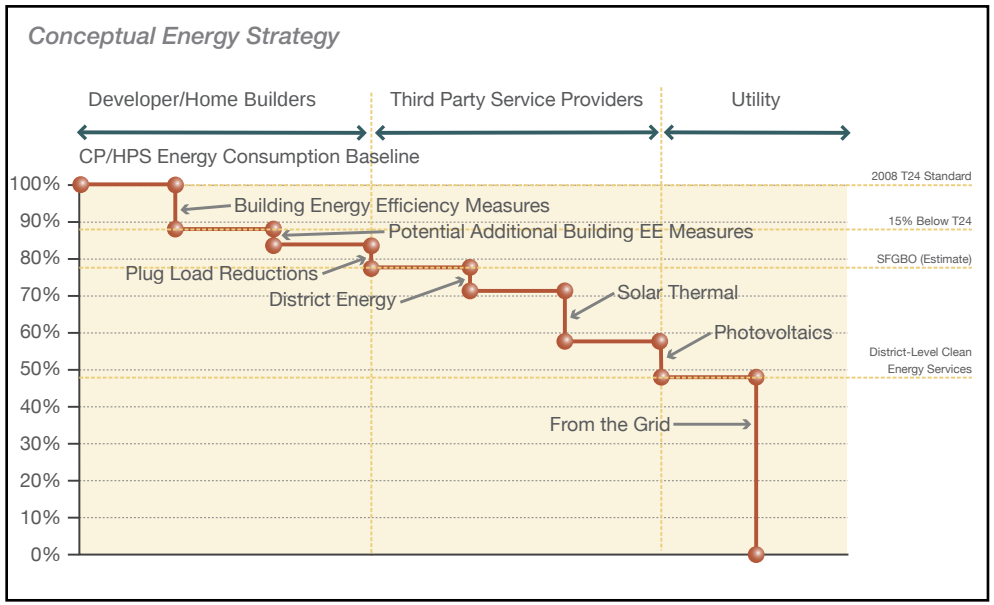
4 Sustainability Strategy

Resource Efficiency

Energy

Minimizing demand for finite resources such as energy and water, ensuring a sustainable supply of energy and water, and minimizing production of wastes, are vital to the long term viability of the development. Using these resources efficiently results in tangible benefits including less pollution and increased monetary savings. This section addresses how the CP/HPS Project will, with its partners, implement innovative technologies and strategies that will result in real community benefits.

The targeted total energy consumption for the project is 20 MBtu (Million British Thermal Units) per resident per year, which is 63% less than current energy consumption for the City of San Francisco residents (53 MBtu per resident per year).



Goal

Implement a whole-systems approach to energy conservation/efficiency, and sustainable supply that minimizes the need for fossil fuels.

The Opportunity

The CP/HPS Project presents a unique opportunity to employ an integrated energy strategy that will take advantage of best practices in energy efficient design and construction and the use of renewable energy sources. The sustainable energy strategy will involve three components: reducing electricity and gas demand and usage; efficiently producing and distributing heating and cooling to all buildings; and utilizing renewable energy sources like photovoltaics for generating onsite power.

A 213,000 sf solar thermal system on the roof of the regional retail parking facility could displace almost 60% of the project's predicted total natural gas use.

Strategies

1. Reduce building energy demand and consumption

Consistent with California law, reduce regulated building energy use by complying with building codes in effect at the time of Site Permit, including California Title 24 Part 6 and San Francisco Green Building Code. These goals may be achieved by:

- Requiring all appliances to be EnergyStar compliant
- Use solar thermal systems to either preheat water in a central utility plant or to heat water in buildings
- Attempting to locate all occupied interior spaces within 25 feet of an operable window to maximize the use of natural ventilation
- Maximizing natural daylighting through optimal glazing, window placement and light shelves
- Utilizing integrated building controls that maximize the use of passive energy strategies

CP Dev Co is pursuing the implementation of several proposed district scale systems described below collectively known as an Eco-Grid. However, a number of policy, regulatory and financing hurdles exist that could preclude the implementation of the proposed Eco-Grid systems. One or all of these systems may not be feasible. As such, CP Dev Co. is not required to implement the district level systems described above, or others that may be studied in the future.

2. District Scale Opportunity:

Geothermal & Central Utility Plant

District heating and cooling systems are more efficient

Possible Location of District Heating & Cooling Plants

District energy systems can increase the efficiency and reduce the cost of heating and cooling

than individual building natural-gas fired boilers and electrical chillers. By aggregating the loads in a centralized location, the project can take advantage of the diversified loads around the mixed-use site. Furthermore, thermal energy can be moved around the site through the district distribution system so that simultaneous heating and cooling needs can be addressed in an optimized way. If the heating and cooling systems in a centralized plant can be electrified through the use of large heat exchangers, the GHG emissions can be significantly reduced in comparison to conventional boilers and chillers. In addition, if a geothermal system can be implemented it can increase the efficiency of the heat exchangers even further.

The evaluated district system at HPS2 includes a central utility plant (CUP), a vertical bore geothermal heat exchange system, a four-pipe chilled and hot water return and supply distribution system, and water-to-air and water-to-water heat exchangers for in-building space conditioning.

The proposed HPS2 geothermal heat exchange system pumps a water-based fluid through a closed loop in a series of vertical bores that extend several hundred feet below the ground surface and are invisible once completed. During the winter, the water being pumped through the geothermal bore field absorbs heat from the ground prior to being directed to the large heat exchangers in the CUP where the heat is extracted prior to recirculation through the bore field. The heat exchangers in the CUP use the heat from the geothermal loop and transfer it to a closed loop distribution system for delivery to the individual buildings. In the summer, this process is reversed. Controls at the CUP integrated with building management systems ensure that the overall geothermal HVAC plant is operating at optimal efficiency throughout the year.

3. District Scale Opportunity:

Maximize on-site energy generation from renewable sources

Solar energy is the most attractive renewable energy that can be used at CP/HPS. A district-scale solar photovoltaic (PV) facility is the most effective renewable energy option that can be utilized at CP/HPS. Preliminary analysis of economic and technical issues with deploying the PV systems determined that up to 15MW of capacity could be installed by utilizing the roof top space throughout the site and leveraging third party financing. This would produce about 40% of the project peak demand (37MW) and 23,000 MWh/yr, which is roughly 30% of the project's annual electricity demand.

Rooftop solar PV systems would be installed on newly constructed buildings to maximize on-site renewable power output. Power produced by the PV cells would be delivered either directly to the building or to the local utility (SFPUC) distribution grid at street level utilizing industry standard bidirectional smart meters.

Battery storage would be a component of the utility electricity systems to store surplus energy generated from the PV systems as well as smooth out intermittent production and provide additional grid stability benefits. The storage systems could also provide backup power for critical customer loads at HPS2.

In the initial phases of the project, advanced lithium-ion batteries would be used for energy storage due to their cost-effectiveness and space efficiency. Other battery technologies (reduction-oxidation flow batteries and metal-air batteries) are quickly maturing and may be considered in future phases.

Roof top photovoltaics could produce 50% of the project's peak electrical demand and 30% of total annual electrical needs.

Benefits

- Fully renewable power source onsite
- Reduces energy costs for residents and increases reliability of power supply
- Reduced exposure to rising fuel prices

Possible Location of Photovoltaics

Current system only proposed for HPS2, similar system may be pursued at CP in the future

As proposed, district heating and cooling, solar thermal (as an efficiency measure) and photovoltaics could reduce the amount of power required from the grid annually by approximately 30%

4 Sustainability Strategy

Water

Goal

Develop a holistic environmentally and socially responsible water strategy for CP/HPS.

The Opportunity

Potable water for the City of San Francisco is provided via the Hetch Hetchy Reservoir, located in the Sierra Nevada Mountains, with the Tuolumne River as its source.

While the City has legal rights to more water than it is currently taking, it has committed to reducing water withdrawals from the river and increasing water conservation for environmental reasons. Maximizing efficiency and conservation can dramatically reduce the burden on the City's potable water supply. In addition, significant use of reclaimed water for irrigation and toilet flushing can further reduce the burden on potable water supply.

Utilizing a low impact development (LID) approach for stormwater management can eliminate stormwater discharges to the Southeast Water Pollution Control Plant (SEWPCP), which will reduce combined sewer and stormwater overflows and contribute to a cleaner and safer Bay.

Strategies

1. Reduce overall water demand

Historically a development such as CP/HPS could be expected to require 2.95 million gallons per day (MGD) based on its development mix and population. However, based on current California building code requirements, its consumption will be reduced to 2.46 MGD. The project is targeting a further 32% water demand reduction from current California building code by:

- Using regionally-appropriate planting and efficient irrigation systems
- Using water-efficient fixtures, such as low-flow toilets and faucets
- Reducing cooling needs and deploying efficient building cooling systems
- Reducing leakage and other losses in the water distribution system energy strategies.

2. Use alternative water sources

Potable water demand can be further reduced by 35% to 0.86 MGD by establishing a source of reclaimed water for:

- Irrigation of public parks and open space (including street trees)
- Non-residential exterior uses (e.g. irrigation, building wash down and dust control)
- Non-residential interior uses (e.g. toilet flushing and building process water)

Potential Location of Recycled Water System

Current system only proposed for HPS2, similar system may be pursued at CP in the future

CP/HPS will eliminate all discharge of stormwater to the Southeast plant and will meet over 50% of total water demand with reclaimed water.

3. District Scale Opportunity:

Recycled Water System

A district-scale recycled water system and distribution is far more cost-efficient than individual building reclamation systems. By centralizing the production of recycled water, the system can avoid disruptions in supply by tapping a central sewer line while ensuring continuous provision of recycled water for toilet flushing, irrigation, laundry and mechanical cooling without reliance on building-specific flow rates. The system for HPS2 is expected to have a total capacity of 450,000 GPD and may be extended to serve the Candlestick Park site as well.

For each 150,000 gpd of recycled water produced, approximately 165,000 gpd of raw wastewater would be diverted from the SFPUC sewer system to the plant, which returns approximately 15,000 gpd of undigested biosolids to the sewer system. A similar system could be explored for future phases of development at Candlestick Point.

If the recycled water facility is constructed, the facility's odor control methods identified in the supporting environmental analysis will be implemented. Odor control methods could include enclosed and covered process tanks, a suction blower to capture air from one or more unit processes, a scrubber system, and the off-site processing of sludge. In the highly unlikely event that the facility develops an odor issue, the existing odor control measures will be repaired or maintained, or additional odor control measures will be implemented until the odor issue is completely addressed.

4. Implement a low impact stormwater management system

Green infrastructure will be implemented in the project as a solution for sustainable stormwater management. The plantings included in the Project's green infrastructure may be informed by optimum wildlife habitat potential, climate resilience, and sustainability, where feasible.

- Employ natural techniques to filter, infiltrate, store, evaporate and detain runoff using urban features such as vegetative medians, roof areas, parking lots, sidewalks and open spaces
- Treat stormwater runoff at-source
- Eliminate stormwater discharges to the SEWPCP

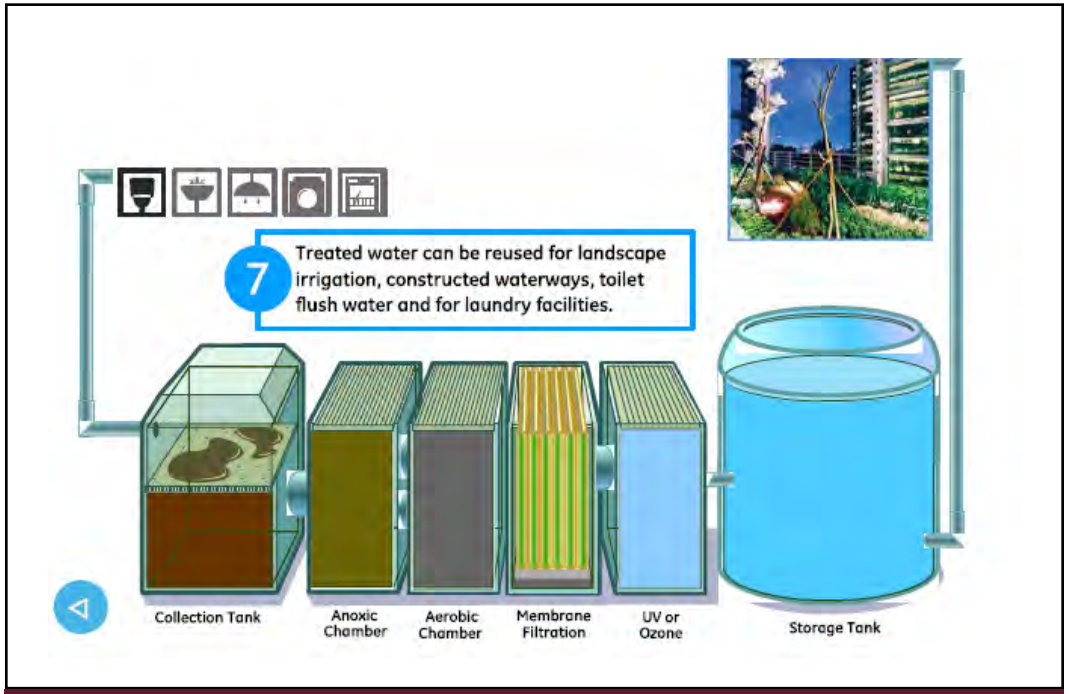
Benefits

- Households expected to enjoy savings of about $101 per year on their water bill
- Provides opportunity to use reclaimed water for landscaping to keep the neighborhood beautiful
- Improves water quality in the Bay
- Creates and protects natural habitat
- Allows the community to live within its natural water budget (consumes less than what falls on the site)
- Reduces project impact on municipal potable water facilities

Partners

- San Francisco Public Utilities Commission
- Alliance for a Clean Water Front
- Bayview Hunters Point Community Advocates
- Third party water services company

CP Dev Co is pursuing the implementation of several proposed district scale systems described above; collectively known as an Eco-Grid. However, a number of policy, regulatory and financing hurdles exist that could preclude the implementation of the proposed Eco-Grid systems. One or all of these systems may not be feasible. As such, CP Dev Co. is not required to implement the district level systems described above, or others that may be studied in the future.



Generic MBR Process Diagram (courtesy of GE/Zenon)

The new community will be one of the first in San Francisco to divert stormwater from the combined sewer/stormwater system.

4 Sustainability Strategy

Solid Waste

Goal

Reduce, reuse and recycle appropriate solid waste materials, with a special emphasis on reusing construction materials and recycling organic wastes in an effort to divert as much waste as possible from landfills

The Opportunity

The CP/HPS Project has the opportunity not only to follow the lead of the City of San Francisco in terms of diverting waste from landfill, but to be a model project that represents the best practices in sustainable solid waste management to help achieve the city's goal of Zero Waste. The total annual waste generation projection for the CP/HPS Project is 23,241 tons per year.

Given the large amount of demolition and construction that will take place at the site, there is a significant opportunity to reuse and/or recycle this waste. It is projected that approximately 37,500 tons of construction waste and 917,785 tons of demolition waste will be generated in constructing the CP/HPS Project.

Recology, the city's solid waste hauler, has partnered with Transvac to offer the deployment of an automated waste collection system (AWCS) at CP/HPS. Such a system would enable Recology to achieve long-term City waste diversion targets in the most sustainable manner possible. Currently, the City operates a 3-Cart Recycling Program, comprised of three stream separation (recyclables, organic and residual waste), to assist in achieving the statemandated 50 percent recycling law. The figure below illustrates how this waste would be handled following current trends and the opportunity for further capture of recyclables.

Strategies

1. Minimize waste during planning, design and construction

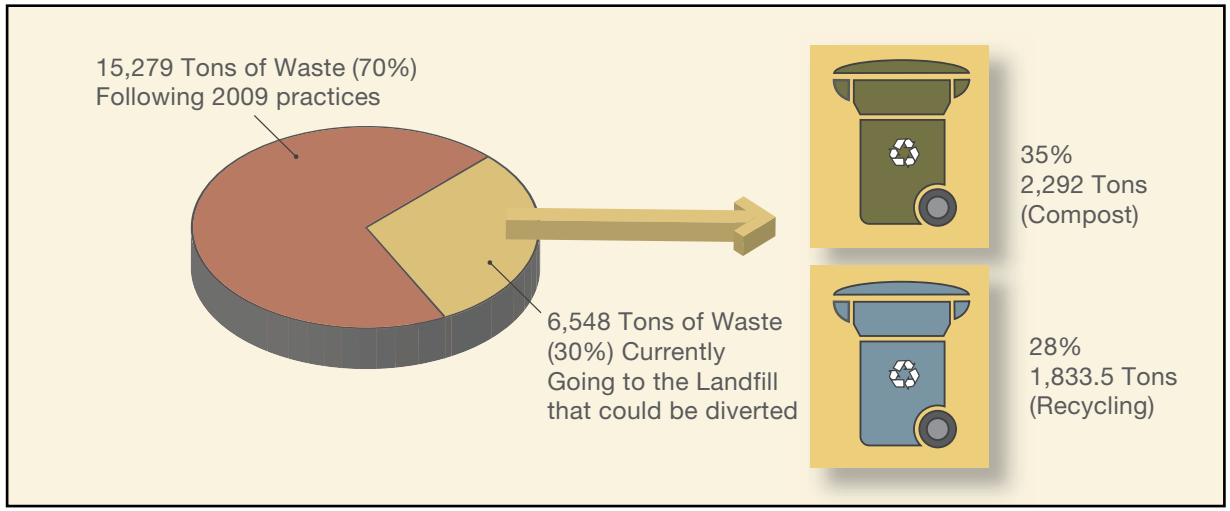
- Reduce the amount of construction waste likely to be generated through planning and design
- Maximize reused waste, recovered materials and recycled materials during construction

2. Minimize waste during operation

- Work with residents, commercial tenants, community-based recycling initiatives and local officials to reduce the generation of waste
- • Provide adequate space for the storage, collection and separation of recyclable, compostable and trash materials
- Use organic waste to provide soil or energy resources to the community (e.g. composting for local gardens)

3. Collect and manage/dispose all hazardous wastes generated from "The Point"

- The Point may assign 200 square feet of space within the artists' facility to serve as the neighborhood "drop-off" site for hazardous waste.



CP/HPS Waste Diversion Opportunities

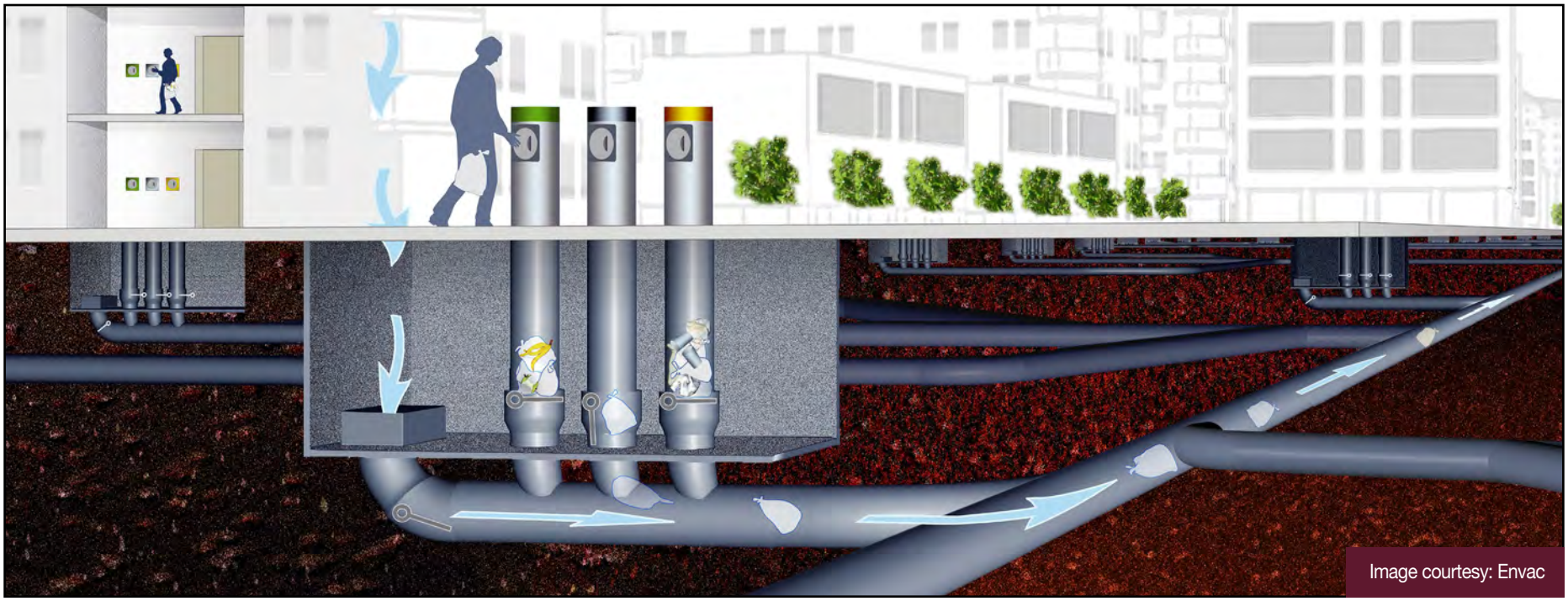


Image courtesy: Envac

4. Explore options for an Automated Waste Collection System

Automated waste collection systems are used throughout the world, but mostly in Europe. An AWCS transports household and/or commercial waste from each floor of a building or complex of buildings pneumatically through a set of vacuum pipes. In principle, the AWCS consists of a number of waste inlet points, linked together by a network of pipes that transports the waste to a central waste collection station for compaction and temporary storage before being hauled offsite.

Benefits

- Increases property value through clean and efficient waste storage and collection systems
- Reduces greenhouse gas emissions associated with solid waste
- AWCS creates a more pleasant community free of trash trucks and trash bins left out for collection
- Reduces greenhouse gas emissions associated with waste transport and decreases traffic congestion
- Produces a usable compost/soil improver and energy

Partners

- Transvac
- Recology
- City of San Francisco

4 Sustainability Strategy

Ecology

Ecological processes are critical to sustain life. The land, water and air interact to create certain environments that support plants, animals and humans. **These processes take place on a global level as well as a local level.** This section addresses the natural environment of BVHP and how the project can **remediate historic damage and create a healthier and more vital place for people and wildlife.**

Goal

Protect and improve local soils, water bodies and air basins.

The Opportunity

The redevelopment of the CP/HPS Project site offers a unique opportunity to revitalize the site in a way that improves air quality, ground and surface water quality and cleaner soils. Future air quality will be improved by land-use planning initiatives to promote walking, bicycling and use of public transit. The risk of future contamination of the site will be significantly reduced by the replacement of polluting industries with clean technology industries and by implementing maintenance practices that reduce the requirement for pesticides and other chemical applications.

Strategies

In addition to the strategies discussed under Resource Efficiency and Transportation, the following strategies will be used to further remediate and improve the environment in BVHP:

1. Promote healthy air quality

Historically a development such as CP/HPS could be expected to require 2.95 million gallons per day (MGD) based on its development mix and population. However, based on current California building code requirements, its consumption will be reduced to 2.46 MGD. The project is targeting a further 32% water demand reduction from current California building code by:

- All new buses servicing the CP/HPS Project will use zero emission or ultra-low emission technologies. The CP/HPS Project will also work with the City to ensure that all park vehicles and other City vehicles that operate on the site generate little or no emissions.
- By developing significant areas of the CP/HPS Project into parks and open space, wetlands, bioswales and possibly developing green roofs, the increased amount of vegetation will have a beneficial effect on local air quality by removing pollutants from the air, while also improving habitat and biodiversity at the site.
- The CP/HPS Project will use building materials that meet minimum LEED® requirements for VOC and formaldehyde content.
- In applying “green” building practices, the CP/HPS Project will promote a high standard of indoor air quality in all residential and commercial buildings by specifically limiting the use of any materials during construction and fit-out that is odorous, irritating or harmful to the comfort and well-being of building occupiers.

The CP/HPS Project will promote a high standard of indoor air quality in all residential and commercial buildings

2. Clean the site so that it is safe for residents and visitors

- Through a combination of the Navy's ongoing ground remediation programs, the site will be cleaned up to a standard that is appropriate and safe for the land uses proposed, in accordance with US EPA protocols.

3. Reduce the release of toxic pesticides into the environment

- The CP/HPS Project will use Integrated Pest Management (IPM) practices, which provide a flexible approach to manage pest populations with a significant reduction in pesticide use. Additionally, IPM will be considered when planting appropriate Project vegetation.

Benefits

- Improves resident health
- Improves regional air quality
- Improves groundwater quality
- Cleaner surface soils
- Improves indoor air quality

Partners

- Bay Area Air Quality Management District
- City of San Francisco Department of the Environment
- US Navy

4 Sustainability Strategy

Habitat

Goal

Protect and enhance wetlands and other natural habitats occurring at the site.

The Opportunity

Although Candlestick Point and Hunters Point are dominated by existing buildings and paved areas, the area has continually shown signs of a natural ecosystem. Wildlife has found pockets of habitat that provide vegetation for foraging and areas for breeding and resting. Despite the ongoing effects of soil and water pollution and predation by non-native species, the areas have maintained limited biodiversity and shown that with the proper strategies, CP/HPS can become a much more hospitable place for wildlife. The Project's open space plan and habitat restoriation work will allow residents, employees and visitors of the Project and Bayview at large to experience and connect with nature in a meaningful way.

Specifically, the CP/HPS Project site provides numerous opportunities for enhancement of habitats and biodiversity, including:

- Restoration of native plant species and habitats
- Reintroduction of special-status plants
- Wetland creation/restoration/enhancement
- Enhancement of habitat for migratory birds
- Increase the carbon sequestration potential of the site

Strategies

The overall habitat enhancement strategy is to strengthen plant and wildlife habitat to the extent feasible (thus providing a considerable improvement over existing conditions throughout the vast majority of the CP/HPS Project site) while allowing for a substantial increase in public access and recreational opportunities. Other specific habitat enhancements, or areas where enhancement will occur, are described below and summarized in the figure (right).

1. Protect and Enhance Existing Wetland Habitats within the Site

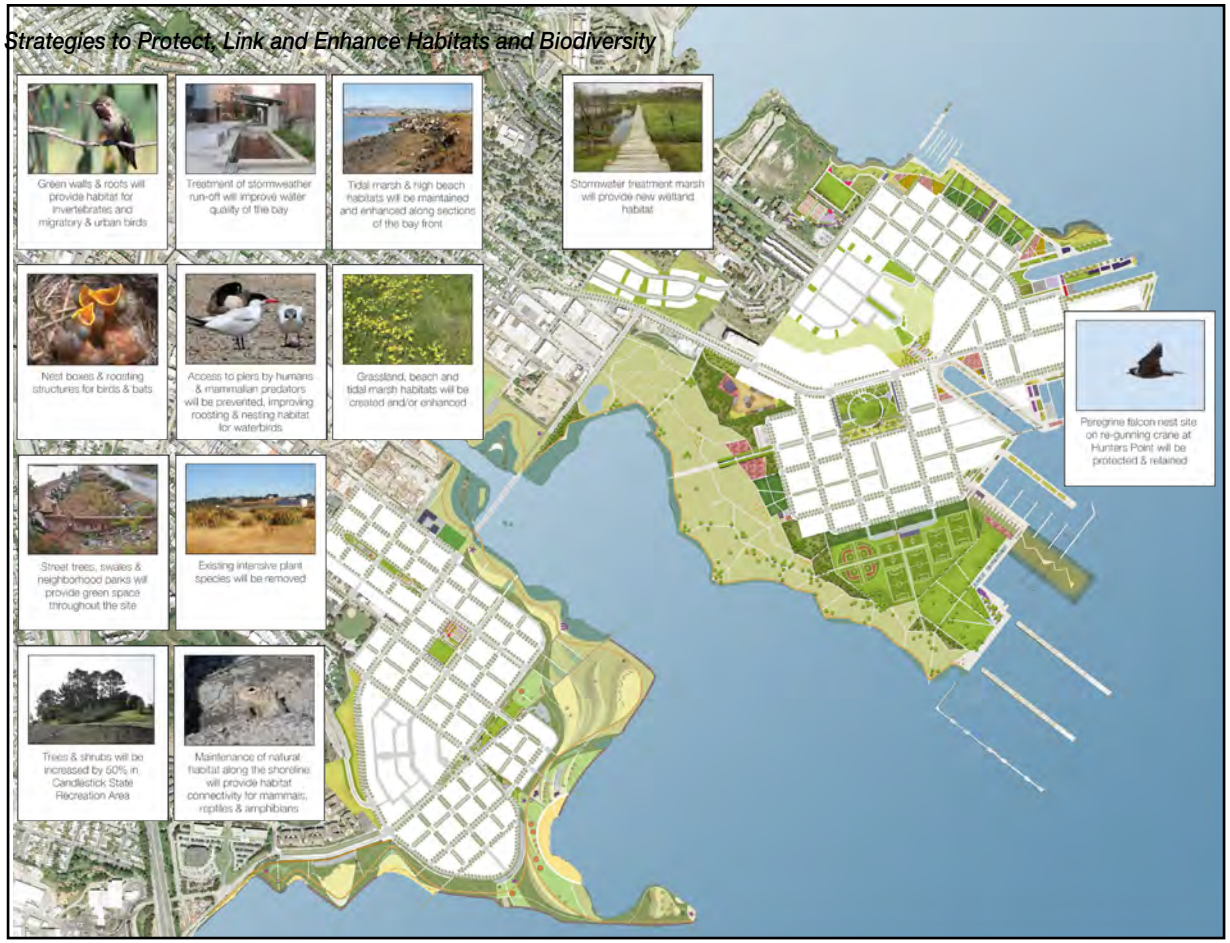
- Protect waters adjacent to the site
- Support the protection and enhancement of Yosemite Slough
- Restoration of tidal marsh and high beach habitats for wildlife benefits and overall community ecological resilience, climate adaptation and preparedness in the face of sea-level rise.
- Improve roosting opportunities for waterbirds
- Provide new habitat areas by the creation of stormwater treatment wetlands
- Improve the quality of surface runoff water
- The Bue Greenway Restoration and Revegetation Guidelines for Contaminated and Impacted Areas may be used to guide landscape design in the project.

2. Create new areas of natural habitat value within the site

- Create new grasslands parks
- Improve upland habitat value within the Candlestick Point area of the site
- Encourage California State Parks to plant native, regionally-appropriate, noninvasive species
- Removal of invasive, non-native plants
- Use of native and climate-appropriate plant species
- The San Francisco Plant Finder may be used to select approprite vegetation for the project.

3. Protect and enhance urban habitats

- Project-wide tree and shrub plantings
- Incorporate nest boxes, roosting structures and waterbird nesting habitat into the built environment
- Retain and protect the peregrine falcon nesting site



4. Migratory bird protection measures

- Improve migratory stopover habitat
- Separate high-quality stopover habitat from buildings
- Incorporate bird-friendly building design elements such as sensitive lighting and non-reflective tinted glass

5. Ecological education

- Provide more sensitive plant and wildlife species, for
- suitable habitat areas while providing the public with educational and recreational opportunities

Benefits

- Increases ecological value of the land and biodiversity
- Improves public amenity
- Protects existing resources
- Attracting beneficial species, particularly those that can contribute to the Integrated Pest Management Plan

Partners

- San Francisco Recreation and Park Department
- California State Parks
- California State Parks Foundation
- Invasive Spartina Project
- California Native Plant Society

4 Sustainability Strategy

Climate & Resiliency

Goal

Mitigate the conditions that contribute to climate change and adapt to the effects of climate change. Significantly reduce greenhouse gas emissions of residents and businesses.

The Opportunity

The CP/HPS Project will be designed with a suite of energy efficiency measures, low carbon energy sources and sustainable transportation initiatives to become a model for low carbon development in the city of San Francisco.

In November 2006, AB 32, the Global Warming Solutions act passed into California state law. AB 32 set a legally binding target for the state to reduce its GHGs to 1990 levels by 2020, which is equivalent to an approximate 30 percent reduction compared to 'business-as-usual' (BAU) emissions. All sectors of the State's economy will need to contribute towards meeting this challenging target. In the nearer term, the City of San Francisco has set a goal to curb emissions at 40 percent below 1990 levels by 2025.

Relative sea level rise for the west coast, which includes the sum of contributions from local thermal expansion of seawater, wind-driven components, land ice melting, and vertical land motion puts low-lying coastal areas in jeopardy. After evaluating a series of sea level rise projections for the Bay Area, an Initial Shoreline Assessment for the CP/HPS Project recommends that the developed areas of the proposed project allow for rise in mean sea level of about 5.5 feet. The current conditions of the shoreline include embankments, concrete structures in various levels of disrepair along the northern portion of the site, slopes protected by concrete debris on the southern portion, unprotected slopes and beaches.

The creation of new park and open space areas and use of street trees, bioswales, green roofs and green walls throughout the development will increase vegetation across the site, providing a valuable carbon sink as the plants absorb and store carbon dioxide from the atmosphere. The CP/HPS Project will provide residents with the resources to live low carbon lifestyles and businesses with highly carbon-efficient commercial space and incentives for clean technology industries.

The average annual emissions footprint of a CP/HPS resident is roughly 1/3 that of the average San Francisco resident.

Strategies

1. Minimize the impact of the development on global climate change

- Deploy strategies listed under Resource
- Efficiency – Energy, Water and Waste
- Deploy strategies listed under Access and Transportation
- Deploy strategies listed under Public Well Being and Quality of Life (e.g. parks and open space enhancement)
- Plant 10,000 new trees. When selecting trees, care may be given to consider species reslience and carbon sequestration.
- Require use of green building and infrastructure materials with low embodied energy (e.g. fly ash in concrete or recycled materials)

2. Design the development to accommodate the effects of a changed climate in the future

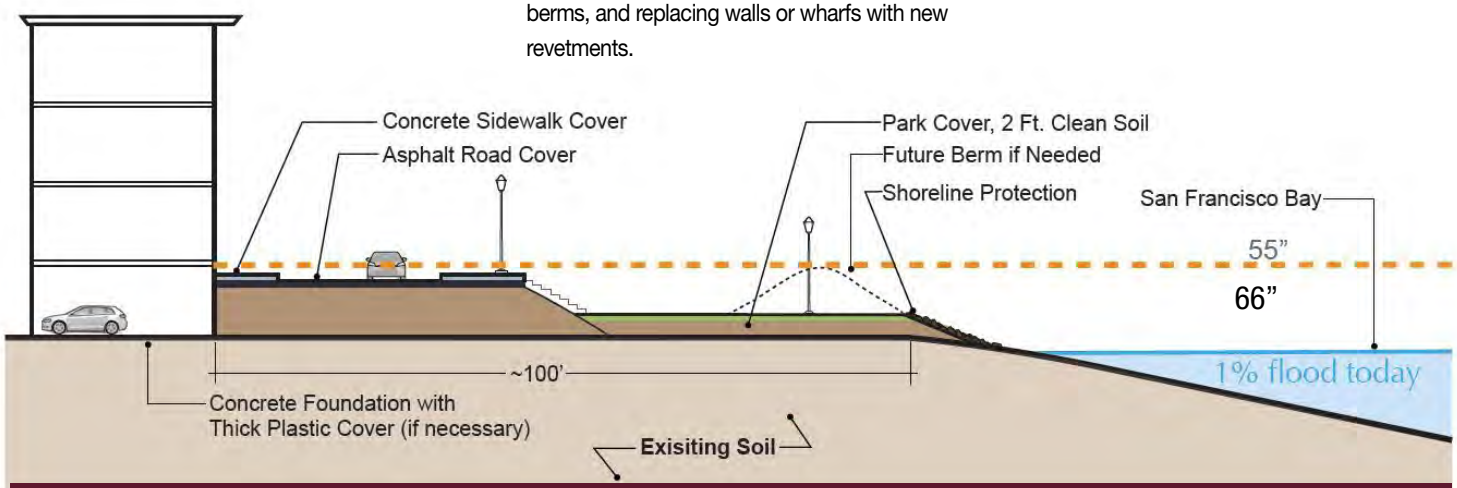
- Require finished floor elevations that accomodate 66 inches of sea level rise above the current 100-year flood elevation
- Implement a monitoring program that assesses changes in sea levels as reported by the National Oceanic Atmospheric Administration so that decisions about raising perimeter grades can be made in an informed manner.
- Develop an Adaptive Management Strategy that can be deployed if/when the monitoring plan reveals the need to prevent potential coastal flooding. The improvement strategies, which vary for different segments of the CP/HPS Project shoreline, include: Raising existing or creating new berms and revetments, raising existing or creating new sea walls, constructing foreshore berms and wave tripping berms, and replacing walls or wharfs with new revetments.

Benefits

- Reduces risk of future flooding
- Reduces insurance premiums
- Protection of open space and built environment

Partners

- US EPA
- Bay Conservation and Development Commission
- City and County of San Francisco
- San Francisco Department of Environment



Examples of Strategies to Address Sea Level Rise

4 Sustainability Strategy

Advanced Information & Communication Technology

Goal

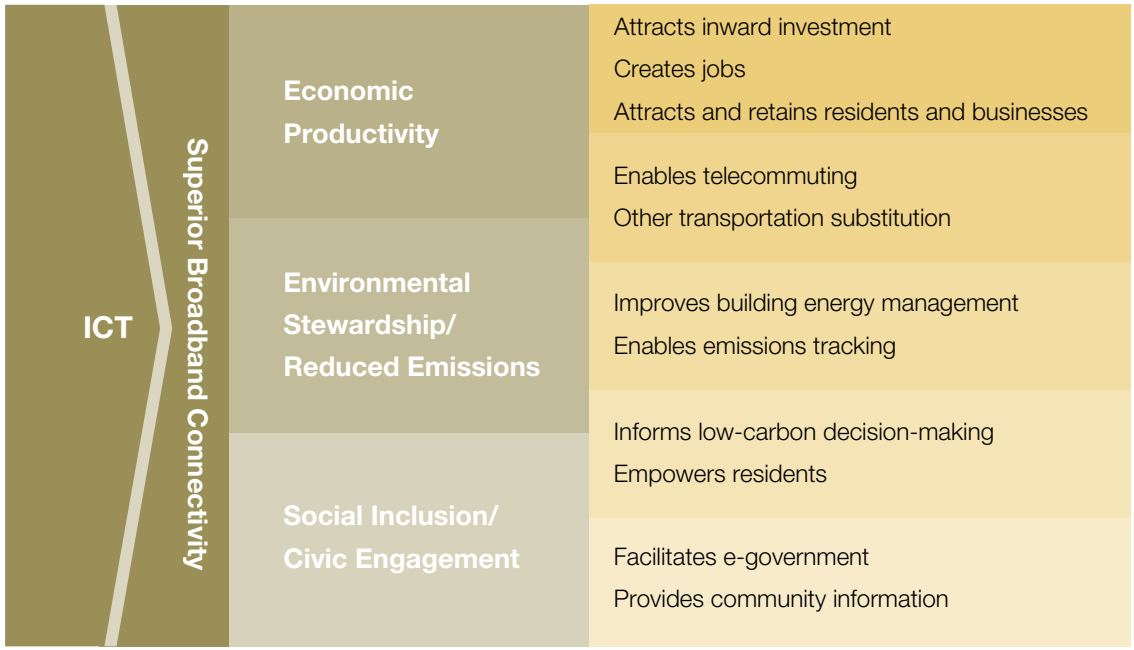
Allow residents to better manage their utilities, bolster local economic activity, improve access to real-time information and facilitate community communications and activities.

The Opportunity

Advanced Information and Communication Technology (ICT) refers to the various technologies that will enable the next generation of communications and power infrastructure. Three technology examples of advanced ICT are cellular broadband, smart grid and smart meters:

- A smart grid allows the utility to actively manage the grid, employing energy generated by renewable sources when able, and the end user to better manage consumption. The result is a more sustainable energy supply that is able to meet a reduced energy demand.
- Smart meters support the smart grid by providing real time information about energy flows for both the utility and its customers, allowing all parties to make more informed decisions about energy use.
- Cellular broadband allows residents to access the internet at home or while mobile. This has a number of advantages such as making transit decisions on the go, based on real-time data and always having the powerful aspects of the internet at your fingertips such as searching, downloadingand email.

Supporting the Triple-bottom Line Approach



The figure (left) summarizes how this technology will work to the benefit of the CP/HPS Project.

Strategies

1. Empower residents to save money and make low-carbon decisions

Electric, gas and water services are currently delivered through simple meters that are read once a month, and consumed by customers without real knowledge about where and how much they are using.

- Work with the power utility to ensure they implement a "smart grid" that maximizes the application of "smart metering" in homes and businesses

- Provide residents access to real-time utility data on a hard wired user interface or online
- Provide homeowner and new resident orientation on how smart meters work and how to access and respond to utility data to save money on utility bills.

2. Provide next-generation broadband connectivity

- Develop an ultra-high broadband and mobile network (e.g. 4G)
- Free (or affordable), ubiquitous Wi-Fi that is provided by the City or through the private sector

3. Provide a digital information portal for residents, visitors and newcomers

- Develop and operate a community website
- Install and maintain digital information kiosks
- Provide real-time transit information at transit nodes

Benefits

- Helps residents reduce energy and water consumption and manage their utility bills
- Boosts economic development
- Bridges digital divide
- Increases access to jobs, education, health care and government services
- Enables residents to better engage and participate in their community

Partners

- City of San Francisco CIO
- MIT Mobile Experience Lab
- Intelligent Community Forum
- International Network of E-Communities (INEC)

ARUP

www.arup.com | We shape a better world

TRANSPORTATION PLAN AMENDMENTS

SUMMARY

The Transportation Plan is Exhibit N to the CP-HPS2 DDA. The Transportation Plan complements the Infrastructure Plan in establishing certain Project Infrastructure and Developer obligations that are subject to San Francisco Municipal Transportation Agency ("SFMTA") jurisdiction. These obligations include, but are not limited to, construction of transportation infrastructure, monitoring of transportation infrastructure performance, and mitigation of poor transportation infrastructure performance.

The Transportation Plan Amendments have been reviewed and approved by staff of the SFMTA, the Department of Public Works, the San Francisco Planning Department, and the San Francisco Fire Department in addition to OCII staff.

The currently approved network of streets in the southern part of Shipyard Phase 2 is replaced with a revised street network which is intended to create greater opportunity for the potential retention of legacy buildings. This results in the relocation of a number of streets in that area. Widths of parking lanes, vehicle travel lanes, and bicycle lanes are revised.

The bicycle network in Shipyard Phase 2 is modified. Because the street network in the southern part of Shipyard Phase 2 has changed, the locations of bicycle facilities co-located with streets are also modified. The primary bicycle route running through the Project has been modified from a Class II bicycle facility (bike lane) to a Class IV bicycle facility (separated bikeway/cycletrack) between the northern boundary of Shipyard Phase 2 and the Transit Center. This results in a continuous bicycle facility, which is physically separated from traffic, running through the entire Project from the northern boundary of Shipyard Phase 2 to the southwestern boundary of Candlestick Point. The portion of this route that is between the Transit Center and the intersection of Arelious Walker Drive and Donner Avenue is changed from a Class IV bicycle facility (separated bikeway/cycletrack) to a Class I bicycle facility (bike path), and remains physically separated from traffic. A Class III bicycle facility (bike route) is removed from Innes Avenue and replaced with a parallel Class I facility (bike path) one block away on Hudson Street in order to accommodate anticipated transit vehicle and automobile traffic. Two Class IV bicycle facilities have been added in the southern part of Shipyard Phase 2. A bicycle facility on Earl Street in Candlestick Point is converted from a Class II facility to a Class III facility. A pedestrian and bicycle bridge across Dry Dock 4 is added; the primary bicycle route through the Project crosses this bridge. Other conforming changes to bicycle networks which respond to revised transportation networks, development parcels, and land uses are made.

Planned transit service and transit service phasing is modified. The extension of 56-Rutland Muni service to the Project area is no longer planned. The phasing of transit service implementation is modified to reflect changes in the anticipated schedule of Project construction and updated SFMTA transit service plans. Up to six new traffic signals are added to the Gilman Avenue off-site improvement to facilitate operation of the 29-Sunset Muni service. The location of the Hunters Point Shipyard Transit Center is moved from the southern side of Spear Avenue to the northern side of Spear Avenue.

A second pedestrian-only bridge over Dry Dock 4 is proposed for potential construction. Potential water taxi service terminating at Dry Dock 4 is also proposed.

Other revisions are made to conform with the general transportation network and land use changes now before the Commission.

DETAILED AMENDMENT OVERVIEW

General Amendments

- References to stadium removed

- Figures, tables and text updated to reflect revised street layout, land use plan and program and project phasing
- Outdated references to Superdistrict 3 removed
- References to Transit Effectiveness Project (TEP) replaced with Muni Forward
- Outdated comparisons to other TDM programs removed
- References to Climate Action Plan (CAP) replaced with renamed Climate Action Strategy (CAS), goals updated accordingly
- References to Project Area Committee (PAC) removed as that body no longer exists
- Costs and revenues updated
- References to Lennar replaced with FivePoint
- Text edits to clarify language

§1.1 Integration of Transportation & Land Use

- Number of open space acres indicated

§1.2 Project Definition

- Incomplete list of street improvements removed, description of improvements and corresponding figure located later in the document referenced instead

§1.2 Transportation Program

- Note added to indicate parking does not need to be unbundled for CP Senior BMR Project

§3.1 Transit Challenges

- Bayshore station ridership data updated

§3.4 Other Proposed Developments in the Project Area

- Outdated, section removed

§4.2 Street Network and Urban Form—Street Typologies

- Street typologies updated

§4.2 Street Network and Urban Form—Design Principles

- Text regarding potential easement struck as it applied only to one block that has already been constructed
- Text added describing refined street network at the Shipyard
- Street cross section figures updated

§4.3 Proposed Roadway Improvements

- Language added describing potential extension of Donahue Street to Crisp Road

§5.2 Strategies—Maximize Internal Trips

- Text indicating location of grocery store struck, as market conditions will dictate the location of that amenity

§5.2 Strategies—Expand & Improve Transit Services

- SFMTA greenhouse gas emissions goals updated
- Reference to 'light-rail-ready' infrastructure removed
- Reference to Overhead Contact System extension to the project struck

§5.2 Strategies—Implement Transportation Demand Management Program

- Reference to TC maintaining a website struck as TDM best practices have changed since the original Plan was approved, and coordinators now rely on existing websites
- Reference to angled parking removed
- SFMTA guidance and policies referenced in design of on-street loading facilities
- Reference made to increased usage of transit network companies (TNCs) and ride-hailing services made, increasing need for curb space
- Loading table revised to remove outdated reference to density categories
- Monitoring of parking and TNC activity added to TC's responsibilities
- Parking identified as potential tool to use should Project not meet mode split goal

§6 Analogies

- Outdated section removed

Amendments to the Transit Operating Plan:

General amendments

- Figures, tables and text updated to reflect revised street layout, land use plan and program and project phasing
- Costs and revenues updated
- References to Transit Effectiveness Project (TEP) replaced with Muni Forward
- Text edits to clarify language

§2 Proposed Transit Plan

- Interim 28L-Geneva Avenue route referenced
- Free shuttle replicating 28L BRT route added to the plan
- T-Third improvements associated with Central Subway project clarified

§2 Phasing

- Phasing text updated

Amendments to the TDM Funding and Implementation Plan:

General amendments

- Figures, tables and text updated to reflect revised street layout, land use plan and program and project phasing
- Costs and revenues updated
- Text edits to clarify language

§2 Overview

- Transit Strategies
  - Signals added along Gilman avenue
- TDM Support Strategies
  - Text added about Emergency Ride Home program

§2 Transportation Coordinator and TDM Funds

- Language added regarding Articles of Incorporation that were filed for the Candlestick Point-Hunters Point Shipyard Transportation Management Association (CPHPSTMA)
- CPHPSTMA Board of Directors clarified to have one representative each from the Developer, the residential homeowners, and the commercial property owners

CANDLESTICK POINT HUNTERS POINT SHIPYARD PHASE II

TRANSPORTATION PLAN APPENDIX

APRIL 2018 (DRAFT)

FEHR & PEERS

FIVEPOINT™

TABLE OF CONTENTS

ONE **Introduction** **2**

TWO **Proposed Transit Plan** **3**

THREE **Transit Operating Costs** **5**
3.1 Operations and Maintenance Costs 5
3.2 Capital Costs 6

FOUR **Phasing** **7**
4.1 Conclusion 11

FIGURES & TABLES

Figure 1 Proposed Transit Improvements 4

Table 1 Transit Service Proposal Costs at Project Buildout 6
Table 2 Transit Vehicle Capital Costs 6
Table 3 Transit Phasing 8
Tables 4A-4B Transit Phasing and Associated Costs by Year 9-10

CHAPTER ONE: INTRODUCTION

This report describes the transit service plan for the Candlestick Point / Hunters Point Shipyard Phase II (CP/HPS) project, including elements of the plan and the expected costs associated with operating that service. This analysis and the resulting transit service plan is the product of close collaboration between the Mayor's Office of Economic and Workforce Development, the Office of Community Investment and Infrastructure, the Planning Department, and SFMTA. There has been general consensus regarding the suitability and financial feasibility of this plan to provide robust transit service to the southeastern portion of San Francisco. SFMTA service planning staff will retain the discretion to implement the most appropriate transit service as conditions in the area warrant. However, this transit service plan represents the currently-anticipated transit service improvements.

This report is divided into four chapters. This chapter provides a brief introduction to the report and describes its purpose. The second chapter provides a brief summary of the proposed transit plan. The third chapter describes the costs associated with operating the proposed service plan at completion of the project, and the fourth chapter describes the anticipated phasing of transit service increases (and associated costs) relative to project buildout.

CHAPTER TWO: PROPOSED TRANSIT PLAN

Fehr & Peers has worked collaboratively with staff from the Mayor's Office of Economic and Workforce Development, the Office of Community Investment and Infrastructure, the San Francisco County Transportation Authority, the Planning Department, and SFMTA to develop reliable projections of transit ridership associated not just with the proposed project, but with other proposed and planned projects in the area. These detailed, route-specific ridership projections were used to develop and refine the transit service plan for buildout conditions. Specifically, the transit operating plan would include the following peak period service improvements at buildout:

- Extension of the 24-Divisadero, the 44-O'Shaughnessy, and the 48-Quintara-24th Street into Hunters Point Shipyard, and increased frequency in the AM and PM peak periods[1].
- Extension of the 29-Sunset from its current terminus near the Alice Griffith housing development, near Gilman Avenue and Giants Drive, into the proposed Candlestick Point retail area. The 29-Sunset would operate a short line between Candlestick Point and the Balboa Park BART station. This would increase frequencies on the 29-Sunset by reducing headways between buses from 10 minutes to 5 minutes during the AM and PM peak periods between Candlestick Point and the Balboa BART station. Every other bus would continue to serve the Sunset District at 10 minute headways.
- Extension of the 28R-19th Avenue Limited from its Muni Forward, formerly known as the Transit Effectiveness Program (TEP), proposed terminus on Geneva Avenue, just east of Mission Street, into the Hunters Point Shipyard transit center. Ultimately, the 28R-19th Avenue Limited would travel along Geneva Avenue across U.S. 101 via the proposed Geneva Avenue extension and new interchange with U.S. 101, to Harney Way. As an interim service, prior to construction of the Geneva Avenue extension and new interchange with US 101, the 28R-Geneva Avenue Limited would travel through the Little Hollywood neighborhood on an exact route to be determined. East of Bayshore Boulevard, the 28R-19th Avenue Limited would operate as BRT, traveling in exclusive bus lanes into the Candlestick Point area. The BRT route would travel through the Candlestick Point retail corridor,

1 Initially, the 23-Monterey would be extended into the Hunters Point Shipyard instead of the 24-Divisadero. Approximately during Major Phase 3, the 23-Monterey would return to its existing route and the 24-Divisadero would be extended into the site.

and cross over Yosemite Slough into the Hunters Point Shipyard transit center. The 28R-19th Avenue Limited would operate a short line to the Balboa Park BART station. This would increase frequencies on the 28R-19th Avenue Limited by reducing headways between buses from 8 minutes to 5 minutes for the segment between Hunters Point Shipyard and the Balboa Park BART station, traveling in exclusive lanes throughout the project site. Every other bus would continue to the Sunset District at 10-minute headways[2].

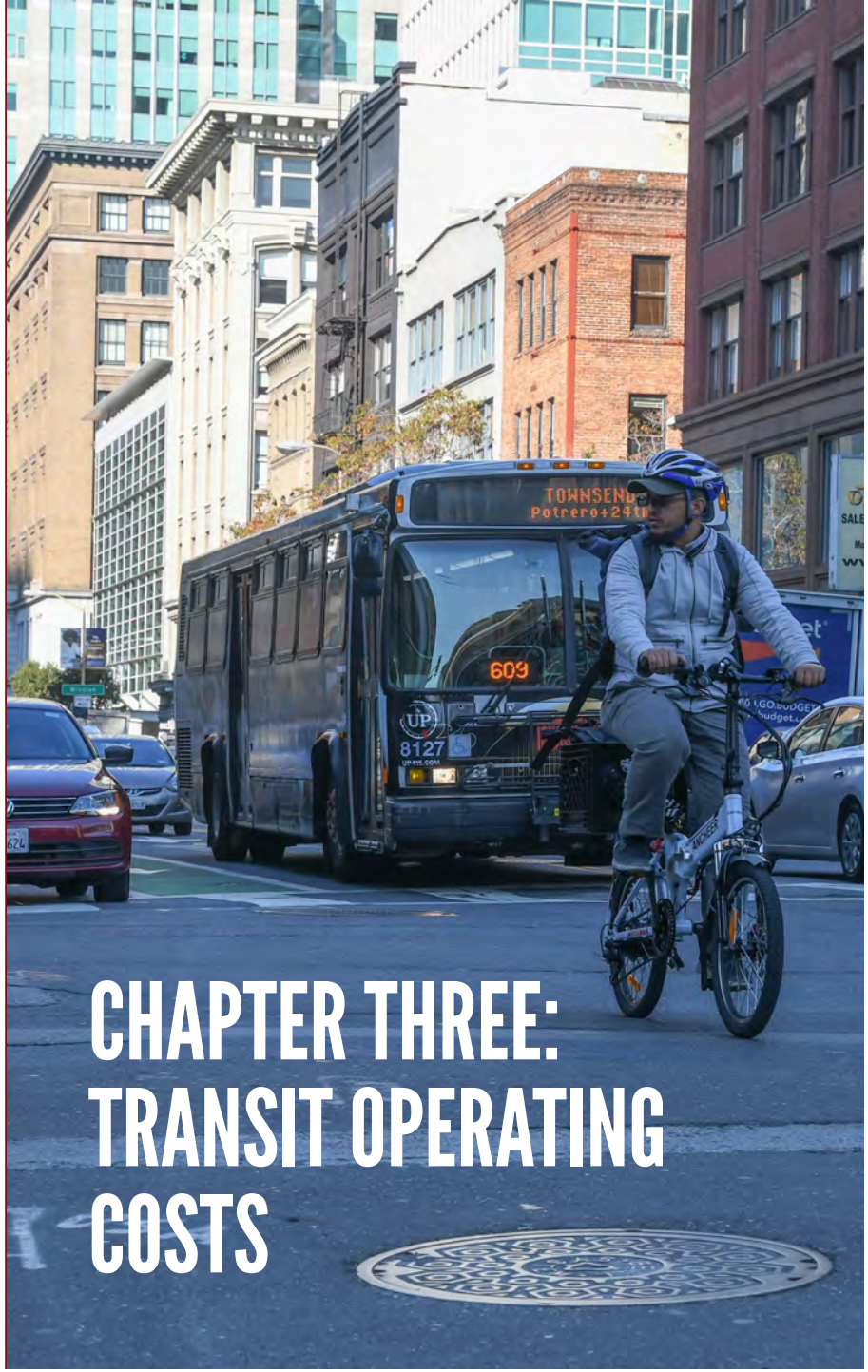
- New CPX-Candlestick Express to downtown serving the Candlestick Point site, traveling along Harney Way (with potential stops at Executive Park), before traveling on U.S. 101 toward downtown, terminating at or near the Transbay Terminal[3].
- New HPX-Hunters Point Shipyard Express to downtown serving the Hunters Point Shipyard site, traveling from the Hunters Point Shipyard Transit Center, along Innes Avenue, with stops at the India Basin and Hunters View areas. The HPX would continue non-stop to a destination near the Transbay Terminal in Downtown San Francisco.
- Convert T-Third service between Bayview and Chinatown via the Central Subway from one-car to two-car trains or comparable service improvement[4].

This new transit service would be complimented by the provision of a new transit center in the Hunters Point Shipyard site, which would include space for bus stops, bus layovers, transit operator restrooms, customer information, and other amenities as described in the Candlestick Point & Hunters Point Shipyard Phase II Transportation Plan and the project's Infrastructure Plan.

As noted in Chapter 1, the proposed transit service would complement service changes proposed by the Muni Forward, and is illustrated on **Figure 1**. As currently contemplated, the relative difference between off-peak and peak period transit service would be similar to the relative differences proposed as part of Muni Forward.

Figure 1: Proposed Transit Improvements

2 The Transit Operating Plan includes a complimentary publicly accessible shuttle that is privately-funded, which will provide service between the project site and the Balboa BART station, replicating service that will ultimately be offered by the 28R BRT route. The shuttle will operate at approximately 7.5-minute frequency. The shuttle will serve as an interim service until the 28R BRT route, or other comparable transit service is implemented.
3 Although preliminary routes between the project area and the Transbay Terminal have been identified, SFMTA staff will ultimately determine precise routing at the time the routes are initiated.
4 Improvements to service on the T-Third light rail line are not expected to be phased based on project development; instead, improvements on the T-Third will be phased according to construction on the Central Subway project and regional demand needs.



CHAPTER THREE: TRANSIT OPERATING COSTS

Fehr & Peers worked with SFMTA staff to develop cost estimates for operating and maintaining the proposed transit service and for capital costs associated with additional rolling stock. These costs are increases over the proposed TEP operating scenario and include extensions of transit routes into the project site and increased frequencies on some routes.

Table 1 provides the percentage of ridership increases between existing conditions and year 2030 conditions (project buildout) on each route that is attributable to the CP/HPS project[5]. Table 1 also provides the annual operations and maintenance costs and the capital costs for providing the proposed service on each route. Finally, by multiplying the CP/HPS project's percentage contribution to transit ridership by the capital costs and operations and maintenance costs, the CP/HPS fair-share contribution to the proposed transit service improvements can be determined.

3.1 OPERATIONS & MAINTENANCE COSTS

The annual costs associated with operating the proposed service were determined using SFMTA's cost estimation model, originally developed for Muni Forward. This document only discuses costs and does not account for increased revenue to the City associated with farebox recovery, advertising revenue, or other revenue source. Those offsetting revenues are discussed separately in the project's fiscal analysis.[6]

5 The method used in the analysis summarized on Table 1 is based on the project's contribution of ridership at the maximum load point of each route. This is reasonable, since the maximum load point is usually the controlling point in determining route frequency and capacity (and therefore, operating cost). However, another way to look at ridership contribution is based on the project's contribution to overall growth in total number of boardings along each route. This method may be better suited to indicate the proportion of riders realizing benefits to improved frequencies and running times. The method of determining a cost contribution from a project is a policy decision; however, both methods produced similar fair-share contributions for the CP/HPS project. The analysis described in this report is based solely on the maximum load method.

6 Fiscal and Economic Analysis, Economic & Planning Systems, March 2018

3.2 CAPITAL COSTS

The number of new transit vehicles required to operate the proposed transit plan was also determined using SFMTA's cost estimation model. SFMTA staff have reviewed and concurred with the projections from this model. The unit costs for new rolling stock were also provided by SFMTA, and are summarized in **Table 2**. The Fiscal and Economic Analysis (March 2018) assume capital costs are financed over several years. Additionally, through discussions with SFMTA staff, the 24-Divisadero will eventually be served by battery electric buses; thus, trolley wires are no longer proposed.[7]

As shown, the total additional cost to operate the proposed transit service includes nearly $194 million in capital costs for rolling stock and will require an annual operations and maintenance cost of nearly $48 million. Based on the portion of ridership increases attributable to the CP/HPS project between now and full project buildout, the CP/HPS project's share includes over $55 million in capital costs for rolling stock and nearly $18 million annually for operations and maintenance.

7 The 2010 capital costs did not include the extension of trolley wires into the project site; therefore capital costs associated with the 24-Divisadero, shown in Table 1, are not affected by the removal of the trolley wires.

Table 1: Transit Service Proposal Costs at Project Buildout

Route	Number of Vehicles Added	Project Contributions	Total Costs (FY 2017 Dollars)[1, 2]			
			Proposed Service Plan Total Costs		CP-HPS Share	
			Annual O&M Costs	Capital Costs	Annual O&M	Capital Costs
CPX	12	92%	$3,348,800	$11,520,000	$3,080,900	$10,576,000
HPX	20	56%	$5,275,400	$19,200,000	$2,954,200	$10,729,000
Route 48	7	20%	$2,916,500	$6,720,000	$583,300	$1,341,000
Route 28R	17	51%	$11,145,100	$16,320,000	$5,684,000	$8,306,000
Route 29	11	27%	$4,266,700	$10,560,000	$1,152,000	$2,845,000
Route 24	10	46%	$3,733,000	$15,800,000	$1,717,200	$3,634,000
T-Third	19	16%	$17,318,100	$114,000,000	$2,770,900	$18,240,000
Others	-	100%	-	-	-	-
Total			$48,003,900	$194,120,000	$17,942,500	$55,671,000

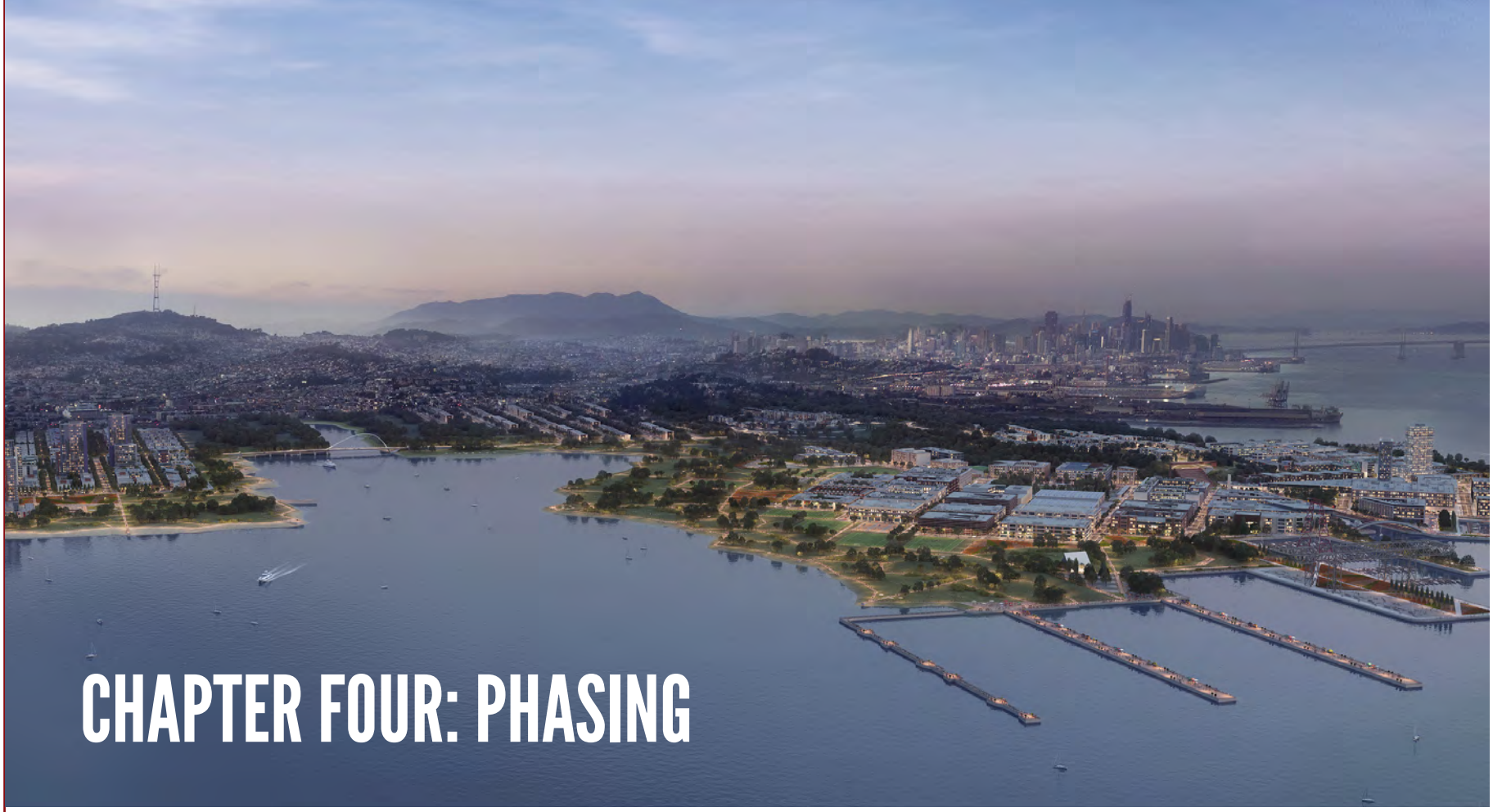
Notes:
1. O&M Costs updated to reflect 2017 dollars by increasing original amounts by 15%. This was done by calculating the increase in SFMTA's Cost Per Revenue Hour from 2007 to 2017
2. Capital costs updated based on Muni cost/bus estimates from Frank Markowitz, SFMTA (2018).

Table 2: Capital Cost per Transit Vehicle[1]

Vehicle Type	Cost Provided by MTA (FY 2017 Dollars)
Trolley Coaches	$1.58 Million
Motor Coaches	$0.96 Million
Light Rail Vehicle	$6.00 Million

Source: SFMTA, 2017

Notes:
1. Capital costs updated based on Muni cost/bus estimates from Frank Markowitz, SFMTA (2018).



CHAPTER FOUR: PHASING

The transit phasing plan has been designed to ensure that the level of transit service provided generally anticipates the CP/HPS project's transit demand. This will ensure that the Project maintains its "transit orientation" throughout the development horizon.

Table 3 presents the various levels of transit service expected to be provided at the site throughout various points of development.

To serve the retail center, the 29-Sunset would be extended to the retail center and its frequency would be increased from 10 minutes to its ultimate frequency of 5 minutes upon opening of the center. Additionally, due to the relatively high number of residential units expected under the first major phase, the CPX will start out at 15 minutes and increase to its ultimate frequency of 10 minutes upon opening of the retail center. The CPX would provide connections between Candlestick Point, Downtown and regional transit systems. However, the 28R/BRT would not be as useful under the early years of the Project because the infrastructure connecting it to Geneva Avenue to the west would not be in place and therefore, will be implemented later in the overall schedule.

In addition, a complimentary publicly accessible shuttle that is privately-funded, will provide service between the project site and the Balboa BART station. Service will be offered at 7.5 minute frequency with approximately 30-passenger vehicles. This service will be interim service until the 28R/BRT route or other comparable transit service is implemented. Although the shuttle service will initially be oriented to the Balboa Park BART Station, the site's TDM coordinator will retain the ability to reroute the shuttle to other regional transit hubs to better match patron and employee demand, with mutual agreement of the city.

Phasing of other transit service, relative to development phasing, has been established in cooperation with SFMTA.

The phasing levels were selected to correspond to ridership demand and to ensure that the initiation of service is relatively early in the overall development timeline. Service would be gradually increased up to full buildout service frequencies to maintain robust and attractive transit service throughout the Project phasing. The service frequency increases would be managed by SFMTA to maintain ridership conditions below SFMTA's 85% capacity utilization standard, a PM peak period external transit mode split of approximately 20% or higher, and an overall transportation system where vehicle traffic congestion (i.e., intersection level of service) along the major transit corridors would be similar to or better than conditions identified in the EIR at study intersections.

Preliminary development schedules provided by FivePoint forecast occupancy of the first building by year 2021 and completion of the final development by year 2035. **Table 4** presents the annual capital and operating and maintenance costs expected to accrue based on the projected project buildout and projected implementation of transit service by year.

Notes:
1 Temporary until initiation of 28R/BRT.
2 Although the anticipated development schedule calls for the first portions of HP-01 to be completed in 2019, that portion is primarily reconstruction of existing artists' studios. The first portion of new development is scheduled to be complete by approximately 2021, which is when new transit service would likely be warranted.

Table 3: Transit Phasing

Route	Frequency (Minutes)	Major Phase / Sub-Phase	Approximate Year
Hunters Point Shipyard			
Hunters Point Express (HPX)	20 10 6	1 / HP-01 2 / HP-04 3 / HP-06	2021[2] 2025 2026
23 Monterey (Temporary)	20	1 / HP-01	2021
24 Divisadero	15 10	2 / HP-04 3 / HP-06	2025 2026
44 O'Shaughnessy	10 7.5 6.5	1 / HP-02 2 / HP-03 3 / HP-06	2022 2025 2026
48 Quintara	15 10	1 / HP-01 2 / HP-03	2021 2025
Candlestick Point			
Candlestick Point Express (CPX)	15 10	1 / CP-03 1 / CP-02	2021 2022
Extension of 29-Sunset	10 5	1 / CP-03 1 / CP-02	2021 2025
Privately-Funded Complimentary Shuttle[1]	7.5	1 / CP-02	2022
Routes Serving Both Sites			
Extension of 28R/BRT[1]	8 5	2 / HP-04 3 / CP-07	2025 2028
Increase serve on T-Third Light Rail	6 5	No Change - Not triggered by project development	

Table 4A: Transit Phasing and Associated Cost by Year

Annual Costs Based on Hunters Point Development

Improvement	Headway (min.)	Major Phase	Yearly O&M Costs (2017)	Capital Costs (2017)	2019	2020	2021	2022	2023	2024	2025	2026	2027
Begin Hunters Point Express (HPX)	20	1	$886,300	$3,218,800.00	-	-	$4,105,100	$886,300	$886,300	$886,300	-	-	-
	10	2	$1,772,600	$6,437,600	-	-	-	-	-	-	$4,991,400	-	-
	6	3	$2,954,200	$10,729,000	-	-	-	-	-	-	-	$7,245,600	$2,954,200
Extend 23-Monterey	20	1	$438,700	$545,000	-	-	$983,700	$438,700	$438,700	$438,700	-	-	-
	15	2	$438,700	-	-	-	-	-	-	-	$438,700	-	-
Extend 24-Divisadero	10	3	$1,717,200	$3,634,000	-	-	-	-	-	-	-	$5,351,200	$1,717,200
Extend 48-Quintara	15	1	$146,200	$192,000	-	-	$338,200	$146,200	$146,200	$146,200	-	-	-
	10	2	$583,300	$1,341,000	-	-	-	-	-	-	$1,732,300	$583,300	$583,300
Total PM Transit Trips from HP Development Area					0	0	467	523	714	714	961	1342	1342
HP Generated Annual Cost					-	-	$5,427,000	$1,471,200	$1,471,200	$1,471,200	$7,162,400	$13,180,100	$5,254,700

Annual Costs Based on Candlestick Point Development

Improvement	Headway (min.)	Major Phase	Yearly O&M Costs (2017)	Capital Costs (2017)	2019	2020	2021	2022	2023	2024	2025	2026	2027
Begin Candlestick Point Express (CPX)	15	1	$2,054,000	$7,051,000	-	-	$9,105,000	-	-	-	-	-	-
	10	1	$3,080,900	$10,576,000	-	-	-	$6,605,900	$3,080,900	$3,080,900	$3,080,900	$3,080,900	$3,080,900
Extend 29-Sunset	10	1	$125,100	$259,000	-	-	$384,100	$125,100	$125,100	$125,100	-	-	-
	5	1	$1,152,000	$2,845,000	-	-	-	-	-	-	$3,738,000	$1,152,000	$1,152,000
Total PM Transit Trips from CP Development Area					0	48	371	1198	1198	1272	1272	1371	1398
CP Generated Annual Cost					-	-	$9,489,100	$6,731,000	$3,206,000	$3,206,000	$6,818,900	$4,232,900	$4,232,900

Annual Costs Based on Total Development

Improvement	Headway (min.)	Major Phase	Yearly O&M Costs (2017)	Capital Costs (2017)	2019	2020	2021	2022	2023	2024	2025	2026	2027
Begin/Extend 28R/BRT	8	2	$4,520,100	$6,840,000	-	-	-	-	-	-	$11,360,100	$4,520,100	$4,520,100
	5	3	$5,684,000	$8,306,000	-	-	-	-	-	-	-	-	-
T-Third	6	2	-	-	-	$10,505,450	$1,385,450	$1,385,450	$1,385,450	$1,385,450	-	-	-
	5	3	$2,770,900	$18,240,000	-	-	-	-	-	-	$11,890,900	$2,770,900	$2,770,900
Total PM Transit Trips from HP/CP Development Area					0	48	838	1721	1912	1986	2233	2713	2740
Combined Development Costs					-	$10,505,450	$1,385,450	$1,385,450	$1,385,450	$1,385,450	$23,251,000	$7,291,000	$7,291,000
Total Operating & Maintenance Costs					-	$1,385,450	$5,035,750	$6,062,650	$6,062,650	$6,062,650	$14,318,500	$16,778,600	$16,778,600
Total Capital Costs					-	$9,120,000	$11,265,800	$3,525,000	-	-	$22,913,800	$7,925,400	-

Table 4B: Transit Phasing and Associated Cost by Year

Annual Costs Based on Hunters Point Development												
Improvement	Headway (min.)	Major Phase	Yearly O&M Costs (2017)	Capital Costs (2017)	2028	2029	2030	2031	2032	2033	2034	2035
Begin Hunters Point Express (HPX)	20	1	$886,300	3,218,800.00	-	-	-	-	-	-	-	-
	10	2	$1,772,600	$6,437,600	-	-	-	-	-	-	-	-
	6	3	$2,954,200	$10,729,000	$2,954,200	$2,954,200	$2,954,200	$2,954,200	$2,954,200	$2,954,200	$2,954,200	$2,954,200
Extend 23-Monterey	20	1	$438,700	$545,000	-	-	-	-	-	-	-	-
	15	2	$438,700	-	-	-	-	-	-	-	-	-
Extend 24-Divisadero	10	3	$1,717,200	$3,634,000	$1,717,200	$1,717,200	$1,717,200	$1,717,200	$1,717,200	$1,717,200	$1,717,200	$1,717,200
Extend 48-Quintara	15	1	$146,200	$192,000	-	-	-	-	-	-	-	-
	10	2	$583,300	$1,341,000	$583,300	$583,300	$583,300	$583,300	$583,300	$583,300	$583,300	$583,300
Total PM Transit Trips from HP Development Area					1462	1484	1522	1522	1522	1522	1522	1522
HP Generated Annual Cost					$13,180,100	$5,254,700	$5,254,700	$5,254,700	$5,254,700	$5,254,700	$5,254,700	$5,254,700

Annual Costs Based on Candlestick Point Development												
Improvement	Headway (min.)	Major Phase	Yearly O&M Costs (2017)	Capital Costs (2017)	2028	2029	2030	2031	2032	2033	2034	2035
Begin Candlestick Point Express (CPX)	15	1	$2,054,000	$7,051,000	-	-	-	-	-	-	-	-
	10	1	$3,080,900	$10,576,000	$3,080,900	$3,080,900	$3,080,900	$3,080,900	$3,080,900	$3,080,900	$3,080,900	$3,080,900
Extend 29-Sunset	10	1	$125,100	$259,000	-	-	-	-	-	-	-	-
	5	1	$1,152,000	$2,845,000	$1,152,000	$1,152,000	$1,152,000	$1,152,000	$1,152,000	$1,152,000	$1,152,000	$1,152,000
Total PM Transit Trips from CP Development Area					1619	1823	1959	1959	1959	1959	1959	1959
CP Generated Annual Cost					$4,232,900	$4,232,900	$4,232,900	$4,232,900	$4,232,900	$4,232,900	$4,232,900	$4,232,900

Annual Costs Based on Total Development												
Improvement	Headway (min.)	Major Phase	Yearly O&M Costs (2017)	Capital Costs (2017)	2028	2029	2030	2031	2032	2033	2034	2035
Begin/Extend 28R/BRT	8	2	$4,520,100	$6,840,000	-	-	-	-	-	-	-	-
	5	3	$5,684,000	$8,306,000	$7,150,000	$5,684,000	$5,684,000	$5,684,000	$5,684,000	$5,684,000	$5,684,000	$5,684,000
T-Third	6	2	-	-	-	-	-	-	-	-	-	-
	5	3	$2,770,900	$18,240,000	$2,770,900	$2,770,900	$2,770,900	$2,770,900	$2,770,900	$2,770,900	$2,770,900	$2,770,900
Total PM Transit Trips from HP/CP Development Area					3081	3307	3481	3481	3481	3481	3481	3481
Combined Development Costs					$9,920,900	$8,454,900	$8,454,900	$8,454,900	$8,454,900	$8,454,900	$8,454,900	$8,454,900
Total Operating & Maintenance Costs					$17,942,500	$17,942,500	$17,942,500	$17,942,500	$17,942,500	$17,942,500	$17,942,500	$17,942,500
Total Capital Costs					$1,466,000	-	-	-	-	-	-	-

Notes: Fiscal impact analysis assumes capital costs incurred over time and includes capital costs associated with mitigation measures.

4.1 CONCLUSION

As noted earlier, SFMTA service planning staff will retain the discretion to implement transit service at a time and type based on their best judgment over the course of buildout of the CP/HPS project and other development projects in the southeast portion of San Francisco. However, this analysis represents a reasonable forecast based on the information available at this time.

TABLE OF CONTENTS

ONE **Introduction** **13**

TWO **Implementation Strategies & Funding Overview** **14**

THREE **Transportation Coordinator & TDM Funds** **16**

3.1 Implementation 16

3.2 Costs & Funding 17

Appendix A: TDM Figures Detail **19**

Appendix B: TDM Strategies Costs Calculations **20-22**

TABLES & FIGURES

Table 2-1 TDM Strategies - Implementation of Funding 15

Table 3-1 TDM Strategies Cost 18

Table 3-2 TDM Strategies Funding 18

Table A-1 Assumptions for TDM Figures 19

Table B-1 TDM Strategies Cost Detail 20-22

CHAPTER ONE: INTRODUCTION

The Candlestick Point – Hunters Point Shipyard (CP-HPS) Phase II Transportation Plan included a commitment to develop and implement a Transportation Demand Management (TDM) Program designed to reduce use of single-occupant vehicles and to increase the use of rideshare, transit, bicycle, and walk modes for trips to and from, as well as within, the Development Plan Area. The TDM Program was envisioned to highlight and support the demand management qualities of the overall Development Plan, including:

- Jobs-Housing linkage. By providing a range of job types (retail, research, hospitality, office, etc.) and a range of housing types from affordable apartments to single family homes, the Development Plan will maximize the potential jobs/housing "matches" on site. Each match reduces the number of vehicle trips that will enter/leave the Development Plan Area during peak hours.
- Streets designed for low speed and safe crossings. In addition to new residential and commercial buildings, the Development Plan will provide significant infrastructure, including streets. All new streets and intersection upgrades will consider the needs of pedestrians.
- Land uses and transit located to encourage walking. People walk more when destinations are within close proximity, along flat routes with easy street crossings, and through interesting areas with storefronts, street trees, street furniture and other pedestrian-oriented amenities. The Development Plan embraces these principles, with all homes located within a 15-minute walk of transit and neighborhood retail services integrated into residential blocks. Many existing neighborhoods will also benefit from their proximity to enhanced transit service, schools, retail locations, and jobs with the Development.

The TDM Program includes a menu of tools that, when employed, will make the most of the above design qualities of the Development Plan. This document further refines the tool menu and sets forth a funding and implementation plan for the TDM Program.

A detailed description of the TDM Plan is included in the Transportation Plan. The purpose of this appendix is to describe the implementation and funding mechanisms used to support the TDM Plan.

CHAPTER TWO: IMPLEMENTATION STRATEGIES & FUNDING OVERVIEW

To move forward with the TDM Program outlined in the Transportation Plan, an implementation and funding plan is needed. This chapter summarizes the anticipated funding source and implementation lead for each TDM strategy to be provided inherently with the Development and through other sources. Subsequent chapters in this Plan will go into further detail for the funding and implementation of strategies that will not be inherent to the Development and/or will require on-going maintenance and monitoring to ensure their effectiveness.

Strategies to be implemented and funded with the Development include: transit infrastructure and operations, parking strategies, pedestrian infrastructure, and a majority of the bicycle improvement strategies, as shown in **Table 2-1**.

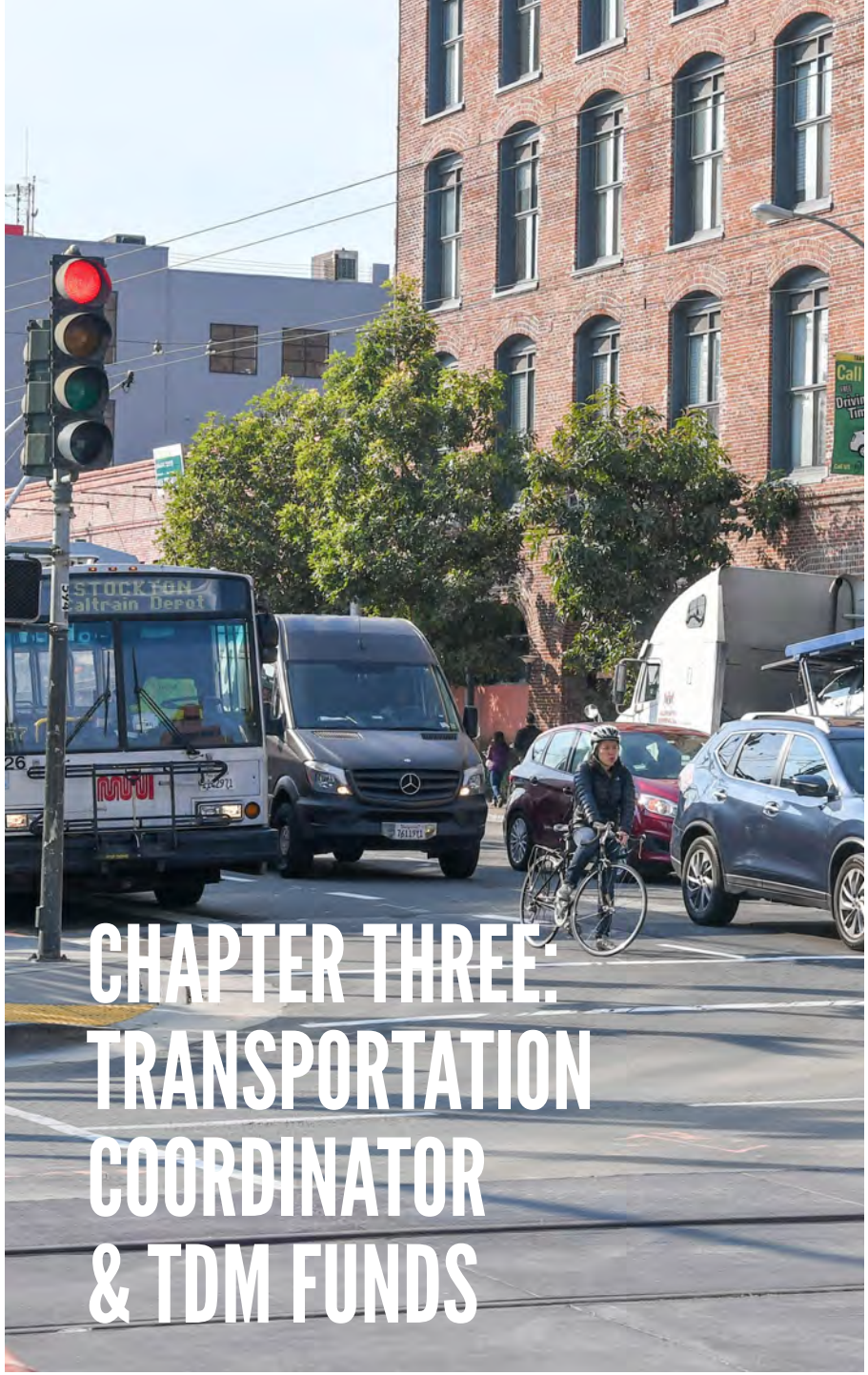
Of the strategies listed in **Table 2-1**, those requiring TDM funds as their funding source will be discussed in detail in Chapter 3. TDM support strategies for residents are typically implemented or supported by the On-Site Transportation Coordinator (TC) with TDM funds (paid by all residents and employers). Employee TDM strategies will be funded by the employers but the TC will provide the employer with support in implementing the programs. The TC will also implement and fund monitoring strategies with TDM funds.

The transit and parking revenues associated with the above strategies have been calculated separately and are not addressed in this Plan as they are largely meant to offset costs incurred by SFMTA of operating increased transit service to the site. The EcoPass transit pass will also help to subsidize the cost of enhancing transit service to the Project area. All residents will be required to purchase an EcoPass, and employers will be encouraged to participate as well.

Table 2-1: TDM Strategies - Implementation and Funding

Implementation Strategy	Implementation Source	Funding Source
Overall		
Jobs-Housing Linkage	Project Development	
Streets designed for low speed and safe crossings	Project Development	
Land uses and transit located to encourage walking	Project Development	
Transit Strategies		
Central Transit Hub and Ferry Terminal	Project Development	
Enhanced Transit Service	SFMTA	Resident and Emmployee EcoPass (subsidy), Project Development
Transit Preferential Street (Palou Avenue)	Project Development	
BRT, Bicycle, Pedestrian Bridge over Yosemite Slough	Project Development	
Bicycle Improvement Strategies		
Enhanced Bicycle Facilities	Project Development	
Bicycle racks, indoor/long-term parking, lockers, and showers	Project Development	
Bicycle Station (attended parking, repair facilities)	Transportation Coordinator and Bicycle Station staff	Project Development and TDM funds (subsidy)[1]
Bicycle Sharking Kiosks	Bicycle Sharing Company	
TDM Support Strategies		
Employee TDM Programs		
Information boards/kiosks, marketing of alternative travel options, special event planning	Transportation Coordinator and Employer	Employers
Commute subsidies, parking cash-out, commuter checks, Ecopass	Transportation Coordinator and Employer	Employers
Carpool/Vanpools	Transportation Coordinator and Employer	Employers
Guaranteed Ride Home Program	Transportation Coordinator and Employer	City of San Francisco and Employers
Compressed work week, flex time, telecommuting options	Employer	
All Other TDM Support Strategies		
Wayfinding	Project Development	
Ecopass	Transportation Coordinator	Residents and Employers
High-speed wireless internet	Project Development	
Carshare Services	Carshare company	
Carpool pick-up points	Transportation Coordinator	Project Development
Off-Peak Commercial Deliveries	Transportation Coordinator	Project Development
Parking		
Unbundled Residential Parking	Project Development	
Visitor Variable, Market Rate Parking Pricing	Transportation Coordinator, SFMTA, Project Development, and Private Parking Operator	Project Development
Parking Maximum Ratio	Project Development	
Shared parking	Project Development	
Preferential parking spaces reserved for carpoolers in commercial zone and near transit centers	Project Development	TDM funds (subsidy)
Free designated spaces in parking facilities to vanpools; Free short-term parking spaces in commercial zones reserved for carshare parking	Project Development	TDM funds (subsidy)
Carshare vehicles hubs	Carshare company	TDM funds (subsidy)
Ongoing Implementation and Monitoring		
On-Site Transportation Coordinator		
Salary and Rent	--	TDM funds
Transportation Website	Transportation Coordinator	TDM funds
Marketing of TDM Programs	Transportation Coordinator	TDM funds
Monitoring of Transportation Demand	Transportation Coordinator	TDM funds
Monitoring Effectiveness of Congestion Reducing/Traffic Calming	Transportation Coordinator	TDM funds

Notes:
1 Project development will fund the capital costs of the bike station. TDM funds will subsidize rent and provide a partial operating subsidy. The bicycle shop operating the station will provide the remaining operating costs for staffing and running the station and the Candlestick Point bicycle kiosk.



CHAPTER THREE: TRANSPORTATION COORDINATOR & TDM FUNDS

This chapter discusses the role of the Transportation Coordinator (TC), the associated logistics and organization of the TC's office, the estimated costs of all strategies requiring TDM funds, and proposed funding sources to cover these strategies.

3.1 IMPLEMENTATION

Roles

The role of the Transportation Coordinator is extensive, as shown by all the strategies with a "TC" label under the Implementation Source column in **Table 2-1**. At full build-out, the Development may require at least one and up to three full-time positions to implement the TDM strategies. This estimate is based on other TDM plans in the San Francisco Bay Area (see Appendix B for detail). For three full-time positions, the roles would be: one Transportation Liaison in charge of working with other entities; one Technical Coordinator managing website, car/vanpool database, rideshare; and one Marketing Coordinator managing TDM marketing to residents and employers (hereafter known as the TC team). The Transportation Liaison will be the bridge between residents and employers and the transportation agencies and the City of San Francisco. The Liaison will also be working with carshare companies, homeowners associations, and other entities involved with the relevant TDM strategies. The Marketing Coordinator will be the contact person and informational resource to support the project goal of providing residents and employees with alternatives to using a single-occupancy vehicle. Implementation and support of all Transportation Coordinator related TDM strategies will be covered by one of the three positions.

Logistics

The TDM office will house the TC team and will be located next to the bike station at the project transit center. The location is appropriate as the TDM office and bike station will have the option to be within a shared space, since rent for both are supported through the TDM funds. The TDM office will be the location where residents can pick up EcoPasses (if lost, etc.) and obtain general TDM support.

Organization

The TC team will act as staff to the Candlestick Point-Hunters Point Shipyard Transportation Management Association (CPHPSTMA). CPHPSTMA will be formed to develop, implement, operate and administer strategies and programs to manage transportation resources in Candlestick Point-Hunters Point Shipyard (including Phase I and Phase II) in accordance with the Transportation Demand Management Plan for Candlestick Point – Hunters Point Shipyard. The Articles of Incorporation for the Candlestick Point – Hunters Point Shipyard TMA were filed with the State of California on July 18, 2016. Therein, the activities, property, and affairs of the Corporation are dictated to be spelled out by the Board of Directors, the number of which will be dictated by the filed bylaws. The bylaws establish the entity as a non-profit established to further the goals of the approved TDM Program, namely, to reduce traffic congestion, reduce air pollution, reduce commuting costs, generate public/private measures to solve transportation problems, and create a central information service for ridesharing, public transportation, and other transportation related subjects. The Board of Directors of CPHPSTMA representing private property owners will be initially appointed by FivePoint. The Board of Directors is assigned to include three (3) groups, each of whom will get to appoint their representative for a one (1) year term: CP Development Company, LP, the Commercial Property Owners, and the Residential Property Owners. CPHPSTMA will enter into Participation Agreements with each and every owner of real property in CP-HPS Phase I and Phase II, setting forth the rights and obligations of each such owner relating to the programs and fees imposed by CPHPSTMA.

Monitoring

The TDM programs will be monitored by the TC team on an annual basis to determine the success of the programs and to allow the TC team and the CPHPSTMA Board of Directors to make decisions about the allocation of resources and/or changes in the services that may be needed.

3.2 COSTS AND FUNDING

The costs for each TDM strategy supported by TDM funds are estimated in **Table 3-1**. See Appendix B for detailed assumptions and calculations of TDM strategies costs.

Implementation of the above strategies costs an estimated total of $1,882,219 annually. An annual TDM fee for all residents and employees in the Plan Area including an additional 1,600 homes in Hunters Point Shipyard Phase I, will cover the annual costs. The fee will be assessed as an add-on to the mandatory EcoPass (transit pass) fee discussed in Chapters 2. The project is expected to have a residential population of 24,866, with 10,672 housing units, and 16,155 employees at full build-out. This population would be in addition to a residential population of 3,328 in 1,428 housing units associated with Phase I, for a total residential population of 28,193. Based on these estimates, an annual TDM fee of $135.19 per household[2] (assessed through rents or HOA dues) and $58.02 per employee (incorporated into employer leases) will be able to cover the costs of implementing these TDM strategies. This fee will increase over time as the operating costs increase with inflation and/or with any significant changes in the TDM tool menu.

2 This amount does not include the cost of an EcoPass transit pass, but the two costs would likely be combined into one monthly assessment.

Table 3-1: TDM Strategies Costs		
Implementation Strategy	Funding Source	Annual Operating Cost
Bicycle Improvement Strategies		
Bicycle station (attended parking, repair facilities)	Project Development and TDM funds	$240,000[1]
Parking		
Preferential parking spaces reserved for carpoolers in commercial zone and near transit	TDM funds	Assume carpool spaces pay same parking rate
Free designated spaces in parking facilities to vanpools; free short-term parking spaces in commercial zones reserved for carshare parking	TDM funds	$602,875[2]
Carshare vehicles hubs	TDM funds	$384,344[2]
Parking		
On-Site Transportation Coordinator		
Salary	TDM funds	$510,000.00
Rent	TDM funds	$60,000
Transportation Website	TDM funds	$10,000
Administrative costs, expenses, printing, etc.	TDM funds	$60,000
Tech consulting	TDM funds	$15,000
Marking of TDM Programs	TDM funds	Assume included in Transportation Coordinator's salary and administrative costs
Monitoring of Transportation Demand	TDM funds	Assume included in Transportation Coordinator's salary and administrative costs
Monitoring Effectiveness of Congestion Reducing / Traffic Calming	TDM funds	Assume included in Transportation Coordinator's salary and administrative costs
	Total	$1,882,219

Notes:
1 This cost estimate is only from TDM funds and represents a rent and partial operating subsidy for the Bicycle Station.
2 Amount of lost revenue assuming the parking spaces were used for marking-rate parking.

Table 3-2: TDM Strategies Funding		
Funding Strategy	Applicable To	Price
Annual TDM Fee	All households within the Project site[2]	$135.19
	All employees within the Project site	$58.02
Monthly TDM Fee[1]	All households within the Project site[2]	$11.27
	All employees within the Project site	$4.84

Notes:
1 Assumes 50 percent of employees participate.
2 BMR unit households at or below 60% of AMI will not be assessed the TDM fee and will not be required to purchase EcoPass.

APPENDIX A: TDM FIGURES DETAIL

Figures 16 and 17 of the Plan were meant to illustrate the various TDM strategies at CPHPS. They do not represent exact locations or counts of the strategies. Please see the table below for detailed assumptions for mapping out these strategies.

Table A-1: Assumptions for TDM Figures

Strategy Detail (from Transportation Plan)	Notes for Figures
Showers and locker facilities will be provided within each new commercial building with greater than 20,000 square feet of uses	Placed a showers/lockers symbol at every block which had office/ commercial/retail use (from BWP Transportation Study document)
Bike sharing program will be considered where bike kiosks are set up at intervals along major corridors and riders can pick up and drop off bicycle in seconds	Assumed there would be two kiosks serving the project site. One would be located at the transit center in HP near the bicycle station. This will allow for assistance from station employees to bike riders and would be the location for bike riders to buy or refill bike cards. Another kiosk would be located near the BRT stop in the commercial center of CP. This kiosk would be a self-service station.
Bicycle parking will be provided within each commercial parking facility, residential garage or within each residential building. Supplemental racks at major destinations	Placed a bike parking symbol on every block of project site that had commercial parking, or residential or was a major destination (from BWP Transportation Study document)
A designated signed area near the transit centers would be reserved for casual carpooling.	Assumed there would be one carpool point at CP (near the BRT stop in the commercial center) and one at HP near the transit center
Free designated spaces in parking facilities to vanpools; Free short-term parking spaces in commercial zones reserved for carshare parking; Preferential parking spaces reserved for carpoolers in commercial zone and near transit centers	Placed a symbol at every block with commercial/office parking facilities or on a commercial block.

APPENDIX B: TDM STRATEGIES COSTS CALCULATIONS

Table B-1: TDM Strategies Cost Detail

Implementation Strategies	Annual Operating Costs	Operating Cost Assumptions	Assumption Sources
Bicycle Improvement Strategies			
Bicycle Station (attended parking, repair facilities)	$240,000	Estimate of annual operating expenses (not including personnel) based on Downtown Berkeley BART bike station.	Downtown Berkeley BART Bikestation - Economic Analysis for Facility Expansion; September 2005; Strategic Economics. Costs updated to reflect 2017 value based on CPI.
Parking			
Preferential parking spaces reserved for carpoolers in commercial zone and near transit centers	n/a	Assume capital costs, such as signage, would be included in the garage cost; assume no enforcement costs if employed with attended parking; assume carpool spaces pay same parking rate	
Free designated spaces in parking facilities to vanpools; Free short-term parking spaces in commercial zones reserved for carshare parking	$602,875	Lost parking revenue. 1% of parking dedicated to vanpool and carshare. Assume $25/day, 5 days/week, 50 weeks/year.	Per transportation plan (proposed parking supply figure), 9,646 commercial structure parking.
Carshare vehicles hubs	$384,344	Lost parking revenue. 1 carshare vehicle for every 200 dwelling units (61 total spaces). Assume $25/day, 5 days/week, 50 weeks/year.	SF Planning code requires 1 carshare space for 201+ units, plus 1 for every 200 dwelling units over 200. (http://sf-planning.org/car-share-requirements-and-guidelines). 12,100 dwelling units proposed at build out (includes HPS Phase 1).

APPENDIX B: TDM STRATEGIES COSTS CALCULATIONS CONTINUED

Table B-1: TDM Strategies Cost Detail

Implementation Strategies	Annual Operating Costs	Operating Cost Assumptions	Assumption Sources
Ongoing Implementation and Monitoring			
On-Site Transportation Coordinator (TC)			
Salary	$510,000	3 staff with salary of $85,000 (x2 for benefits)	Assuming one Transportation Liaison in charge of working with other entities; one Technical Coordinator managing website, car/vanpool database, rideshare; one Marketing Coordinator managing TDM marketing to residents and employers.
Rent	$60,000	Conservative estimate of 4 staff for this calculation.	Rent estimate from typical craigslist office lease postings for a four-person office (for SOMA/south beach area approximately $5,000 a month).
Transportation Website	$10,000	"Assume administrative costs included in TC's salary. Calculation includes start up costs and yearly maintenance."	
Ridesharing and Ridematching, Carpool and Vanpool Database	N/A	Assume administrative costs included in TC's salary. Calculation includes start up costs and yearly maintenance.	*Nelson\Nygaard. "RideNow! Evaluation Draft Report." Alameda County Congestion Management Agency. September 2006. Retrieved September 2008 from http://www.ridenow.org/4113_ACCMADynamicRidesharing.pdf

APPENDIX B: TDM STRATEGIES COSTS CALCULATIONS CONTINUED

Table B-1: TDM Strategies Cost Detail

Implementation Strategies	Annual Operating Costs	Operating Cost Assumptions	Assumption Sources
Administrative costs, expenses, printing, materials, etc.	$60,000	Costs include marketing expenses, flyers, brochures. Total population of 43,000 at project site. Flyers for all residents and employees at $1/flyer. Additional costs for brochures and events.	Project estimates residential population of 28,193 and 16,155 employees at buildout (includes Hunters Point Shipyard Phase 1).
Tech consulting	$15,000	Assume periodic tech support needed throughout the year	
Marketing of TDM programs	N/A	Assume admin included in TC's salary and administrative costs	
Monitoring of Transportation Demand	N/A	Assume admin included in TC's salary and administrative costs	
Monitoring Effectiveness of Congestion-Reducing/Traffic Calming	N/A	Assume admin included in TC's salary and administrative costs	

FEHR & PEERS

FIVEPOINT™

CANDLESTICK POINT HUNTERS POINT SHIPYARD PHASE II

TRANSPORTATION PLAN

APRIL 2018 (DRAFT)

FEHR PEERS

FIVEPOINT™

TABLE OF CONTENTS

ONE Executive Summary 1
1.1 Introduction 1
1.2 Project Definition 3
1.3 Transportation Program 4

TWO Introduction 7
2.1 The Development Plan 7
2.2 Project Location 8
2.3 Goals, Principles and Strategies 8
2.4 Outreach & Community Feedback 11

THREE Existing Conditions 13
3.1 Transit Challenges 14
3.2 Traffic Challenges 15
3.3 Pedestrian & Bicycle Challenges 17
3.4 Other Proposed Developments in the Project Area 17

FOUR Project Definition 19
4.1 Land Use Program 19
4.2 Street Network and Urban Form 22
4.3 Proposed Roadway Improvements 55

FIVE Transportation Program 61
5.1 Introduction 61
5.2 Strategies 63
5.3 Phasing 87

TABLES

Table 1 Project Mode Split Goals - PM Peak Hour Work Trips 2
Table 2 Land Use Program 3
Table 3 Land Use Program 20
Table 4 SD-3 Calculated Mode Split – Weekday PM Peak Hour 62
Table 5 Project Mode Split Goal – Weekday PM Peak Hour 62
Table 6 Muni Service to the Project – Existing and Muni Forward Equivalents 74
Table 7 Car Share Parking Space Requirements 79
Table 8 Maximum Parking Requirements 83
Table 9 Bicycle Parking Spaces for Residential Users 83
Table 10 Bicycle Parking Spaces for Non-Residential Uses 84
Table 11 Proposed Off-Street Freight Loading Space Limits Medium- and High-Density Residential Blocks 86
Table 12 Proposed Off-Street Freight Loading Space Requirements Outside of Medium- and High-Density Residential Blocks 86
Table 13 Land Development Phasing 88
Table 14 Roadway Improvement Phasing 89
Table 15 Transit Phasing 90

FIGURES

Figure 1 Planned Transportation Improvements 4
Figure 2 Project Location 8
Figure 3 Existing Transit Network 14
Figure 4 Existing Roadway Network 16
Figure 5 Proposed Nearby Developments 18
Figure 6 Land Use Program 21
Figures 7A-7Z Proposed Internal Street Network 28-53
Figure 8 Proposed Roadway Improvements 56
Figure 9 Proposed Harney Way Initial Configuration 57
Figure 10 Proposed Harney Way Potential Long-Term Configuration 58
Figure 11 Innes Avenue Improvements 59
Figure 12 Yosemite Slough Bridge 60
Figure 13 Pedestrian Circulation Improvements 64
Figure 14 Existing Bicycle Routes 66
Figure 15 Proposed Bicycle Routes 67
Figure 16 Bicycle Support Facilities 68
Figure 17 Proposed Transit Improvements 71

CHAPTER ONE: EXECUTIVE SUMMARY

1.1 INTRODUCTION

The Candlestick Point and Hunters Point Shipyard Phase II Development Plan contemplates a new, mixed-use community in southeastern San Francisco.

This Transportation Plan is one of several plans and reports implementing the proposed Development Plan. The Transportation Plan presents goals, principles, and strategies to meet the travel demand needs: incorporating innovative practices and sustainable development principles, the Plan seeks to provide residents, employees, and visitors of the two neighborhoods with high-quality transportation infrastructure and services.

Goals & Principles

The Transportation Plan's (referred to throughout as "the Plan") elements prioritize walking, bicycling, and transit travel, making these attractive and practical transportation options. At full build-out, the project targets a weekday PM peak hour work trip mode split of not more than 45 percent auto, and not less than 30 percent transit, 20 percent walk, and 5 percent bike, as shown in **Table 1**. Integrating transportation and land use, providing new and improved transit options, an effective Transportation Demand Management (TDM) Program, and properly designed streets will help achieve this goal. The project also enhances the self-sufficiency and sustainability of adjacent neighborhoods (such as the Bayview, Executive Park/Visitacion Valley, the Central Waterfront, India Basin and across the border in Brisbane) by linking these areas to the project's strong transit, bicycle and pedestrian networks, and neighborhood services within close proximity while providing seamless transit to regional employment centers and destinations. This linkage should also serve to reduce overall trips and vehicle miles traveled in the area.

Table 1: Project Mode Split Goals - PM Peak Hour Work Trips

Mode	Project Travel Behavior Goal
Auto	45%
Transit	30%
Walk	20%
Bike	5%
Total	100%

In addition, the project aims to create a community with all of the services necessary to achieve self-sufficiency, and serve as a model of sustainable development and transportation.

Integration of Transportation & Land Use

The land use plan incorporates a dense, compact development pattern centered around mixed-use transit nodes. The following illustrate a few features of the plan designed to promote pedestrian, bicycle, and transit travel:

- The development pattern is designed to facilitate walking and cycling for internal trips, and bus service for internal trips, trips downtown and to regional transit hubs;
- Over 335 acres are preserved as open space;
- Streets are designed to support a variety of travel modes at moderate to low speeds, and are arranged in a pedestrian-oriented grid of small blocks;
- All of the homes within each community are within a 15-minute walk of a transit stop, where frequent service will be available;
- Neighborhood services and retail are integrated into residential blocks;
- The mixed-use center of each community will serve as an arrival point and activity hub, and provide a source of identity; and
- Implementation of transit corresponds to each development phase.

Integration of Transportation Improvements with Surrounding Bayview Neighborhood

The proposed street and transit improvements would be integrated with the surrounding transportation network and facilities to benefit the entire Bayview/Hunters Point neighborhood, in addition to serving the proposed project demands.

1.2 PROJECT DEFINITION

The proposed land use program for the redevelopment of Candlestick Point and Hunters Point Shipyard, summarized in **Table 2**, includes residential, regional and local-serving retail, research and development space, office, hotel, and open space.

Table 2: Land Use Program

Land Use	Candlestick Point	Hunters Point Shipyard
Residential	7,218 d.u.	3,454 d.u.
Neighborhood Retail / Makers Space[1]	125,000 sq. ft.	301,000 sq. ft.
Regional Retail	635,000 sq. ft.	100,000 sq. ft.
Hotel	220 rooms	175 rooms
Community Services	50,000 sq. ft.	50,000 sq. ft.
R&D	--	4,265,000 sq. ft.
Artists' Studios	--	255,000 sq. ft.[2]
Marina	--	300 slips
Arena[3]	10,000 seats	--
Office	150,000 sq. ft.	--
Institution	--	410,000 sq. ft.[4]

Source: FivePoint – April 2018

1 75,000 square feet of the 301,000 square feet of Neighborhood Retail at HPS would be dedicated for maker space uses.
2 The Project includes 225,000 sq. ft. of existing artist studio space that would be renovated and replaced.
3 The 10,000 seat Arena is proposed to be 75,000 square feet.
4 410,000 sq. ft. equates to approximately 1,000 junior high/high school students and 1,000 high school/post-secondary students. Types of students and institutions may vary.

The density and arrangement of land uses at Candlestick Point and Hunters Point Shipyard are designed to actively encourage the use of walking and bicycling as primary travel modes within the project area. The street network is intended to better manage vehicle access while supporting transit ridership, public character, and sustainability.

A comprehensive set of roadway improvements, shown with transit improvements in **Figure 1**, have been identified to meet the project's travel demand. These are depicted in blue on **Figure 1** and discussed later in this document.

1.3 TRANSPORTATION PROGRAM

The Transportation Program consists of strategies which build off the land use strategies to encourage internalization, maximize the usefulness of walking and bicycling, and discourage the overall use of private automobiles through a parking plan, increased transit service, and a Transportation Demand Management (TDM) Program. The Transportation Program is shown in **Figure 1** and described below.

Internal Trip Capture & Pedestrian and Bicycle Facilities

The mixed-use neighborhoods proposed by the Development Plan will include office, retail, recreation, and entertainment centers designed to meet resident and employee needs, and reduce the demand for off-site trips. Travel within the project will be facilitated by a network of pedestrian and bicycle routes, secure bike parking, traffic-calmed streets, and urban design that makes walking and bicycling comfortable and convenient.

Figure 1: Planned Transportation Improvements

New and Improved Transit

Current Muni service to Candlestick Point and Hunters Point Shipyard is limited, and no circulation is provided between the two areas. Connections to major employment centers in Downtown San Francisco and the Peninsula are inefficient. To maximize the effectiveness and convenience of transit service to and within the project site, the following strategies have been developed:

- Extensions of existing Muni routes to Candlestick Point and Hunters Point Shipyard, and new express buses providing direct service to Downtown San Francisco;
- New BRT (Muni Line 28R) service operating between Candlestick Point and Hunters Point Shipyard, and connecting to SamTrans, BART, Caltrain, and the T-Third Metro line at the Bayshore Caltrain station and Balboa Park BART station;
- A transit center at Hunters Point Shipyard to enable efficient and convenient transfers;
- Bus service throughout the day, evening, and weekends at high levels of service to provide convenient connections to employment and activity centers and the regional transit network; and
- Other area-wide improvements associated with Muni Forward and Muni's Service Plan

Transportation Demand Management Program

Also included in the Plan is a comprehensive TDM program that will include elements to facilitate carpools and vanpools, encourage carsharing, increase the convenience of transit services, and create a walkable and bikeable community. Specific components of the TDM program include:

- A full-time Transportation Coordinator to manage the real-time transportation needs of residents, employees and visitors to Candlestick Point and Hunters Point Shipyard;
- Residential parking sold or leased separately from units[1];
- Bicycle support facilities to encourage bicycling, including parking facilities (racks, lockers and showers), stations at key locations with attended bicycle parking and repair facilities, and potentially participation in the City's bike sharing program;
- The inclusion of a transit pass with monthly homeowner's dues; and
- Public parking charges at variable market rates to encourage transit use. This can be accomplished by increasing parking rates during the peak period when transit service is most frequent, or increasing parking rates progressively to favor short-term parking over long-term parking, discouraging commuter parking.

Implementation and Monitoring

A phasing strategy has been developed for roadway and transit service improvements and programs to coincide with the project's development. Some specific components of the monitoring plan include:

- The Plan will be implemented at the earliest stages of development and specific phasing of the programs and services will be adopted;
- Outreach to residents, employees and visitors will inform them of all available transportation options; and
- The impact of events at the performance venues will be evaluated to identify the opportunities for applying measures to encourage the use of non-auto modes.

1 This arrangement would not apply to the 1,655 "Agency Affordable" units or to the Senior BMR Project at CP-02, which are limited by tax-credit financing requirements.

RAPID
7 HAIGHT/NORIEGA
Ocean Beach
MEN'S WEAREHOUSE
Powell
Powell

CHAPTER TWO: INTRODUCTION

2.1 THE DEVELOPMENT PLAN

The Candlestick Point and Hunters Point Shipyard Phase II Development Plan (the Development Plan, referred to throughout as "the Project") contemplates a new, mixed-use community within the Bayview/Hunters Point Redevelopment Area. The Project consists of approximately 10,700 homes, in addition to the 1,400 homes constructed under Hunters Point Shipyard Phase I; over 6 million square feet of retail, artists' studios, maker space, entertainment, office, and research and development uses; two hotels; over 335 acres of new and restored parklands and recreational open spaces; and civic and community uses. This Transportation Plan (referred to throughout as "the Plan") is one of several plans and reports (including a Sustainability Plan and Streetscape Plan) describing the project and the existing and future circumstances of the project site and surrounding areas.

FivePoint is the lead developer for the Development Plan. FivePoint is working in partnership with various City agencies and departments to define the project and plan for its implementation, including, among others, the Mayor's Office of Economic and Workforce Development, the Office of Community Investment and Infrastructure (the successor to the Redevelopment Agency), the Planning Department, and the Municipal Transportation Agency (SFMTA). The project's components and design have been informed by feedback obtained at over 245 public meetings and workshops with the Bayview/Hunters Point communities and presentations before the Citizens Advisory Committee (CAC).

The project is subject to environmental review under the California Environmental Quality Act, and the approval of the Commission on Community Investment and Infrastructure and the Board of Supervisors as well as other city, state, and federal permitting authorities. The Project's EIR was certified by the San Francisco Planning Commission, the SFMTA Board, and the San Francisco Redevelopment Agency in June 2010, and refined through subsequent addenda. The 2018 Transportation Plan has been refined through discussions with City representatives to ensure that it responds to the most recent City best practices and subsequent refinements to the project. Implementation of the final Transportation Plan will require commitments from FivePoint, the City (including SFMTA), and other transportation agencies.

2.2 PROJECT LOCATION

The Candlestick Point and Hunters Point Shipyard Phase II Development Plan site is located along the San Francisco Bay waterfront in the Bayview/Hunters Point neighborhood in southeastern San Francisco, as shown in **Figure 2**. The neighborhood is generally bounded by Cesar Chavez Street to the north, US 101 to the west, the San Mateo County line and the City of Brisbane to the south, and San Francisco Bay to the east.

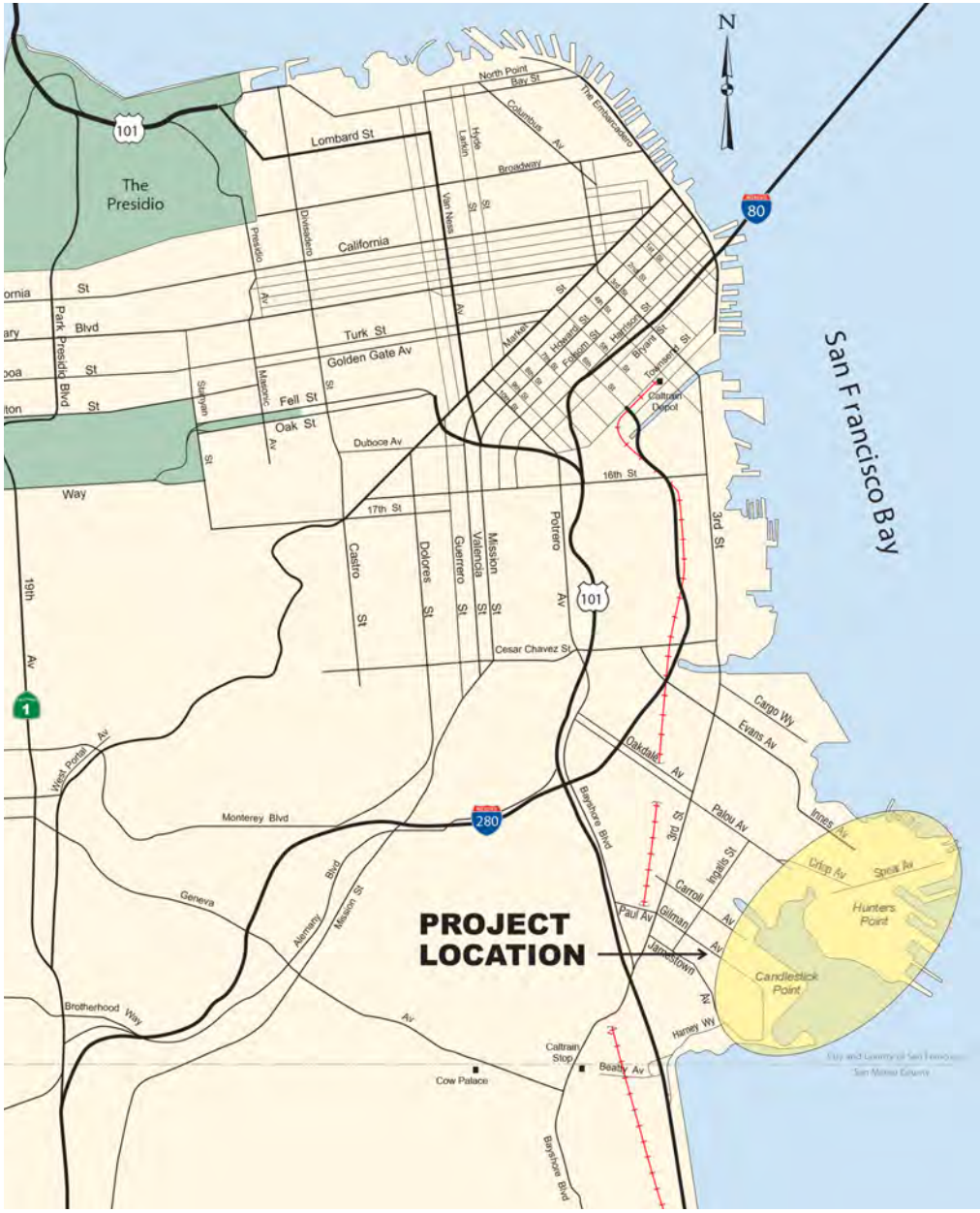
The project site includes Candlestick Point, a 267-acre site within the Bayview/Hunters Point Redevelopment Plan Area; and Hunters Point Shipyard Phase II, a 421-acre site within the Hunters Point Shipyard Redevelopment Plan Area. Phase I of the Hunters Point Shipyard is a 75-acre site within the Shipyard Redevelopment Plan Area and is under development with 1,600 new homes and approximately 20,000 square feet of retail uses.

2.3 GOALS, PRINCIPLES & STRATEGIES

The Plan's elements prioritize walking, bicycling, and transit, making these attractive and practical transportation options, which are consistent with the City's Climate Action Strategy (CAS). The CAS outlined a number of transportation strategies, which, when combined with other strategies, will help the City reduce its overall greenhouse gas emissions to 40 percent below 1990 levels by the year 2025. The CAS's recommended transportation actions are grouped into six categories:

- Increase the use of public transit as an alternative to driving
- Increase the use of ridesharing as an alternative to single occupancy driving
- Increase bicycling and walking as an alternative to driving
- Support trip reduction through employer based programs
- Discourage driving
- Increase the use of clean air vehicles and improve fleet efficiency

Figure 2: Project Location



The goals, principles, and strategies in this Transportation Plan are centered around these six themes, and are supported by investment in infrastructure and services that provide alternatives to private auto travel. Also included in the Plan are travel demand management strategies designed to encourage the use of transit and alternative modes of travel.

Another objective of the project is to integrate the proposed roadway and transit improvements with the surrounding neighborhood as many of the improvements will also benefit the existing community. The Plan seeks to create transportation solutions that benefit the entire Bayview/Hunters Point neighborhood in addition to serving the proposed project demands.

Goals

- The project targets a weekday PM peak hour mode split for work trips of not more than 45 percent auto travel, and not less than 30 percent transit, 20 percent walk and 5 percent bike;
- The project will create a lively community with a strong sense of place and the services necessary to help achieve self-sufficiency;
- The project proposes a balance of uses that will enable residents to meet their daily needs with reduced automobile dependency;
- The project will serve as a model for the region and the nation of sustainable development and transportation and land use integration; and
- The project will reduce vehicle miles traveled and carbon emissions compared to traditional development patterns.

Principles

- Transportation systems should be fully integrated with existing networks to provide seamless connections and service;
- The development pattern is designed to facilitate walking, cycling, and transit trips;
- Internal streets are designed to support a variety of travel modes at moderate to low speeds (between 15 and 25 mph), arranged within a pedestrian-oriented grid of small blocks;
- Arterials will be designed for a posted speed of 25 mph to allow for rapid transit service competitive with the private car;
- The mixed-use center of each community should serve as an arrival point and activity hub, and provide a source of identity;
- All of the homes within each community should be within a quarter mile of a transit stop, where frequent bus service will be available;
- All residences should also be within walking distance of basic neighborhood retail;
- Transit service to and from Candlestick Point and Hunters Point Shipyard should operate throughout the day, evening, and weekends at high levels of service to provide convenient connections to employment and activity centers and the regional transit network;
- Auto access should be discouraged through traffic calming, parking management, and other policies;
- Transportation demand measures should support transit, pedestrian, and bicycle travel and will be directed at residents, employees, and visitors; and
- Phasing of development and transportation infrastructure shall be coordinated to support the achievement of the goals above in each major increment of development.

Strategies

To achieve the project goals according to the above principles, the Plan includes the following elements:

- Homeowners' dues will include the cost of a transit pass that can be used on Muni, Caltrain, or BART services;
- Residential parking will be "unbundled", i.e., sold or leased separately from units[2];
- All public parking will be unbundled from residential and visitor uses, and incur a parking charge at variable market rates to encourage transit use (potentially with increased rates during peak periods and/or for long-term parking);
- A full-time Transportation Coordinator will be employed to manage the real-time transportation needs of residents, employees, and visitors;
- Travel within the development areas will be facilitated by bike lanes and frequent bus rapid transit service operating in dedicated lanes and with signal priority;
- Elements of the Transportation Demand Management (TDM) Program will be implemented at the earliest stages of development and specific phasing of the measures and services will be adopted;
- The TDM program will be monitored by the Transportation Coordinator for its effectiveness in meeting the Plan's objectives. Outreach to residents, employees, and visitors will inform them of all available transportation options. The TDM Plan is an Appendix to this Transportation Plan;
- The impact of events held at performance venues will be monitored to determine opportunities for applying TDM to encourage the use of non-auto modes; and
- Development controls and design guidelines will require that public and private spaces be designed to create a high quality pedestrian environment.

2 This arrangement would not apply to the 1,655 "Agency Affordable" units, which are limited by tax-credit financing requirements.

2.4 OUTREACH & COMMUNITY FEEDBACK

This plan relies extensively on community outreach and input. Input and guidance from City agencies and long-standing agreements with members of the Bayview/Hunters Point community have been carried into this Plan, ranging from the high-level (e.g., San Francisco's "Transit First" policy and SFMTA's policies supporting safe pedestrian and bicycle circulation) to specific neighborhood-related transportation goals and objectives of the Bayview/Hunters Point area.

To complement the broader policies and agreements, input and feedback reflecting the most current conditions informed by new developments in the transportation system is included. An extensive multi-agency series of workshops, panels, hearings, and presentations were conducted between 2008 and 2018 to update and refine information for this Transportation Plan.

Subsequent to the initial adoption of the Transportation Plan in 2010, regular presentations have been made to the Bayview community related to implementation of the first phase of development at Candlestick Point and amendments to the Transportation Plan made in 2017-2018.

Community-Based Outreach & Input

The specially-formed, community-staffed, Project-based Policy Advisory Committee (PAC) and Citizens Advisory Committee (CAC) presided over numerous meetings focused on transportation and were held in the project area. In the spring and summer of 2009, a transportation workshop series with a brainstorming/report-back format was held with three focus areas:

- India Basin Roundtable (specific focus on the India Basin area);
- Northern Connections Workshop (brainstorming/report-back, broad scope with special focus on Hunters Point);
- Southern Connections Workshop (brainstorming/report-back, broad scope with special focus on Candlestick Point and Yosemite Slough);
- Workshop summary presentations to the CAC and the PAC.

To complement these workshops and broaden the discussion to adjoining neighborhoods and regional connections, other specific community meetings were held with these areas of focus:

- Adjoining neighborhoods: Visitacion Valley, India Basin, and Bayview;
- Environmental sustainability;
- The San Francisco Bay Trail;
- The San Francisco Bicycle Plan;
- Bi-County Study (San Francisco County/San Mateo County transportation & land use coordination).

Community Priorities

These community-based workshops informed a set of goals to guide the decisions, multi-modal balance, and phasing/implementation strategies of this Plan, and expressed the following priorities and focus areas:

- Safety: to address perceived safety concerns as well as incidents;
- Equity: to avoid a "gated community" effect;
- Connectivity: to ensure efficient and fast transit to other city neighborhoods and the region, and for seamless travel for all modes between neighborhoods;
- Community: to create a walkable "village" context;
- Sustainability: to emphasize transit, pedestrian, and bicycle circulation;
- Vitality: to promote economic and aesthetic health of the area;
- Quality of Life: to address noise and other impacts to residential areas;
- Adaptability: to ensure "complete" communities in all phases.

The community also provided specific direction related to the design of key arterials such as Harney Way, Innes Avenue, and Palou Avenue, defining alternative transportation paths and routes (including over and around Yosemite Slough and India Basin), managing impacts on residential areas, refining transit and bicycle route extensions and service plans, protecting the on-street parking supply, integrating the safety and design enhancements of the San Francisco Better Streets Plan, and implementing development and infrastructure in phases.

Public Agency Review

Input and feedback from the public agencies involved in the development of the Transportation Plan was obtained from a series of technical meetings to focus on transportation engineering issues such as emergency vehicle access, Muni service planning needs, land use and transportation coordination and phasing, street greening, truck route circulation, highway and interchange design, waterfront transportation access and parks access.

The agencies engaged include, among others:

- San Francisco Planning Department and Commission
- SF Redevelopment Agency and Commission/Office of Community Investment and Infrastructure
- Board of Supervisors and its various committees
- SF Municipal Transportation Agency (SFMTA Board, Board CAC, Traffic Engineering, Muni Capital and Service Planning)
- San Francisco County Transportation Authority: Bi-County project and CAC
- Bayview Transportation Improvements Project
- TASC (includes SFMTA, DPW, SF Police Department and SF Fire Department)
- Mayor's Office on Disability
- SF Public Utilities Commission
- SF Environment and Commission
- SF Department of Public Health
- SF Greening
- City/County Association of Governments for San Mateo County
- City of Brisbane
- Caltrain/SamTrans
- Association of Bay Area Governments
- Metropolitan Transportation Commission
- Water Emergency Transportation Authority
- California Department of Transportation
- California State Parks Foundation

Through these processes, the Plan incorporates community priorities, coordination between local and regional networks and between transportation and land use phases, and recommendations following technical review and refinements from responsible agencies. The outreach and input also assisted in accommodating a variety of goals, reconciling conflicts, and ensuring the over-arching accommodation of safety and sustainability in the Project area.

CHAPTER THREE: EXISTING CONDITIONS

The Project site is located in the southeastern portion of San Francisco along the Bayview Waterfront. The Candlestick Point and Hunters Point Shipyard Phase II portions of the project lie within the Bayview/Hunters Point Redevelopment Plan Area and the Hunters Point Shipyard Redevelopment Plan Area, respectively.

The site is relatively isolated from the rest of the City. The surrounding topography of hills and Yosemite Slough create a context with limited connections to the existing regional transportation network. Essentially, only two main roads serve the site, Harney Way on the south and Innes Avenue on the north, and many intermediate streets do not connect through to other neighborhoods. These conditions create challenges with respect to providing convenient transit service and accommodating traffic demand.

3.1 TRANSIT CHALLENGES

In the existing transit network, shown on Figure 3, two Muni lines currently reach the edge of the project area: 19-Polk and 29-Sunset. This is inadequate to serve the project, as the lines do not provide any circulation within the project area, nor do they directly serve employment centers in San Francisco or the Peninsula. Both lines provide access to Downtown San Francisco via a transfer to the T-Third Metro line. Although the 29-Sunset connects to the regional rail system at Balboa Park BART station, it is accessed via a circuitous route that is subject to congestion. Further, neither the 19-Polk nor the 29-Sunset connects to Caltrain, which operates in the project's vicinity[3] and serves as the primary connection to the major employment centers on the Peninsula and in the South Bay.

Bayshore remains the only Caltrain Station in the project area after the closure of Paul Avenue Station in 2005. No other transit services connect directly to Bayshore Station, which is served only by local trains running on an hourly basis during peak periods. An average of only 253 weekday boardings was recorded at the station in 2016. Without convenient transit connections from Candlestick Point and Hunters Point Shipyard and with limited service, the existing Bayshore Station is insufficient to serve the project area. In addition to the two lines previously mentioned, four additional Muni lines – 23-Monterey, 24-Divisadero, 44-O'Shaughnessy and 54-Felton – serve the greater Bayview neighborhood west of Candlestick Point and Hunters Point Shipyard.

Muni has recently conducted a comprehensive review of its services in an effort to improve its performance and efficiency. Muni Forward, formerly known as the "Transit Effectiveness Project" (TEP) specifies changes to several of the lines that would serve Candlestick Point and Hunters Point Shipyard. One of the proposals from Muni Forward involved replacing the 19-Polk line with the 48-Quintara line in the study area. These changes would improve service to the Bayview/Hunters Point neighborhood, but additional improvements beyond the Muni Forward proposals would be needed to serve the project.

Figure 3: Existing Transit Network

3 Bayshore Caltrain Station is located in San Mateo County.

3.2 TRAFFIC CHALLENGES

The existing street network at Hunters Point Shipyard has served relatively little traffic since the shipyard that occupied the site closed. The street network within Candlestick Point also sees comparatively low levels of traffic. Streets in both areas have been only marginally maintained and are not sufficient for the high-density development of the proposed land use plan.

Further outside the project boundaries, the arterial streets in the area – Third Street, Cesar Chavez Street, and Harney Way – lack the capacity needed to accommodate frequent transit service and the level of auto traffic expected to be generated by the project. Hunters Point Shipyard in particular has only two access points and an indirect route to the freeway network. Access to Candlestick Point is currently constrained by the narrow right-of-way between Executive Park and San Francisco Bay.

East-west access is inhibited by the limited number of streets that cross the Caltrain tracks, some of which are narrow or have steep grades. Prior to the 49ers relocation, game day and special event conditions presented additional challenges related to street traffic and on-street parking prohibitions. These included use of sidewalks for parking, private automobiles on streets designated for transit and taxis only, overcrowded buses delayed on congested streets, and numerous automobile/pedestrian/bicycle conflict points. These challenges are no longer an issue since the 49ers relocated.

Other transportation challenges that exist in the area include:

- Third Street cuts across the street grid at an angle, with no direct alternate routes;
- Industrial and residential land uses are mixed together in Bayview, resulting in truck traffic in some residential areas; and
- Streets are relatively wide, potentially encouraging higher vehicular speeds.

For regional access to the project area, the project is near US 101, part of the regional freeway network. The US 101 interchanges that serve the project area (at Harney Way, Third Street, Paul Avenue, Silver Avenue, Alemany Boulevard / Industrial Avenue, and Cesar Chavez Street / Jerrold Avenue) will likely lack the capacity to accommodate the additional auto travel demand for a project of this size in the future. There is no direct on-ramp from westbound Cesar Chavez Street to southbound US 101 or from southbound Third Street to northbound US 101. In contrast to congested US 101 interchanges, the interchanges on I-280 that serve the project area (Silver Avenue / Alemany Boulevard / Industrial Street, and Cesar Chavez / 25th Street) are underutilized. The existing roadway network is shown in **Figure 4**.

Figure 4: Existing Roadway Network

3.3 PEDESTRIAN & BICYCLE CHALLENGES

Pedestrian access throughout the project site is limited due to topographic constraints and minimal connectivity within the street network. Existing land uses are primarily industrial and not conducive to pedestrian activity. Currently waterfront access is limited to a portion of the Bay Trail, a Class I facility that provides a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians, which extends along the southern shoreline of the Candlestick Point State Recreation Area.

Currently, bicycle facilities within the project area include Class III bicycle routes, which provide for a right-of-way designated by signs and pavement markings for shared use with motor vehicles. Existing Class III bicycle facilities are located on Carroll Avenue, Arelious Walker Drive, Hunters Point Expressway and Jamestown Avenue. The existing bicycle facilities provide minimal access to the proposed project site. There are no Class II on-street bicycle facilities separating vehicular traffic from bicycles within the project site.

3.4 OTHER PROPOSED DEVELOPMENTS IN THE PROJECT AREA

There are also a number of other new development projects near the Project area which will increase the transit demand and automobile traffic. These proposed developments, which are in various planning or construction stages, are summarized below. The exact project description may change; however, the following net overall increases were assumed when the plan was conceived. **Figure 5** shows the location of these proposed developments in relation to the two project areas and to major transportation facilities.

Executive Park
3,400 homes
90,000 sq. ft. of retail/restaurant

Hunters View
800 homes
6,400 sq. ft. of retail
21,600 sq. ft. of community services

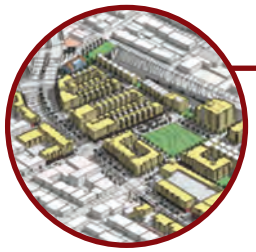
India Basin Shoreline Area C
275,330 sq. ft of commercial/retail space
50,000 sq. ft. of institutional space
829,700 sq. ft. of open space|

Hunters Point Shipyard Phase I
1,600 homes
20,000 sq. ft. of retail

Brisbane Baylands
8,400,000 sq. ft. of development

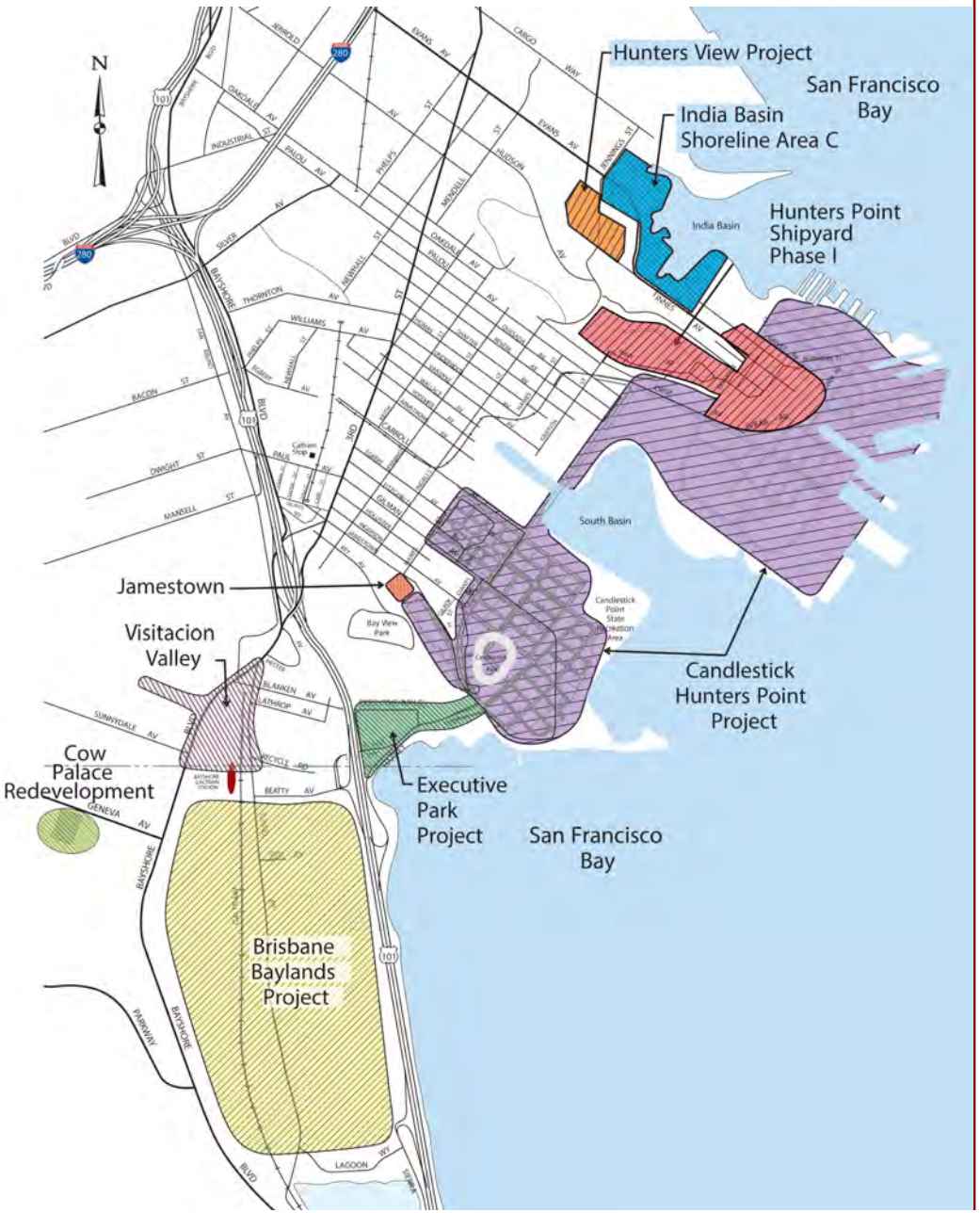
Cow Palace Redevelopment
1,700 homes
550,000 sq. ft. of commercial/
research & development

Jamestown
approximately 200 homes



Visitacion Valley
1,600 homes
170,000 sq. ft. of retail
25,000 sq. ft. of community services

Figure 5: Proposed Nearby Developments



CHAPTER FOUR: PROJECT DEFINITIONS

4.1 LAND USE PROGRAM

The proposed Candlestick Point and Hunters Point Shipyard Phase II Development Plan land use program includes 10,672 homes (in addition to 1,428 homes in Hunters Point Shipyard Phase I); 1,116,100 square feet of retail uses; 4,415,000 square feet of office and research and development space; two hotels; an arena, artist's studio, maker space, and schools. The Plan also includes a number of city parks, sports fields, and new and restored open space in the Candlestick Point Recreation Area. Over 335 acres are designated for recreational uses, including sports fields, and as open space. **Table 3** summarizes the proposed land use program for Candlestick Point and Hunters Point Shipyard Phase II. The locations of the project's proposed land uses are shown in **Figure 6**.

Table 3: Land Use Program			
Land Use	Candlestick Point	Hunters Point Shipyard	Project Total
Residential	7,218 d.u.	3,454 d.u.	10,672 d.u.
Neighborhood Retail / Maker space[1]	125,000 sq. ft.	301,000 sq. ft.	426,000 sq. ft.
Regional Retail	635,000 sq. ft.	100,000 sq. ft.	735,000 sq. ft.
Hotel	220 rooms	175 rooms	395 rooms
Community Services	50,000 sq. ft.	50,000 sq. ft.	100,000 sq. ft.
Research & Development	--	4,265,000 sq. ft.	4,265,000 sq. ft.
Artist's Studios	--	255,000 sq. ft.[2]	255,000 sq. ft.
Marina	--	300 slips	300 slips
Arena[3]	10,000 seats	--	10,000 seats
Office	150,000 sq. ft.	--	150,000 sq. ft.
Institution	--	410,000 sq. ft.[4]	410,000 sq. ft.
Source: FivePoint – April 2018			

1 75,000 square feet of the 301,000 square feet of Neighborhood Retail at HPS would be dedicated for maker space uses.
2 The Project includes 225,000 square feet of existing artist studio space that would be renovated and replaced.
3 The 10,000 seat Arena is proposed to be 75,000 square feet.
4 410,000 sq. ft. equates to approximately 1,000 junior high/high school students and 1,000 high school/post-secondary students. Types of students and institutions may vary.

The Redevelopment Plans authorize the conversion of commercial square footage to other land uses permitted under the Redevelopment Plans subject to the approval of the Agency Commission and additional environmental analysis.

Candlestick Point

At Candlestick Point, 7,218 new residential units are proposed. These units would be developed as two-story townhomes, four-to-eight-story mid-rise buildings, and high-rise towers. Some residential buildings will be mixed-use with residential units above ground-floor retail or office uses. Other residential buildings may include corner-store retail.

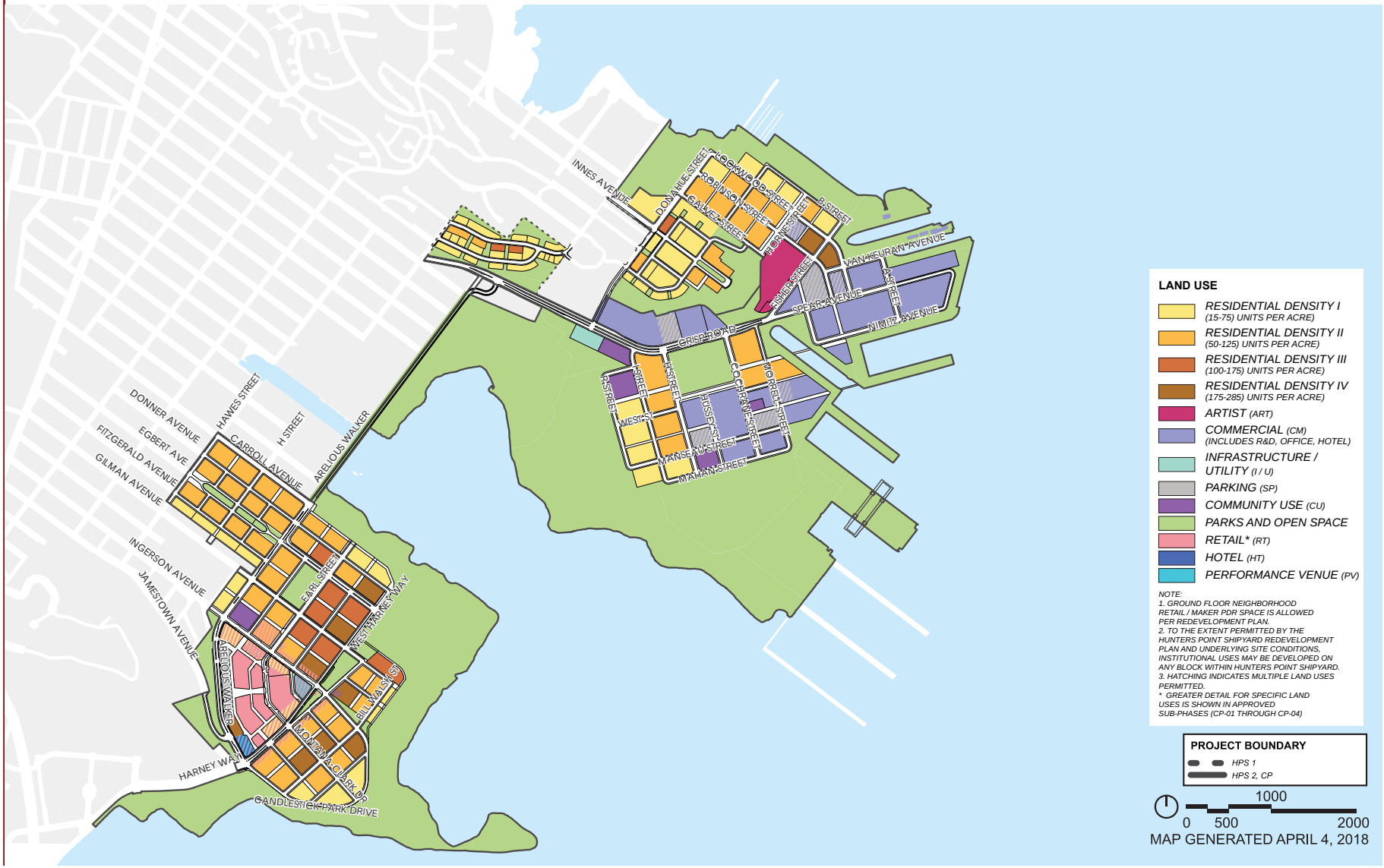
The housing program includes the redevelopment of the San Francisco Housing Authority's Alice Griffith site (also known as "Double Rock"), replacing the 256 existing units with a total of about 1,000 townhomes and four-story stacked flats. These new units are being made available to existing residents before the existing units are removed, so that no residents will have to be relocated.

A 635,000-square foot regional retail center is also envisioned at Candlestick Point. The proposed retail program is anticipated to include large-format shopping venues, and restaurants. The retail center is also proposed to include a hotel with 220 rooms and 150,000 square feet of office. A parking structure or structures may be provided for the Retail Center.

An additional 125,000 square feet of neighborhood-serving retail space, such as grocers or coffee shops, and 50,000 square feet of Community Services space is planned for Candlestick Point.

Hunters Point Shipyard Phase II

Figure 6: Land Use Program



Hunters Point Shipyard Phase II includes 3,454 new residential units. These units would be developed as a mix of housing types including townhomes, four-story flats over parking, and residential towers. Some residential buildings will be mixed-use with residential units above ground-floor retail or office uses. Other residential buildings may include corner-store retail.

Up to 100,000 square feet of regional retail and 301,000 square feet of neighborhood retail, of which 75,000 square feet is proposed as maker space, would be located at Hunters Point Shipyard Phase II. In addition to retail space, the Hunters Point Shipyard Phase II includes the renovation and expansion of an existing artists' studio, a hotel, community services, institutional uses, and over four million square feet of research and development space is proposed.

4.2 STREET NETWORK & URBAN FORM

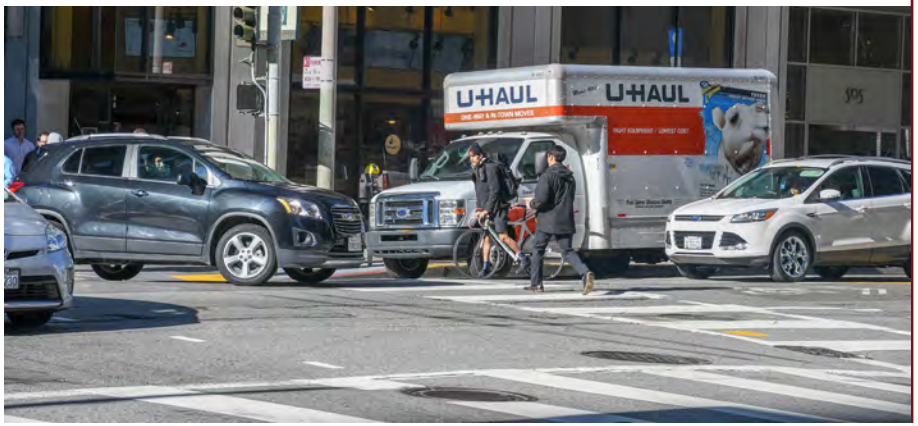
As noted earlier, Candlestick Point and Hunters Point Shipyard are relatively isolated and currently have limited connections to the existing roadway network and US 101 interchanges in the immediate vicinity. The condition of the existing streets is insufficient to meet the travel demand that the project will generate and there is no existing direct connection between Hunters Point Shipyard and Candlestick Point.

Both Candlestick Point and Hunters Point Shipyard have extensive waterfronts; however, access to the waterfront is currently limited to a portion of the Bay Trail at the southern end of Candlestick State Recreation Area. This project prioritizes multimodal access to the waterfront, which has been coordinated with Executive Park and other local developments.

The street network proposed for Hunters Point Shipyard and Candlestick Point is an extension of the existing grid of the adjacent Bayview neighborhood, using typical Bayview block sizes. This street pattern allows the axes of most streets to lie perpendicular to the Bay Shore with terminating vistas of the bay.

The proposed internal street network is intended to provide improved vehicular access while supporting transit ridership, public character, and sustainability. Streets are designed to emphasize non-auto travel and moderate the speed of auto traffic where required, successfully facilitating all movements. Proposed techniques include driveway access management; traffic calming features such as signage and striping, pedestrian bulbouts at intersections, and refuge islands; streetscape amenities including street furniture, lighting, and plantings; and other features that will assist in creating a high-quality pedestrian and bicycle network. Streets are designed to reflect their roles as the community's organizing framework while providing a safe and comfortable environment for all users.

The guidelines of San Francisco's Better Streets Plan (BSP) were consulted throughout the planning of the project streets and sidewalks. In some cases, constraints in topography, transportation engineering, and abutting land uses result in a constrained cross-section; however, these cross-sections generally follow the intent of the BSP requirements.



Street Typologies

The following street types are included in this Plan. The Streetscape Plans for Candlestick Point and Hunters Point Shipyard further define street typologies.

The Spine: The Spine is the civic backbone of the new neighborhoods, a city scale street that connects to the surrounding community and provides a unifying link between Hunters Point Shipyard and Candlestick Point. The Spine is comprised of several typologies (Residential, Commercial, Park), which are unified as a main thoroughfare through the site. The Spine provides a special identity for Candlestick Point and Hunters Point Shipyard.

Commercial Streets: Commercial streets, such as Harney Way, near Ingerson, and Ingerson between Arelious Walker and Harney are modeled after many of San Francisco's most vibrant streets, handling continuous activity throughout the day. They are the streets where residents do their daily errands, meet with friends, and shop and play on the weekends. Short-term parking for customers and space for loading facilities are essential components of commercial districts. However, parking and loading facilities often compete for the same space as desired features such as corner bulbouts or pedestrian plazas. Managing parking and loading facilities efficiently and effectively can serve both the needs of local businesses while enabling improvements to the public realm.

Residential Street: Residential streets are quieter residential streets with relatively low traffic volumes and speeds. Though they have low levels of activity relative to other street types, they play a key role to support the social life of the neighborhood. Residential streets should feel safe, comfortable, and cared for. Residents may think of the street outside their home as an extension of their home or a neighborhood commons. Improvements should focus on slowing traffic, providing useable space and amenities, and making improvements that encourage residents to take pride and ownership of the streetscape outside their front door.

Industrial Mixed-Use Street: Mixed-use streets such as those adjacent to Production, Distribution, and Repair (PDR) uses in the Bayview serve a variety of low-intensity industrial uses, as well as a growing number of residences, shops, and services. Their use and character are frequently in a state of change, and streets must reflect this changing character and serve a variety of needs. Mixed-use streets are often wide streets, with high volumes of fast-moving traffic. Streetscape treatments should include landscaping, pedestrian safety elements, public space uses, and other amenities to complement current and future land use.

Park Street: Streets that border major parks or the waterfront have one set of conditions on one side of the street and a distinctly different set of conditions on the other. Park edge streets often have fewer spatial constraints on the park edge side but unique demands of high pedestrian volumes or special activities associated with them. These streets should have a generous park edge with landscaping, lighting, furnishings, and multi-use trails.

Primary Streets: Primary streets promote pedestrian activity with elements such as generous sidewalks, on-street parking, transit shelters and a mix of land uses on both sides. These streets are used as primary vehicular circulation for accessing neighborhood destinations.

Secondary Streets: Secondary streets are calm streets to set neighborhood life and engagement. These streets are intended to be used for local access.

Mid-block Breaks: Mid-block Breaks are privately owned, publicly accessible travel-ways that prioritize pedestrian use, but permit vehicles and bicycles to share the open space. Shared public ways should be designed to emphasize their pedestrian scale and calm traffic. They enable a generous pedestrian realm on narrow streets, and they create pockets of usable open space to act as front yards in open space-deficient neighborhoods.

Multi-use Paths: Multi-use Paths (pedestrians, bicycles) are closed to vechiel traffic, except emergency vehicles. Ownership of these areas has yet to be determined and will be addressed at the time of development.

Design Principles

A consistent set of design principles for street facilities was developed to ensure a logical and rational approach to street design. Those principles are as follows.

Travel Lanes: Streets Without Transit

- 10' Standard
- 11' Adjacent to raised curb, except in exclusively residential areas where 10' may be proposed adjacent to a curb

On-street Parking

- 8' Standard
- 9' when adjacent to a Class II bike facility

Bike Lanes

- 6' Standard when adjacent to curb
- 5' when adjacent to (9') on-street parking
- 13' two-way cycletrack (6.5' in each direction)

Sidewalks

All sidewalks either 12' or 15', with a few exceptions near linear parks. The sidewalk throughway zone shall be at minimum, 6 feet.

Other Exceptions

Some street segments may require different dimensions; (e.g., streets carrying transit on one or two blocks may require 12' travel lanes on those blocks, but 10' travel lanes on the rest of the street). In other cases, strict application of the design principles would result in streets that are either offset, or inconsistent rights of way, both of which are undesirable consequences. Further, in some locations, lane widths have been adjusted through a collaborative process between FivePoint, OCII, SFMTA, DPW, and the SF Fire Department to ensure adequate clearance is provided for fire access. In these cases, some dimensions may be increased from the minimums described above.

The locations of each street type and sections for the various applications in each neighborhood are presented in **Figures 7A through 7Z** on the following pages:

Figure 7A: Overview of Street Typologies
Figure 7B-7C: Candlestick Point Emergency Vehicle Access & Mid-Block Break Widths
Figure 7D-7E: Hunters Point Shipyard Emergency Vehicle Access & Mid-Block Break Widths
Figure 7F - 7Q: Candlestick Point
Figure 7R - 7Z: Hunters Point Shipyard

The project's street network consists of a variety of roadway types, designed to be consistent with the Better Streets Plan and to reflect the diverse character of the project itself. The street types are shown on **Figure 7A**. Additionally, included is **Figure 7B and 7E**, which illustrates Emergency Vehicle Access and Mid-Block Break Widths for Candlestick Point and Hunters Point Shipyard.

The spine of the project's street network is a continuous arterial beginning in the northwest of Hunters Point and traveling south to Candlestick Point that connects the two project sites. The spine travels on Innes Avenue, Donahue Street, Lockwood Street, Fisher Street, and Crisp Avenue in Hunters Point Shipyard. It continues south to Candlestick Point and incorporates an improved Griffith Street, Thomas Avenue, Ingalls Street, and Carroll Avenue. The final portion, within Candlestick Point, continues on Arelious Walker Drive and connects to an improved Harney Way at the southernmost point of Candlestick Point.

Most locations on the project site would be within four to five blocks of this roadway spine, affording convenient access to residences and offices. The arterial skirts the edge of the two mixed-use "village centers" at Hunters Point Shipyard and Candlestick Point, providing access to their parking facilities and to transit services. The arterial is intended to provide extra capacity for truck traffic, which would use interior streets only as a direct connection from the arterial to a particular destination.

Within Candlestick Point, the streets are designed to reflect the unique character of the different neighborhoods, but also to form a continuous and connected street grid. The Alice Griffith neighborhood streets would connect to and extend the existing Bayview neighborhood street grid into the Alice Griffith neighborhood. This will enhance the walkability of that neighborhood, and also improve access between that neighborhood, the existing Bayview neighborhood, and the new development at Candlestick Point. The central east-west corridor of the Alice Griffith neighborhood (**Figure 7I**) would feature a 75-foot wide linear park, which will calm traffic and provide neighborhood green space.

To the east of the Alice Griffith neighborhood is the southern portion of the project's transportation spine, Arelious Walker Drive (**Figure 7G and 7H**). Arelious Walker Drive will form the primary north-south arterial through the Candlestick Point site, serving vehicular and truck traffic, as well as a portion of the BRT route, north of Egbert Avenue. Arelious Walker Drive, along with Harney Way, will also serve as the primary truck access route between US 101 and the Candlestick Point site.

The Candlestick North neighborhood street network is designed as a further extension of the Bayview neighborhood street grid. Roadways in this neighborhood are designed to further enhance the porosity of the project site, and encourage connections between the proposed and existing neighborhoods, as well as accommodate a large central park/open space and a linear park along Earl Street. Additionally, the BRT route will traverse the Candlestick North neighborhood along Egbert Avenue.

The Candlestick South neighborhood is a primarily residential neighborhood on the southern and eastern edges of the Candlestick Point development. Because this neighborhood sits on the edge of the project area, there is not likely to be substantial traffic on the neighborhood streets, other than traffic specifically destined for uses within the neighborhood. Thus, roadways in this neighborhood are designed to be calm, low-speed, and low-volume.

In addition to the streets within Candlestick Point, the project includes improvements to external streets as well. Specifically, the project will improve the portions of the project's "spine" that connect the Candlestick Point and Hunters Point Shipyard sites. These streets consist of improvements to Griffith Street, Thomas Avenue, Ingalls Street, and Carroll Avenue which will provide primary auto and truck access between the sites, as well as construction of the Yosemite Slough Bridge, which will provide transit, bicycle, and pedestrian access over Yosemite Slough (**Figure 7S**). The Yosemite Slough Bridge will be closed to cars.

The project will also improve streets outside of the project boundary that provide primary access to the site. Improvements to Gilman Avenue and Jamestown Avenue will ensure connections between the site and the adjacent neighborhoods are attractive and provide a high functionality for all modes.

Harney Way will also be improved to provide the primary access between the site and US 101. Initially, Harney Way would be designed with a two-way cycletrack between the general-purpose roadway and the State Park along the waterfront. If needed, a portion of this cycletrack would be rebuilt as part of the Bay Trail to the south to provide an additional auto lane from the proposed Harney interchange to the East to Arelious Walker Drive. Refinements to this configuration (number, locations, and design of right turn lanes, for example) may be necessary following completion of ongoing studies related to the Executive Park development site and the Harney Way interchange project.

The project has proposed a similar approach to developing street designs for the Hunters Point Shipyard site.

The Shipyard North neighborhood adopts a grid like street network. East-west arterials, such as Robinson Street and Lockwood Street, serve as primary access points to and from the site. Robinson Street is designated to include bicycle facilities while Lockwood Street is designated to include transit facilities.

The Shipyard South neighborhood has a similar grid network approach. North-south collectors such as H Street and Cochrane Street operate as the main roadway connecting the Shipyard South neighborhood to the main spine along Crisp Road. Bicycle facilities are provided along these corridors as well as along Manseau Street, which connects the east and west sides of the Shipyard neighborhood.

The Crisp Road spine continues north into the Project site to connect to Spear Street, which bisects the Shipyard R&D neighborhood, located on the most eastern side of the Hunters Points Shipyard site. Streets are kept as two lanes with some on-street parking. There is not likely to be substantial traffic in this neighborhood beyond the traffic that is destined to this location.

Figure 7A: Overview of Street Typologies

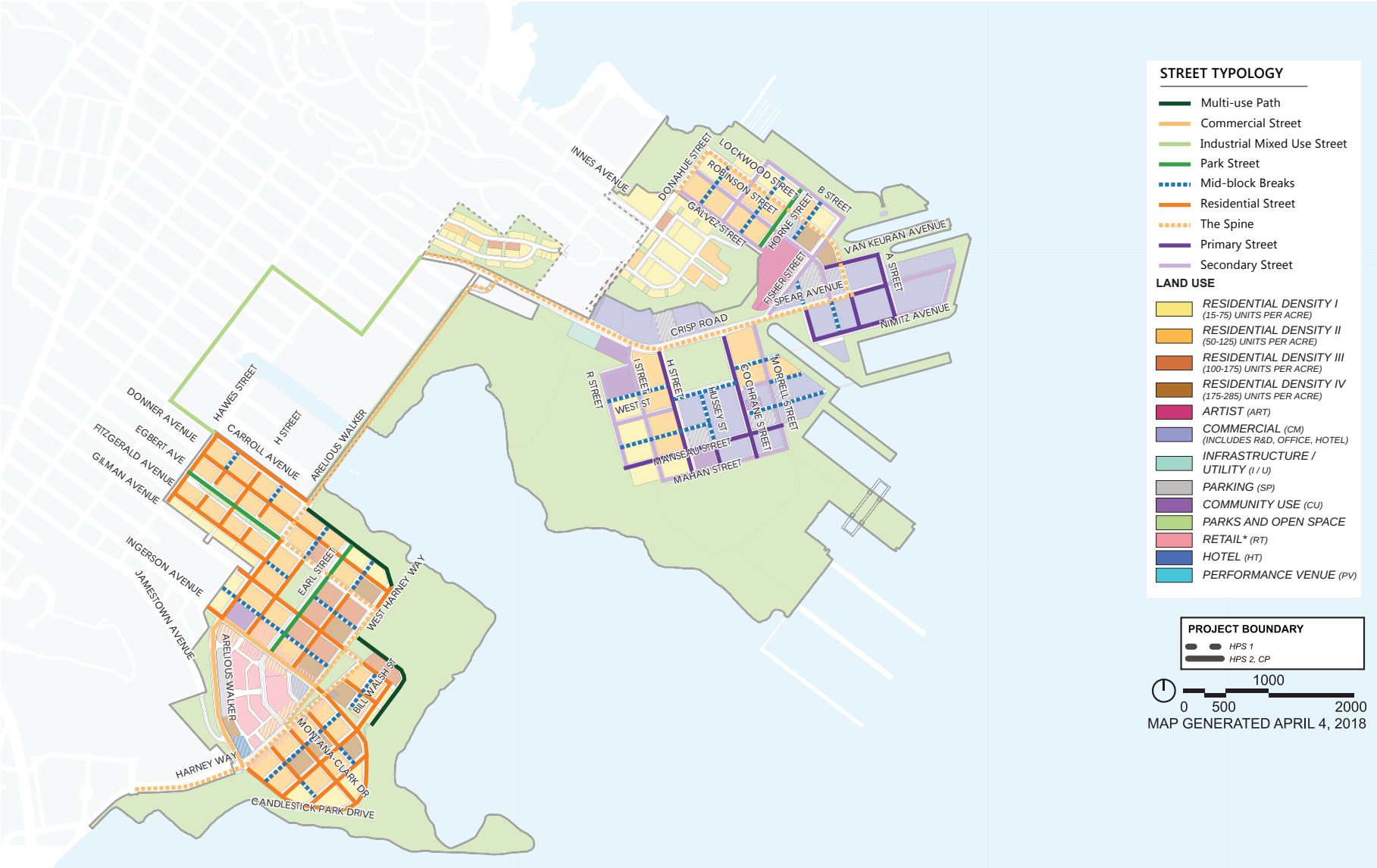


Figure 7B: Candlestick Point Emergency Vehicle Access

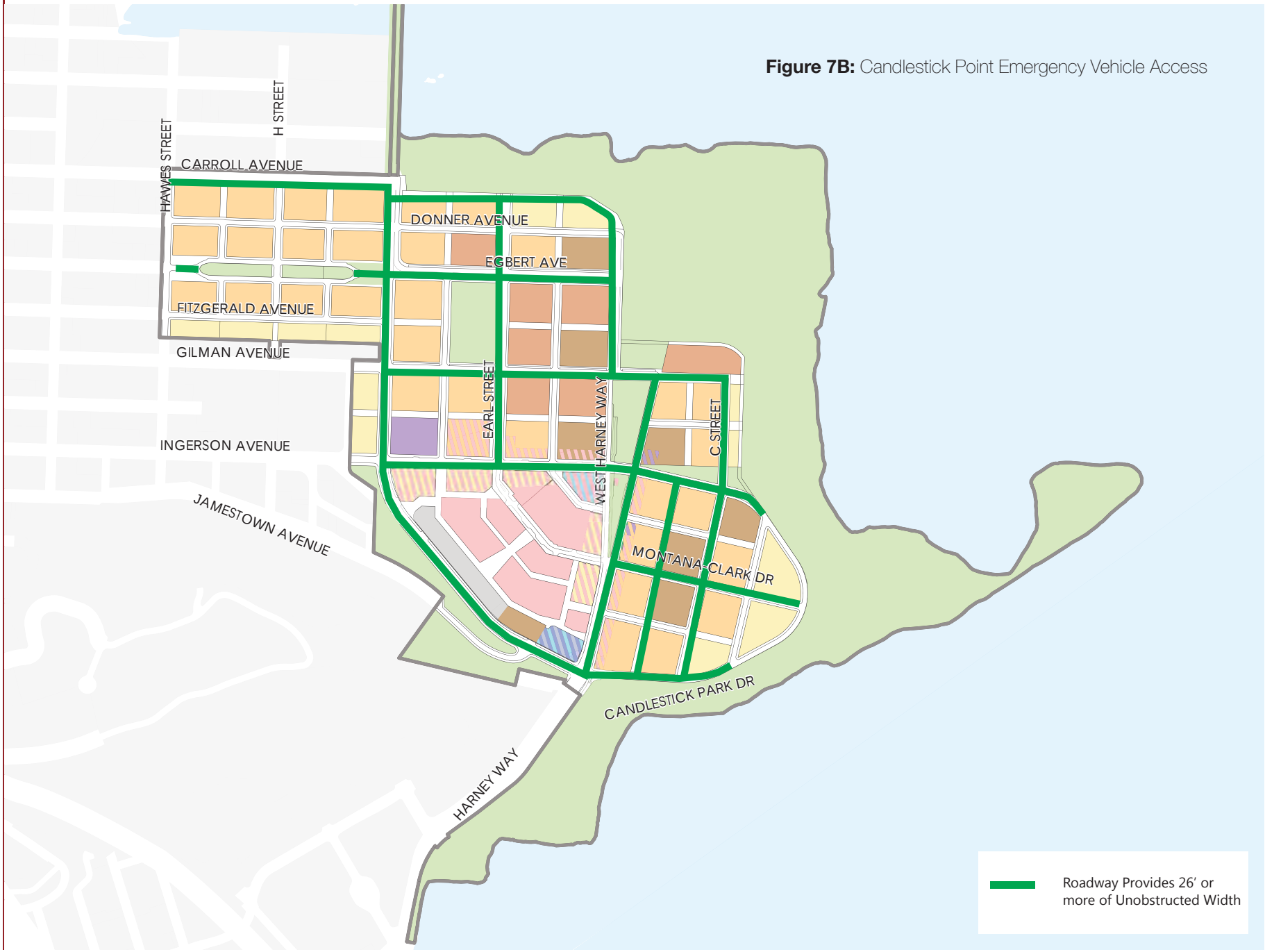
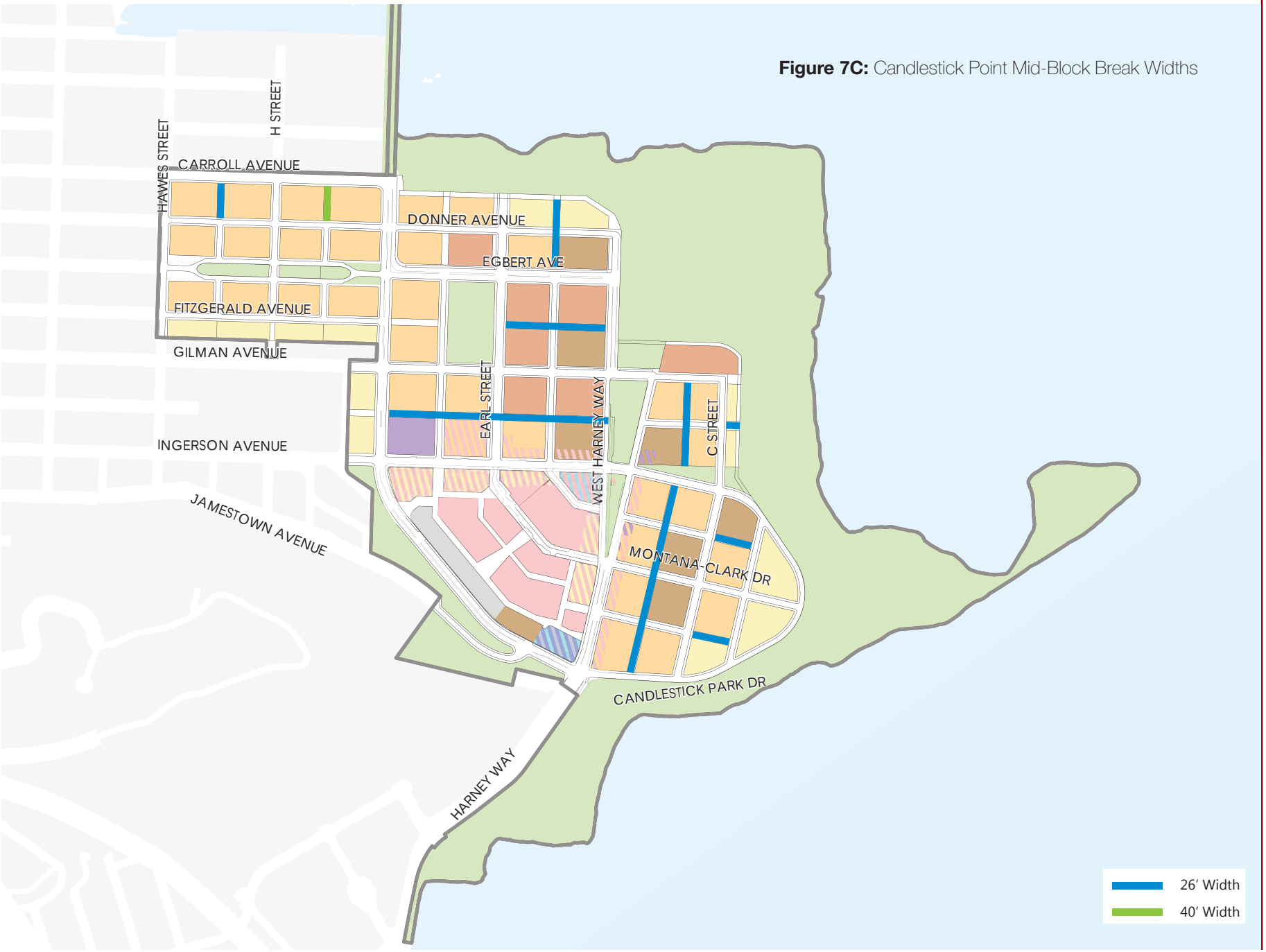


Figure 7C: Candlestick Point Mid-Block Break Widths



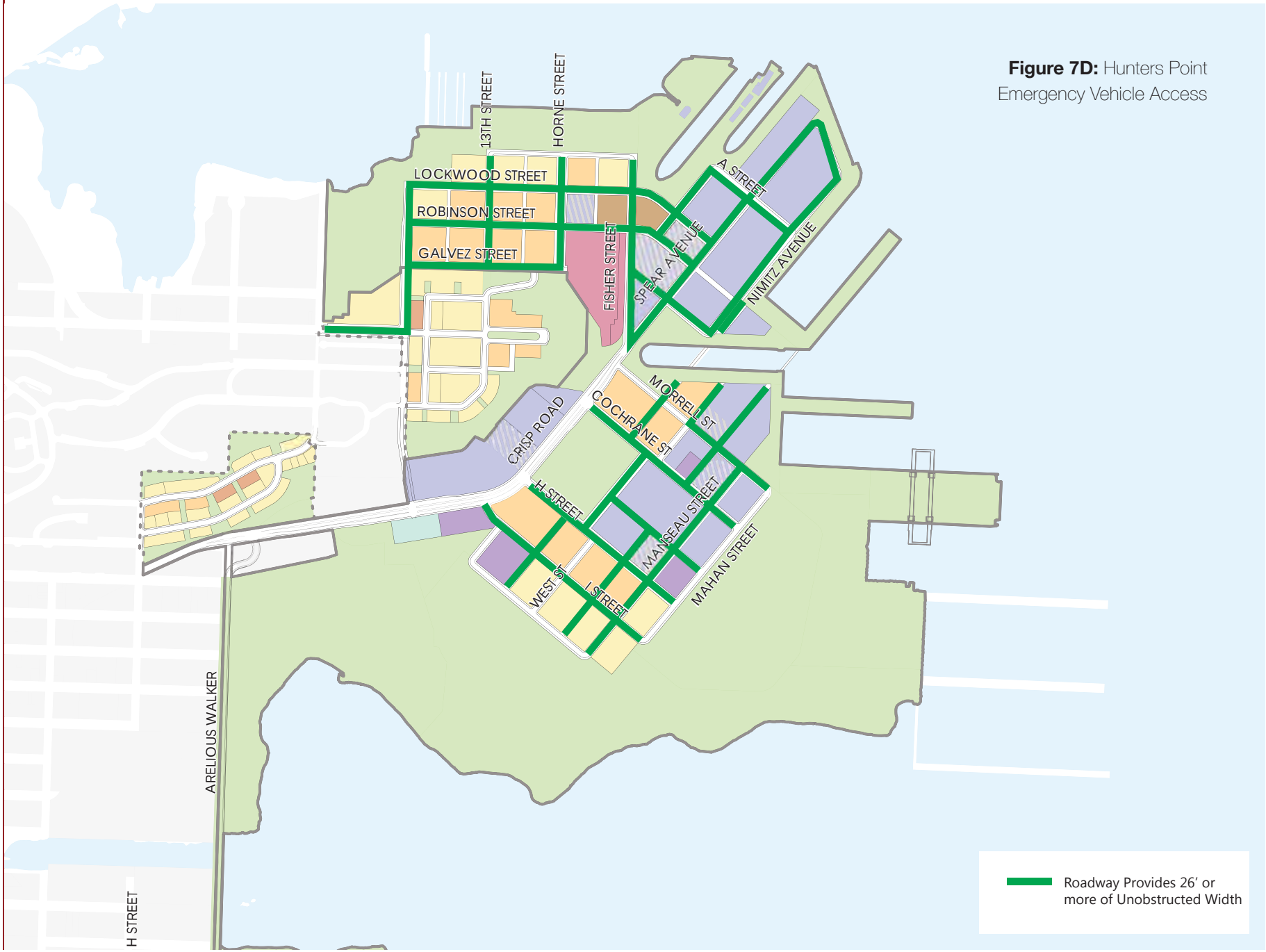


Figure 7D: Hunters Point Emergency Vehicle Access

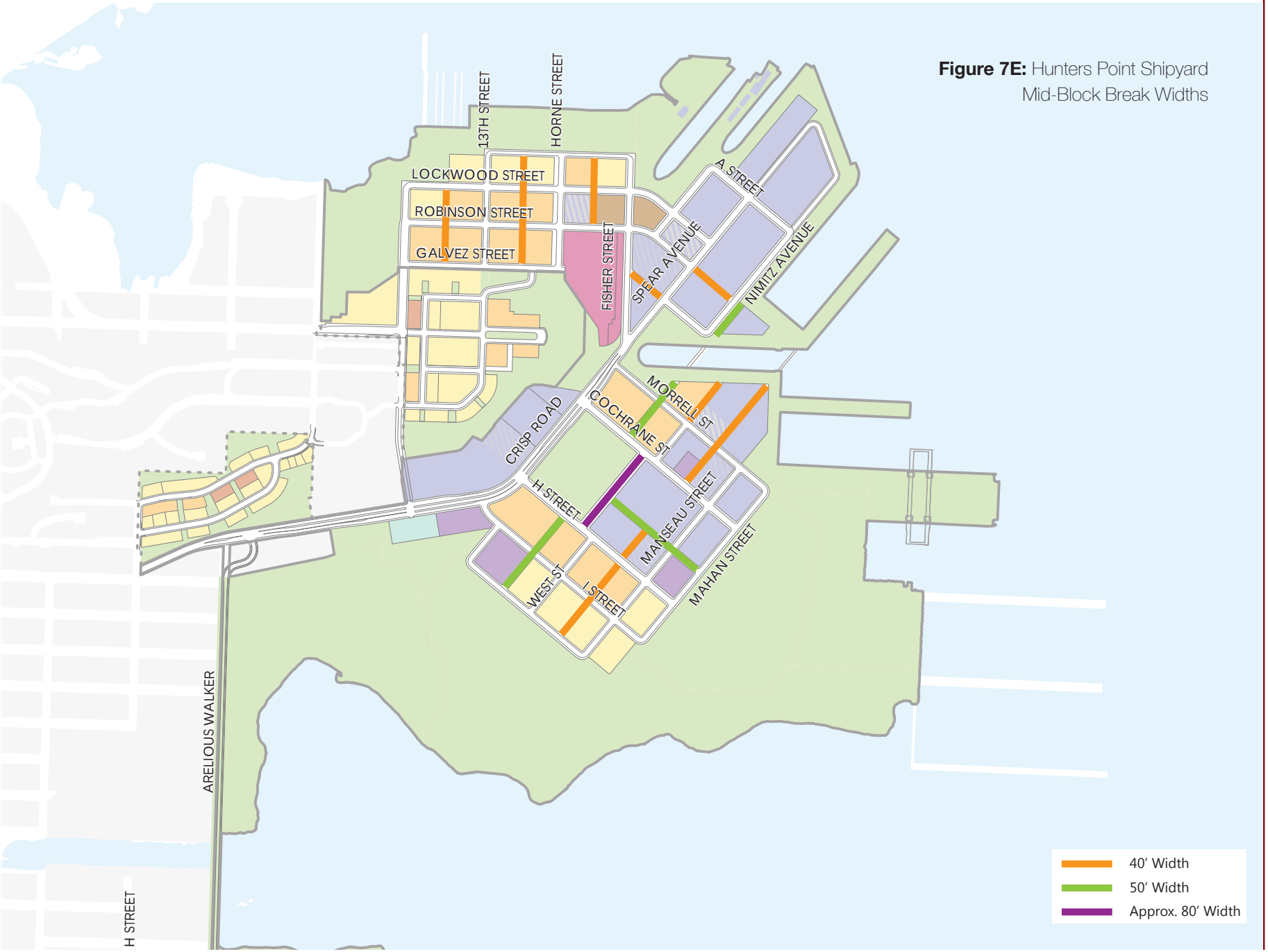
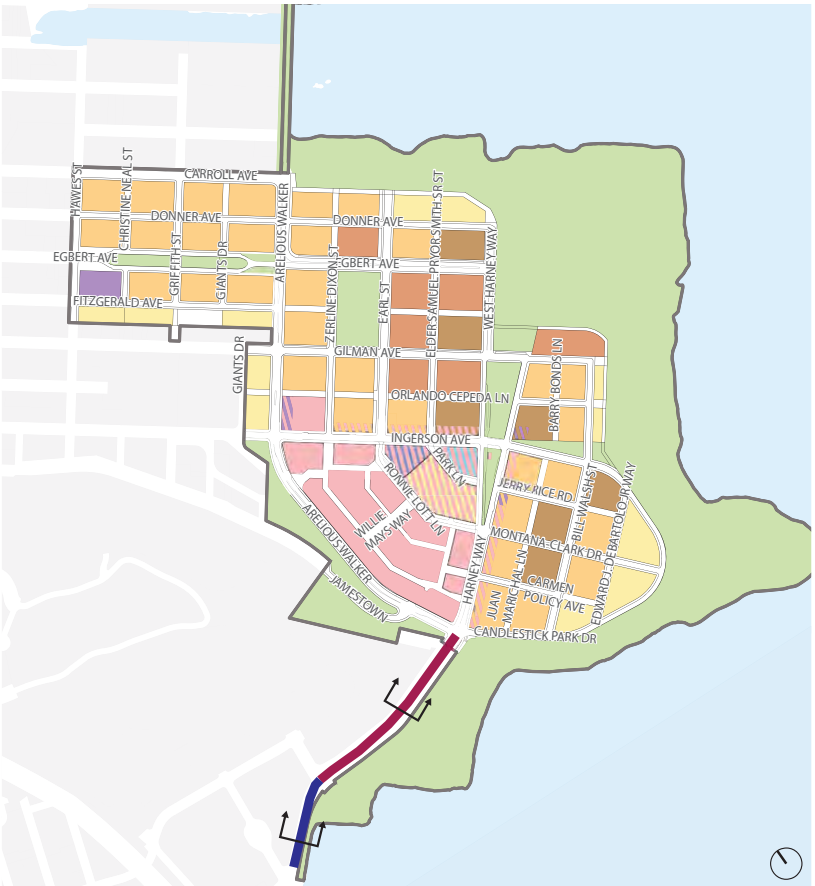
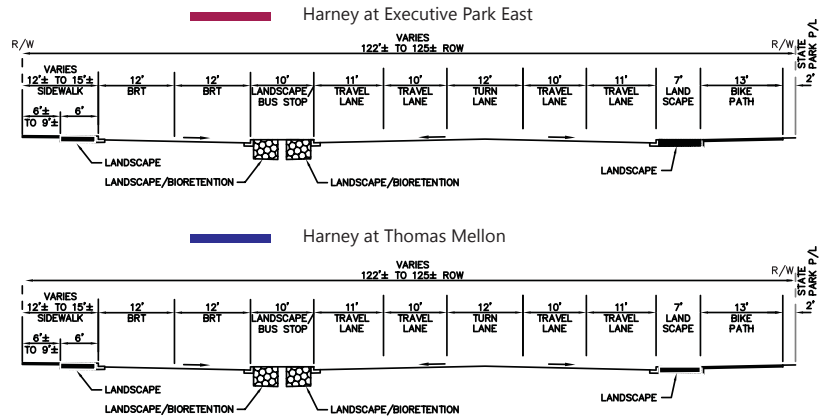


Figure 7E: Hunters Point Shipyard Mid-Block Break Widths

Figure 7F: Candlestick Point

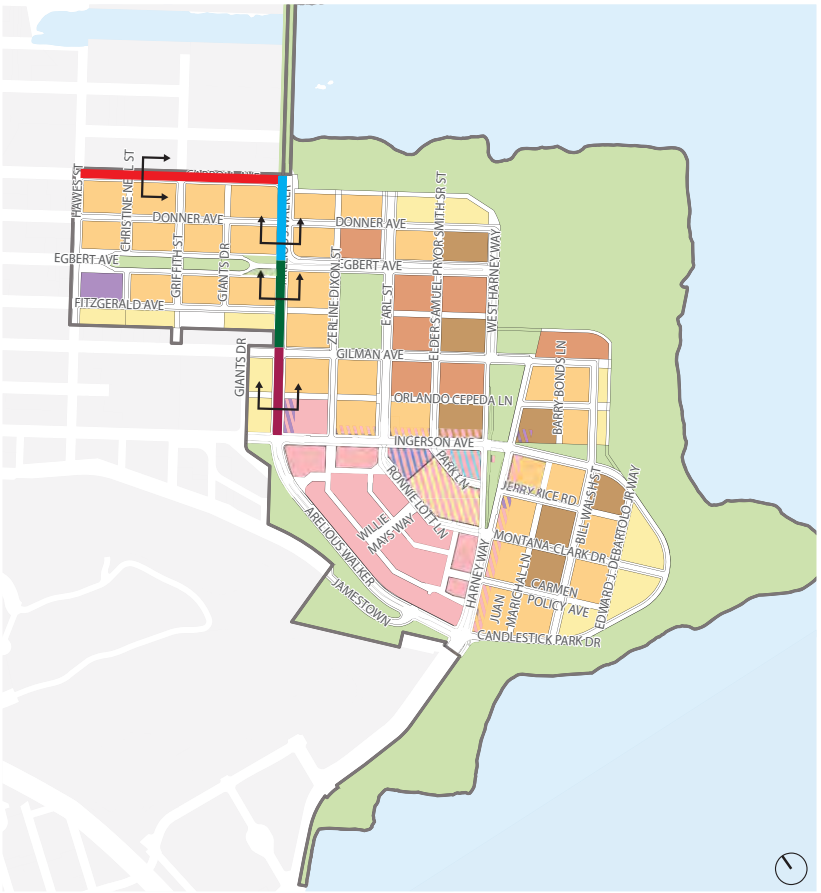




LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

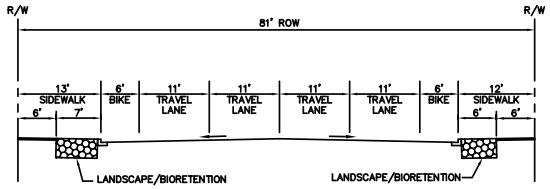
Figure 7G: Candlestick Point



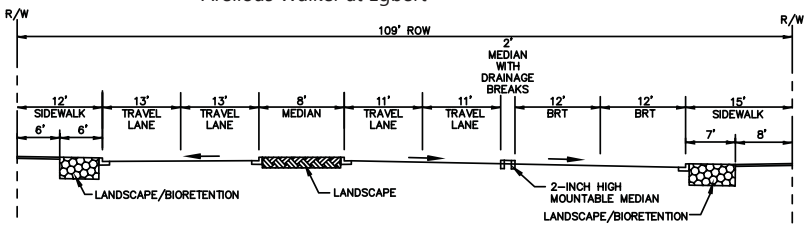
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

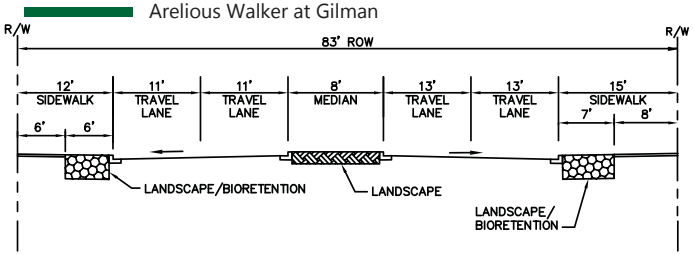
Carroll at Ingalls



Arelious Walker at Egbert



Arelious Walker at Gilman



Arelious Walker at Ingerson

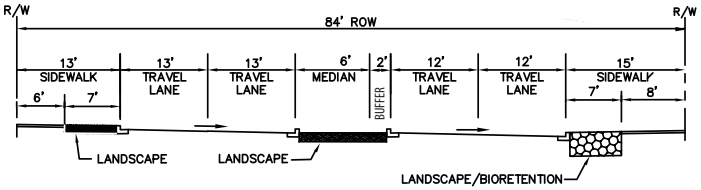
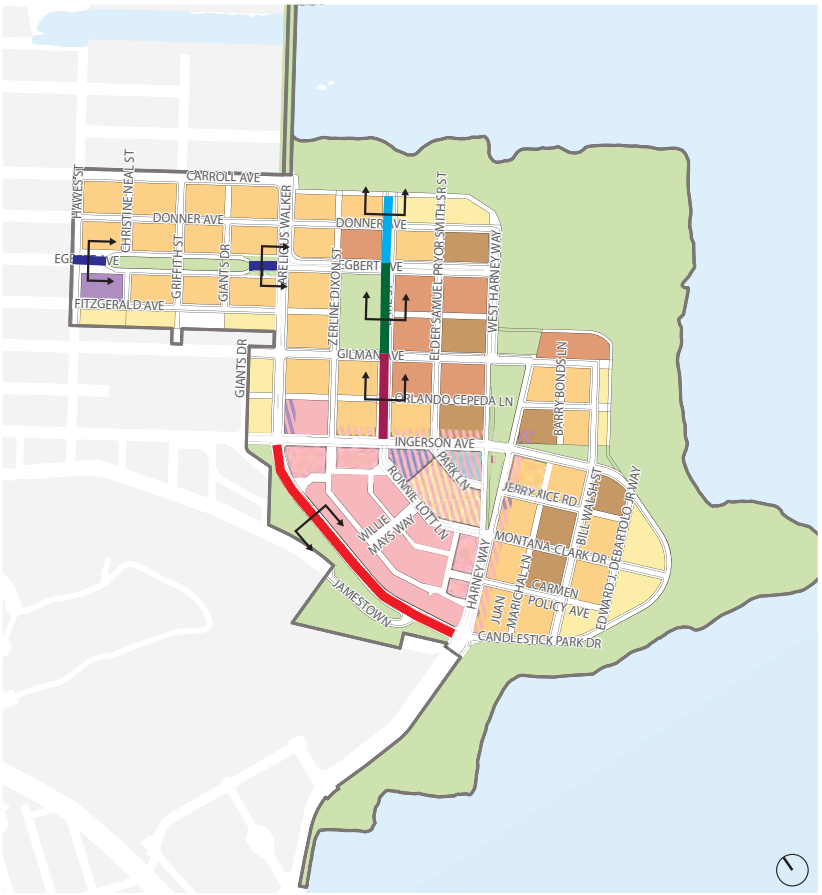


Figure 7H: Candlestick Point



LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

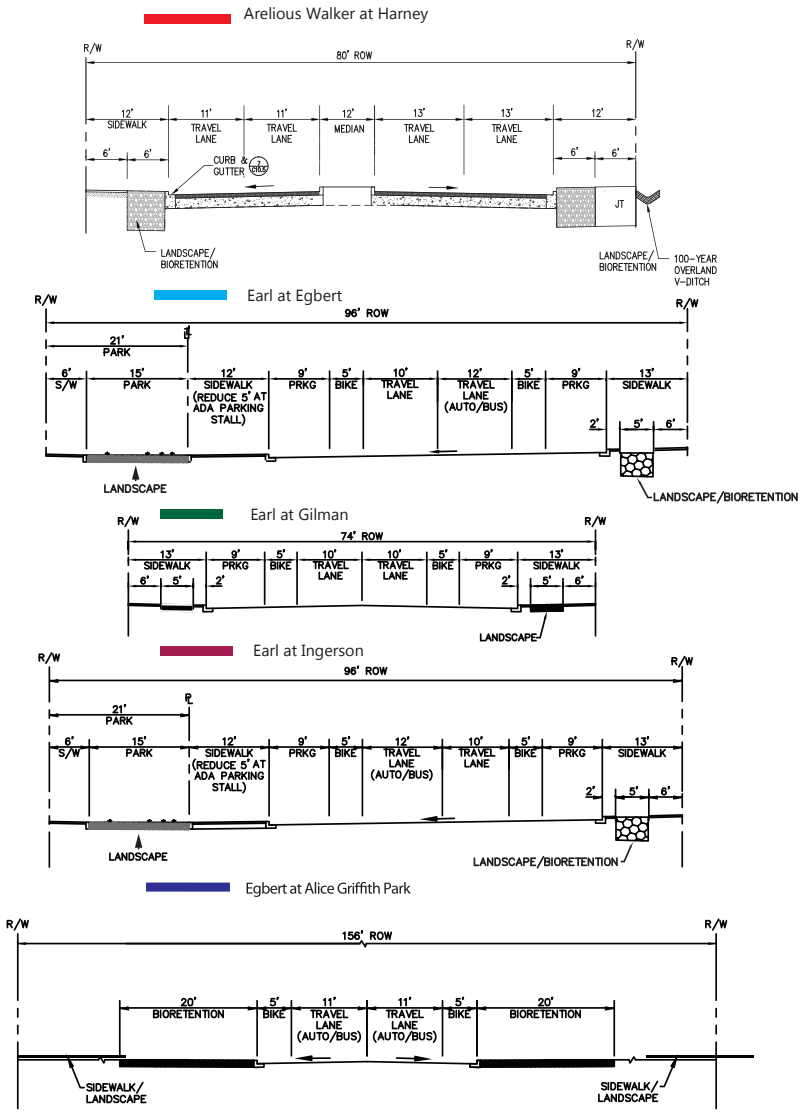
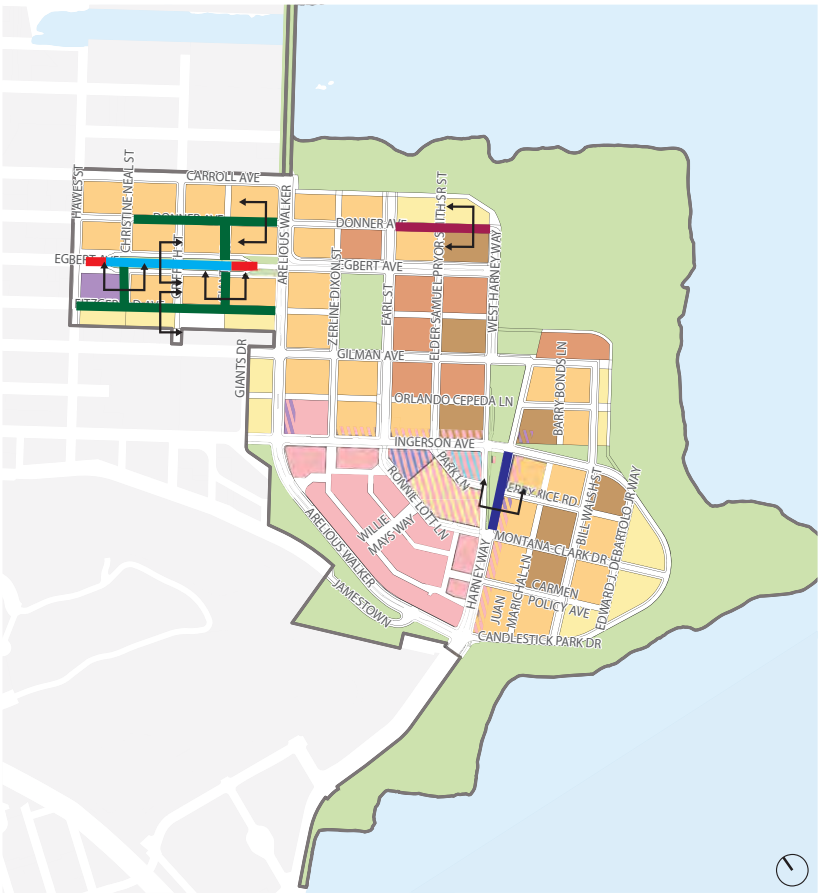
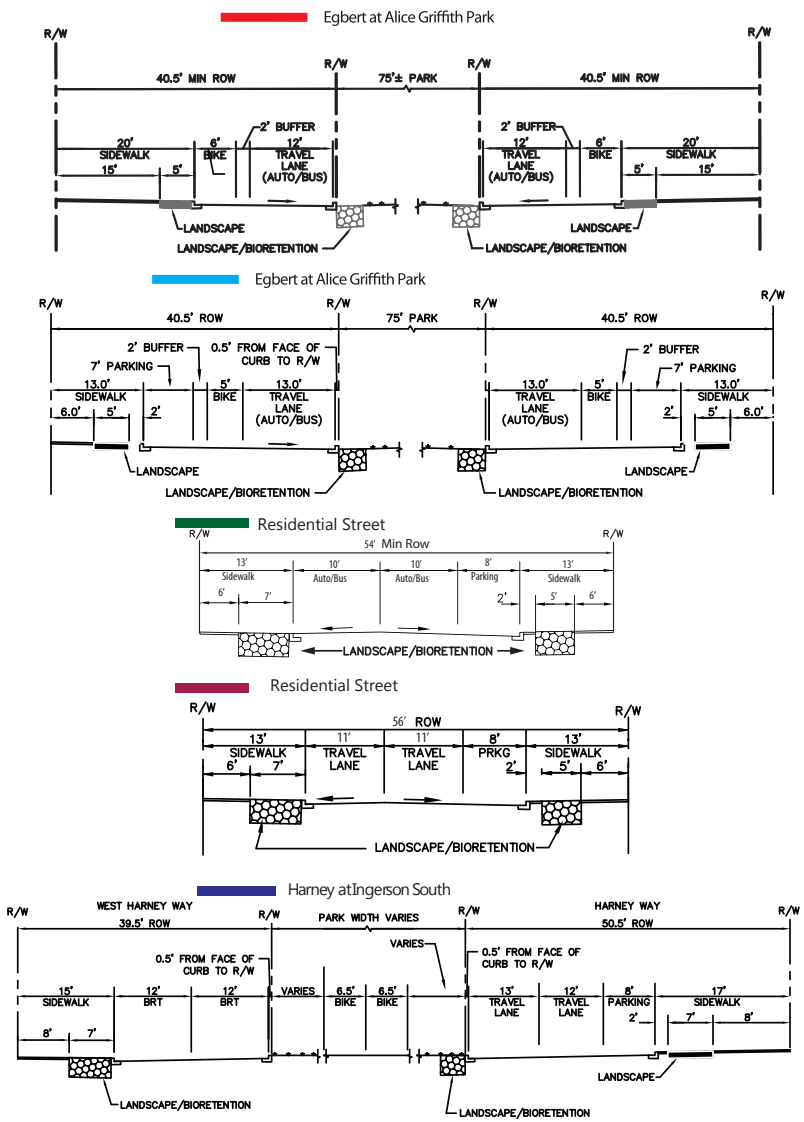


Figure 7I: Candlestick Point

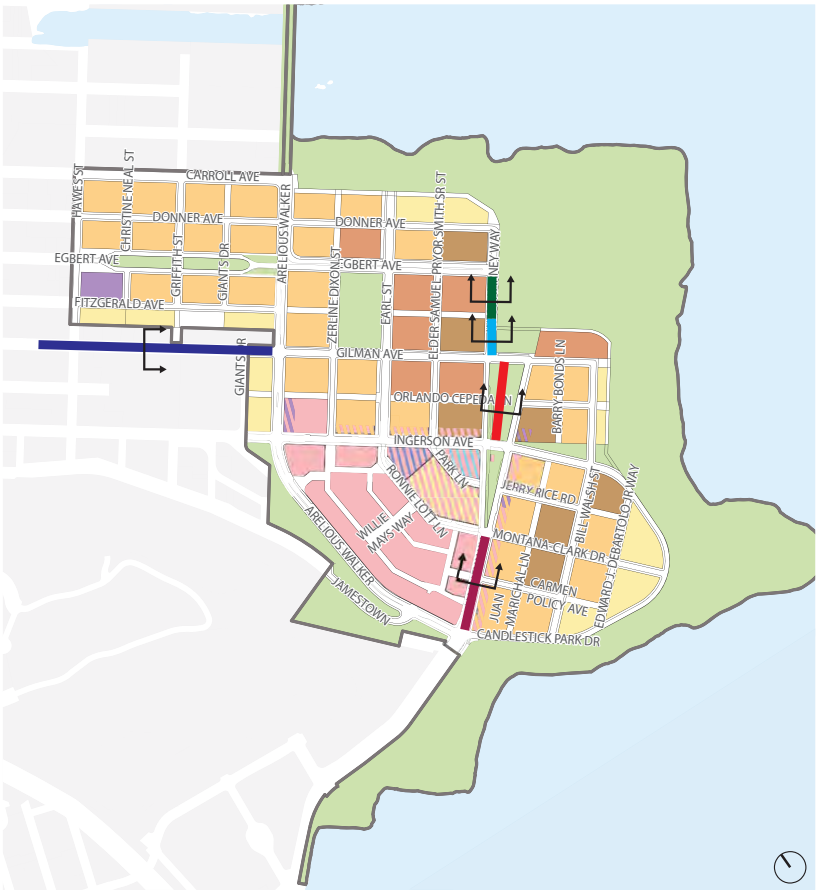




LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

Figure 7J: Candlestick Point



LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

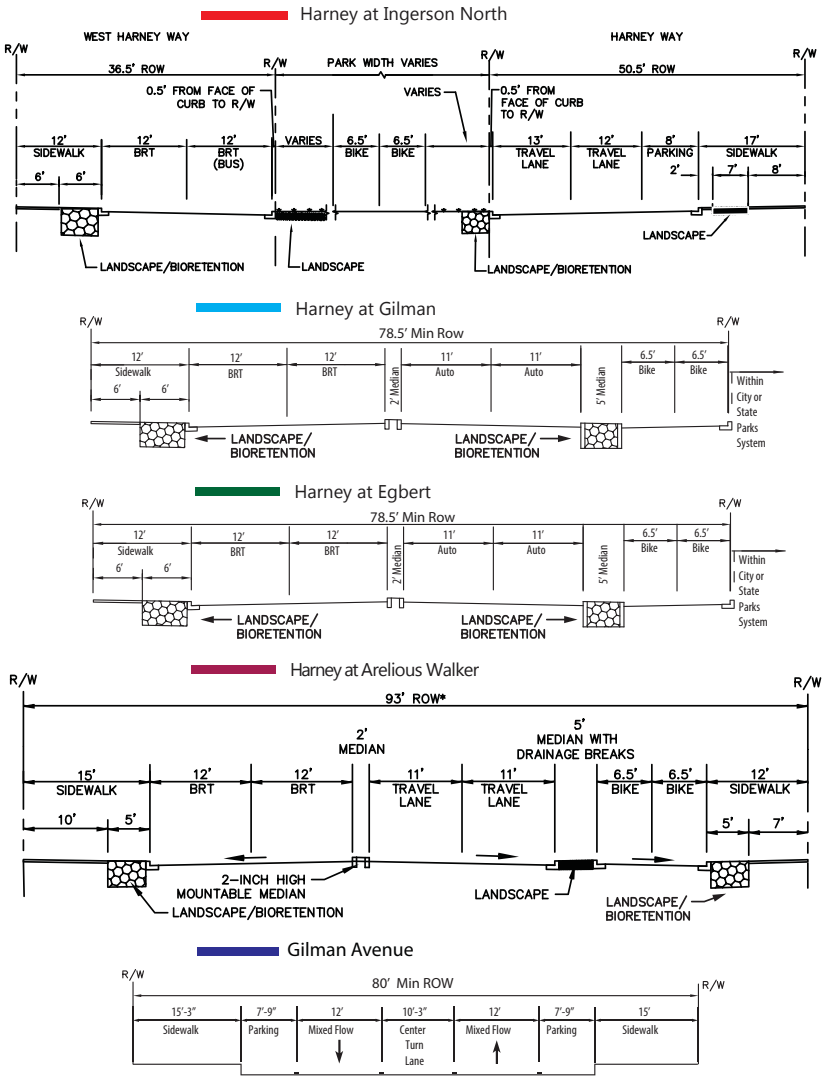
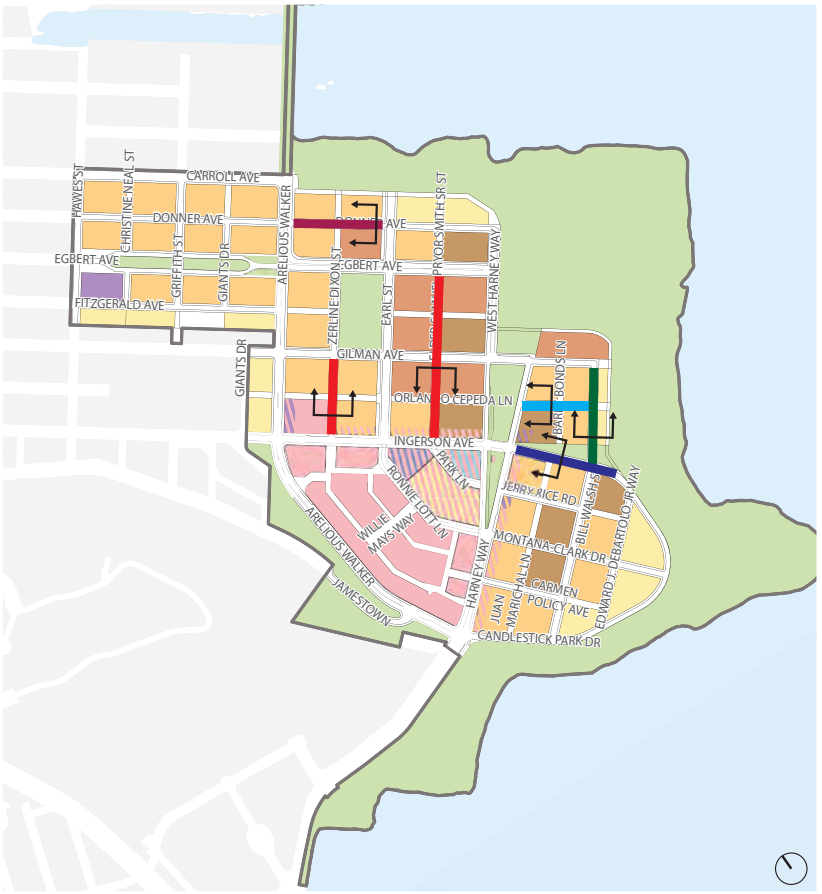


Figure 7K: Candlestick Point



LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

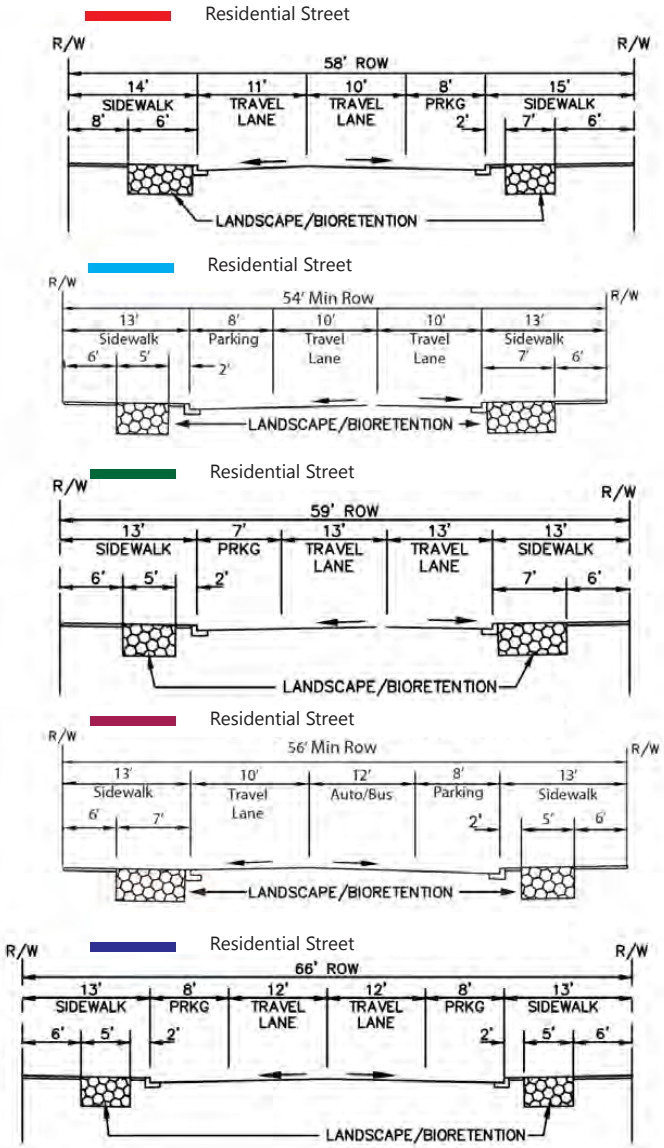
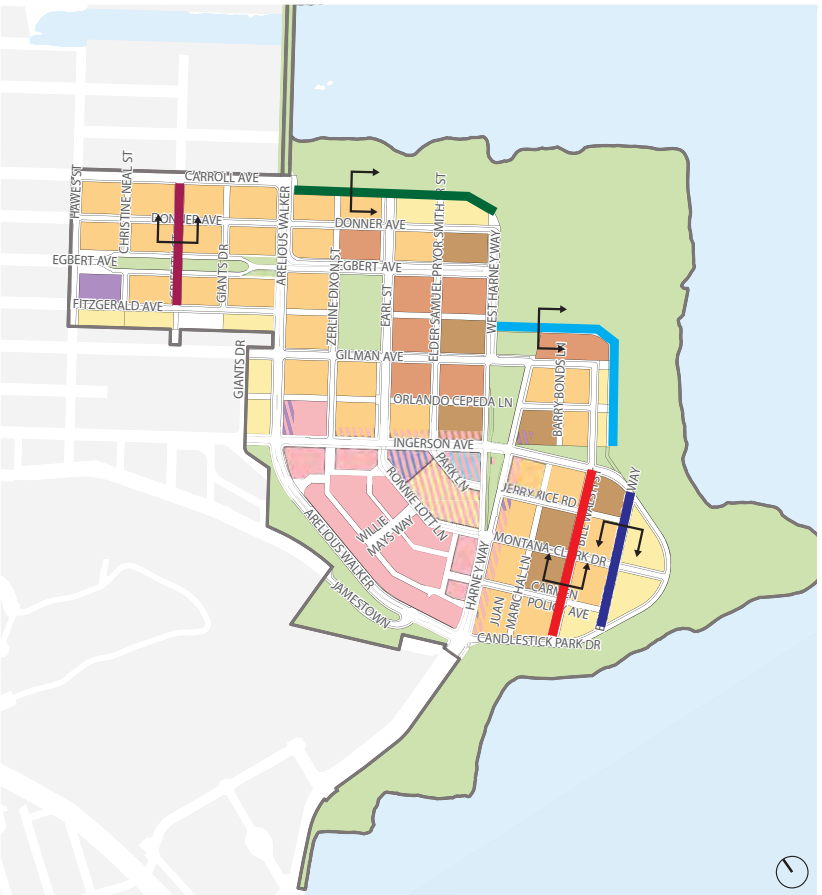


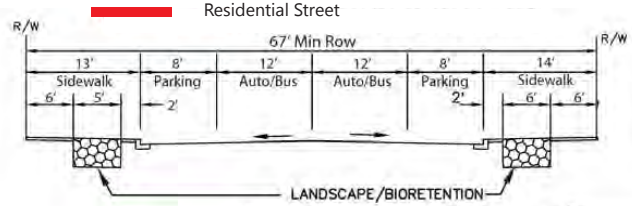
Figure 7L: Candlestick Point



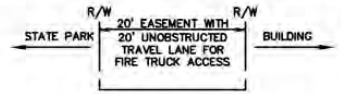
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

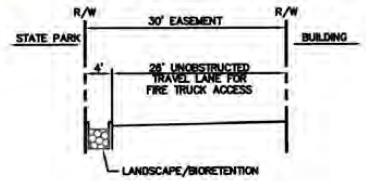
Residential Street



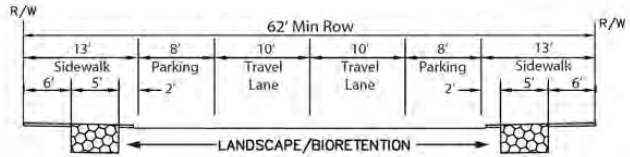
Multi-use Path - 20' Min ROW



Multi-use Path - 30' Min ROW



Residential Street



Residential Street

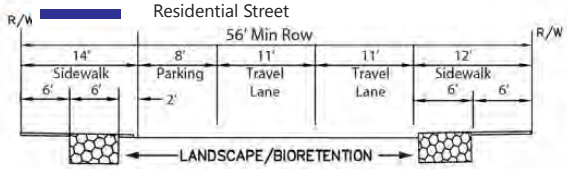
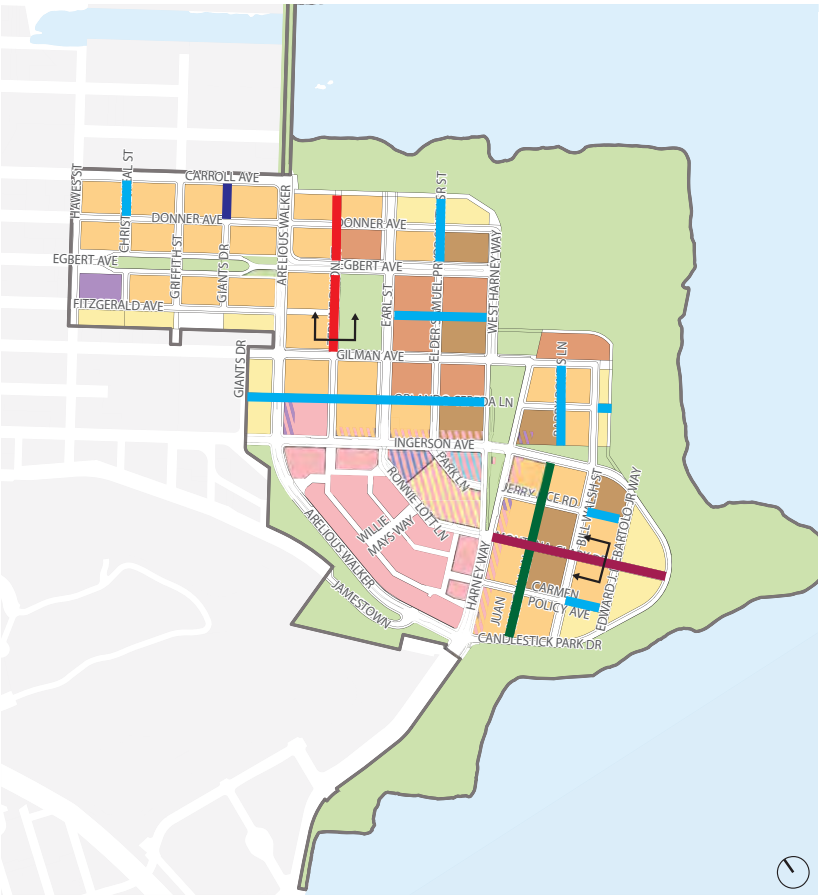


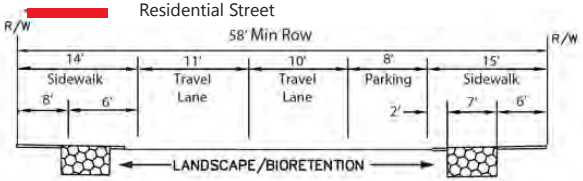
Figure 7M: Candlestick Point



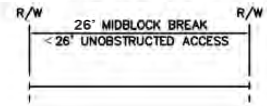
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

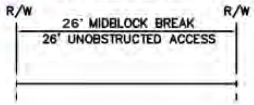
Residential Street



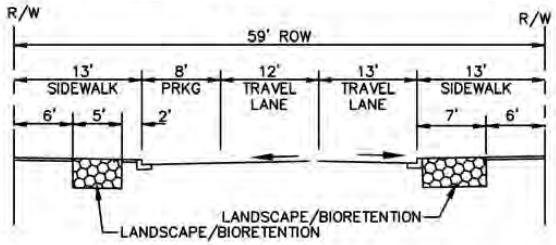
Mid-Block Break - 26' Min ROW



Mid-Block Break - 26' Min ROW



Residential Street



Mid-Block Break - 40' Min ROW

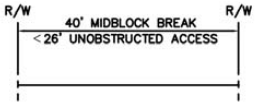
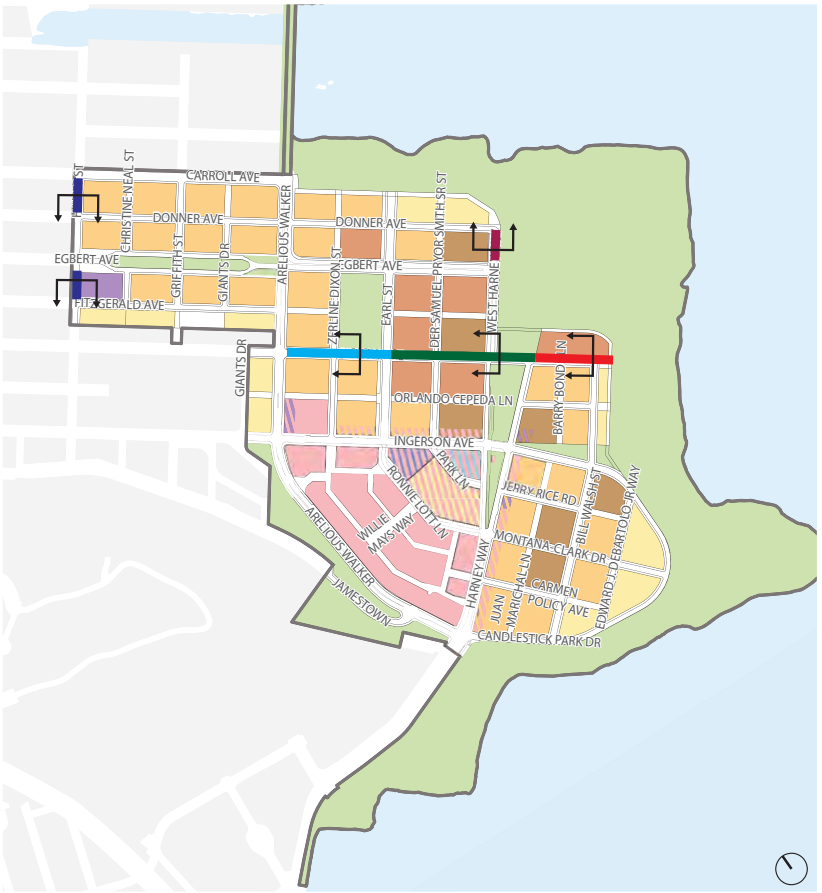
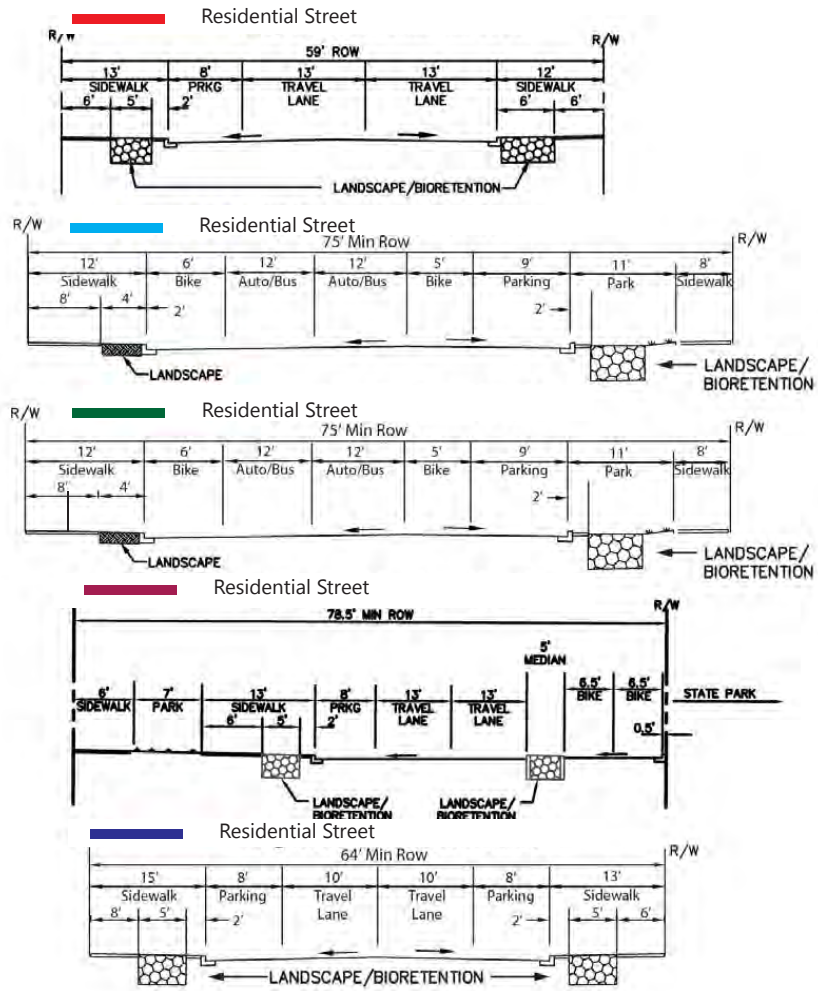


Figure 7N: Candlestick Point

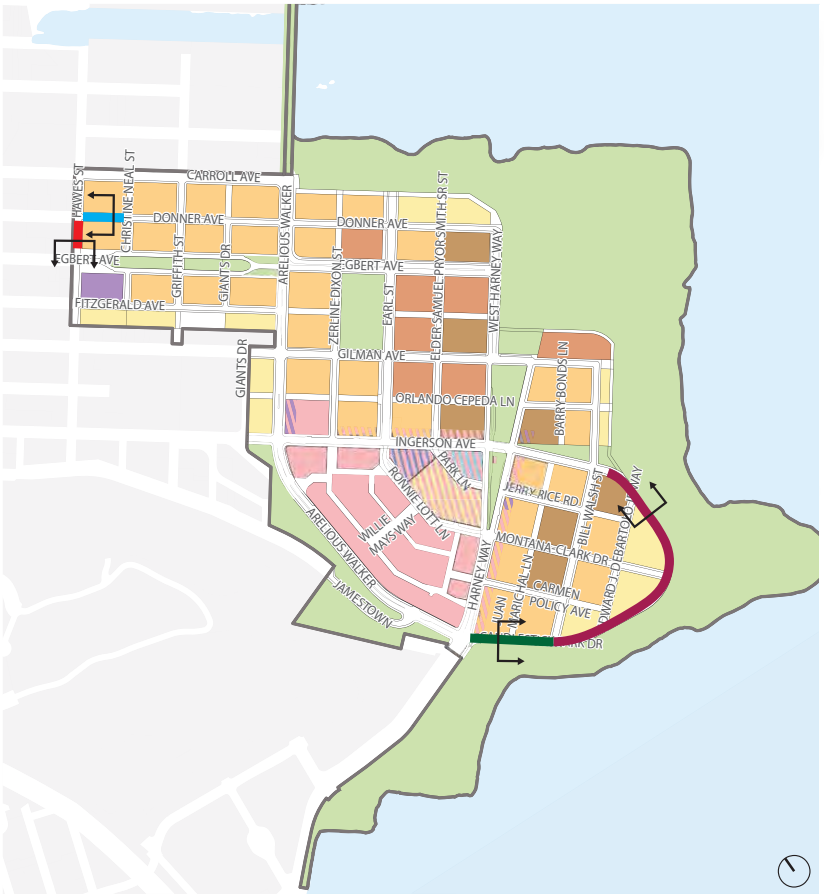




LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

Figure 7O: Candlestick Point



LAND USE

- RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)
- RESIDENTIAL DENSITY II (50-125) UNITS PER ACRE)
- RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)
- RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)
- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
- INFRASTRUCTURE / UTILITY (I / U)
- PARKING (SP)
- COMMUNITY USE (CU)
- PARKS AND OPEN SPACE
- RETAIL* (RT)
- HOTEL (HT)
- PERFORMANCE VENUE (PV)

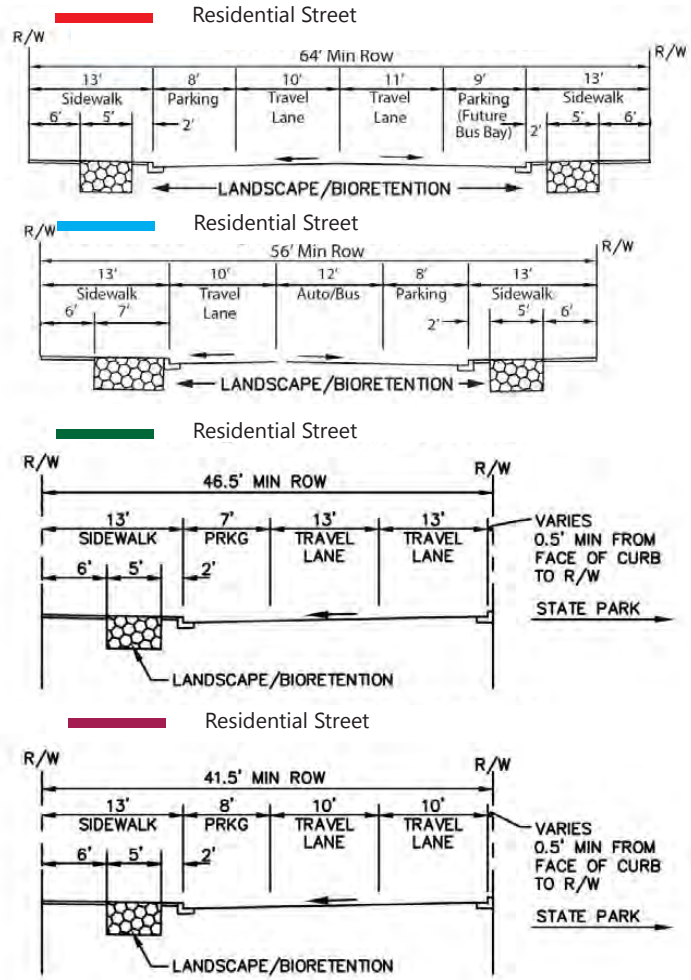
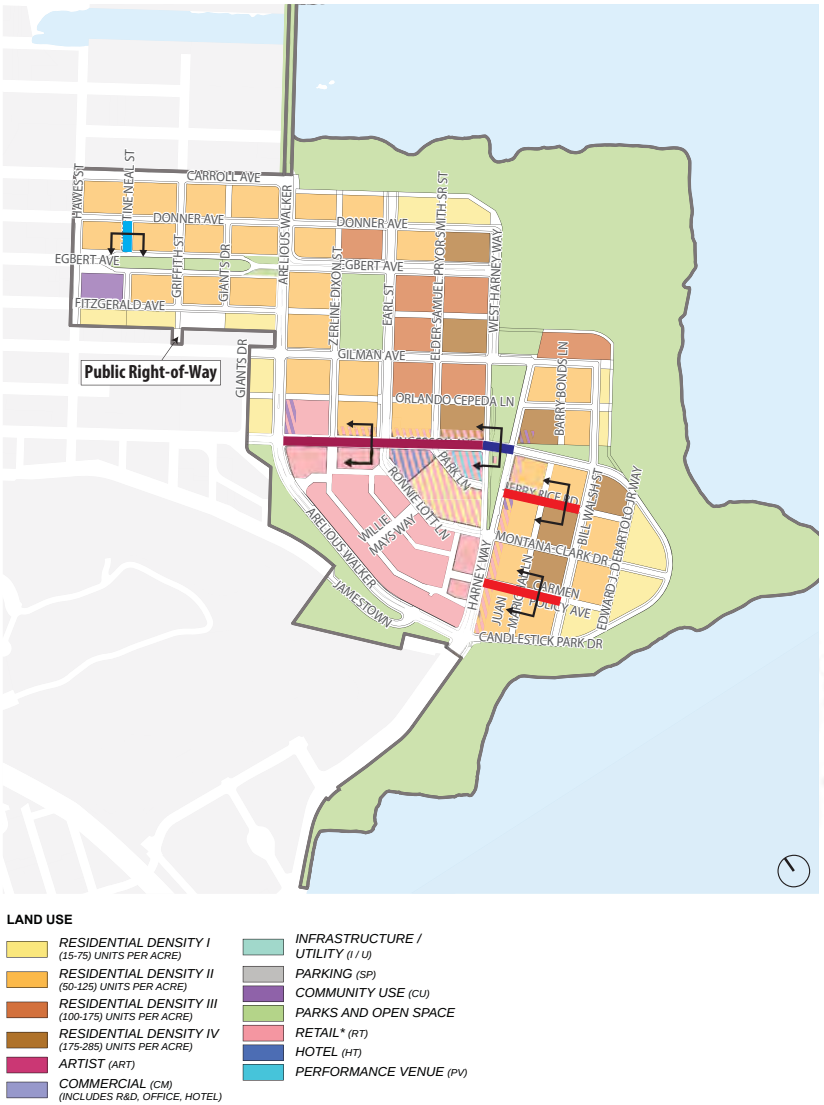
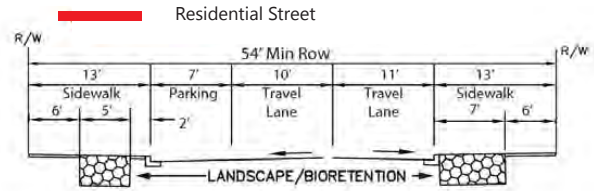
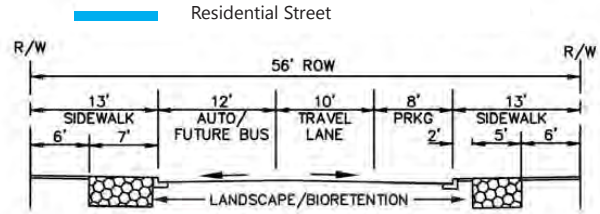
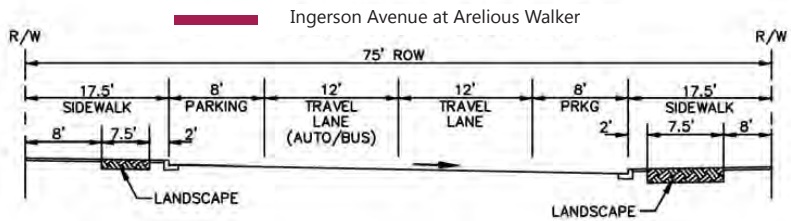


Figure 7P: Candlestick Point









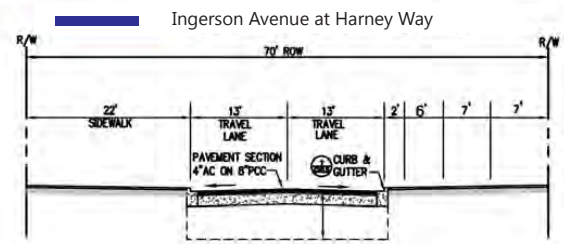
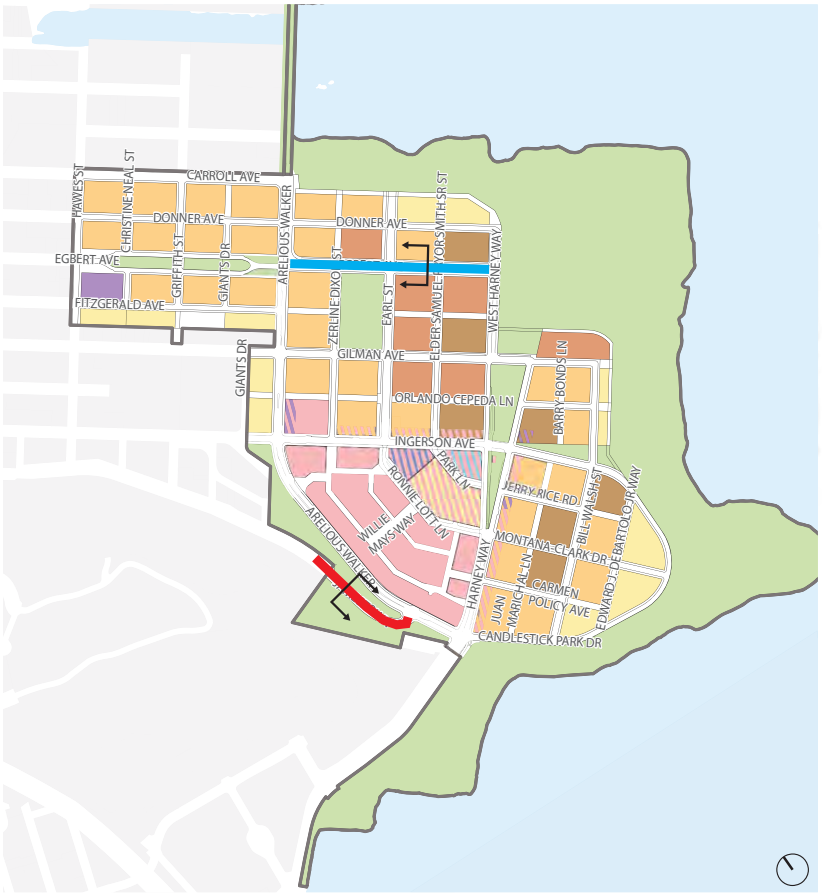
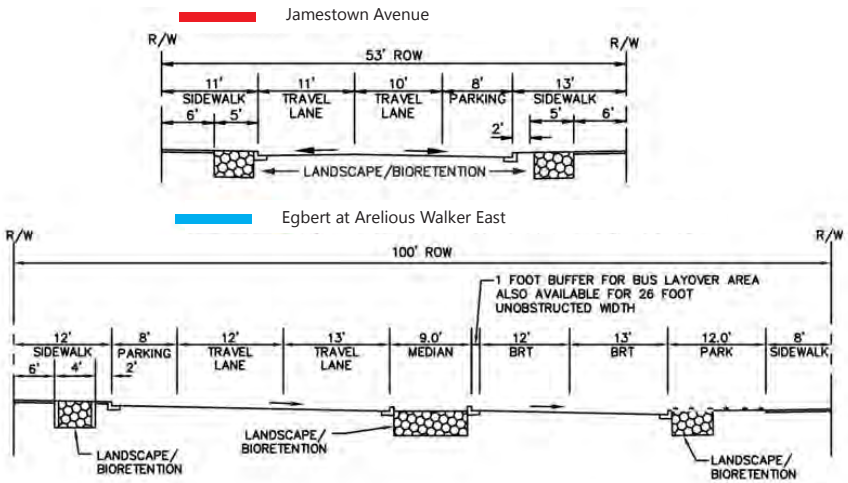


Figure 7Q: Candlestick Point

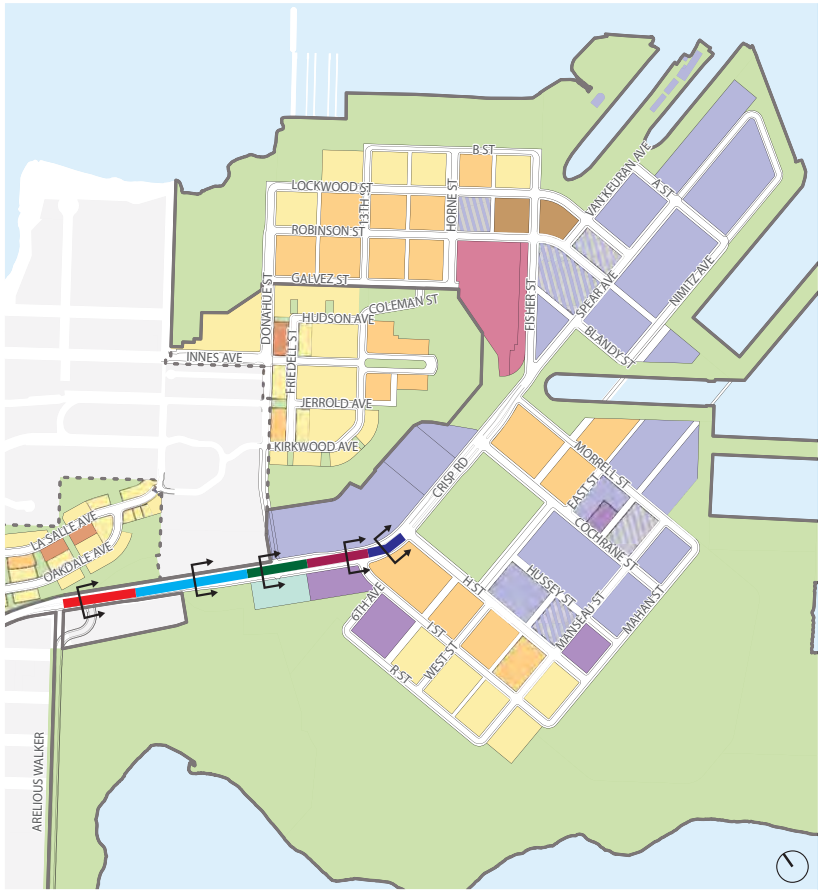




LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

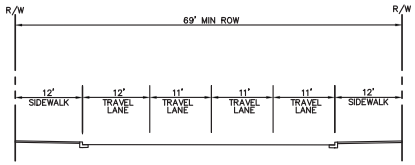
Figure 7R: Hunters Point Shipyard



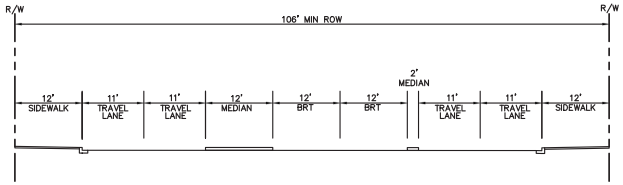
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

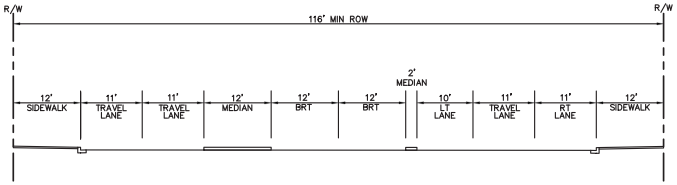
Crisp Road, west of Arelious Walker



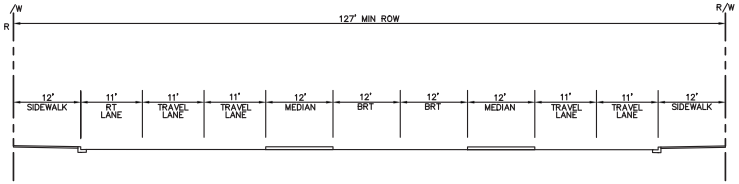
Crisp Road, east of Arelious Walker



Crisp Road, west of Donahue Street



Crisp Road, east of Donahue Street



Crisp Road, between I Street and H Street

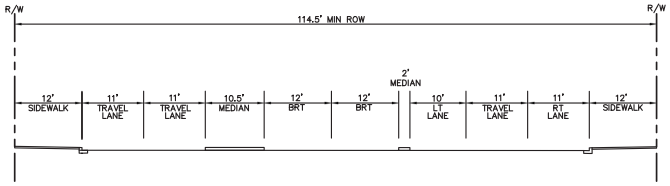
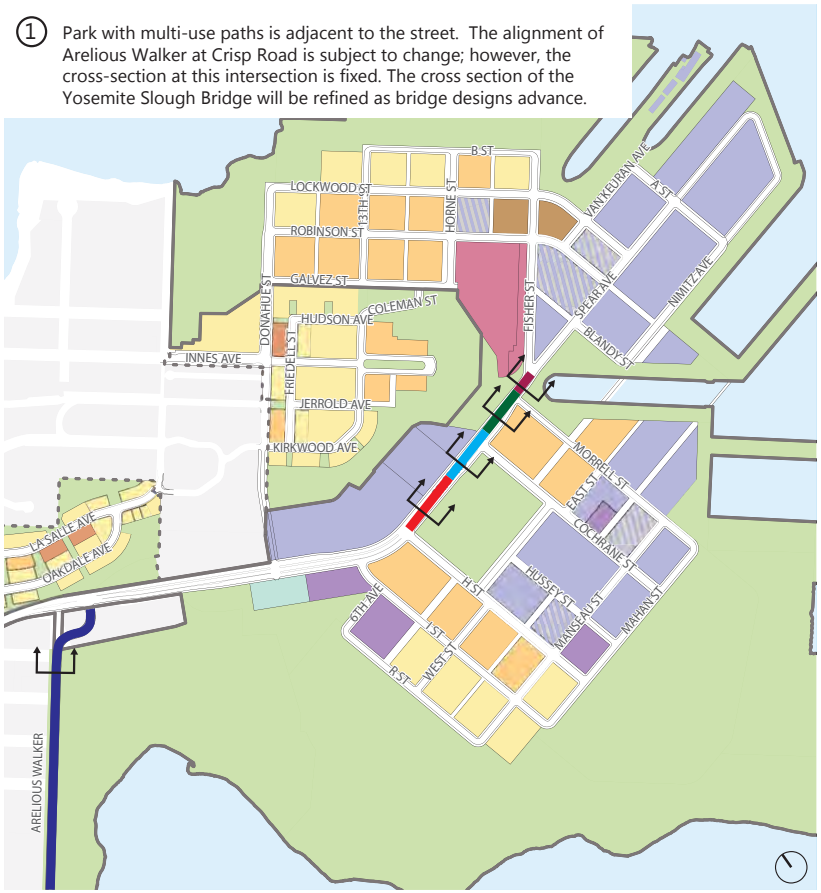


Figure 7S: Hunters Point Shipyard

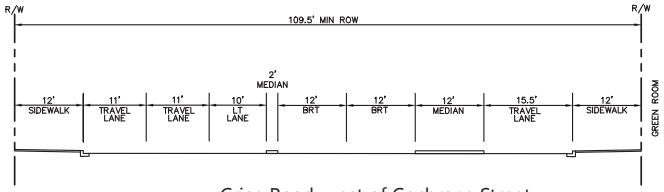
① Park with multi-use paths is adjacent to the street. The alignment of Arelious Walker at Crisp Road is subject to change; however, the cross-section at this intersection is fixed. The cross section of the Yosemite Slough Bridge will be refined as bridge designs advance.



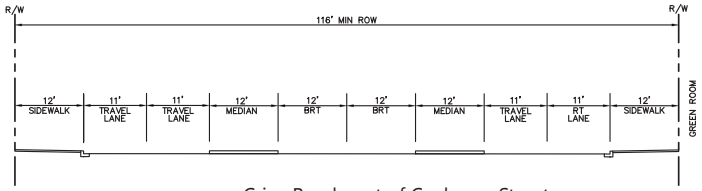
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

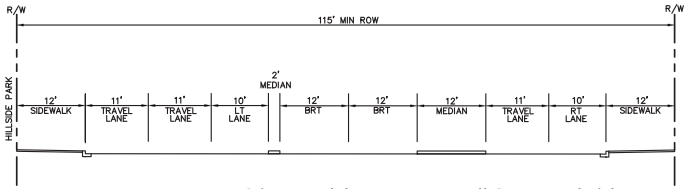
Crisp Road, east of H Street



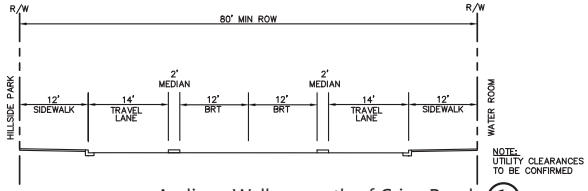
Crisp Road, west of Cochrane Street



Crisp Road, east of Cochrane Street



Crisp Road, between Morrell Street and Fisher Avenue



Arelious Walker, south of Crisp Road ①

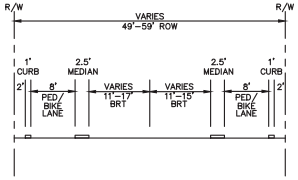
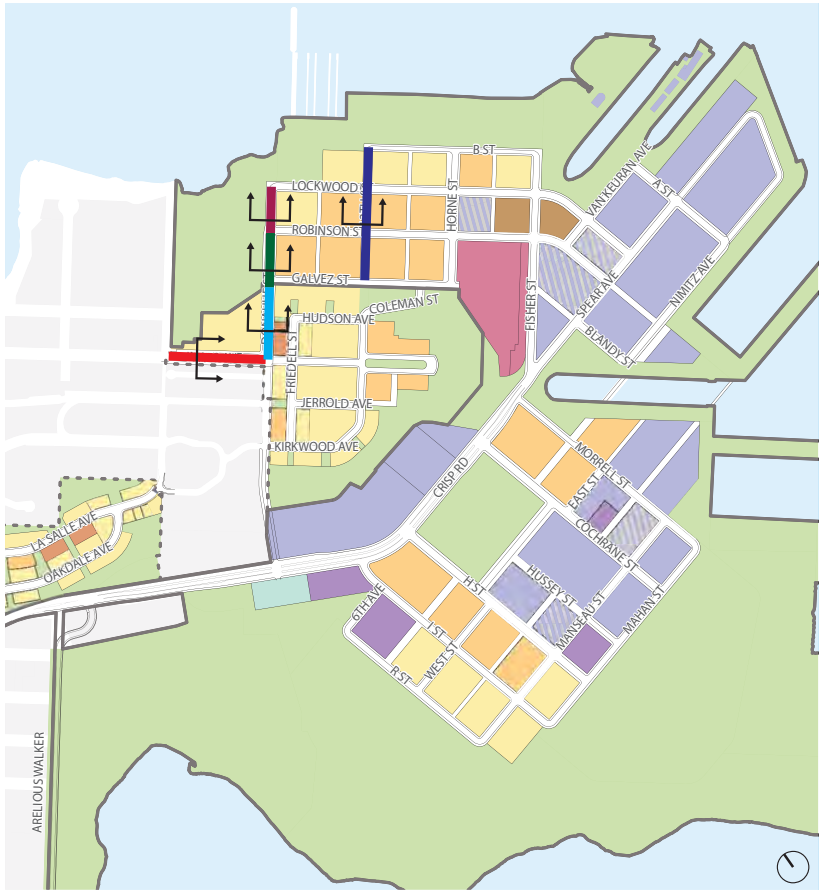


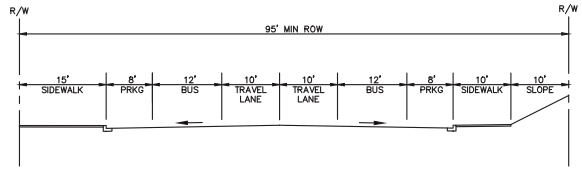
Figure 7T: Hunters Point Shipyard



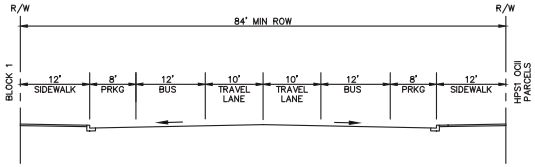
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

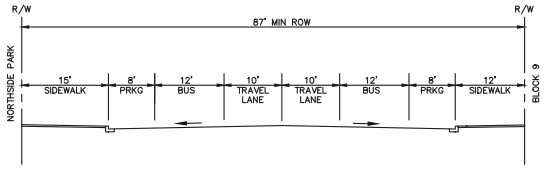
Innes Avenue at Donahue Street



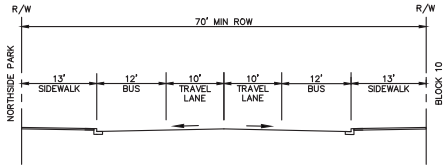
Donahue Street between Innes Avenue and Galvez Street



Donahue Street, between Galvez Street and Robinson Street



Donahue Street, between Robinson Street and Lockwood Street



13th Street

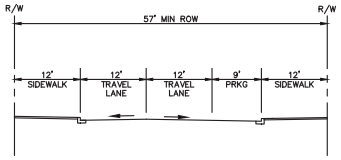
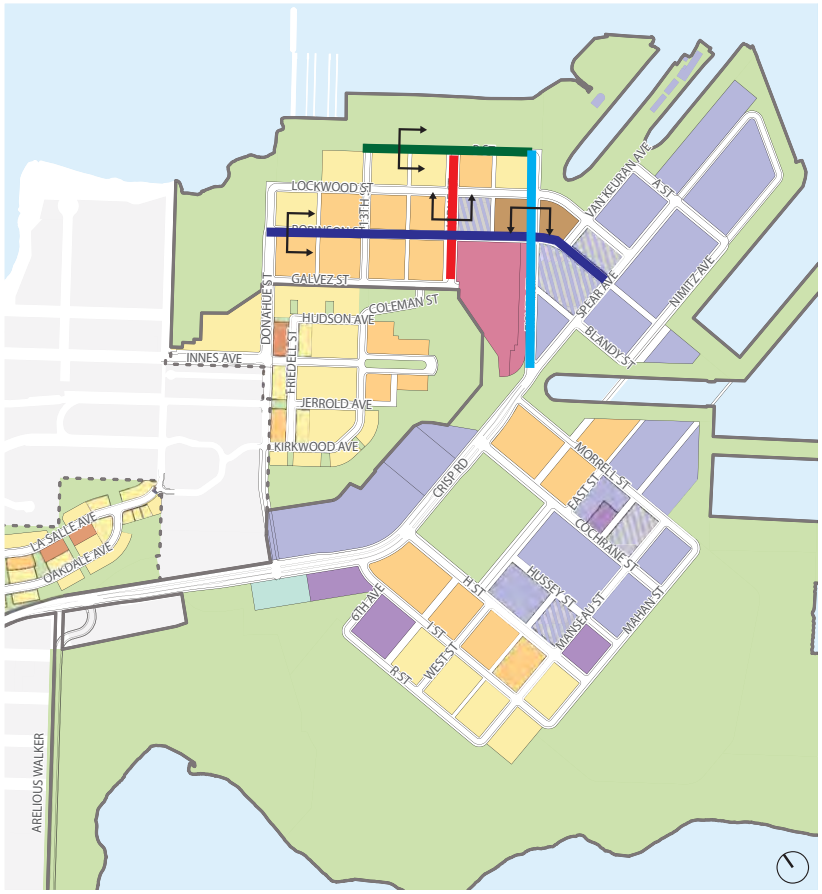
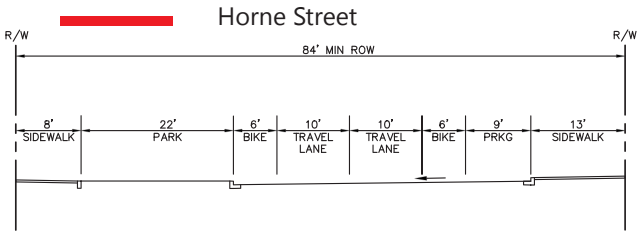


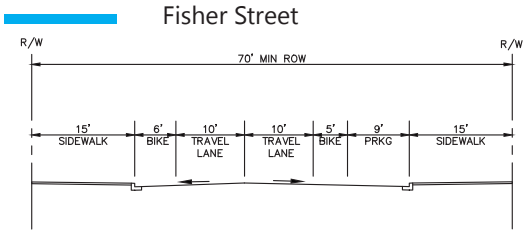
Figure 7U: Hunters Point Shipyard

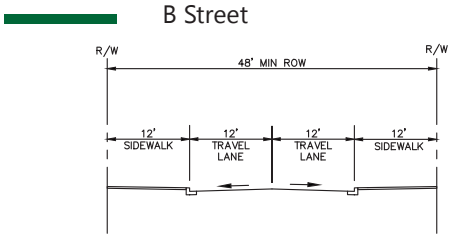


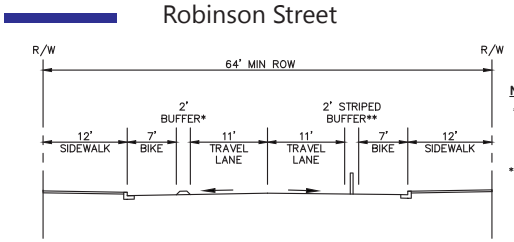
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)





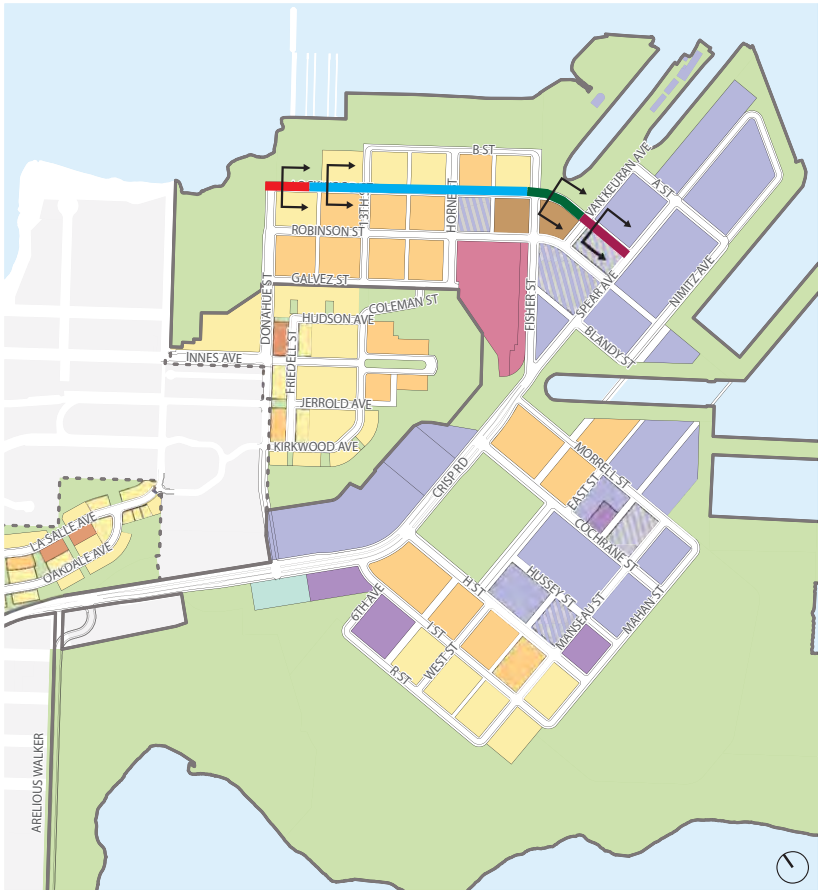




NOTE:

- *6" RAISED MEDIAN, OR STRIPED BUFFER WHERE REQUIRED BY SFPUC FOR UTILITY CLEARANCE
- **STRIPED BUFFER WITH SAFE HIT POSTS. CURB MAY BE IMPLEMENTED IF STRIPED BUFFER NOT REQUIRED BY SFPUC FOR UTILITY CLEARANCE

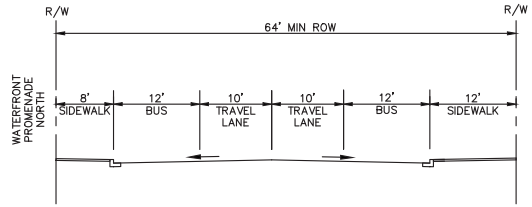
Figure 7V: Hunters Point Shipyard



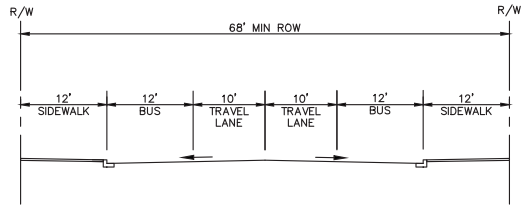
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

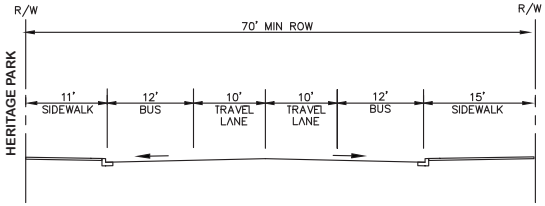
Lockwood Between Donahue and Midblock



Lockwood Between midblock and Fisher Ave



Lockwood Between Fisher Ave and Van Keuran



Lockwood Between Van Keuran and Spear

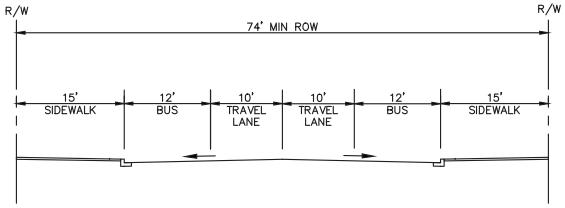
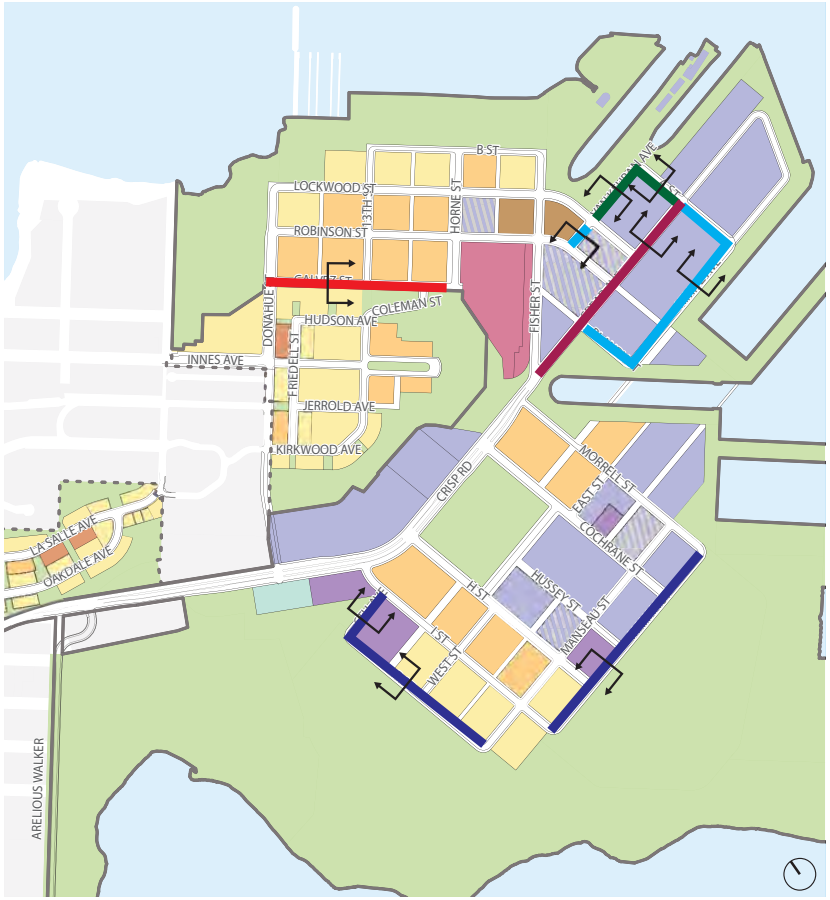


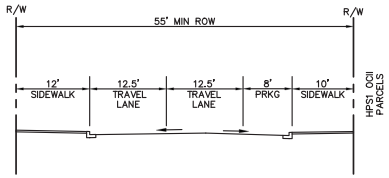
Figure 7W: Hunters Point Shipyard



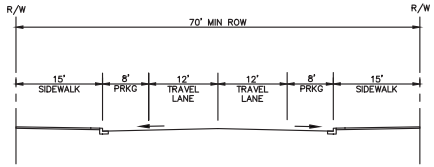
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

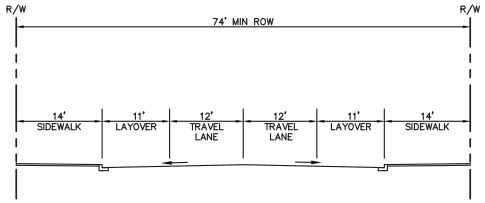
Galvez Avenue



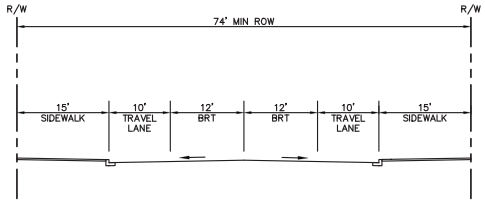
Primary Street



Transit Layover



Spear Avenue



Secondary Street

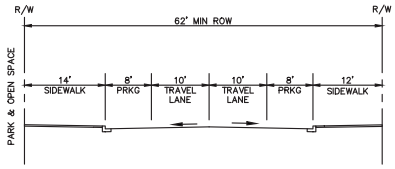
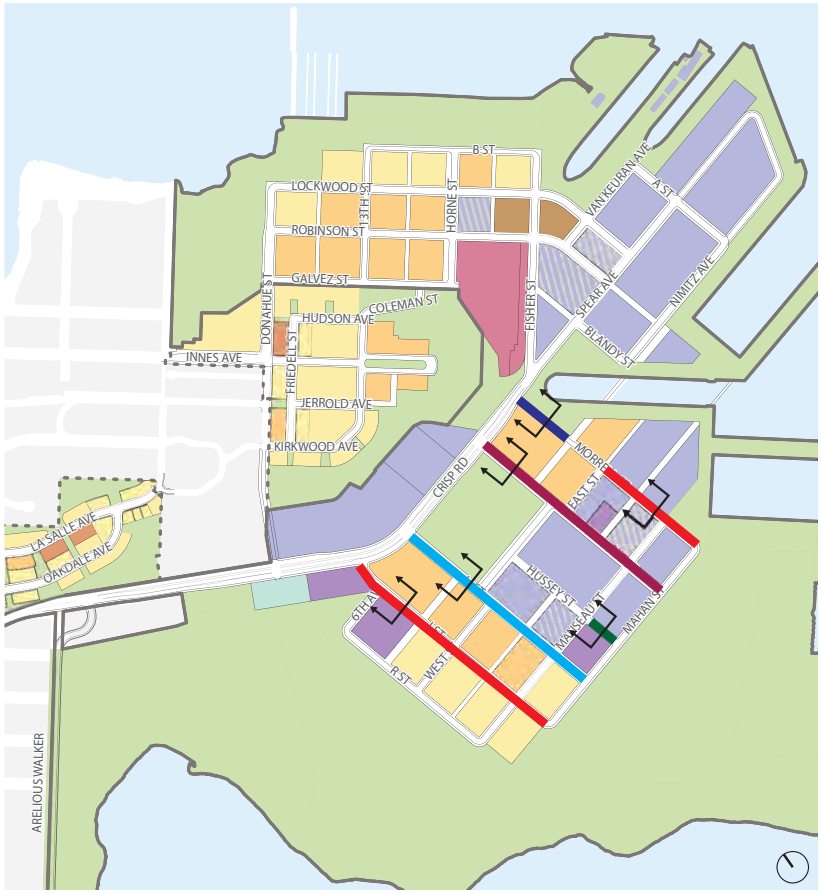


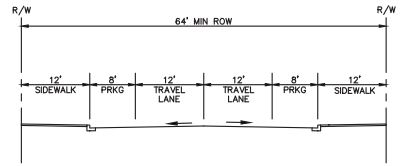
Figure 7X: Hunters Point Shipyard



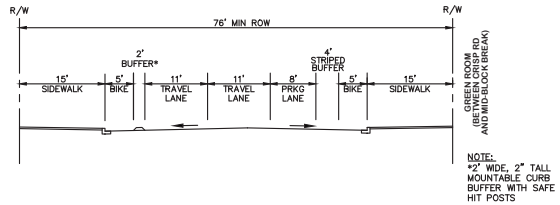
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

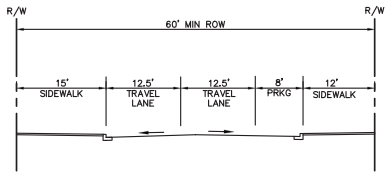
Secondary Street



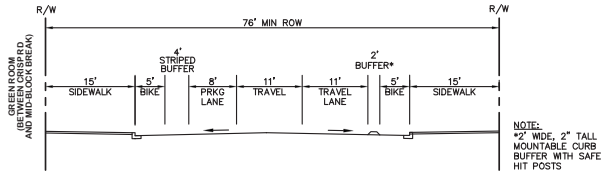
H Street



Hussey Street



Cochrane Street



Morrell Street, between Crisp Road and Mid-Block

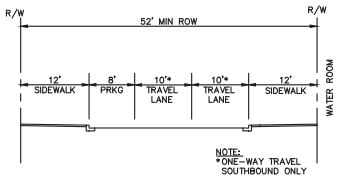
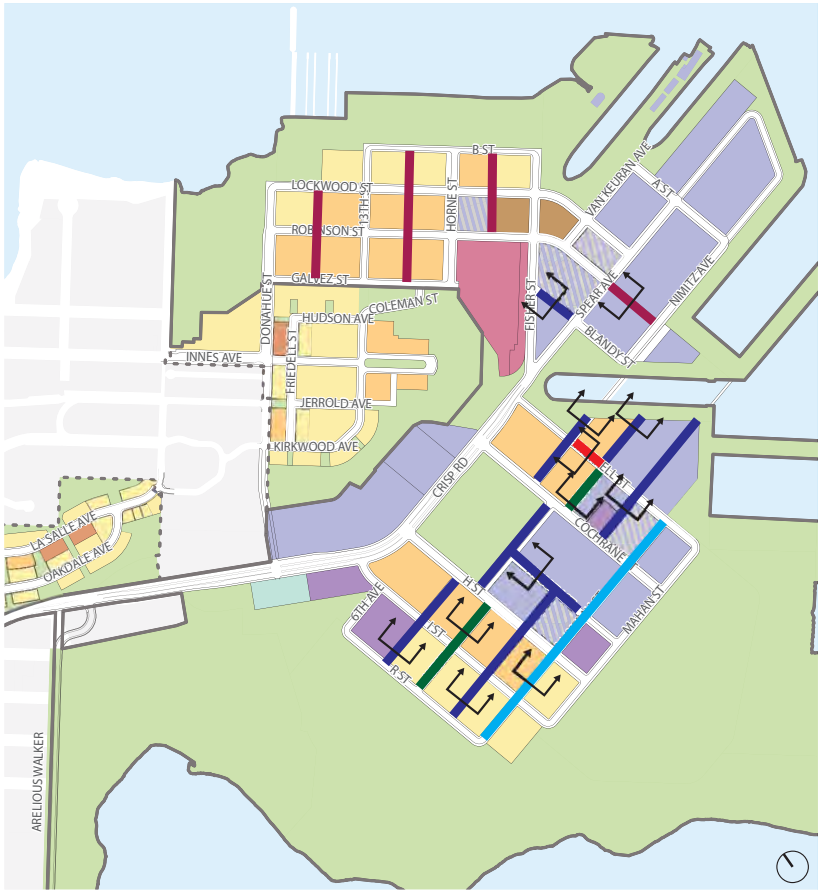


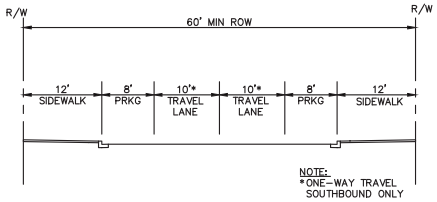
Figure 7Y: Hunters Point Shipyard



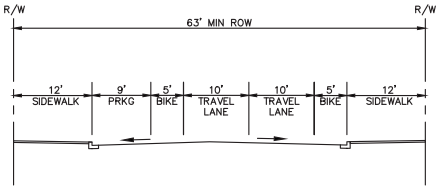
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

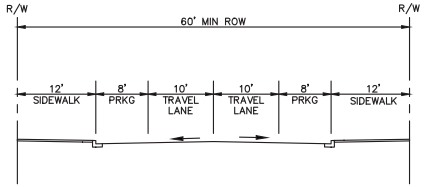
Morrell Street, between Mid-block and East Street



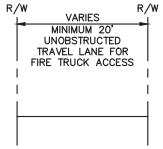
Manseau Street



Secondary Street



Private Mid-block Break (20' Minimum Emergency Vehicle Access)



Private Mid-block Break (26' Minimum Emergency Vehicle Access)

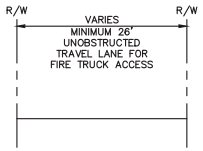
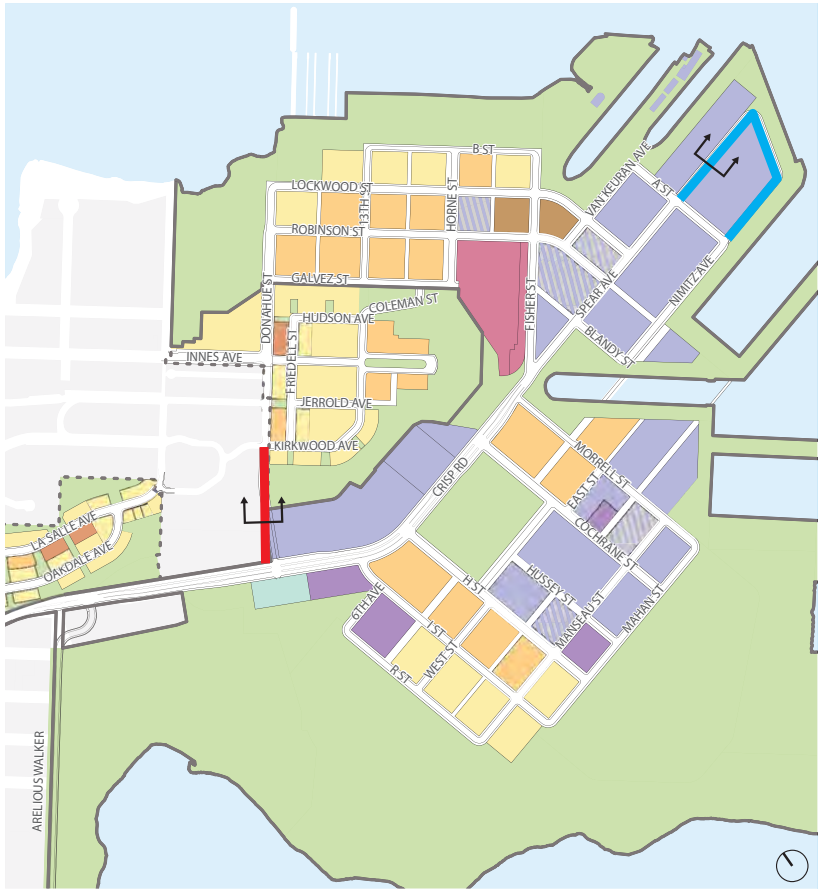


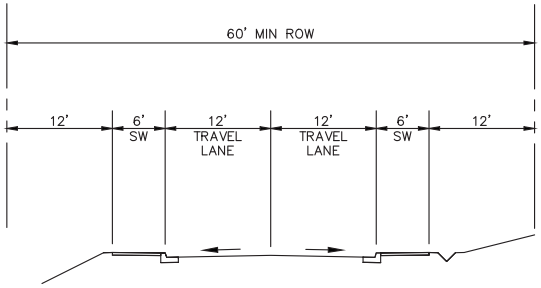
Figure 7Z: Hunters Point Shipyard



LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

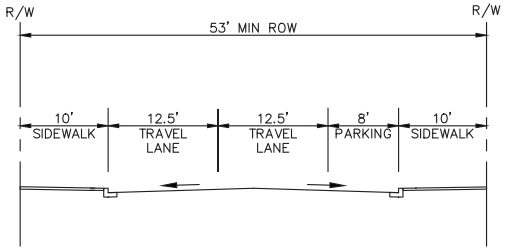
Donahue Street, north of Crisp



NOTE:
THE EXTENSION OF DONAHUE STREET IS NOT VITAL TO SITE CIRCULATION. THIS SECTION MAY NOT BE CONSTRUCTED DEPENDING ON FEASIBILITY.

Note: The Developer is pursuing the extension of Donahue Street to Crisp Road. However, the Developer is not obligated to complete the extension of Donahue Street as it relies on several external factors

Commercial Street



ONE WAY
EMBARCADERO CENTER
HAWAIIAN
O'REILLY & FAINA GLASS

4.3 PROPOSED ROADWAY IMPROVEMENTS

Existing roadways will be expanded and new facilities built to serve Candlestick Point and Hunters Point Shipyard and the surrounding Bayview neighborhoods. This expansion will include a new special-access bridge, reconfiguration of existing streets, and other improvements, as shown in **Figure 8** and described below.

1. Harney Way Widening

Harney Way, with its access to the US 101 Freeway, will function as the southern gateway to the project. The existing four-lane facility would be rebuilt as a new five-lane auto facility with right-of-way reserved for an additional auto lane to be built in the future as needed to serve increased traffic levels. In addition, a left turn lane on eastbound Harney Way would be incorporated at both the Thomas Mellon Drive and Executive Park East Boulevard intersections to provide access to Executive Park. A westbound right turn lane will be provided at Executive Park East Boulevard to provide access to Executive Park. **Figures 9 and 10** illustrate the proposed cross-sections.[1] New traffic signals will be installed at Thomas Mellon Drive and Executive Park East Boulevard. In addition to the auto lanes, two lanes would be constructed adjacent to the roadway to accommodate exclusive BRT operations and a two-way Class I cycletrack would be provided on the south side of the roadway.

2. New Primary Roadway through Candlestick Point

Candlestick Point will be served by a new four-lane roadway approximately following the current path of Giants Drive and Arelious Walker Drive. The roadway would also have a 10-foot median to accommodate left turn lanes at major intersections. Sidewalks, curb ramps, and streetlights would be upgraded. New traffic signals will be installed at the Harney Way/Arelious Walker Drive intersection and at the Jamestown, Ingerson, Gilman, Egbert, and Carroll Avenue intersections. Portions of the roadway would accommodate exclusive BRT operations.

3. New Connecting Roadways

Roadway connections between Hunters Point Shipyard and Candlestick Point will be served by Ingalls Street, connecting to Crisp Road via Thomas Avenue and Griffith Street. Ingalls Street and Griffith Street would contain two travel lanes and on-street parking/loading on both sides of the roadway. Thomas Avenue will be converted from a two-lane to four-lane facility with on-street parking retained on both sides of the roadway. During the evening peak period, on-street parking would be prohibited on Griffith Street and Ingalls Street, such that there would be four travel lanes connecting the entire auto route around Yosemite Slough (Carroll Avenue, Ingalls Street, Thomas Avenue, Griffith Street, and Crisp Avenue). New signals will be installed at the intersections of Thomas Avenue/Ingalls Street and Palou Avenue/Crisp Road.

4. Streetscape Improvements

Streetscape improvements are planned for several key Bayview/Hunters Point roadways: Innes, Palou, Carroll and Gilman Avenues. **Figure 11** illustrates the extent of the improvements along Innes Avenue. These streets will serve as primary routes for pedestrians, bicyclists, transit riders, and drivers. They are proposed to enhance the safety and experience of road users and existing residents. Enhanced streetscape design, including street trees, sidewalk plantings, furnishings, and paving treatments will be designed to visually tie together the proposed project with the greater Bayview neighborhood. Specific streetscape treatments will vary depending on existing right-of-way and traffic demands. Careful consideration will be given to improving visibility at all four-way stops.

5. Yosemite Slough Bridge

A new Yosemite Slough bridge would extend Arelious Walker Drive from Candlestick Point to Hunters Point Shipyard. **Figure 12** illustrates the plan view and cross-section view of the bridge. The bridge would have a 45-foot wide right-of-way and would contain two 11-foot wide BRT lanes, and an 8-foot, one-way Class I bicycle/pedestrian path on each side. The Class I bicycle/pedestrian paths would provide the most direct connection between Candlestick Point and Hunters Point Shipyard for pedestrians, bicyclists, and BRT service.

6. Donahue Street Extension

FivePoint is currently pursuing the extension of Donahue Street; however, the feasibility of the roadway extension is dependent on several external factors and is not an obligation of the project. If extended, Donahue Street, which currently connects Lockwood Street to La Salle Avenue, will be extended south to connect to Crisp Road/ The roadway extension will provide a direct connection to and from the Shipyard North neighborhood and the Shipyard South neighborhood. The roadway extension would include up two 12-foot travel lanes and sidewalks on either side.

1 Proposed Harney Way cross-sections are draft proposals and may change as designs progress.

New Roadway Improvements Under Study

Additional roadway improvements have been identified that may serve the project site and surrounding development. These improvements, requiring approval by the City of Brisbane, will be studied through the environmental review process required by the California Environmental Quality Act (CEQA); thus, the timing of these improvements are uncertain. The improvements are shown on **Figure 8** and described below.

7. Geneva Avenue Extension

Geneva Avenue, which currently ends at Bayshore Boulevard, would be extended east to meet Harney Way, improving east-west access in the area. As currently envisioned, the Geneva Avenue Extension would have three eastbound and three westbound travel lanes between Bayshore Boulevard and a new interchange with U.S. 101. Currently, the nearest east-west access road is Blanken Avenue, which is designed as a neighborhood collector roadway and could not accommodate the additional east-west traffic generated by area projects. The lead agency for this project is the City of Brisbane.

8. Geneva/Harney/US 101 Interchange

In conjunction with the extension of Geneva Avenue east, the existing Harney Way interchange would be redesigned as a typical diamond interchange. The City of Brisbane, in coordination with Caltrans, completed a Project Study Report (PSR) in 2012 which proposed a preferred alternative where the Geneva Avenue / Harney Way crossing is over U.S. 101. A separate environmental review and approvals by Caltrans, the City of Brisbane, SFCTA, and the City of San Francisco will be required to implement this improvement, supported by analysis from the San Francisco County Transportation Authority's Bi-County study.

9. Geneva Avenue to Balboa Park BART

In conjunction with the projects above, specific transit-preferential treatments along Geneva Avenue and related roadway improvements (including signal work, street design, and safety improvements) would be implemented.

Figure 8: Proposed Roadway Improvements

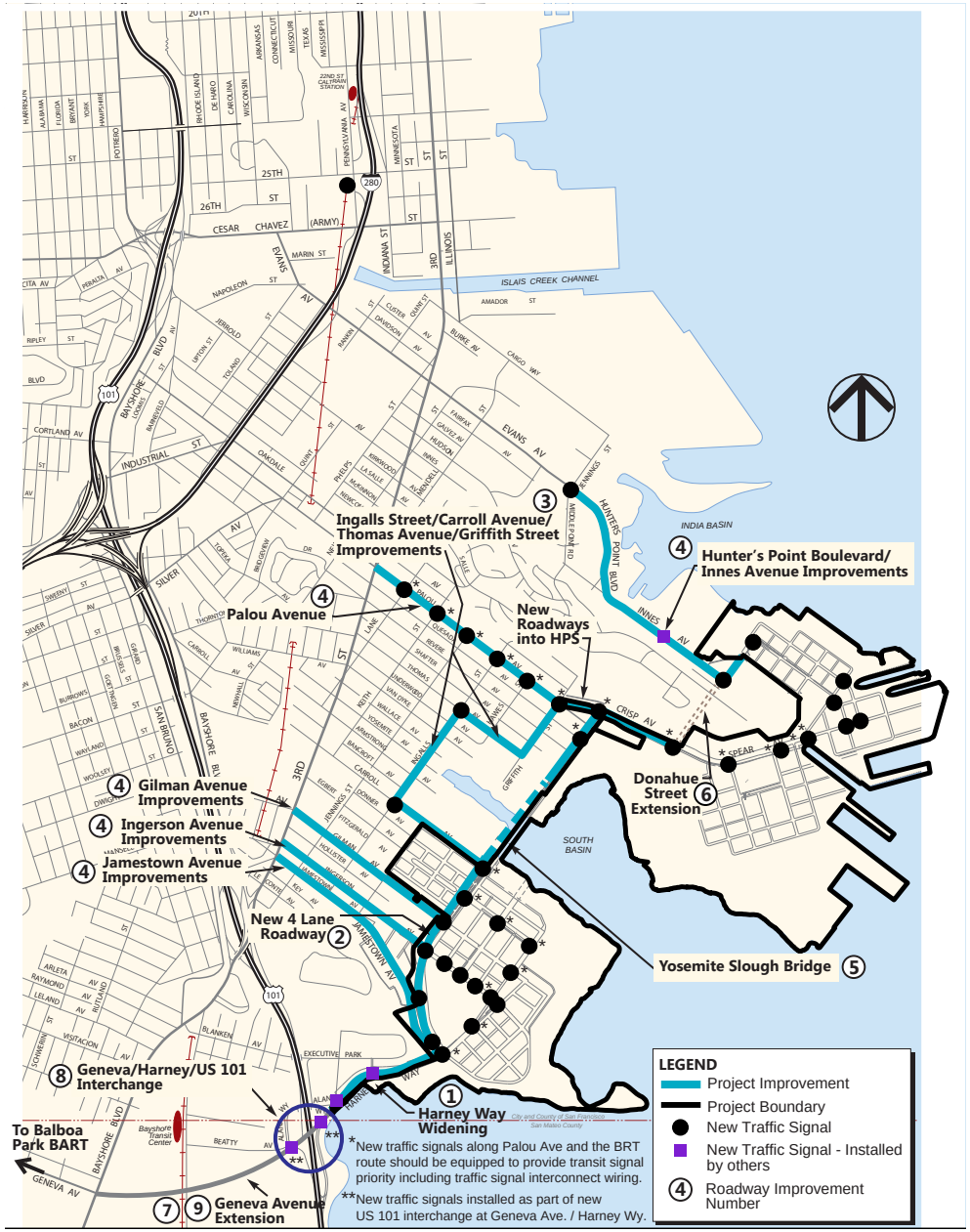
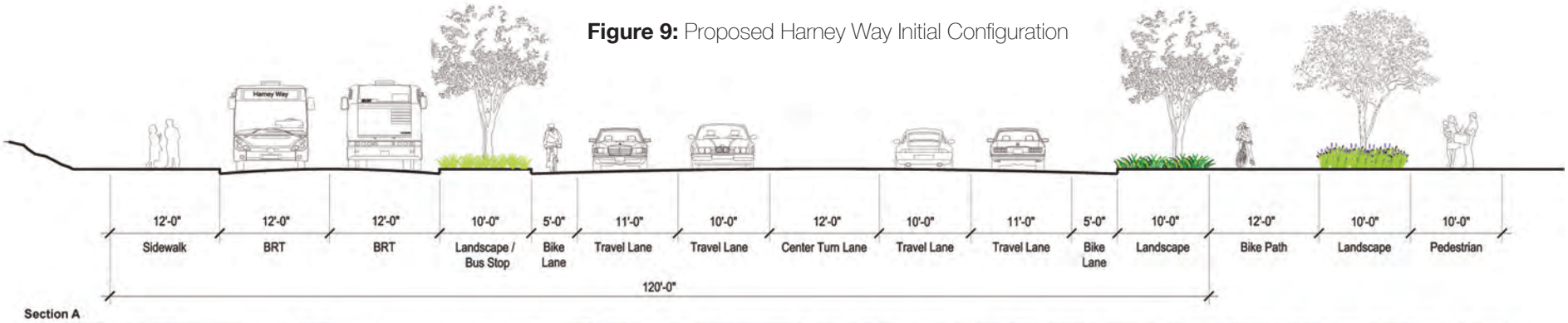


Figure 9: Proposed Harney Way Initial Configuration



Section A

Figure 10: Proposed Harney Way Potential Long-Term Configuration

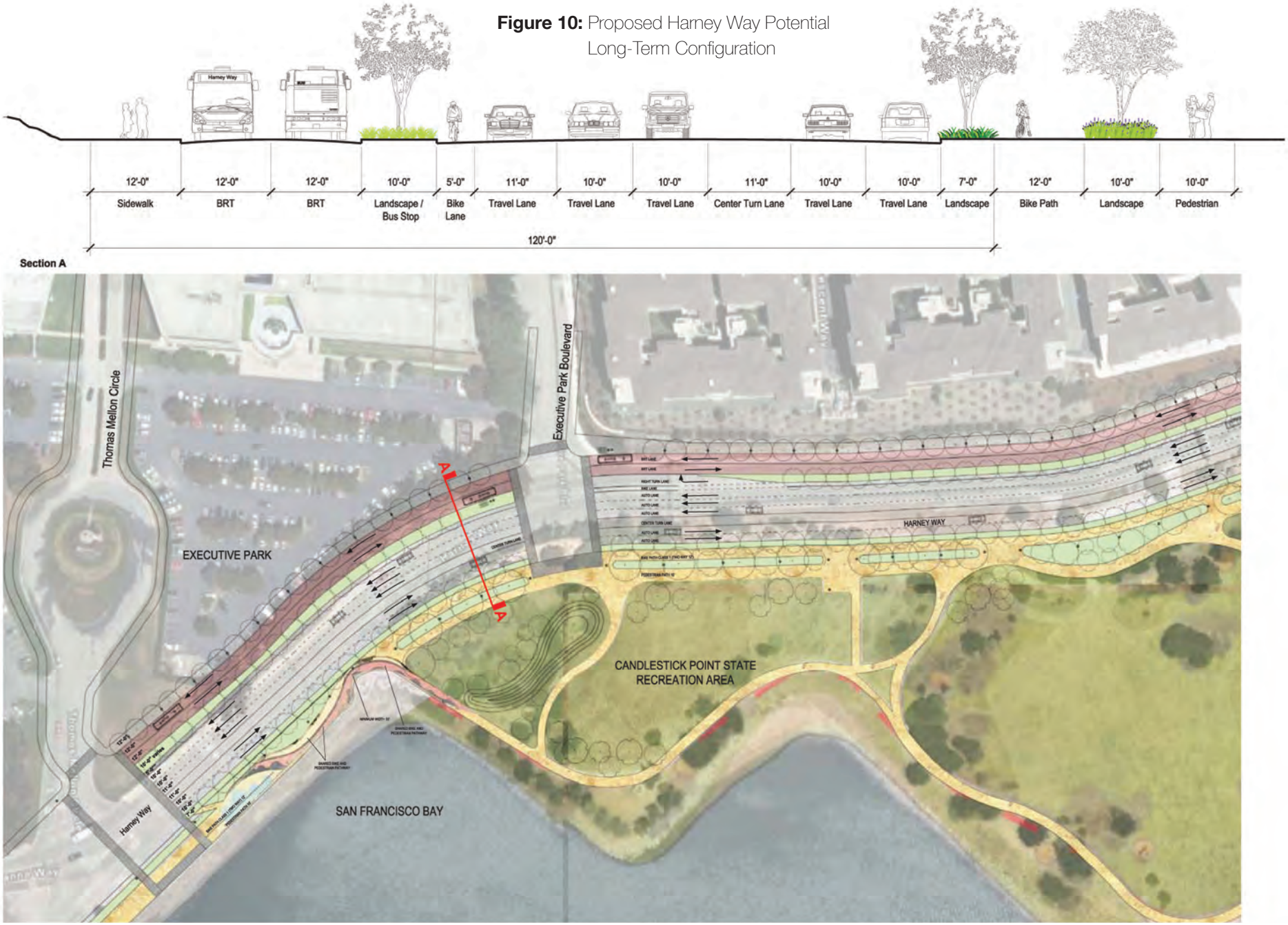


Figure 11: Innes Avenue Improvements

Proposed Scope of Improvements:

- The Innes corridor is planned to be reconstructed between Donahue and Jennings Street
- Traffic signals and left-turn pockets are planned to be installed to provide access to Build Inc. India Basin Development
- Street lights that need to be replaced are planned to be upgraded and a continuous sidewalk will be constructed on both sides of the street
- The work is planned to include streetscape improvements, which can include new street trees, benches, bicycle racks, and trash receptacles

The work does not include:

- Undergrounding of utilities
- Irrigation system for the street trees
- Stormwater planters

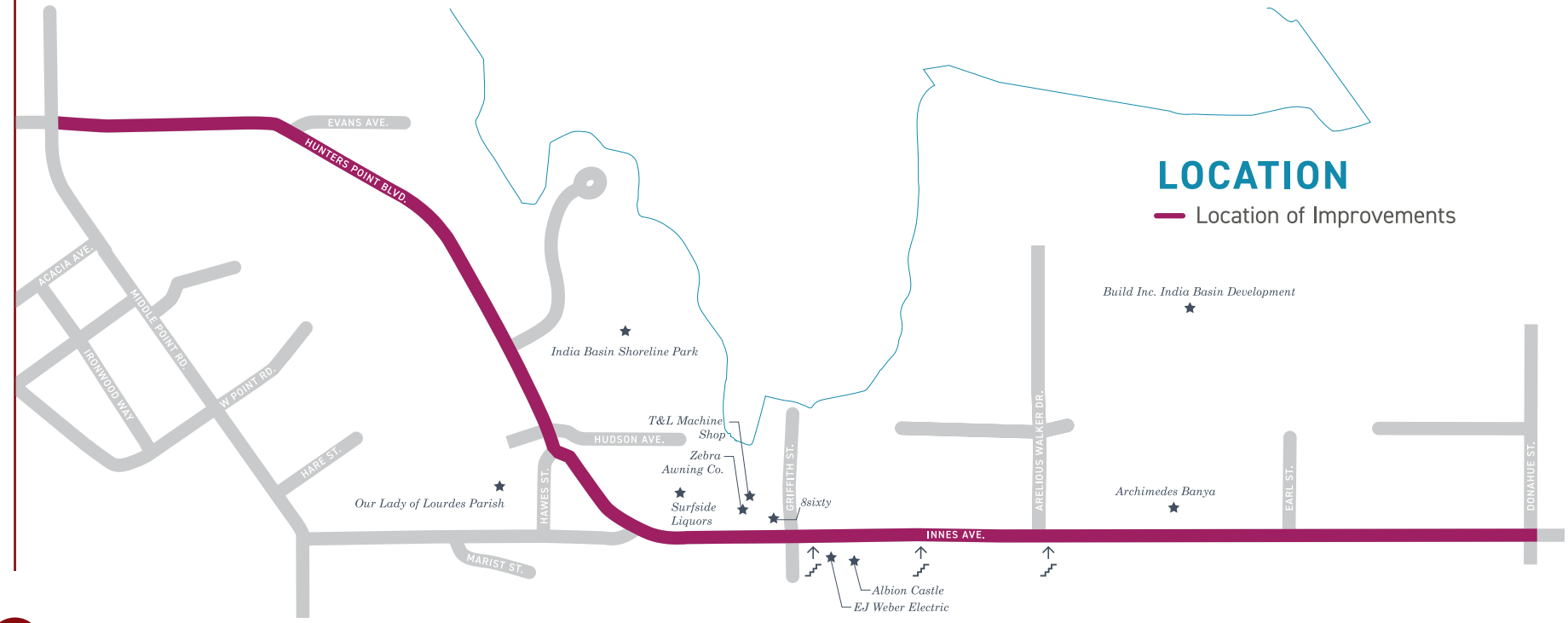
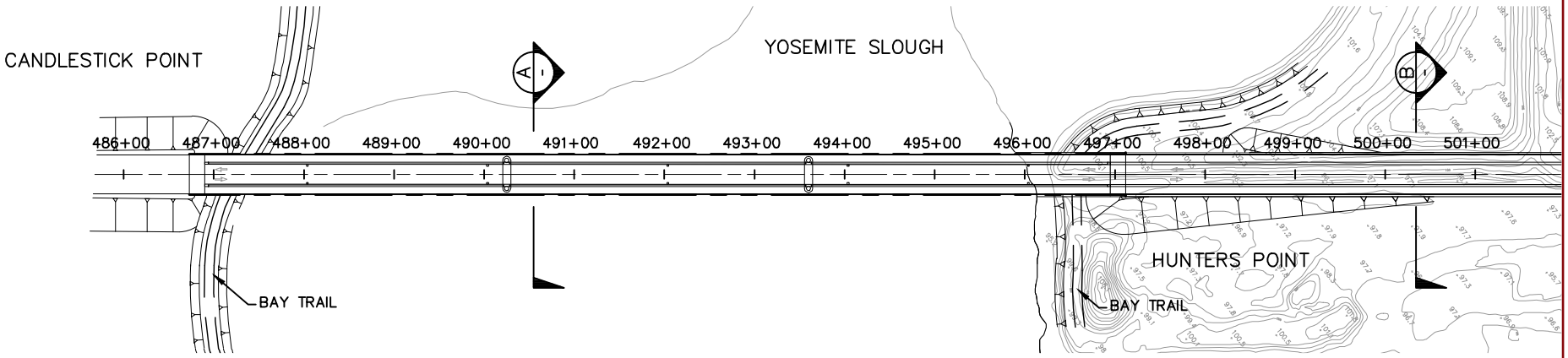
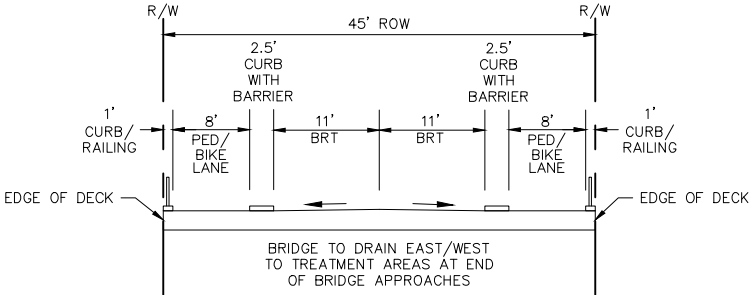


Figure 12: Yosemite Slough Bridge



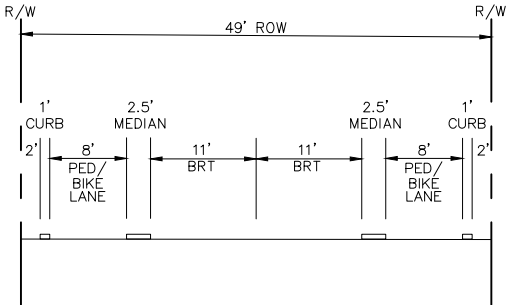
YOSEMITE SLOUGH BRIDGE PLAN

NTS



SECTION A

NTS



SECTION B

NTS

CHAPTER FIVE: TRANSPORTATION PROGRAM

5.1 INTRODUCTION

Currently, about two-thirds of all trips in the southeast quadrant of San Francisco are car trips. If the trips generated by the project exhibit this level of automobile use, the existing vehicular transportation facilities in this area would be insufficient to handle the projected demand. Thus, the policies and programs outlined in this chapter target a significant redistribution of trips from auto to transit and non-motorized modes. The following sections outline the specific means designed to encourage the use of modes other than private automobile, achieve the project mode split goal, as well as enhance alternatives to transportation in surrounding neighborhoods by developing a stronger transit, bicycle, and pedestrian network.

The Candlestick Point and Hunters Point Shipyard Phase II Development Plan Environmental Impact Report (EIR), has been prepared independently from this Plan, and models and evaluates the travel demand of this project.

Existing Travel Behavior

Within the City and County of San Francisco, travel behavior for new developments is typically estimated using the SF Guidelines[4], which contains detailed survey data used to forecast trip generation, mode split, and origins/destinations based on land use and trip type. The data is organized by superdistricts (SD), one in each quadrant of San Francisco.

Candlestick Point and Hunters Point Shipyard are located in SD-3, the southeastern quadrant of the City. According to historical data from the SF Guidelines, the modal split of travel demand for a new project located in SD-3 would be expected to exhibit the modal split shown in **Table 4**.

Table 4: SD-3 Calculated Mode Split – Weekday PM Peak Hour

Mode	SD-3 Mode Split[1] (Inbound and Outbound Trips)
Auto	66%
Transit	16%
Walk	16%
Bike	2%
Total	100%

1 AECOM – October 2008

The mode split above reflects data collected in the 1990s for land uses and transit service within a large area of San Francisco that has since undergone significant change. It is also based on much less dense development and a different mix of uses than what is proposed for the project area. Therefore, the data from the SF Guidelines alone is not a sufficient estimator for mode split for a project of this size and character.

4 2002 Transportation Impact Analysis Guidelines for Environmental Review. Planning Department, City and County of San Francisco. October, 2002.

Project Travel Behavior Goal

Although past travel behavior can be a useful tool to forecast future mode splits, many factors can result in changes to travel patterns. The Candlestick Point and Hunters Point Shipyard Phase II project aspires to a mode share of not more than 45 percent of person-trips by auto, and not less than 30 percent by transit, 20 percent on foot, and 5 percent as bike trips for work trips during the weekday PM peak hour. **Table 5** shows that to achieve this mode split goal, approximately 21 percent of peak hour work trips would need to shift from private auto to either transit, walk or bike based on historical travel behavior data. The project is also linked to surrounding neighborhoods by its strong transit, bicycle and pedestrian networks, and neighborhood services which should serve to reduce overall trips and vehicle miles traveled in the area.

Table 5: Project Mode Split Goal - Weekday PM Peak Hour

Mode	SD-3 Mode Split	Project Travel Behavior Goal	Difference
Auto	66%	45%	-21%
Transit	16%	30%	+14%
Walk	16%	20%	+4%
Bike	2%	5%	+3%
Total	100%	100%	

5.2 STRATEGIES

The strategies outlined in this section, which include new and improved transit options as well as a comprehensive package of TDM measures, would help achieve the desired mode shift.

Maximize Internal Trips

The Development Plan envisions mixed-use neighborhoods that will incorporate new office, retail, and entertainment centers. These will allow trips that might be otherwise attracted to external destinations to remain within the project area. Internal trips are shorter and are thus more likely to shift from auto to non-auto modes.

Internal trips will be maximized by the following strategies:

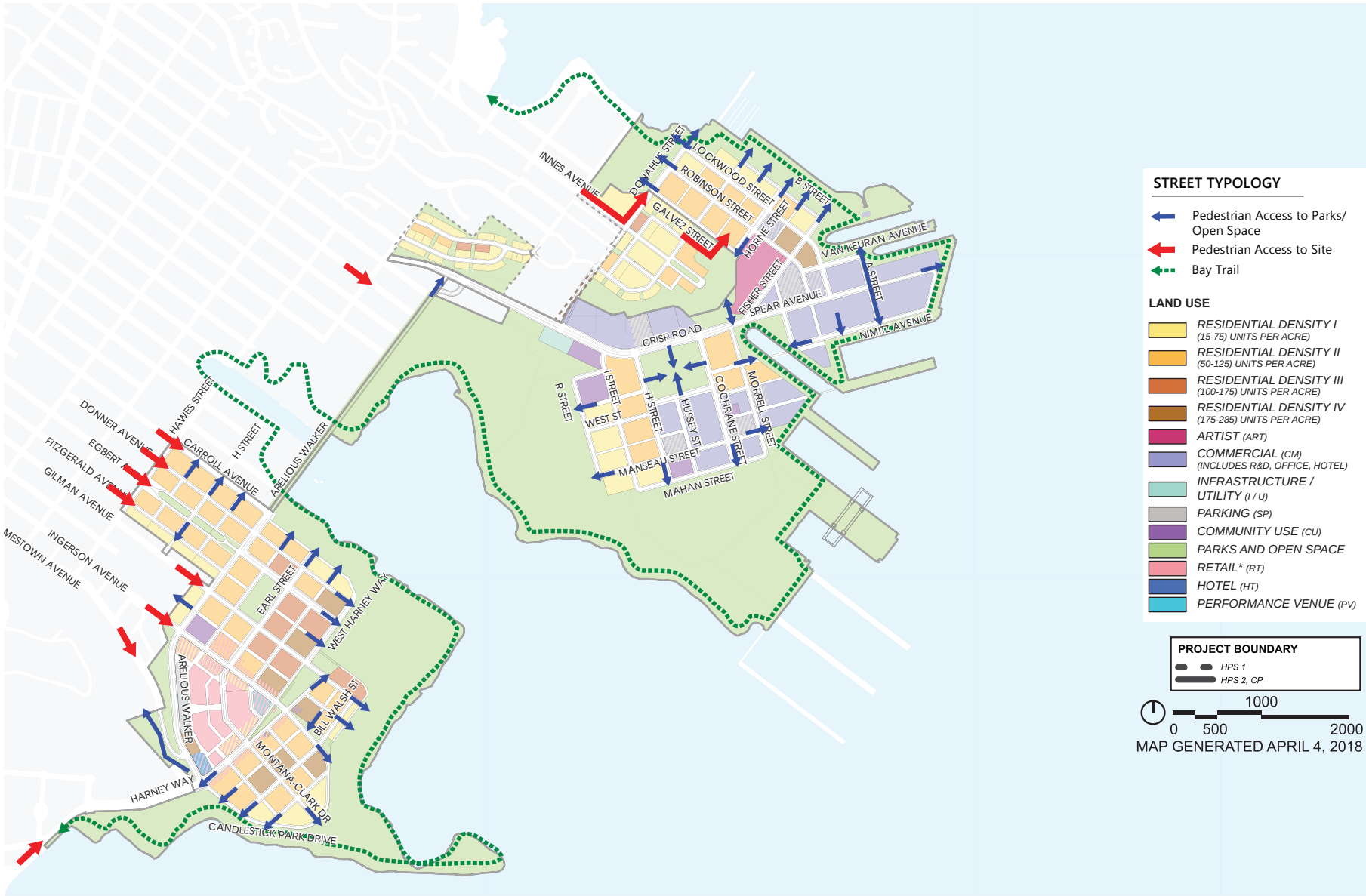
- Support services will be included in the commercial land use program. These uses will be designed and located in a manner that minimizes the need to use automobiles;
- Opportunities for residents to work within the project site will be encouraged; and
- Appropriate street design that accommodates pedestrian-friendly design speeds and levels of congestion.

Maximize Pedestrian Travel

The density and configuration of the project are designed to actively encourage the use of walking as a primary travel mode. The project will be served by a network of pedestrian routes as illustrated in **Figure 13**. The following concepts will encourage pedestrian travel:

- The proposed residential densities are consistent with other dense and walkable San Francisco neighborhoods, such as North Beach, the Mission and the Marina, and are comparable to successful walkable and transit-oriented communities elsewhere;
- The highest residential densities will be within a five-minute walk of the Hunters Point Shipyard Transit Center and the Candlestick Point BRT Stops, and all residences will be within a 15-minute walk;
- The community-oriented land uses – markets, schools, and other public facilities – are located within short walking distances of project residents;
- Site design elements such as the configuration and orientation of buildings, landscaping and streets will be designed to provide a comfortable walking environment;
- Sidewalks conforming as closely as possible to the Better Streets Plan will be provided on all streets;
- A comprehensive wayfinding signage program will support the network of walkways and shared-use paths;
- The project will be designed and built to be ADA-accessible to residents and visitors;
- Pathways will be provided between residential areas and to key entrances of parks and open space;
- Many residences in the adjacent neighborhoods of Bayview, Hunters View, India Basin, Executive Park, and the City of Brisbane will also be within a 15-minute walk of the improved transit facilities and new neighborhood services and retail; and
- Streets will be designed to be pedestrian-friendly and incorporate the following characteristics:
  - Separate pedestrians from moving traffic through the use of wide sidewalks, on-street parking, and landscaping;
  - Facilitate pedestrian circulation with continuous pedestrian paths of travel and short block distances;
  - Enhance safety at crossings with shorter crossing distances, clearly marked crosswalks, and pedestrian crosswalk signals. Intersections should be designed with curb extensions where possible and tight corner radii (except on streets with delivery trucks or buses);
  - Install vibrant streetscape elements including street trees, continuous “street wall”, openings for activity and gathering space; and street furniture and lighting.

Figure 13: Pedestrian Circulation Plan



Maximize Bicycle Travel

The existing bicycle routes in the project vicinity, illustrated in **Figure 14**, are not sufficient to accommodate the level of bicycle activity expected in the area after the proposed project is built. To facilitate bicycle travel, the project will be served by an expanded network of bicycle routes, as proposed in **Figure 15**. To support bicycle travel, support facilities such as bicycle parking, in both residential and commercial developments (such as racks, indoor/long-term parking, lockers, and showers), as well as bike share stations will be included in both the Candlestick Point and Hunters Point Shipyard sites, as illustrated in **Figure 16**. Appendix A of the TDM Plan, included in this Plan's appendix documents assumptions for **Figure 16**. The following concepts have been developed to facilitate bicycle travel in a safe and convenient manner:

- Bicycle routes will be established within a quarter mile of all residences and employment, consistent with the City's current guidelines and bicycle plans;
- A two-way, dedicated cycle track (Class IV) will be provided through the project, connecting the Candlestick Point and Hunters Point Shipyard sites. The two-way cycle track will terminate at the south side of the Yosemite Slough Bridge where it will turn into a Class I shared facility. The Class I facility will bisect the Shipyard South neighborhood and connect to other bicycle facilities on-site. The Class I and Class IV facilities will provide a high-quality route for commuters and complimenting the recreational nature of Bay Trail;
- The development's roadways or adjacent roadways will incorporate Class II bicycle lanes for safe and efficient bike mobility through the project site. Appropriate signage and pavement markings (sharrows) will also be included for Class III bicycle routes;
- Shared-use paths will provide safe, direct, convenient and attractive routes between all of the development's major destinations. The project's bicycle route network will connect to the Bay Trail and to recreational paths on the project site;
- Internal streets will be designed to be low-speed (15-25mph), creating an environment that is attractive and safe for bicycling. Arterials will be designed for a posted speed of 25 mph;

- Directional signage along the bicycle routes and shared-use paths will point out key destinations;
- Bicycle routes will be designed to improve connectivity from within the project area to surrounding neighborhoods, and to increase bicycle access from outside the area to new destinations and regional transit hubs within;
- Safe and secure bicycle parking will be provided within each residential garage or within each residential building, with a minimum of 25 parking spaces for the first 50 dwelling units plus one space for every four dwelling units thereafter. Each commercial parking facility will provide bicycle parking at a minimum rate of 15 percent of car spaces;
- Supplemental bicycle parking racks will be provided near major destinations, and a bike parking station will be included at the Hunters Point Shipyard Transit Center;
- Showers and locker facilities will be provided within each new commercial building with greater than 10,000 square feet of uses; and
- Discounted space will be provided to encourage a bicycle station offering rentals, repairs, and storage to locate at Candlestick Point/ Hunters Point Shipyard.

Figure 14: Existing Bicycle Routes

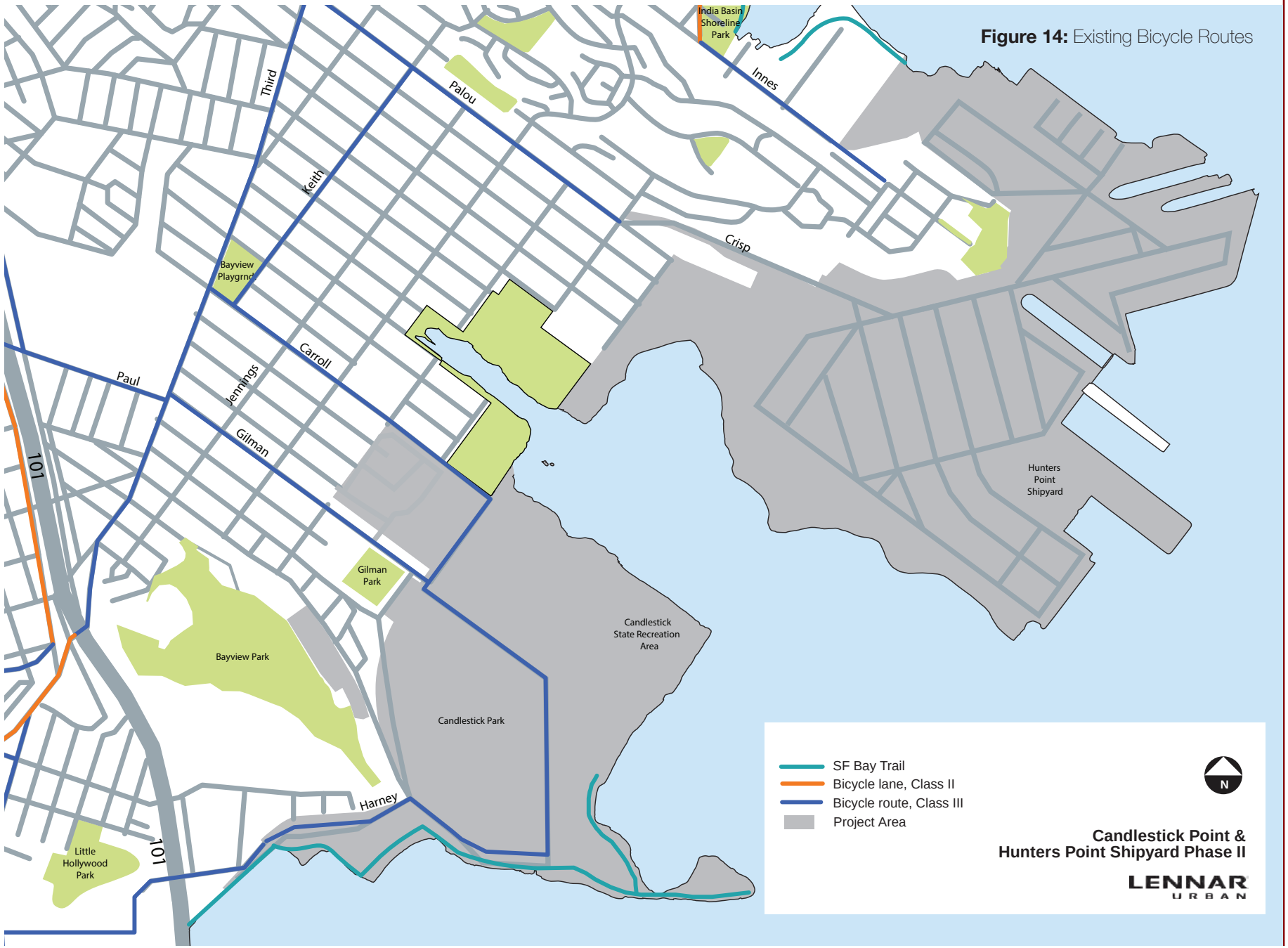


Figure 15: Proposed Bicycle Routes

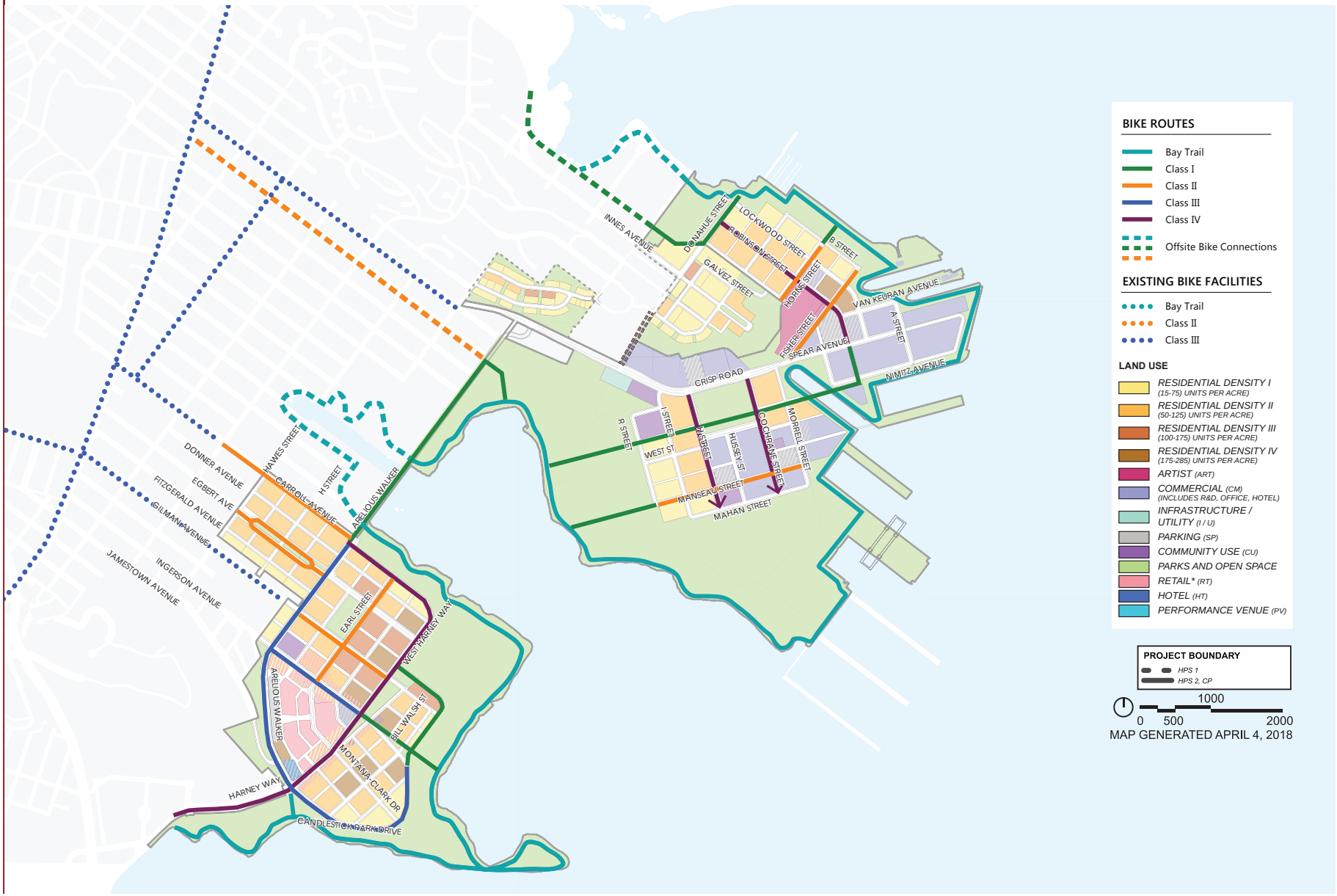
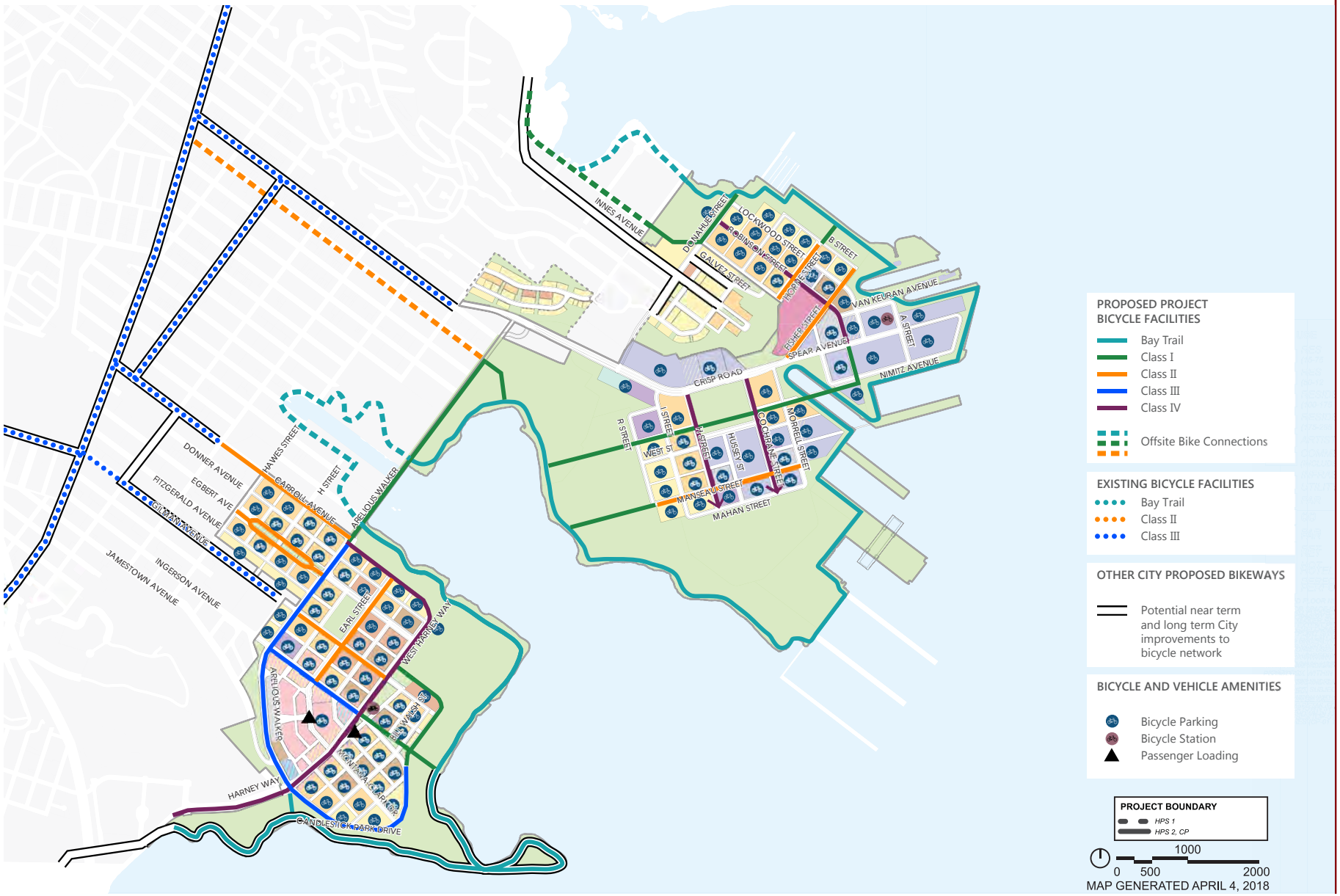


Figure 16: Bicycle Support Facilities



111 TAYLOR ST. APARTMENTS
111

Expand & Improve Transit Services

The Plan targets a near doubling of the current mode share of transit in the vicinity of Candlestick Point and Hunters Point Shipyard. Reaching this goal depends upon maximizing the effectiveness and convenience of transit service to and within the project site.

Ongoing dialogue with the San Francisco Municipal Transportation Agency (SFMTA) has identified new transit services to serve the project site. The ultimate network of new and improved transit services will be implemented by SFMTA. In addition, the City has initiated discussions to ensure complementary and mutually-reinforcing system connections with SamTrans and Caltrain.

In order to attain the project's transit usage goal, the strategies below have been developed. Rather than proposing a single major transportation facility, such as a new BRT, the strategies build upon the existing transit network and infrastructure. The following strategies will also benefit the surrounding Bayview and Hunters Point Shipyard neighborhoods:

- Extend existing Muni routes in coordination with phases of development to better serve the project area, with local and rapid transit service within a quarter or half mile of all residences and employment, respectively;
- Increase frequencies on existing routes to provide more capacity and increase the capacity of key routes, such as the T-Third;
- Complement these routes with new transit facilities and routes in coordination with phases of development in order to reduce transfers and better serve the project's proposed land use program and transit demand;
- Increase connections to the regional transit network (BART, Caltrain) to help reduce the current perception of the area's transit isolation;
- Specifically create a new BRT (Muni Line 28R) connecting Balboa BART Station, Bayshore Caltrain Station and T-Third Muni with several bus lines; and
- Ensure that new regional transit hubs within the project area are accessible by local transit, bicycle, pedestrians, shuttles, and taxis from adjacent neighborhoods on both sides of the City limits.

The need for new transit vehicles to serve the project presents an opportunity to introduce low- or zero-emission buses. SFMTA has targeted a reduction in greenhouse gas emissions from its vehicles and eventually become 100 percent emission-free.

PROPOSED TRANSIT IMPROVEMENTS

New direct one-seat transit service is proposed to serve the high employment concentration of Downtown San Francisco. Fast and efficient connections to the regional transit network (BART, Caltrain, T-Third/Central Subway) also serve these destinations, as well as the employment centers of the Airport, the East Bay, the Peninsula, and the South Bay. BART and Caltrain stations south of the project site are generally well-served by local bus routes and shuttles that would provide connections to Peninsula workplaces.

The proposed transit improvements, illustrated in **Figure 17**, are described in the list to follow. Appendix A of the TDM Plan, included in this Plan's appendix documents assumptions for **Figure 17**.

Figure 17: Proposed Transit Improvements[1]

A. New and Expanded Bus Lines

Existing Muni lines 24-Divisadero, 44-O'Shaughnessy, and the 48-Quintara would be extended to Hunters Point Shipyard; line 29-Sunset would be extended into Candlestick Point. Service frequencies on these lines would be increased to accommodate greater demand. New Downtown Express routes would connect both Candlestick Point and Hunters Point Shipyard with Downtown San Francisco, possibly at or near the Transbay Terminal. As transit-preferential elements are implemented on Palou Avenue, as well as Harney Way to support BRT (Muni Line 28R) service, new lines would be introduced to serve these corridors as well (see D and E below). The proposed expansion is summarized in **Table 6**.

B. Harney/Geneva BRT/Transit Preferential Street

To facilitate access to the regional transit system, BRT and transit preferential improvements will be implemented in the Harney Way / Geneva Avenue corridor. Exclusive bus lanes and BRT elements will be installed along the route connecting Hunters Point Shipyard Transit Center and Bayshore Caltrain Station through Candlestick Point. Transit preferential elements would be implemented along Geneva Avenue between Bayshore Caltrain Station and Naples Street, and BRT elements from Naples Street to Balboa Park BART Station. BRT service in this corridor would connect Hunters Point Shipyard and Candlestick Point to Caltrain, T-Third Metro, and BART service. In addition, transfers to SamTrans will be facilitated at the Bayshore Boulevard and Geneva Avenue intersection.

1 The transit service plan is continually reviewed and may be updated at the discretion of the SFMTA.

C. Hunters Point Shipyard Transit Center

The Hunters Point Shipyard Transit Center will serve the northern half of the project and would be located in the Shipyard R&D neighborhood along Spear Street, Lockwood Street, and Van Keuran Avenue. Along with bus bays, the facility will include shelters, ticketing kiosks, real-time transit information technology and operator restrooms. All of the bus lines serving Hunters Point Shipyard will stop at the transit center allowing quick and immediate transfers to other lines. The transit center will be located within a few blocks from the Shipyard Village Center retail street. Additionally, a ferry terminal and water taxi to accommodate water-based service to and from the project site is envisioned as potential transit expansion for the future.

The intention of the Transit Center is to consolidate the terminus of all transit lines in one location to allow for convenient transfers and bus layovers. It is located at the nexus of residential, retail, and research and development land uses.

D. BRT Stops

BRT (Muni Line 28R) stops will be located throughout the Candlestick Point and Hunters Point Shipyard project site. At the BRT stops, platforms would be provided or curbside space could be specifically designated for BRT stops. The stops will include shelters, ticketing kiosks, real-time transit information and other amenities. **Figure 16** illustrates proposed stop locations within the project site.

E. Palou Avenue Transit Preferential Street

One Muni line will be extended along Palou Avenue to serve the Hunters Point Shipyard Transit Center. In addition, two other lines will operate along Palou Avenue with service near the project. In order to provide efficient, attractive service on these lines, transit preferential treatments including transit-priority technology would be implemented, including installation of up to six new traffic signals along Palou Avenue. To improve pedestrian comfort and the accessibility of transit in this corridor, new bus shelters will be installed and the street will be upgraded with ADA ramps, bulbouts, and crosswalks.

F. Water Taxi

The Project Sponsor is considering the potential for water taxi, as the site fronts the Bay and offers opportunities to include water-based transportation. The potential for a water taxi will be considered as the project continues to develop.

OTHER POTENTIAL TRANSIT SYSTEM IMPROVEMENTS UNDER STUDY

A number of additional transit projects under study have been identified that would facilitate access to the project but are not part of this Plan.

G. Bayshore Transit Center

The Bayshore Transit Center is a multi-modal facility that will connect different modes of transportation and better serve the future transportation demand in the bi-county area. The Harney/Geneva bus rapid transit corridor intersects Caltrain at the Bayshore Station, which would allow for convenient intermodal connections between Candlestick Point, Hunters Point Shipyard, and Peninsula destinations. A vertical circulation connection would be introduced to seamlessly connect the two services. The connection would include elevators and stairs, and a potential extension of the station platform. Consideration will be given to include a bicycle station to facilitate Intermodal connections.

H. Oakdale Caltrain Station Improvements

Until 2005, the Bayview District was served by the Paul Avenue Station, which has since been closed. The San Francisco County Transportation Authority (SFCTA) is considering a new station serving this area at Oakdale Avenue. This project is not being actively pursued at this time; however, the improvements are still a possibility. If implemented, bus services on Palou Avenue would intersect Caltrain at this location, creating an intermodal station. This would forge a second connection from Hunters Point Shipyard and Candlestick Point to Caltrain, offering a fast, convenient connection to the South of Market District.

I. SamTrans

The City of San Francisco is currently working with SamTrans to facilitate new shared routes to directly serve South San Francisco employment centers.

MUNI FORWARD

Muni has proposed changes to several of the lines that would serve Candlestick Point and Hunters Point Shipyard as part of Muni Forward, formerly known as the Transit Effectiveness Project (TEP). Service extensions and modifications beyond the Muni Forward proposals would be required to serve the project site. **Table 6** presents each existing line proposed to serve Candlestick Point and Hunters Point Shipyard, the line's equivalent under the Muni Forward proposals, and the modification to the existing or equivalent line that would be required to provide service to the project.

REGIONAL TRANSIT EFFICIENCY

The new and stronger Muni links to local trunk lines and regional transit corridors helps provide multiple options for transit riders heading to Mission Bay and Downtown San Francisco via connections to the T-Third/Central Subway, BART, Caltrain, and the one-seat Muni express ride. Furthermore, the development of mixed uses in the project area will help to create "reverse commute" job and recreation destinations that take advantage of transit capacity in the regional networks in the serving the non-peak direction. This phenomenon will help balance the network and increase fare box revenue for corridors where capacity currently exists. These include BART to the Airport and Peninsula and Caltrain to the Peninsula and Silicon Valley.

ADDITIONAL TRANSIT ELEMENTS

In addition to the extension of Muni service to the project site, as described above, the following elements will support and encourage transit ridership:

- Real-time transit arrival information using NextBus technology and passenger waiting shelters will be provided at the transit center and key bus stops;
- All bus stops will be clearly marked on the pavement, and will include either bus bulbs or bus pull-outs if requested by Muni;
- Transit maps, schedules, on-line passes, real-time arrival information, and internet links will be provided on the Candlestick Point/Hunters Point Shipyard website for all nearby transit operators;
- An Emergency Ride Home Program would reimburse transit riders for return trip travel in the event of an emergency when an alternative means of travel is not available;
- Residents will be charged for and provided a transit pass as part of their homeowner's dues, which would be valid for use on the various transit systems that serve the site;
- In addition to a pass for residents, opportunities to provide employees with an "EcoPass" will also be pursued, similar to the programs already underway at the University of California and the City of Berkeley. These passes would allow unlimited transit use and could be purchased on a monthly and/or annual basis, and then be made available to all employees who work on the project site.

Table 6: Muni Service to the Project – Existing and Muni Forward Equivalents

Existing Muni Line	Equivalent under Muni Forward Proposals and Summary of Changes	Additional Proposed Service Enhancements
23 – Monterey	18 – 46th Ave: would be combined with Line 23, providing direct service to the Outer Sunset and Outer Richmond	Same as proposed Muni Forward service[1]
24 – Divisadero	24 – Divisadero: would be modified to serve the Mission and the Marina Districts	Extension along Palou Ave, Crisp Road, and Spear Ave to Hunters Point Shipyard Transit Center. Additionally, the 24 is not expected to have OCS wire extension, thus, the project will not include OCS through the site.
28R – 19th Ave/ Geneva Limited (BRT)	28R – 19th Ave Limited: would be modified to serve Balboa Park BART. Service would extend to 9 PM.	Extension along Geneva Ave through Candlestick Point with terminus in Hunters Point Shipyard. Conversion to BRT in the project area, with enhancements along Geneva Ave as supported in the Bi-County Study
29 – Sunset	29 – Sunset: minor changes only	Extension along Gilman Ave to Harney Way
44 – O'Shaughnessy	44 – O'Shaughnessy: no changes	Extension along Innes Ave to Hunters Point Shipyard Transit Center
48 – Quintara to 24th St	48 – Quintara to 24th St: would cover portion of Line 19 on Evans and Innes	Extension to Hunters Point Shipyard Transit Center
54 – Felton	54 – Felton: minor changes only	Same as proposed Muni Forward service
T – Third (light rail)	T – Third: increase frequency and capacity and extend into Chinatown via the Central Subway	Same as proposed Muni Forward service
Candlestick Point Express (CPX)	Not proposed in Muni Forward	Provide new express bus service between Candlestick Point and Downtown San Francisco
Hunters Point Express (HPX)	Not proposed in Muni Forward	Provide new express bus service between Hunters Point Shipyard and Downtown San Francisco

Source: San Francisco Municipal Transportation Agency – March 2009

1 The 23 Monterey service may extend into HPS until SFMTA's fleet is modified to eliminate the need for OCS wires extended into the HPS site, at which point the 24 Divisadero would be extended and the 23 Monterey would return to its original (existing) routing.

Implement Transportation Demand Management Program

An effective Transportation Demand Management (TDM) Program will reduce the amount of auto use and encourage residents, employees, and visitors to use alternative modes of travel, such as transit, walking, and bicycling. In addition, a TDM program provides measures to reduce the demand for travel during peak times.

The TDM program for Candlestick Point and Hunters Point Shipyard project will be consistent with the policies of the various agencies within the City of San Francisco, and work seamlessly with the ongoing plans at nearby developments. The proposed TDM program will target residents, employees and visitors, and could include the strategies described in the following sections.

TRANSPORTATION COORDINATOR AND WEBSITE

An on-site Transportation Coordinator (TC) will provide residents, employers, employees and visitors with the information they need to make the best use of the transportation alternatives available to them.

The TC will implement and administer the various TDM elements, and will coordinate with the City, the various transit agencies, and other nearby uses. The TC will be in regular communication with the transit agencies and will work with them to monitor transit usage and make appropriate changes to services to match demand.

The TC will keep residents, employees, and employers apprised of travel incentives or changes to travel options, and will be responsible for coordinating with visitors and groups holding events at Candlestick Point or Hunters Point Shipyard.

The TC will be responsible for coordinating the production and distribution of travel brochures and educational documentation to increase resident, employee and visitor awareness of the various available TDM elements and travel options. The TC will also be responsible for conducting new employee/resident orientation and education programs and performing individualized marketing of transportation alternatives.

Other responsibilities of the TC include the following:

- Managing the carpooling/vanpooling database and Emergency Ride Home program;
- Coordinating carsharing organizations on the project site;
- Monitoring bicycle parking provision and usage; and
- Reporting maintenance issues.

Each year, the TC will be responsible for conducting surveys of residents, employees, and visitors to determine the current mode split (percentage of travelers who drive alone, carpool, ride transit, walk, or bike) and demographic information (such as location of work and commute time to and from work). This information will be used to improve the effectiveness of the TDM program if the project's modal split goals are not being met.

TDM MONITORING

As stated, the project goal is to have no more than 45 percent of all person-trips in the weekday evening peak hour made by auto (exclusive of carpool, vanpools and shuttles) at buildout. Achieving this goal will require substantial investments in transit service from SFMTA as well as an aggressive TDM Plan implemented at the site. As part of the project's TDM Plan, the site's TC will conduct annual monitoring of travel behavior to assess the extent to which the project is achieving its auto mode split goal. Monitoring will be conducted separately at Candlestick Point and Hunters Point Shipyard and will begin when the first major phase of development at each of those sites, respectively, reaches 90 percent occupancy

and the associated transit service has been in operation for a minimum of six months. Specifically, the associated transit service improvements expected to coincide with the issuance of certificates of occupancy of Major Phase 1 include:

- Hunters Point Express at 20 minute frequency
- 23-Montery extension at 20 minute frequency
- 48-Quintara extension at 15 minute frequency
- 44-O'Shaughnessey extension at 10 minute frequency
- Candlestick Point Express at 10 minute frequency
- 29-Sunset extension at 5 minute frequency

The project may not meet its ultimate goal of fewer than 45 percent of all trips made by auto prior to full buildout of the project (during which time the full range of transit service to encourage transit trips and complimentary land uses to encourage walk trips may not be in place). If not, the Transportation Coordinator will meet and confer with SFMTA staff to determine whether adjustments should be made to the TDM Plan, or whether additional planned development and associated transit service improvements are likely to result in the project meeting its goal.

At project buildout, if monitoring demonstrates that the project is not meeting its goal, the Transportation Coordinator will meet and confer with SFMTA staff to consider different or additional TDM or Transit Measures to encourage travel patterns that more closely align with goal attainment.

SPECIAL EVENTS TDM ELEMENTS

The impact of events held at performance venues will be monitored to determine opportunities for applying TDM to encourage the use of non-auto modes. TDM measures part of the project's TDM plan would remain in place during special events. The TDM program includes elements that could be applied to managing travel to and from special events. Details of the program will be considered once specific tenants or events are determined.

Proposed TDM elements that could be applicable during special events include:

- Designated event bicycle parking and/or valet in a secure area for event patrons to drop off and pick up their bicycles ;
- Passenger loading adjacent to or near the special event space;
- Preferred parking spaces should be reserved for carpool vehicles;
- Variable parking prices;
- Parking management (valet);
- Extended shuttle service during special events;
- Promotion of transit and bike share services on the Candlestick Point / Hunters Point Shipyard and event website

EMPLOYEE TDM ELEMENTS

The TDM program will include elements designed to assist employers to encourage the use of transit and facilitate walking and bicycling among their employees. All project site employers would be required to participate in the TDM program, and the TC would work with employers to monitor progress and provide support. It is expected that the TDM program will be a single document, which will cover the program monitoring to be performed by the TC. The project's TDM program will detail what elements are required of employers of different sizes and each employer will be required to designate a single contact for transportation purposes.

In addition, employers will be expected to provide the following:

- Bicycle parking in a controlled access or secure area with showers and clothes lockers;
- Carpool and vanpool ride-matching services, with allocated parking spaces and reduced parking charges;
- Emergency Ride Home program for registered carpool, vanpool and transit riders in emergency situations; and
- Information boards/kiosks displaying transit routes and schedules; carpooling and vanpooling information; bicycle lanes, routes, paths and facility information.

Furthermore, employers will be encouraged to offer programs to reduce auto use and support the use of alternative modes including the following:

- Alternative commute subsidies and/or parking cash-out, where employees are provided with a subsidy if they use transit or commute by alternative modes;
- Opportunities to purchase commuter checks;
- Opportunities to provide subsidized vanpool service;
- Marketing of alternative travel options, with employers encouraged to provide information to customers regarding alternative modes of travel;
- Compressed work week and flextime, where employees adjust their work schedule to reduce vehicle trips to the worksite; and
- Telecommuting options.

The TC will work with employers to ensure that employees are kept fully informed of the available programs and promotional activities, and will be available to assist with new employee orientation. In addition, the TC will be available to coordinate these services on behalf of the smaller employers.

CARPOOL/VANPOOL ELEMENTS

Carpool and vanpool ride-matching services would be offered through the TDM program, and designated spaces in parking facilities would be provided free to vanpools. A designated signed area near the transit centers would be reserved for casual carpooling.

Proposed implementation measures include the following:

- Within the commercial zone, preferential parking spaces will be reserved for carpoolers;
- A casual carpool pick-up point will be designated;
- All employees and residents who are registered carpool/vanpool users will be guaranteed a ride home when carpooling or vanpooling;
- A database of carpool/vanpool participants will be collected and maintained by the TC; and
- A real-time carpool match program will be provided on the Candlestick Point/Hunters Point Shipyard website.

CARSHARE ELEMENTS

The Transportation Coordinator will work with local carsharing organizations to provide a network of carshare vehicles parked in neighborhood "pods", each within a half mile of all residences. Members will be allowed to use vehicles when needed, paying based on how much they drive, thus reducing the fixed costs associated with private automobile ownership.

It is expected that many residents would become members of the carsharing organizations, reserving a car by phone or online on an as-needed basis. At the carshare "pods", members would check in with a personalized key card to gain access to the car.

This program provides an effective incentive for residents and others to opt for transit as a primary mode of travel because they know that a car is readily available when they need one. The growth and success of these programs in the Bay Area and in other cities throughout the US has shown their effectiveness in reducing auto dependency.

The carshare operators would determine the appropriate number of cars to be located at the project site, based on market demand. Parking spaces for carshare vehicles would be provided at strategic locations throughout the project site. The number of car share parking spaces is determined on the number of users as outlined in **Table 7**.

Table 7: Car Share Parking Space Requirements

Number of Residential Units	Number of Required Car Share Parking Spaces
0-49	0
50-200	1
201 or more	2, plus 1 for every 200 dwelling units over 200
Number of Parking Spaces Provided for Non-Residential Uses or in a Non-Accessory Parking Facility	**Number of Required Car Share Parking Spaces**
0-24	0
25-49	1
50 or more	1, plus 1 for every 50 parking spaces over 50

Proposed implementation measures include the following:

- The TC will coordinate with carshare providers to establish long-term carshare use. This will reduce the need for private vehicle ownership for vacations or weekend trips;
- The availability of carsharing and information on the various carshare operators will be included in all rental and leasing information and on the Candlestick Point/Hunters Point Shipyard website;
- Within the commercial zones, free parking spaces will be reserved for short-term carshare parking;
- All carshare parking spaces and hub locations will be clearly identified and directional signage will be provided, and real-time availability of carshare vehicles will be provided on the Candlestick Point/Hunters Point Shipyard website (to supplement the information on the carshare operators' websites); and
- Carshare vehicle hubs will be established throughout the project site in coordination with the design of garages and parking facilities.

ADDITIONAL ELEMENTS AND IMPLEMENTATION STRATEGIES

The following additional TDM strategies are best implemented in conjunction with complementary strategies among the previously-described TDM elements:

- A personalized commute plan will be offered for all new residents. The TC will meet with each resident and develop a customized transit, carpool, vanpool, or bicycle program. The TC will show residents their various commute options, comparing costs and travel times, and identifying any employer-based programs.
- The TC will coordinate with major employers in San Francisco and the Peninsula to develop employer-based TDM measures. Transit usage and carpool/vanpool need to be supported on both ends to be successful. There is a higher incentive to use transit if free parking is not provided at the workplace. Employers control the ability to institute alternative work hours and telecommuting. Housing at Candlestick Point/Hunters Point Shipyard could also be marketed to new employees at these workplaces.
- The TC will institute a TDM committee staffed by residents and employees. The committee will participate in setting TDM goals and developing programs, which would give residents and employees a greater stake in its success.
- Performance goals will be set upon occupancy of each phase. Goals could be established as a given decrease in single-occupant vehicle mode split or reduction in peak hour traffic volumes at driveways.
- All TDM information will be included in rental packets and home ownership documents as well as all office, R&D, and retail lease documents.
- Surveys of residents, employers, and employees will be conducted on an annual basis to document TDM effectiveness and to develop additional program measures.
- High-speed wireless internet will be provided to encourage telecommuting.
- All deliveries to the grocery store and other high-volume commercial uses will be scheduled to avoid peak commute periods.
- Participation in San Francisco's bike sharing program will be considered as an alternative transportation program where bike kiosks are set up at intervals along major corridors and riders can pick up and drop off bicycles in seconds.

PARKING

The parking program is designed to reduce the overall usage of private automobiles through pricing, supply, new technologies, and effective monitoring programs. The following sections outline some of the key elements of the parking plan.

RESIDENTIAL PARKING

Residential parking will be unbundled from the units and each parking space will be sold or leased separately to individual units[5]. Residential parking rates will be set equivalent to fair market value and parking will be provided at a rate of one space per unit on average.

In areas outside of Downtown San Francisco, the Planning Code generally requires a minimum 1.0 parking ratio – one off-street parking space for each dwelling unit. However, minimum parking requirements have recently been removed for Downtown Residential (DTR) and C-3 districts – including Union Square, the Financial District, Rincon Hill, and portions of the South of Market Area (SOMA) surrounding the Transbay Terminal. Maximum parking ratios now apply in these areas, which in some cases are well below the otherwise 1.0 parking ratio minimum. The 1.0 parking ratio maximum proposed for this project would be similar.

The San Francisco General Plan discourages automobile use and encourages alternative means of travel in high-density, congested areas, and recognizes that not every resident needs parking provided with their unit. The policy of providing less than one parking space per residential unit has been incorporated in the Market and Octavia Neighborhood Plan, and is under consideration in the Eastern Neighborhoods Area Plans.

Unbundling takes this concept one step further and links parking requirements to auto ownership instead of home ownership. In typical units where parking is bundled, tenants pay for the unit and the parking space as a single cost. Unbundling removes the parking component from the cost of residential or commercial space and allows residents and tenants to buy or lease parking only if they need it.

There are two primary benefits to unbundling[6]:

Reduced housing costs and greater housing affordability. Tenants who do not intend to use off-street parking can save the expense of purchasing a parking space with their unit. Unbundling parking can thus increase the affordability of housing, which is an especially important issue in San Francisco, where the cost of housing can be beyond the means of many households.

Induced changes in travel behavior. Bundled off-street parking gives the impression that parking is “free”, when in reality; the cost of the unit is greater than a unit without off-street parking. Unbundling parking reveals the actual cost of parking to the tenant and can affect the perception of the cost of owning a car compared to the cost of alternative modes of travel such as transit. By increasing awareness of the hidden costs of auto ownership, unbundling parking could ultimately help to induce changes in travel behavior, such as decreasing auto dependency and encouraging more sustainable travel patterns on transit, bicycles, and by foot.

Unbundled parking is currently required in the Transbay, Rincon Hill, Central Waterfront, and Eastern Neighborhoods, and is a standard condition for any housing projects needing approval of the Planning Commission.

Additional parking management strategies such as residential permit parking, time of day restrictions, parking technologies, and parking wayfinding will also be considered as needed to supplement other parking strategies based on the results of the On-Site Coordinator’s annual monitoring program.

5 This arrangement would not apply to the 1,655 “Agency Affordable” units, which are limited by tax-credit financing requirements.

6 Klipp, Luke. “The Real Costs of San Francisco's Off-Street Residential Parking Requirements: An analysis of parking's impact on housing finance ability and affordability.” (2004).

EMPLOYEE/VISITOR PARKING ELEMENTS

- Parking will be designed to serve all commercial land uses. Where shared parking opportunities exist (e.g., a facility provides parking for service uses during the day and a restaurant during the evening), the parking requirements will be reduced accordingly;
- All on- and off-street parking in commercial areas will be paid parking;
- Parking rates will ideally be set equivalent to fair market value and not subsidized by tenants or building operators;
- No discounts will be allowed for "early bird" or "in by/out by" long-term parking, and no discounted monthly parking passes will be allowed; and
- Preferred parking spaces will be reserved for carpool/vanpool/carshare vehicles.

In addition to the above elements, off-street parking will be priced according to the following principles:

- Free or discounted parking will be available for rideshare/vanpool users;
- Parking will be more expensive than transit options;
- Parking fee structures will encourage short-term retail trips and strongly discourage long-term parking/employee parking; and
- Assessment of parking fees would begin before the morning commute period and end after the evening commute period to discourage use of automobiles for home-based work trips among project residents.

RETAIL AND HOTEL PARKING

- Shoppers and hotel guests will not receive validation for parking;
- Parking will be more expensive than transit options;
- Hotel room rates will include a transit pass surcharge to encourage transit use among hotel guests;
- TDM programs will be instituted for retail and hotel employees; and
- TDM programs will be instituted for special events which would be expected to draw large numbers of visitors to project retail uses and hotels.

PARKING REQUIREMENTS

Table 8 summarizes parking requirements calculated for the project land use program. These numbers represent maximum off-street parking spaces for uses within the project area. The Planning Department may require that parking be shared across uses. The development plan parking requirements were established through the Design for Development (D4D) process for development controls, and thus the parking and loading requirements have been tailored to this development.

Table 8: Maximum Parking Requirements	
Land Use	Rate
Residential	1.0 per unit
Regional Retail	2.7 per 1,000 sq. ft. (CP) 3.0 per 1,000 sq. ft. (HP)
Neighborhood Retail / Maker Space	1.0 per 1,000 sq. ft. (CP)[1] 3.0 per 1,000 sq. ft. (HP)
Office / Research and Development	1.0 per 1,000 sq. ft. (CP) 1.3 per 1,000 sq. ft. (HP)
Hotel	0.25 per room
Film Arts Center	1/8/10 seats
Artists' Space	1.0 per 2,000 sq. ft.
Community Uses	1.0 per 2,000 sq. ft.
Institution / School	0.07 per 1,000 sq. ft.
Marina Slips	0.6 per slip
Arena/Performance Venue	1/15 seats

1 Grocery stores include a maximum parking ratio of 2.7 spaces per 1,000 sq. ft.

These requirements present the base number for the proposed project maximum allowable spaces. It should be noted that different requirements may apply based on the type of office and research and development tenants. Additionally, if monitoring demonstrates that the project is not meeting its mode split goal, parking reductions may be considered as a strategy to reduce auto use.

BICYCLE PARKING

Bicycle parking will be located in a secured and convenient location that is near the garage entrance and does not conflict with autos. The standards for bicycle parking by use are listed in **Table 9** and **Table 10**.

Table 9: Bicycle Parking Spaces for Residential Uses	
Residential Use	Minimum Number of Bicycle Parking Spaces Required
Dwelling units in all Districts	For projects up to 100 dwelling units: 1 Class 1 space for every 1 dwelling units.
	For Projects over 100 dwelling units: 100 Class 1 spaces, plus 1 Class 1 space for every 4 additional dwelling units over 100.
Group/Senior Housing	1 Class 1 space for every 10 units.

LOADING

The loading program is designed to facilitate access required by freight vehicles (commercial delivery and moving trucks) and passenger vehicles (private vehicles, vans, and shuttles), while mitigating the negative impacts that loading and unloading activities might have on other traffic modes, particularly the pedestrian environment. The program must be managed effectively in order to prioritize pedestrians and enhance safety. The following sections outline the key elements of the loading plan.

Table 10: Bicycle Parking Spaces for Non-Residential Uses[1]

Land Use	Minimum Number of Bicycle Parking Spaces Required
Office / Research & Development	1 Class 1 Space for every 5,000 square feet
Community Uses / Artists' Space	1 Class 1 Space for every 5,000 square feet
Retail[2]	1 Class 1 Space for every 7,500 square feet
Hotel	1 Class 1 Space for every 30 rooms
School	4 Class 1 Spaces for every classroom
Childcare	1 Class 1 Space for every 20 children

1 Class 2 bicycle parking will be identified in the Candlestick Point and Hunters Point Shipyard Phase II Streetscape Master Plan.
2 Includes regional retail, neighborhood retail, maker space, film arts center, and performance venue.

ON-STREET LOADING

On-street loading spaces are designed to facilitate short-term parking near building entrances to meet the needs of disabled individuals and as a general convenience. They also allow package and other commercial deliveries to be made. Loading spaces also facilitate traffic flow by reducing the incidence of double-parking. However, even the frequent movements of vehicles in and out of loading spaces can hinder traffic, including bikes and transit service. The following guidelines will apply to the location and management of on-street loading spaces though, ultimately, on-street passenger and freight loading will be implemented in accordance with SFMTA guidance and policies:

- The prime street frontage directly in front of building entrances will not be designated for parking but reserved for use as short-term loading zones;
- The sizes of loading zones will be tailored to the specific uses of the adjacent properties;
- Loading spaces should not be designated where they would interfere with BRT or cycle track operations;
- For buildings where on-street loading is not possible on the primary access route, loading will be accommodated on other adjacent streets or on-site (off-street)

Existing travel behavior shows an increase in ride-hailing or TNC services. It is expected that the use of TNC services will continue to rise in the future; thus, on-street loading designs should account for the potential increase in passenger loading demand. Additionally, TNC use will be monitored by the TC as part of the comprehensive monitoring program.

OFF-STREET LOADING

To provide access from the street, off-street loading spaces require curb cuts and driveways, which can be intrusive to the bicycling and pedestrian environment. In addition, the turning movements of vehicles leaving or entering the street can impede the flow of traffic, which is of particular concern with regard to transit vehicles. The following guidelines will apply to the location and design of off-street loading spaces:

- Where possible, curb cuts and driveways providing access to off-street loading spaces should be consolidated into a single location on any block face to minimize their impact;
- No curb cuts accessing off-street loading will be created on the BRT streets or on the local streets with bike lanes, where alternative frontages are available;
- Individual buildings will be limited to one opening of up to 24 feet in width to provide access to off-street loading. Shared openings for parking and loading will be encouraged, with a maximum width of 27 feet;
- Loading spaces will be designed to serve all commercial land uses. Where opportunities to share loading spaces exist (e.g., loading area for a supermarket with a peak of morning deliveries and restaurants with afternoon deliveries), the off-street loading requirements will be reduced accordingly; and
- The Planning Department or Office of Community Investment and Infrastructure may regulate truck access from arterial streets to loading docks based on development-specific loading needs.

Tables 11 and 12 present permitted and required off-street freight loading space for various project uses, based on Section 152 of the San Francisco Planning Code. The Code stipulates off-street loading space requirements that apply generally outside of the downtown commercial core and the South of Market District, but includes special conditions for Downtown Residential (DTR) districts. DTR districts are transit-oriented, high-density, mixed-use residential neighborhoods in and around downtown. Reflecting the greater pedestrian activity in such districts, off-street loading is limited to a certain number of permitted spaces, rather than a prescribed number of spaces.

The off-street loading limits of DTR districts, shown in **Table 11**, are proposed for the medium density residential and high density residential blocks, as shown in the Land Use Program presented in **Figure 6**. In all other areas of the project, the City's general requirementes for off-street loading spaces will apply, as presented in **Table 12**.

Table 11: Proposed Off-Street Freight Loading Space Limits Medium- and High-Density Residential Blocks

Land Use	Size of Use	Number of Spaces Permitted (per block)
Non-Residential Uses	0 - 50,000 sq. ft.	1
	> 50,000 sq. ft.	1 space per 50,000 sq. ft.
Residential – low density	0 - 100 units	1
Residential – high density	> 100 units	1, plus 1 additional loading space for every 200 additional units
Total Number of Loading Spaces Allowed for Any Single Building (all uses)		4

Table 12: Proposed Off-Street Freight Loading Space Requirements Outside of Medium- and High-Density Residential Blocks

Land Use	Size of Use	Number of Spaces Required (per block)
Retail, Wholesale, Manufacturing, Live/Work	0 - 10,000 sq. ft.	0
	10,000 - 60,000 sq. ft.	1
	60,000 - 100,000 sq. ft.	2
	> 100,000 sq. ft.	3, plus 1 for each additional 80,000 sq. ft.
Offices, Hotels, Residential, and all other uses	0 - 100,000 sq. ft.	0
	100,000 - 200,000 sq. ft.	1
	200,000 - 500,000 sq. ft.	2
	> 500,000 sq. ft.	3, plus 1 for each additional 400,000 sq. ft.

5.3 PHASING

The Plan calls for a comprehensive set of transportation solutions to serve the travel demands of residents, employees and visitors and to meet the project goals of sustainability and livability. Because of their cost and complexity, these improvements to the transit and roadway networks will be phased during the development of the project. Because the project is expected to be constructed over a relatively long period (full buildout expected by 2035), it is crucial that transportation improvements be timed to provide the optimal level of mobility relative to the amount of development throughout the buildout process.

Development of the project has been grouped into three major development phases each for Candlestick Point and Hunters Point Shipyard. **Table 13** presents the anticipated land development phasing.

These development assumptions anticipate construction of Candlestick Point will likely occur in initial Phases, with development at the Hunters Point Shipyard site occurring in later phases.

Tables 14 and 15 summarize the programmed roadway and transit improvements, respectively. Phase 1 improvements are generally expected to be built and operational to coincide with the first stage of residential development and to meet the needs of the new regional retail center in Candlestick Point. Subsequent improvements are expected to be built and operational to coincide with project build-out.

Table 13: Land Development Phasing

Land Use	Phase 1	Phase 2	Phase 3	Totals
Hunters Point Shipyard				
Residential (dwelling units)	1,249	904	1,301	3,454
Neighborhood Retail / Maker Space (sf)	183,500	44,500	73,000	301,000
Regional Retail (sf)	0	100,000	0	100,000
Hotel (rooms)	0	175	0	175
Community Services (sf)	0	0	50,000	50,000
R&D (sf)	1,967,655	1,101,745	1,195,600	4,265,000
Artist's Studios (sf)[1]	255,000	0	0	255,000
Institution (sf)[2]	65,000	0	345,000	410,000
Candlestick Point				
Residential (dwelling units)	2,439	1,942	2,837	7,218
Neighborhood Retail (sf)	125,000	0	0	125,000
Regional Retail (sf)	635,000	0	0	635,000
Hotel (rooms)	220	0	0	220
Community Services (sf)	47,000	3,000	0	50,000
Arena (seats)	10,000	0	0	10,000
Office (sf)	150,000	0	0	150,000

Source: FivePoint – April 2018

1 The Project includes 225,000 square feet of existing artist studio space that would be renovated and replaced.
2 410,000 sq. ft. equates to approximately 1,000 junior high/high school students and 1,000 high school/post-secondary students. Types of students and institutions may vary.

Generally, improvements to roadways that are expected to carry traffic to and from the new regional retail center will be constructed in Phase 1. These include Harney Way, Arelious Walker Drive, Gilman Avenue, and Carroll Avenue. This approach will ensure that substantial improvements are made to both auto and transit access to the Candlestick Point retail center prior to its opening. A more detailed discussion of the development-related "triggers" for roadway improvements is included in the project's Infrastructure Plan.

A similar concept has been developed for the transit improvements, as shown in **Table 15**. Transit routes serving the Hunters Point Shipyard (Hunters Point Express (HPX), 23-Monterey/24-Divisadero, 44-O'Shaughnessy, and 48- Quintara) would be extended to serve the site in the early stages of Phases 1 and 2, at somewhat lower frequencies than expected with full buildout. Gradually, as development in the Hunters Point Shipyard occurs, frequencies of these routes will be increased to correspond to the level of development.

Similarly, routes serving Candlestick Point (Candlestick Point Express (CPX) and 29-Sunset) will be extended into the site in the relatively early stages of Phase 1, when the bulk of the Candlestick Point retail center development is scheduled to occur.

The Muni Line 28R/BRT route would be implemented and extended in Phase 2.

Table 14: Roadway Improvement Phasing

Roadway Improvement	Phase		
	1	2	3
Hunters Point Shipyard			
Ingalls Avenue/Thomas Avenue/Griffith Street Improvement		♦	
Innes Avenue Streetscape	♦		
Palou Avenue Transit Preferred Street and Streetscape Improvements			♦
Yosemite Slough Bridge		♦	
Candlestick Point			
Harney Way Widening (Initial Configuration)	♦		
New Roadway through Candlestick Point	♦		
Carroll Avenue		♦	
Gilman Avenue Streetscape	♦		
Ingerson Avenue Repaving		♦	
Jamestown Avenue Streetscape		♦	
Geneva Avenue Extension[2]		♦	
Harney Way/US 101 Interchange Reconstruction[2]		♦	

1 Ultimate configuration based on Mitigation Measure MM TR-16 from project EIR
2 Included to indicate anticipated infrastructure development timeline.

Table 15: Transit Phasing			
Route	Frequency (Minutes)	Major Phase/Sub-Phase	Approximate Year
Hunters Point Shipyard			
Hunters Point Express (HPX)	20 10 6	1 / HP-01 2 / HP-04 3 / HP-06	2021[2] 2025 2026
23 Monterey (Temporary)[1]	20	1 / HP-01	2021
24 Divisadero[1]	15 10	2 / HP-04 3 / HP-06	2025 2026
44 O'Shaughnessy	10 7.5 6.5	1 / HP-02 2 / HP-03 3 / HP-06	2022 2025 2026
48 Quintara	15 10	1 / HP-01 2 / HP-03	2021 2025
Candlestick Point[2]			
Candlestick Point Express (CPX)	15 10	1 / CP-03 1 / CP-02	2021 2022
Extension of 29-Sunset	10 5	1 / CP-03 1 / CP-02	2021 2025
Privately-Funded Complimentary Shuttle[1]	7.5	1 / CP-02	2022
Routes Serving Both Sites			
Extension of 28R / BRT[3]	8 5	2 / HP-04 3 / CP-07	2025 2028
Increase serve on T-Third Light Rail[4]	6 5	No Change - Not triggered by project development	
Other Improvements			
Hunters Point Transit Center		3 / HP-05	2030
BRT Stops		2 / HP-04	2025
Connections to SamTrans		2 / HP-04	2025
Palou Avenue Transit Preferential Street		3 / HP-05[6]	2026[6]
Harney /Geneva BRT / Transit Preferential Street[5]		Unknown - Currently Under Study	
Bayshore Transit Center		Unknown - Currently Under Study	
Oakdale Caltrain Station Improvements		Unknown - Currently Under Study	

1 The 23 Monterey service may extend into HPS until SFMTA's fleet is modified to eliminate the need for OCS wires extended into the HPS site, at which point the 24 Divisadero would be extended and the 23 Monterey would return to its original (existing) routing.

2 The Transit Operating Plan includes a complimentary publicly accessible shuttle that is privately-funded, which will provide service between the project site and the Balboa BART station, replicating service that will ultimately be offered by the 28R/BRT route.

3 Until construction of the Geneva Avenue extension, the BRT service may operate independently from the 28R – 19th Avenue/ Geneva Avenue limited between the Hunters Point Transit Center and the Bayshore Caltrain Station via Alana Way and Beatty Avenue.

4 Increased capacity on the T-Third shown here is accommodated within the overall implementation of the Central Subway service capacity and frequency enhancements and is not triggered by project development. Extension to the Bayshore Caltrain station is also proposed as part of the overall Bi-County study. In Phase 3, service will likely be provided by two-car trains.

5 Improvement currently under study – phasing shown is anticipated but subject to change.

6 Palou Avenue improvements will be triggered by sub-phase HP-05 or based on transit phasing to coincide with improved service frequencies

FEHR & PEERS

FIVEPOINT™

2018 HUNTERS POINT SHIPYARD PHASE 2 DESIGN FOR DEVELOPMENT

SUMMARY

The 2018 Hunters Point Shipyard Phase 2 Design for Development document ("D4D") will provide development controls for all construction on private property in the Phase 2 portion of the Shipyard. A large section of the original D4D, adopted in 2010, focused on the Stadium alternative in the southern portion of the Project Area. With that alternative gone, and to implement architect Sir David Adjaye's expansive new vision for the Shipyard, FivePoint, OCII, the Planning Department and Gensler, the architecture firm, created a new and restated version of the D4D.

The document functions as an innovative zoning code for Phase 2 of the Shipyard. Both the CCII and the Planning Commission will adopt the D4D. The Planning Commission will consider its adoption of the D4D at its April 26, 2018 public hearing, after the CCII's April 17th hearing. Future amendments to the D4D will require both commissions' approvals.

To produce the document, a working group was established comprised of staff from OCII, the Planning Department, FivePoint and Gensler. The working group's charge was to devise mandatory standards and guidelines that, through the built form, implement the vision for the Shipyard and provide opportunities for creative architectural expression. The vision calls for expansive open spaces and large block sizes that will accommodate large-floorplate commercial and residential buildings. The D4D aims to enable the development of large-floorplate buildings while simultaneously humanizing them from close-up with special attention to the design and activation of their ground floors. At the same time, depending on a building's scale, the D4D applies architectural controls to break up its massing and augment its articulation to enrich how the building and skyline are perceived when viewed from afar.

To avoid cookie-cutter design solutions, often used to comply with prescriptive development standards, the D4D offers a unique "menu" approach. This approach provides multiple design options geared towards similar goals.

DETAILED OVERVIEW

The D4D has six chapters as follows:

1. **Introduction**: provides an overview of the document, identifies the D4D's relationship to its companion documents and describes the historical context of the Shipyard's redevelopment.
2. **Vision**: illustrates the overall concept for the Shipyard as well as the relationship between the Shipyard and adjoining communities, specifically concerning design, character, and connections.
3. **Districts and Key Destinations**: defines the design vision and intent for Phase 2 of the Shipyard's four neighborhoods, including their urban form, and how key destinations interface with the public realm and transportation.
4. **Building Design Standards and Guidelines**: defines the design principles and standards regulating the form and character of buildings, including height, massing design, signage and lighting.
5. **Implementation**: offers the procedures for permitting individual parcels, granting variances and mending the D4D.
6. **Appendix**: provides definitions and various site maps to support the D4D.

While the Redevelopment Plan governs permitted land uses in the Shipyard, the D4D regulates the built environment through the development standards and guidelines found in **Chapter 4 "Building Design Standards and Guidelines,"** which supplies the substance of the document.

Chapter 4 "Building Design Standards and Guidelines"

Each section of this chapter includes *Intents*, *Definitions*, *Standards* and *Guidelines*, and some sections include Applications.

Intent statements describe the purpose and objective of each *Standard* and *Guideline* to assist in making future determinations and interpretations of the rules. Similarly, *Definitions* provide clarity on terms used throughout the document.

Standards are mandatory and quantifiable requirements applicable to all development. *Guidelines* are also mandatory, but are qualitative and therefore require interpretation.

Applications proved direction to the architect on how to implement certain *Standards* and *Guidelines*.

General *Standards* include building setbacks, mid-block breaks, site coverage, private open space requirements, maximum building heights and bulk. These *Standards* help shape the urban form of the Shipyard, which calls for the stepping down of heights from the Hilltop to the waterfront, and the framing of formal open spaces, such as the Green Room and the Water Room. The D4D also include many fine-grain *Standards* to enrich the look and feel of each district. Examples of these include ground-floor window transparency; screening of parking areas, utilities and rooftop mechanical devices; maximum dimensions of rooftop penthouses; pedestrian and vehicular entries into buildings; signage; illumination and façade materials.

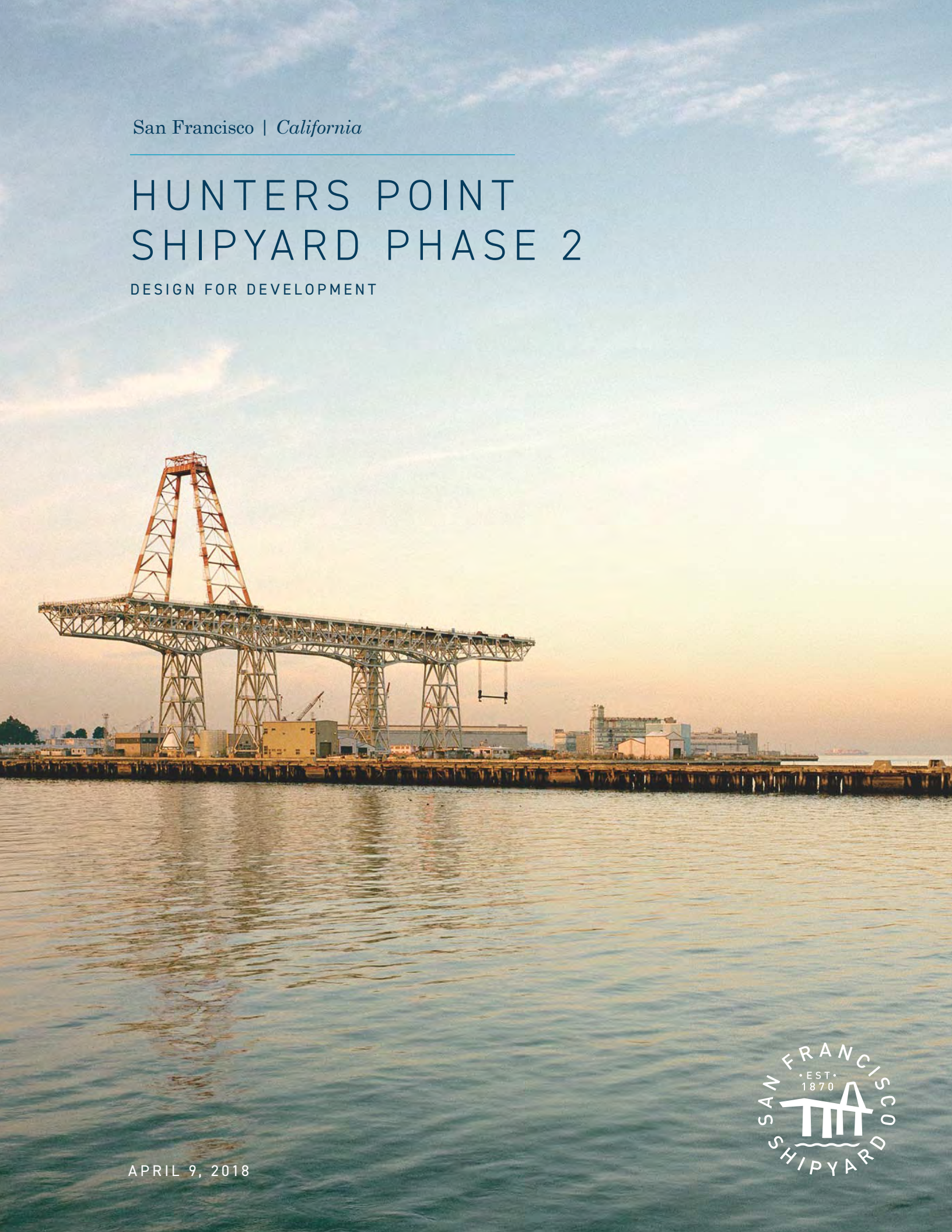
This D4D includes *Architectural Controls* to improve the impact bigger building will have on the urban design of the district. The focus of these controls is on building design, articulation and shape. *The Architectural Controls* also combine ground floor and public realm enhancements to improve the pedestrian experience around the building, which is of concern surrounding large-scale blocks. The *Architectural Controls* are grouped into the following categories: *Façade Composition*, *Bulk and Massing*, and *Building and Public Realm Enhancements*. This D4D includes a menu approach for *Architectural Controls by Building Scale* (p. 67). This menu is arranged in a flow chart (pp. 68-69) and uses a point system. The larger the building, the more points are required and the more options are offered. The menu approach allows flexibility and creativity in design with the goal of establishing an interesting variety of buildings. Each building is required to incorporate multiple architectural techniques.

Finally, the D4D contains a section on *Adaptive Reuse* (p. 132). The section promotes the use of existing buildings on the Shipyard, some of which are unique in their industrial nature and provide a positive design context and opportunities for reuse.

San Francisco | *California*

HUNTERS POINT SHIPYARD PHASE 2

DESIGN FOR DEVELOPMENT



APRIL 9, 2018

ADOPTED _____ BY:

SAN FRANCISCO PLANNING COMMISSION
MOTION NO. _____

COMMISSION ON COMMUNITY INVESTMENT & INFRASTRUCTURE
RESOLUTION NO. _____

Table of Contents

1 Introduction

1.1 Summary of Document 3

1.2 Companion Documents 4

1.3 Document and Chapter Organization 5

1.4 History 8

2 Vision

2.1 Project Vision 18

3 Districts & Features

3.1 Warehouse District 30

3.2 Village Center 32

3.3 Wharf District 34

3.4 North Shoreline 36

3.5 Green Room 38

3.6 Water Room 39

3.7 Pedestrian Allée 40

3.8 Waterfront Open Space 41

4 Building Design Standards & Guidelines

Building Design 50

Private Open Space 134

Signage 146

Lighting 160

Private Infrastructure 162

5 Implementation

5.1 Review and Approval of Design Documents 167

5.2 Deviations and Variances 168

5.3 Process for Amendment of the Design for Development Document 169

6 Appendix

6.1 Checklist 172

6.2 Building Design Application Studies 180

6.3 Sitewide Diagrams 190

6.4 Term Definitions 192

6.5 List of Figures 172

6.6 Image Credits 174

1 INTRODUCTION

1.1 Summary of Document 3

1.2 Companion Documents 4

1.3 Document and Chapter Organization 5

1.4 History 8

1 Introduction

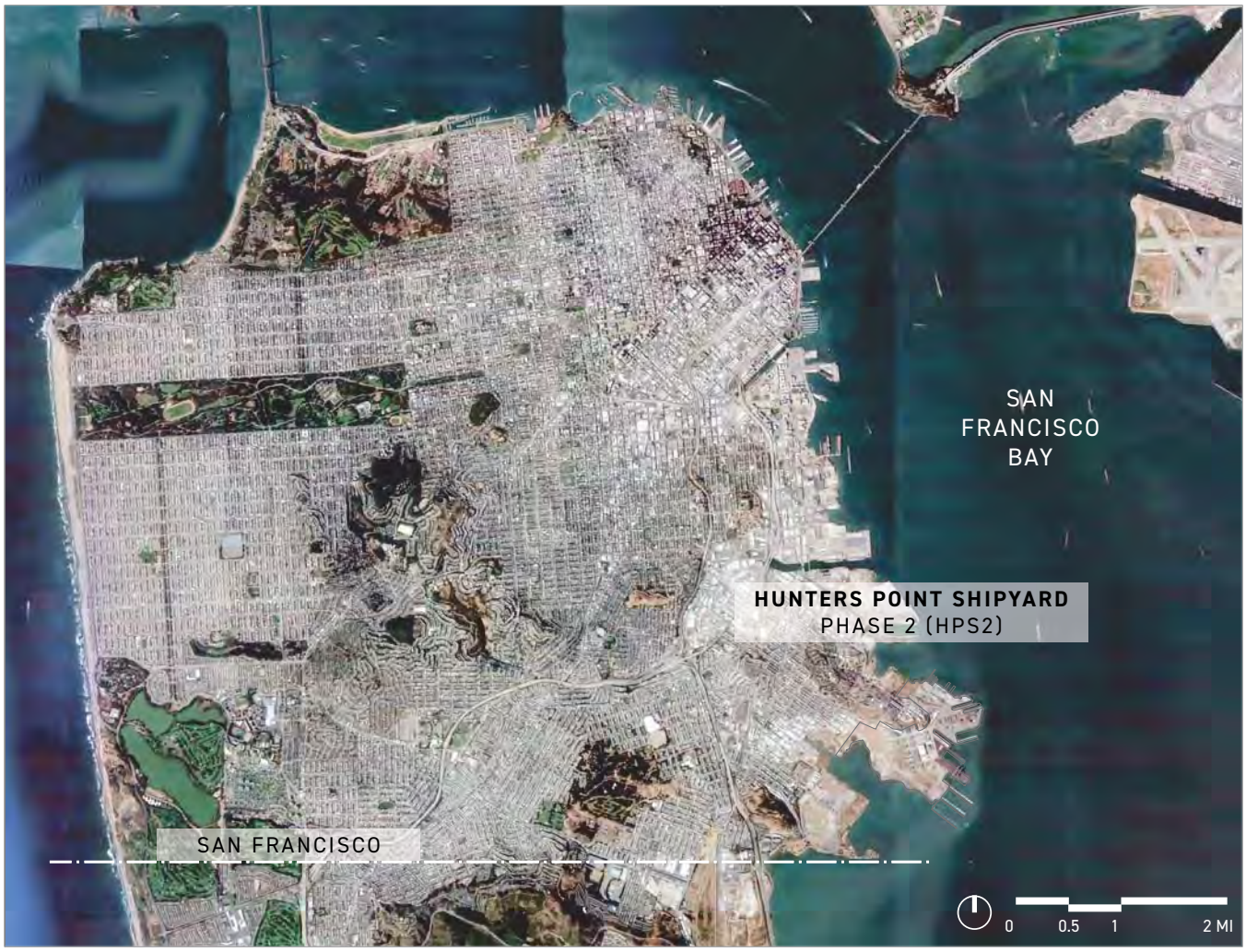


Figure 1.0a: HUNTERS POINT SHIPYARD PHASE 2 SITE LOCATION IN SAN FRANCISCO

1.1 Summary of Document

The 2018 Hunters Point Shipyard Phase 2 Design for Development document (D4D) establishes the design intent, standards, and guidelines that will govern Phase 2 of the Hunters Point Shipyard Redevelopment Project Area (HPS2). The amendment to the HPS2 Redevelopment Plan (Plan) establishes goals to: transform this approximately 421-acre site from a post-military site into thriving neighborhoods; support the construction of market-rate and affordable housing; expand public transit service; and create connections to parks, open spaces, and the waterfront. The Plan governs the land uses in HPS2 and allocates the maximum development square footage for each land use category permitted.

The D4D establishes standards and guidelines for development controls that implement the vision for HPS2 and provide an environment with opportunities for creative and innovative architectural expression. There are additional companion documents which govern different components of the HPS2 development. This D4D includes summaries from these companion documents for reference only—the summaries are not intended to be an exhaustive list of all the relevant content from these documents. This D4D supersedes the HPS2 D4D document approved in 2010.

Throughout this document, Hunters Point Shipyard Phase 1 will be referred to as HPS1 and Hunters Point Shipyard Phase 2 will be referred to as HPS2. While regulated independently, HPS2 is adjacent to HPS1. Hunters Point Shipyard, which includes HPS1 and HPS2, will be referred to as the "Shipyard." The master developer is responsible for the implementation of the Shipyard and Candlestick Point (CP). HPS1 and CP each have a separate D4D. *Figure 1.1a* highlights all three areas where the Office of Community Investment and Infrastructure (OCII) is the primary governing agency.

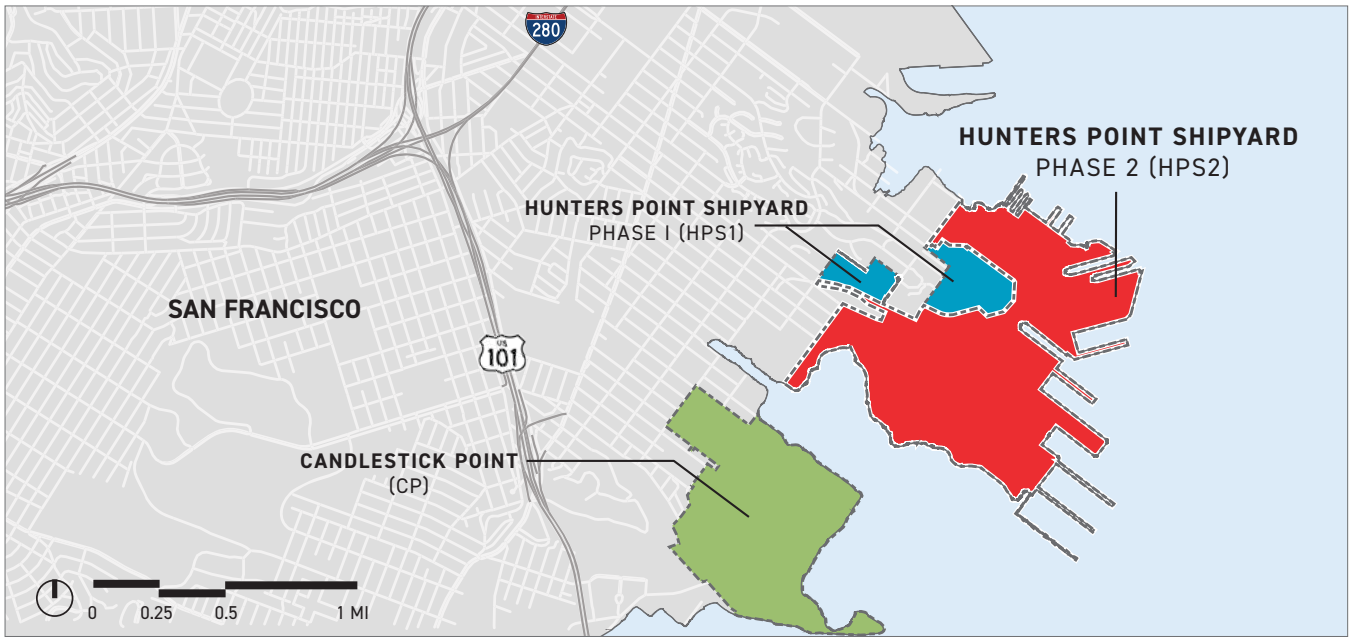


Figure 1.1a: HUNTERS POINT SHIPYARD AND CANDLESTICK POINT BOUNDARY

1.2 Companion Documents

Hunters Point Shipyard Redevelopment Plan: governs permitted land uses and maximum floor areas for each land use in HPS1 and HPS2.

Candlestick Point / Hunters Point Shipyard Phase 2 (CPHPS2) Disposition and Development Agreement (DDA): defines developer obligations to deliver certain infrastructure improvements and community benefits as part of the redevelopment of CP and HPS2.

CPHPS2 Final Environmental Impact Report (and Addenda): describes environmental impacts associated with the construction and operation of development at CP and HPS2, and outlines mitigation measures required of the developer to reduce those environmental impacts.

CPHPS2 Design Review and Document Approval Procedure (DRDAP): defines submittal requirements and the process for approving major and sub-phase applications, as well as Schematic and Design Development documents within CP and HPS2.

CPHPS2 Infrastructure Plan: describes all on-site and off-site infrastructure improvements including utilities and roadways to be constructed in CP and HPS2.

CPHPS2 Parks, Open Space, and Habitat Concept Plan: describes the concept plans for each of the parks and open space areas within CP and HPS2. These areas include the waterfront promenade, neighborhood parks, sports fields, recreational trails linking to the Bay Trail and Blue Greenway, and open spaces dedicated to the restoration of native habitats.

CPHPS2 Sustainability Plan: identifies sustainable design strategies to reduce energy and water demand, improve air quality, and reduce greenhouse gas emissions; defines transportation demand management to minimize auto dependence; and provides plans to enhance the natural environment.

CPHPS2 Transportation Plan: defines the Transit Operating Plan, Transportation Demand Management Program, designated bike routes, and street cross-sections along with parking and loading standards, bicycle facilities, and car-share requirements.

HPS2 Streetscape Master Plan: identifies landscaping, street furnishings, lighting, and paving standards for each neighborhood in HPS2.

HPS2 Signage Plan: defines design standards including color palette, fonts, and sign dimensions for wayfinding and directional signage within the public right-of-way within HPS2.

1.3 Document and Chapter Organization

This D4D opens with an overall vision for HPS2 and its unique districts.

The Design Intent, Standards and Guidelines regulate how this vision will be implemented.

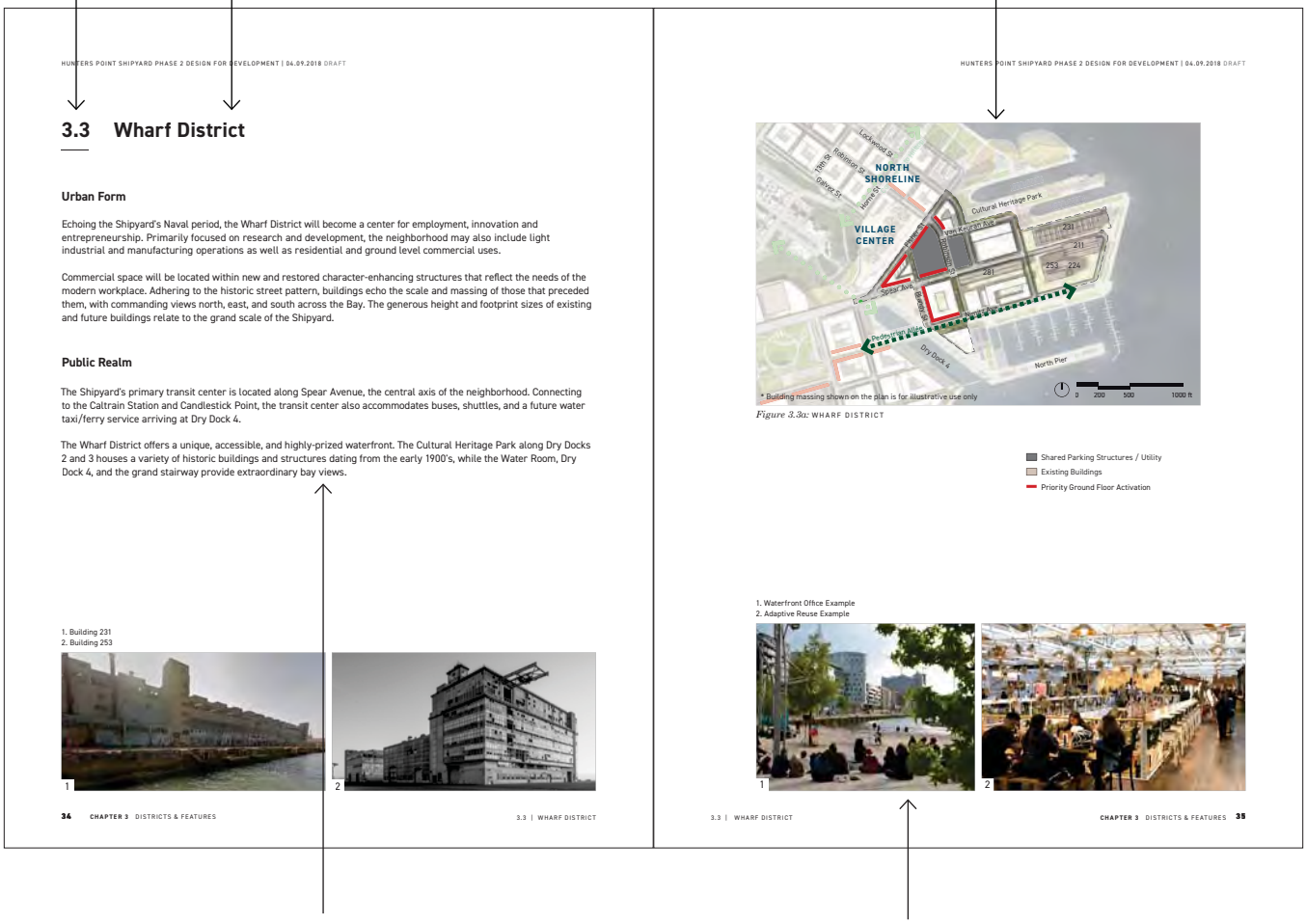
The D4D document has six [6] chapters as follows:

1. **Introduction:** provides the purpose and overview of the D4D, identifies the D4D's relationship to companion documents, and describes the historical context of the Shipyard redevelopment.
2. **Vision:** illustrates the overall concept for HPS2 as well as the relationship between the Shipyard and adjoining communities, specifically in regard to design, character, and connections.
3. **Districts & Key Destinations:** defines the design vision and intent for each of the HPS2 neighborhoods, including urban form, interface and interaction with the public realm, and transportation.
4. **Building Design Standards & Guidelines:** defines the design principles and standards regulating the form and character of buildings, including height, massing, design, signage, and lighting.
5. **Implementation:** offers an overview of the procedures for permitting individual parcels, granting variances, and amending the D4D.
6. **Appendix:** provides definitions and the following site maps for reference to support this D4D: Topography, District and Development Blocks, Land Use, and Phasing.

1.3 Document and Chapter Organization

USER GUIDE

Section Number **Section Name** **Figures**



HUNTERS POINT SHIPYARD PHASE 2 DESIGN FOR DEVELOPMENT | 04.09.2018 DRAFT

3.3 Wharf District

Urban Form

Echoing the Shipyard's Naval period, the Wharf District will become a center for employment, innovation and entrepreneurship. Primarily focused on research and development, the neighborhood may also include light industrial and manufacturing operations as well as residential and ground level commercial uses.

Commercial space will be located within new and restored character-enhancing structures that reflect the needs of the modern workplace. Adhering to the historic street pattern, buildings echo the scale and massing of those that preceded them, with commanding views north, east, and south across the Bay. The generous height and footprint sizes of existing and future buildings relate to the grand scale of the Shipyard.

Public Realm

The Shipyard's primary transit center is located along Spear Avenue, the central axis of the neighborhood. Connecting to the Caltrain Station and Candlestick Point, the transit center also accommodates buses, shuttles, and a future water taxi/ferry service arriving at Dry Dock 4.

The Wharf District offers a unique, accessible, and highly-prized waterfront. The Cultural Heritage Park along Dry Docks 2 and 3 houses a variety of historic buildings and structures dating from the early 1900's, while the Water Room, Dry Dock 4, and the grand stairway provide extraordinary bay views.

1. Building 231
2. Building 253

34 CHAPTER 3 DISTRICTS & FEATURES 3.3 | WHARF DISTRICT

HUNTERS POINT SHIPYARD PHASE 2 DESIGN FOR DEVELOPMENT | 04.09.2018 DRAFT

Figure 3.3a: WHARF DISTRICT

Shared Parking Structures / Utility
Existing Buildings
Priority Ground Floor Activation

1. Waterfront Office Example
2. Adaptive Reuse Example

3.3 | WHARF DISTRICT CHAPTER 3 DISTRICTS & FEATURES 35

Content **Image**

Standard Number and Title

Figures

4.1 Block Sizes and Mid-Block Breaks

4.1.1 Mid-Block Break Lot Divisions and Locations

INTENT

Mid-Block Breaks (MBBs) are intended to allow public access through private development blocks to promote connectivity and walkability and create a finer grain circulation system.

MBBs are regulated by the CPHPS2 Infrastructure Plan, Transportation Plan, and Streetscape Master Plan.

Mid-Block Break Specification Book will be provided per the DRDAP.

DEFINITIONS

"Mid-Block Breaks or MBBs"
A publicly accessible pedestrian, bicycle and/or vehicle lane way on private property as identified in *Figure 4.1.b*.

"Mid Block Break Width"
The mandatory Street Wall to Street Wall width for a MBB and associated Setback zones.

"EVA"
Emergency Vehicular Access.

"Street Wall"
The aggregate effects of the façades of buildings along a property line adjacent to a street or open space. The typical context for this term is in defining the public realm and framing or engaging the street.

"Block Sizes"
Block Sizes and legal parcels are defined in the Final Map. Approximate parcel dimensions are provided in *Figure 4.1b* and are subject to change. Block sizes may be legal parcels or may be part of a legal parcel.

STANDARDS

4.1.1 Mid-Block Break Lot Divisions and Locations

Mid-Block Break locations and widths shall be built as defined in *Figure 4.1a*. MBB Widths shall be used to define the location of the Street Wall. Street Wall to Street Wall dimensions shall not be greater or less than required MBB Width. Refer to *Figure 4.1a*.

MBB locations across blocks shall be aligned. The first developed MBB establishes the required centerline for subsequent MBB alignment. All required amenities including street trees, lighting, and seating shall occur within the MBB Parcel or the adjacent Setback Zones. Refer to *Figure 4.1b* and Section 4.27 Private Open Space - Mid-Block Breaks.

Figure 4.1a: MID-BLOCK BREAK LOT DIVISIONS

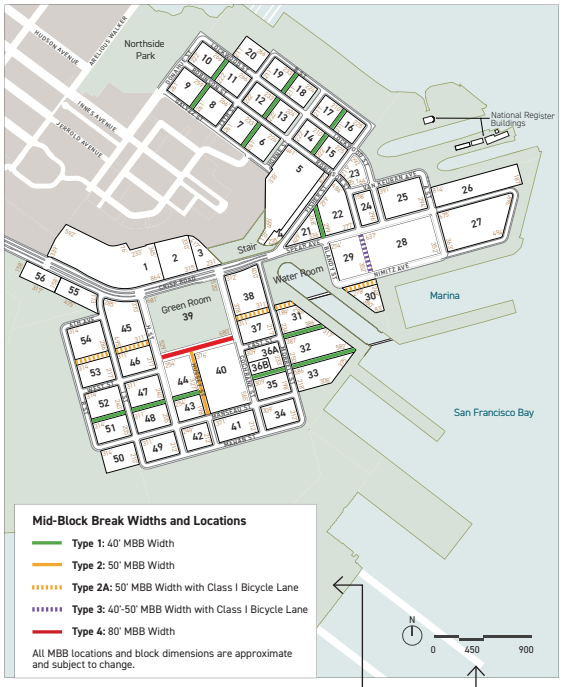


Figure 4.1b: MID-BLOCK BREAK WIDTHS AND LOCATIONS

Intent and Definitions | **Standards and Guidelines** | **Illustrative Graphics** | **Figure Number and Name** | **Figure Legend** | **Scale**

1.4 History

HPS2 occupies approximately 421 acres along the southeastern shoreline of San Francisco. The site has extensive waterfront land along the San Francisco Bay to the east and south, South Basin and Yosemite Slough to the west, and India Basin to the north. Hunters Point is relatively protected from the fog and harsh ocean winds that San Francisco is commonly known for. Nomadic Ohlone tribes and immigrant fishing communities have historically called this area home. The site later became a peripheral location within San Francisco, used as a commercial shipyard prior to being purchased and expanded by the US Navy coincident to WWII in the 1940's.

The original topography of the area has changed dramatically over time. Hunters Point Hill originally stretched a half mile into the bay, meeting the water's edge with steep banks. Large portions of the hill were later removed to fill in the end of the peninsula during the making of the Shipyard. Today, HPS2 is mainly characterized by flat topography as it meets the shoreline with constructed wharves, piers, dry docks, and low sea walls.

HPS2 will embrace a new future for the Shipyard by referencing the site's rich history through the design of the landscape and urban form.

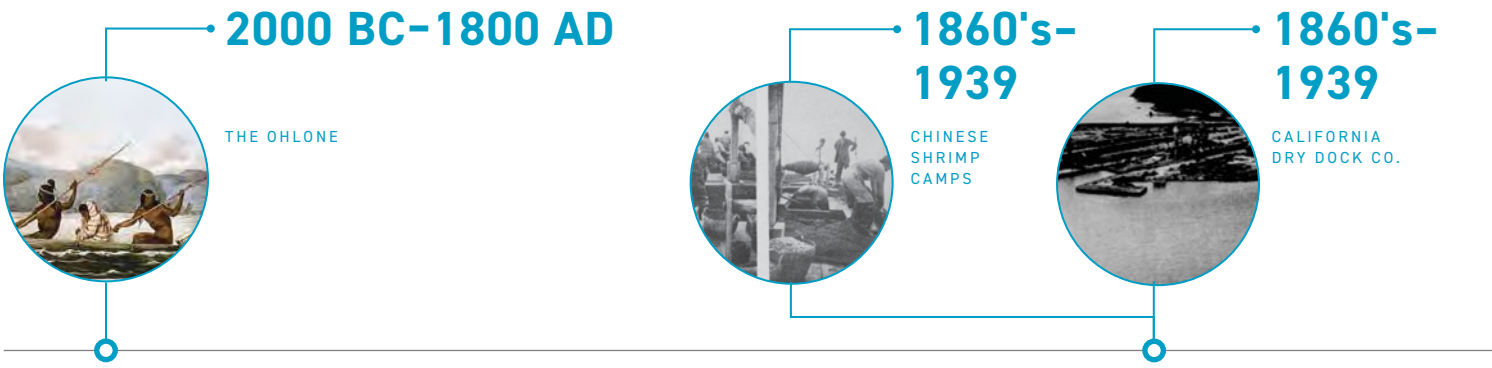


Figure 1.4a: PROJECT HISTORY AND TIMELINE

2000 BC–
1800 AD

The Ohlone

The Shipyard lies within the traditional territory of the indigenous Ohlone (Costanoan) people. Their habitation in close proximity to the San Francisco Bay provided access to clams, ocean and bay mussels, and oysters, which were important components of their diet. The Ohlone carved canoes out of balsa wood and used them to fish and hunt waterfowl and sea mammals. These canoes were also used for travel and trade across the bay waters and salt marshes.

For centuries, the waterfront has played an integral role in the lives of those who have inhabited this area. This powerful interaction between the sea and land will live on through the HPS2 development through waterfront open space promenades, activity areas, and view corridors.

1941–1974

NAVY EXPANSION

2010

HUNTERS POINT
PHASE 1
REDEVELOPMENT PLAN

2018

HUNTERS POINT
PHASE 2 D4D

1860's–
1939

Chinese Shrimp Camps

Following the completion of the Transcontinental Railroad, Chinese immigrants who had previously made a living working on the railroad moved west and established shrimp camps. By the late 1860's they had fully developed the shrimping industry at Hunters Point using bag nets. As a result, a substantial amount of dried fish, abalone, abalone shells, and shrimp were exported to China.

Camps included a range of domestic and work-related structures associated with the shrimp industry. Most followed a similar layout, although this changed over time as population, technology, and social conditions altered. Typically, a camp consisted of several small shacks at the water's edge, a wharf, a processing area with boilers, drying grounds, storehouses, and living quarters. The amount of San Francisco fish and shrimp exported overseas led anglers of other ethnicities to petition the State to levy taxes on Chinese commercial fishing. In 1885 and 1886, six hundred Chinese were arrested for tax reasons. The Federal Government revived old trade laws and applied them to the dried fish and shrimp trade; Chinese vessels were seized and their captains fined.

The number of Chinese camps around the San Francisco Bay decreased from 50 in the 1880's to 26 in 1896. The 1900 US Census lists one Chinese fisherman at Hunters Point, but no evidence of large-scale fishing camps in the area. The State Legislature outlawed the bag net in 1910, and most of the shrimp fishermen abandoned the industry. A redesign of the bag net, which facilitated trolling for shrimp, was introduced in the 1920's. By the 1930's, the fishing villages were active once again. No fewer than twelve fishing camps were observed along Hunters Point shoreline.

In 1939, the San Francisco Health Department received a number of complaints surrounding the strong smell emitted by the fishing camps and responded by declaring them unsanitary and ordering several of the camps burned. Fishing activity also declined due to bay fill and pollution, as well as the Navy's move to Hunters Point in the 1940's.

1860's–
1939

California Dry Dock Co.

Access to deep water at the Shipyard drove the nature of its early maritime activities. Small shipyards that had been crowded out of the waterfront closer to the City's center began operating in and adjacent to the Shipyard as early as the 1860's.

Dry Dock 1, completed in 1868, was well situated with deep water and close proximity to the thriving scow schooner boat yards at India Basin just north of the Shipyard. Most of the boats built and repaired during this time at Hunters Point were scow schooners (boats with a broad, shallow hull instead of a deep keel); two boat yards adjacent to the Shipyard in India Basin are known to have built junks (a boat with a flat bottom, no keel, and a very large rudder) for Chinese fishermen.

The dry dock facilities expanded in 1901-1903 with the completion of Dry Dock 2, Buildings 204 (Gate and Pump House) and 205 (Dry Dock No. 2 Pump House). At the time, it was the most modern dry dock on the San Francisco Bay. After the second dock was constructed, Navy ships came to the area for dry dock service. Dry Dock 3 replaced Dry Dock 1 in 1918 in response to the increase in Naval contracts, and Building 140 (Pump House) was constructed in conjunction with this phase of development. In 1939, the Navy purchased the dry docks and adjacent support buildings 207 (Latrine building) and 208 (Shop Service, Tool Room and Canteen Building).

The Hunters Point Commercial Dry Dock Historic District is listed on the National Register of Historic Places (see *Figure 4.24a.*). This Historic District comprises Dry Docks 2, 3, and 4, and Buildings 140, 204, 205, 207 & 208.

1941–
1974

Navy Expansion

The Navy took possession of the Shipyard on December 18, 1941, less than two weeks after the attack on Pearl Harbor. From this point forward, mobilization for WWII occurred rapidly at Hunters Point. As part of the expansion of the Shipyard, a major reclamation project was undertaken to construct Dry Dock Numbers 4, 5, 6, and 7 for docking submarines, destroyers and aircraft carriers. Between December 18, 1941 and September 2, 1945, 661 ships docked at Hunters Point.

Immediately following WWII, Operation Magic Carpet used the Shipyard for the return of US service personnel from overseas. The facility continued to serve as a docking area for Navy ships for repair, overhaul, maintenance, and conversion. Other functions were transferred to the facility, including Ship Salvage Base, 12th Naval District, and the Radiological Defense Laboratory set up along the southern waterfront. Beginning in the early 1950s, the Shipyard began to focus on submarine repair. It was in this capacity that the Shipyard provided support to the US Naval fleet during the Korean and Vietnam conflicts.

Among remnants of the maritime history at the Shipyard are some exceptional character-enhancing buildings and structures that may serve not only to recall the past, but to inform future uses and activities. Retaining and restoring these buildings and maintaining the Navy's historical street network are integral parts of the new development. Existing buildings serve as a relic of the scale and industrial function of the Shipyard. The historic street grid relates to these buildings. WWII Buildings 211, 224, 231, 253, 281, 411, 351, and 813 are being studied for possible retention and adaptive reuse and the iconic Regunning Crane will be retained. In addition, Buildings 101, 140, 204, 205, 207, and 208 will be retained.

1

2

1&2. ARCHIVAL IMAGES OF THE WORKING SHIPYARD

1974–
PRESENT

Post Military

In 1974, the Navy deactivated the Shipyard and leased the facility to private industry. In 1991, the Base Realignment and Closure Commission identified the Shipyard for closure. Over the next decade, the Navy and the City and County of San Francisco negotiated terms for the lease and subsequent transfer of the facility.

After decommissioning in 1974, the Shipyard was leased in 1976 to a private ship-repair company which sublet buildings to civilians including sculptor Jacques Terzian, a fabricator of found-object furniture and wall installations. Jacques' vision of transforming neglected buildings into affordable workspaces became reality in 1983 when a handful of artists began renting and renovating Shipyard studios. With co-developers Paula Terzian and David Terzian (Jacques' daughter and son), the Shipyard was soon home to 300 visual artists, musicians, and writers. Groups such as the Hunters Point Citizens Advisory Committee, the Shipyard Trust for the Arts and the Shipyard Artist Alliance have worked hard to maintain the vibrancy of this community of arts professionals.

The Bayview Hunters Point neighborhoods adjacent to the Shipyard are predominately home to communities of color that historically included many Shipyard workers and their families. These neighborhoods have had a higher rate of home ownership compared to other neighborhoods within San Francisco, but face a multitude of physical, economic, and social challenges. The US I-280 and CA 101 freeways physically isolate the Bayview neighborhood from the rest of the City. Closure of the Shipyard and de-industrialization of the district in the 1970s and 1980s increased unemployment and local poverty within the Bayview. Racial discrimination, pollution, substandard housing, and lack of investment in infrastructure have been notable and enduring challenges.

Revitalization of the historic Shipyard will create opportunities for housing, employment, open space, transit, and sustainable infrastructure that will complement the growth and resilience of Bayview Hunters Point.

3

3. ARCHIVAL IMAGES OF THE WORKING SHIPYARD

2 VISION

2.1 Project Vision 18

2 Vision

*"I have great respect for the past.
If you don't know where you've come from,
you don't know where you're going. I have
respect for the past, but I'm a person of
the moment. I'm here, and I do my best
to be completely centered at the place I'm at,
then I go forward to the next place."*

Maya Angelou

Sir David Adjaye selected these words to reflect the vision for Hunters Point Shipyard, which recognizes and respects the history of the place and its connection to the water, sensitively responds to present-day needs, and demonstrates optimism for the future by creating space for the as yet unimagined.

2.1 Project Vision

The San Francisco Shipyard offers a once-in-a-lifetime opportunity to reimagine part of the city at a scale and context rarely encountered. The thinking that informed this Design For Development document is animated by a sense of stewardship, borne out of a recognition of the fact that the built environment created here will endure for generations to come. The aim of this work is to inspire designers to transcend typical notions of standards and compliance so that they may interpret and implement the principles of good city-making and work in keeping with the vision of this document.

Buildings will come and go and be renovated and altered. Permanence lies in the way people experience the spaces between buildings—the human-scaled urban fabric. The vision for the project draws upon the unadulterated authenticity of the Shipyard, continues the legacy of human ingenuity at the site, and creates a model of city-making for San Francisco and the world. The site presents the potential to respond at an impactful scale to some of the Bay Area's most pressing issues, including access to housing, employment, and economic equality through a series of integrated-use districts that connect with the adjacent Bayview Hunters Point neighborhood. The master plan connects these integrated-use districts with abundant public open spaces, providing a diversity of housing types, and aspires to create sustainable infrastructure that will make the new buildings remarkably efficient.

The site encompasses histories beyond the legacy of the Shipyard. A large open space identified as the Green Room pays homage to Ohlone shell mounds, and interpretive signage will tell the story of the Chinese shrimp camps along the shoreline. The history of the site is connected to the ideals of the future by embracing the monumental scale of potential adaptive reuse buildings, reconciling them with what makes a San Francisco neighborhood distinct, and carrying those qualities through to the design standards for all buildings. Keeping the street grid intact allows for the potential adaptive reuse of a number of existing structures. These "seed buildings" continue an authentic connection with the past.

1

2

3

4

1. Shipyard Existing Photo
2. Shipyard Historic Photo
3. Shipyard Existing Photo
4. Shipyard Future Development Example

Figure 2.1a: HPS2 ILLUSTRATIVE PLAN

2.1 Project Vision Cont'd

The master plan incorporates certain commonalities found in San Francisco neighborhoods and adapts them to the unique site of the Shipyard. A prominent Pedestrian Allée, open space connections, and view corridors to the water enhance the public realm, stitch the districts of the site together and create a variation in experience. Features such as the dry dock are revitalized to serve as public gathering spaces framed by structures that have potential for adaptive reuse, taller buildings with a strong street wall, limited setbacks, and vibrant ground floor programming. Active and transparent ground floor storefronts focus the energy of the pedestrian realm along identified streets. A material palette to enhance the experiential texture and patina that is specific to the history of craft at the site is identified along specific streets, view corridors, and within public open spaces, lending a subtle distinctiveness to each district.

The project endeavors to couple the Shipyard's heritage of big ambitions with the small scale granularity of day-to-day human experience of people who will live, work, play, and walk through the site. The Shipyard is envisioned as a place that celebrates the monumentality of its past achievements, including exultant expressions of human ingenuity, and it will continue to be recognizable as a destination for big ideas and bold ambitions, replete with the quality and character of other great San Francisco neighborhoods.

1. Waterfront Open Space Example
2. Ground Floor Dining Example

1

2

2.1 Project Vision Cont'd

2.1.1 Embrace the Legacy, Authenticity, and Unique Character of the Shipyard

Situated on the southeastern edge of a city known for its topography, the Shipyard is a uniquely flat maritime landscape with a pronounced connection to the water and the horizon.

Draw Cues from the Scale and Craft of the Shipyard's Heritage Uses to Preserve the Unique Identity of the Site

- Retain the historic buildings and encourage the adaptive reuse of existing character-enhancing structures
- Construct new buildings that respond to the monumental scale of character-enhancing structures
- Incentivize architecture that evokes the legacy of craft and ingenuity at the Shipyard through Adaptive Reuse and Building Materials
- Incentivize adaptive reuse of the unique character-enhancing buildings at Block 28 and Block 40; these structures are of a monumental scale that express the history of the Shipyard. If these blocks are built anew, special requirements to achieve architectural excellence apply

1

2

1. Adaptive Reuse Example
2. New Building Example
3. Shipyard Existing Photo
4. Waterfront Open Space Example

3

Embrace the Maritime Character and Flat Topography of the Shipyard

- Preserve and reinforce views to the water through Building Heights and Setbacks
- Step down the height of buildings at the north and south perimeters of the site to emphasize the natural relationship with and proximity to the waterfront
- Reinforce the height and size of the buildings around the Water Room, Green Room, and Wharf District to meet and address the scale of the adjacent open spaces and water features
- Activate streets with ground floor uses along key corridors
- Activate the ground floor and provide variation in architectural expression along the Pedestrian Allée, which connects a variety of open spaces, residential, retail, and office uses

4

Build on the History of Human Ingenuity at the Site with Exemplary Measures of Large Scale Sustainability

- Aspire to provide state-of-the-art sustainability measures commensurate with the scale of the site which affords the opportunity to reduce its carbon footprint, lessen dependence on non-renewable energy, and significantly reduce water demand
- Create an "Eco-Grid" (subject to financial and regulatory feasibility and the Developer's discretion), which will provide opportunities to:
  - Pursue the implementation of sustainable, district-scale infrastructure
  - Develop a network of sustainable utility and data systems that will reduce impact of the Shipyard on the climate by leveraging the large scale of the site
  - Implement district solar energy generation, recyclable water facilities, and district-wide heating and cooling
  - Establish exemplary best practices for large scale sustainability and resiliency measures
- Leverage the roofs of buildings to accommodate renewable power
- Consider screening parking structure roofs with renewable power
- Allow district energy components within buildings

2.1 Project Vision Cont'd

2.1.2 Create a Model for City-Making That Continues San Francisco's Legacy of Distinct Neighborhoods

San Francisco's distinctive neighborhoods are destinations for residents and global visitors alike. The integrated use districts of this site restore the Shipyard as an engine of economic activity, create space for artists and makers, and benefit the Bayview Hunters Point community. The Shipyard will be reinstated as an economic driver for San Francisco by attracting world-class anchor tenants and research and education institutions. Through its large scale, the project establishes a new, refined approach to workforce urban development.

1

2

Rebuild the Shipyard as a Cultural and Economic Engine for Bayview Hunters Point

- Generate new employment at the Shipyard
- Build community, civic, and institutional resources
- Provide program uses and services that benefit existing neighbors and new residents

Establish Residential Neighborhoods with a Variety of Housing Typologies to Create Diverse Urban Life and Active Streetscapes

- Establish a network of streets and mid-block breaks with active building frontages and proximity to a variety of public open spaces and retail
- Provide residential buildings at various scales and typologies, from multifamily to townhomes
- Design buildings to create an appropriate residential pedestrian street experience

Provide Retail Uses that Activate the Streetscape and Amenities that Build Community

- Design buildings with ground floor activation and transparency to create vibrant, walkable streets
- Prioritize location of retail to focus activity along key streets and walkways
- Use retail and amenities to connect the districts, stimulate mobility, and create places for community gathering

Create Office and R&D Workplaces that Perpetuate San Francisco's Preeminence in the Global Innovation Economy

- Pursue adaptive reuse of select existing character-enhancing structures to create iconic architecture
- Construct new buildings that respond to the scale of existing structures and adjacent open spaces, particularly in the Warehouse and Wharf Districts
- Design large floor plate buildings that preserve flexibility, encourage innovation in workplace design, and attract world-class companies
- Design buildings with attention to architectural detail, quality of materials, and craftsmanship that honor the legacy of ingenuity at the Shipyard

Invigorate the Artistic Cultural District

- Retain Heritage Building 101 and complement it with a new artist studio building and plaza
- Locate active frontages for Artists and Makers along Fisher and Robinson Streets to encourage a vibrant cultural streetscape and destination

4

1. Residential Neighborhood Example
2. Residential Street Example
3. New Office Building Example
4. Office through Adaptive Reuse Example
5. Ground Floor Retail Example

3

5

3 DISTRICTS & FEATURES

3.1 Warehouse District 30

3.2 Village Center 32

3.3 Wharf District 34

3.4 North Shoreline 36

3.5 Green Room 38

3.6 Water Room 39

3.7 Pedestrian Allée 40

3.8 Waterfront Open Spaces 41

3 Districts & Features

Figure 3.0a: DISTRICTS & FEATURES

Districts

The site will comprise four distinct districts. Each district shares the same guiding principles and development goals, but may differ in the character of the public realm, street typologies, building design, and predominant uses.

3.1 Warehouse District: Architectural diversity in scale and massing reflects the demands of the different uses that make up this District. Building designs celebrate monumentality by responding to the large scale of existing structures, as well as to large public open spaces found in the Green Room and Water Room. Buildings may become smaller in scale along the south waterfront, however, providing a more porous layout and allowing more visual connection from interior blocks to the water.

3.2 Village Center: The Village Center accommodates the resident artist community with new studios and gallery space, supplemented by retail, maker space, and other related uses. The new building complements the distinctive scale and rhythm of Building 101. The architecture is appropriately scaled for a traditional artist community, overlooking a plaza with outdoor workspaces and a display area.

3.3 Wharf District: Primarily focused on research and development, this neighborhood may also include makerspaces as well as ground-level commercial or residential uses. Adhering to the historic street pattern, dry docks, and piers, buildings echo the scale and massing of those that preceded them.

3.4 North Shoreline: Predominately residential, buildings range from low- to mid-rise and are domestic in style and scale. The network of streets make for a walkable neighborhood.

Key Destinations and Features

The following key features bring the districts together:

3.5 Green Room: An eight[8] acre urban park sits at the center of the Warehouse District. The park is a well-designed and highly-maintained urban landscape to engage individuals living and working at the Shipyard.

3.6 Water Room: The Water Room opens up to Dry Dock 4. It provides unobstructed views of the Bay and acts as a powerful urban node, linking the Hilltop and waterfront.

3.7 Pedestrian Allée: A generous 50-foot-wide Pedestrian Allée and East-West bike pathway through the Shipyard connects major public spaces such as the Water Room, Green Room, and the Waterfront. This avenue offers ever-changing experiences across open spaces and the built environment. This procession of environments is complemented with low-rise residential, mid-rise residential, ground floor retail, and offices.

3.8 Waterfront Open Spaces: The waterfront open spaces provide a number of different experiences, such as promenades for walking and bicycling, a marina, sports fields, and an ecological landscape for native habitats. A diversity of waterfront edge conditions provide a variety of experiences as well as access to the water. Some are hard edge conditions (sea walls, rip-rap, ecologically enhanced bulkheads) and others are soft edge conditions (marsh lands, vegetated slopes.)

3.1 Warehouse District

Urban Form

The Warehouse District is a vibrant mixed-use neighborhood centered around the Green Room. The Green Room may be complemented by two existing Navy buildings from the World War II era that frame its northern and southern edges and provide a sense of scale and character. New buildings fronting the Water Room and Green Room respond appropriately to the open spaces.

A thoughtful use of building materials, scale, and massing, provide architectural character, and visual interest, and shape the pedestrian realm. Priorities include creating strong street walls at Crisp Road, the Pedestrian Allée, and around the Green Room; activating the ground floor; and framing key view corridors.

Public Realm

The Pedestrian Allée and bike pathway connects large, naturally landscaped open spaces on the southwestern quadrant of the neighborhood with the Green Room, and continue to bridge Dry Dock 4 and the Wharf District.

The Warehouse District is bordered by the Water Room and grand waterfront open spaces that include acres of baseball and soccer fields, a marina, and large natural landscapes. The Bay Trail extends along the shoreline to provide visual and physical connections to the North Shoreline, the Yosemite Slough Bridge, and Candlestick Point.

Ground floor activation is prioritized in the buildings around the Green Room, the Water Room, and the Pedestrian Allée.

A wastewater treatment facility and a police and fire station are located in this district. The character-enhancing elements of these buildings have been considered in the writing of the D4D.

1. Building 813
2. Building 351
3. Building 411

1

2

3

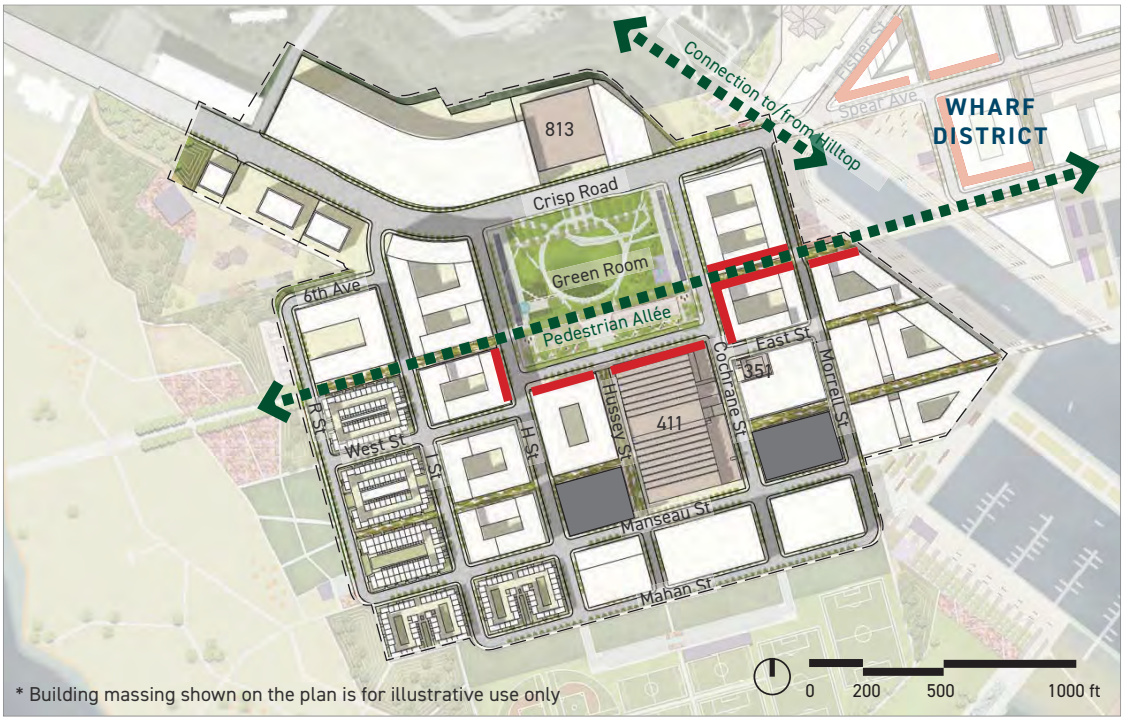
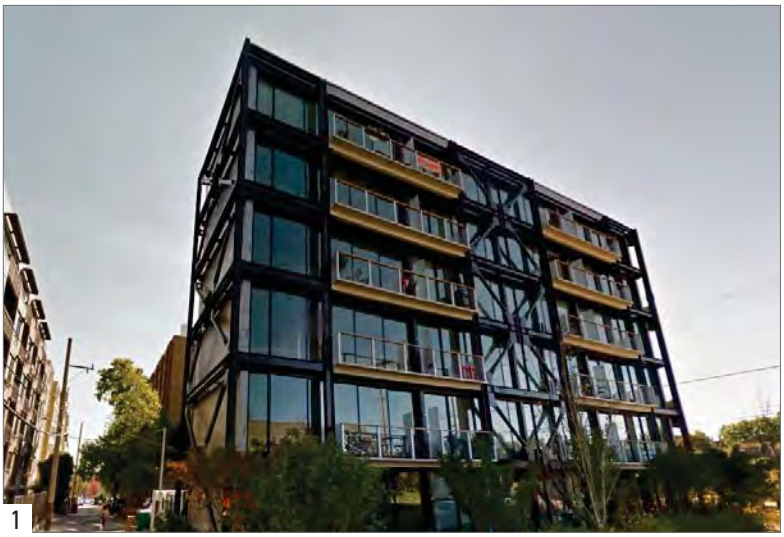


Figure 3.1a: WAREHOUSE DISTRICT



1

- Shared Parking Structures/Utility
- Existing Buildings
- Priority Ground Floor Activation

1. Mid-Rise Residential Example
2. Open Space Example
3. Ground Floor Activation Example

2

3

3.2 Village Center

Urban Form

The Village Center is the creative and cultural hub of the Shipyard and the point of convergence for the other three Shipyard Districts. The Village Center builds on the history of a strong arts and maker community with new artist studios and gallery space supplemented by retail, storefront maker spaces, galleries, and other arts-related uses.

A new Shipyard Artist Studios building frames a plaza for outdoor work spaces and display of artwork. This new building complements the distinctive scale and rhythm of Heritage Building 101, which has been the home for a community of artists since the 1980's.

Public Realm

The nexus of Fischer and Robinson Streets is lined with artists' studios, galleries, and neighborhood retail. The plazas to the north and south of Building 101 provide the primary open space within the Village Center. The low horizontal lines of the Village Center are sharply distinguished from the hillside open space, which rises 85 feet from Fisher to Hilltop Park.

1. Building 101

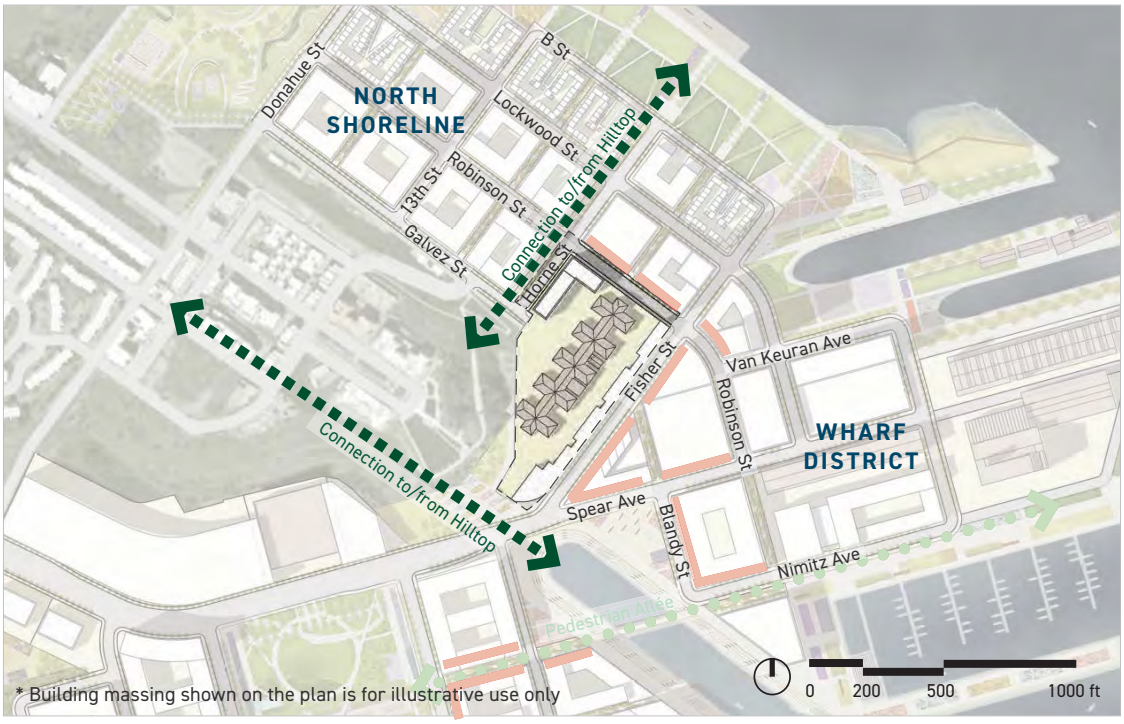


Figure 3.2a: VILLAGE CENTER

Building 101 (Artists' Studios)

1 & 2. Artists' Studios Examples
3. Maker Space Examples

1

2

3

3.3 Wharf District

Urban Form

Echoing the Shipyard's Naval period, the Wharf District will become a center for employment, innovation and entrepreneurship. Primarily focused on research and development, the neighborhood may also include light industrial and manufacturing operations as well as residential and ground level commercial uses.

Commercial space will be located within new and restored character-enhancing structures that reflect the needs of the modern workplace. Adhering to the historic street pattern, buildings echo the scale and massing of those that preceded them, with commanding views north, east, and south across the Bay. The generous height and footprint sizes of existing and future buildings relate to the grand scale of the Shipyard.

Public Realm

The Shipyard's primary transit center is located along Spear Avenue, the central axis of the neighborhood. Connecting to the Caltrain Station and Candlestick Point, the transit center also accommodates buses, shuttles, and a future water taxi/ferry service arriving at Dry Dock 4.

The Wharf District offers a unique, accessible, and highly-prized waterfront. The Cultural Heritage Park along Dry Docks 2 and 3 houses a variety of historic buildings and structures dating from the early 1900's, while the Water Room, Dry Dock 4, and the grand stairway provide extraordinary bay views.

1. Building 231
2. Building 253

1

2

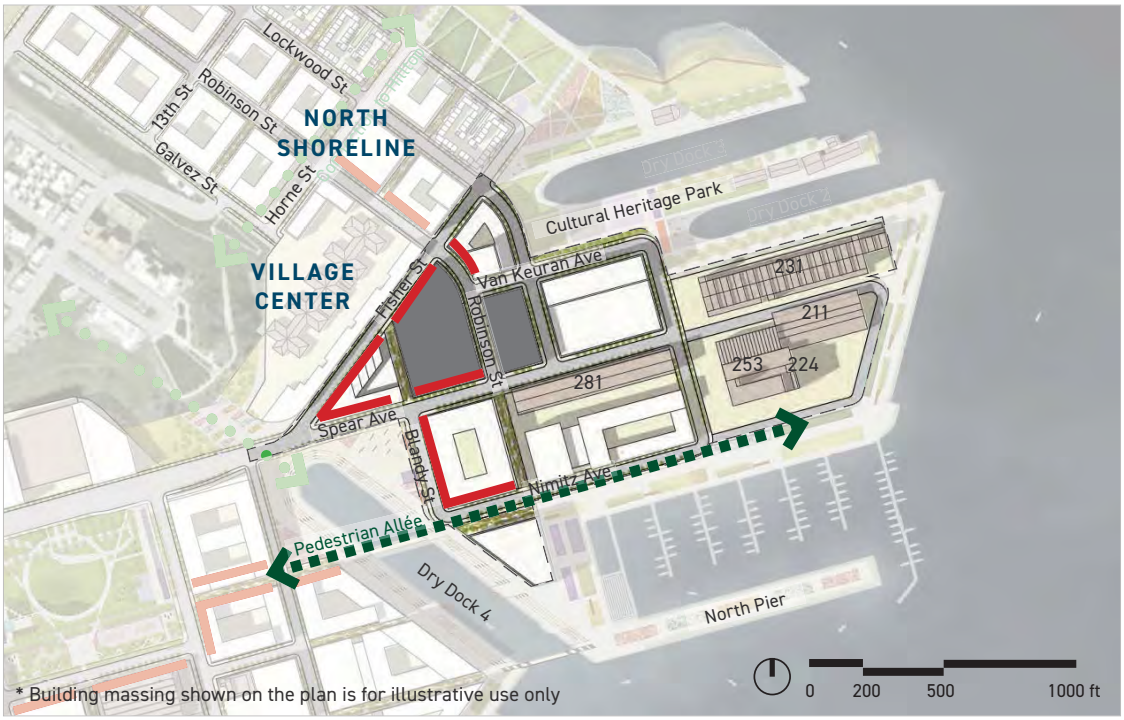


Figure 3.3a: WHARF DISTRICT

Shared Parking Structures / Utility
Existing Buildings
Priority Ground Floor Activation

1. Waterfront Office Example
2. Adaptive Reuse Example

1

2

3.4 North Shoreline

Urban Form

Embracing its historic residential legacy, the North Shoreline is the residential heart of HPS2, providing a range of housing types in proximity to the waterfront. Primarily low-to mid-rise, buildings relate directly to adjacent public spaces and rights-of-way, stepping down in height towards the shoreline. Toward the waterfront, buildings may become smaller in scale and less dense in layout, which allows more visual connection from interior blocks to the water. The North Shoreline also includes neighborhood-serving retail and business services, childcare, and small professional offices near Fisher Street and Robinson Street. The iconic high-rise towers located on either side of Fisher Street define the skyline of the Shipyard.

Public Realm

Bicycle-oriented Robinson Street and transit-rich Lockwood Street draw residents from the site's northern gateway at Innes Avenue and Donahue Street into the Shipyard's neighborhood center. A generous setback is designed on Robinson Street and Lockwood Street to enhance the sense of a neighborhood gateway and to allow for private open spaces, stoops and transitions from the private to public realm.

The Waterfront Promenade along the northeastern edge of the neighborhood provides views across the water to downtown San Francisco. Northside Park, at the northern edge of the Shipyard, is a 13-acre area with passive and active open spaces serving both the residents of Shipyard North Shoreline District and the adjoining Hunters Hill and Indian Basin neighborhoods. Both building and park design provide connectivity while also respecting the privacy of residential dwellings adjoining the promenade.

East-west streets, mid-block breaks, and private open spaces extend views to the parks and Waterfront Promenade. This promenade extends the Bay Trail's walking and bike routes into the neighborhood, via a series of paths connecting to neighborhood streets and allées. The broad, landscaped space along Horne Street connects the park into the neighborhood with manicured trees that preserve glimpses of the Bay.

Figure 3.4a: NORTH SHORELINE

Shared Parking Structures / Utility

Priority Ground Floor Activation

1. Residential Tower Example
2. Residential Mid-Rise Example

1

2

3.5 Green Room

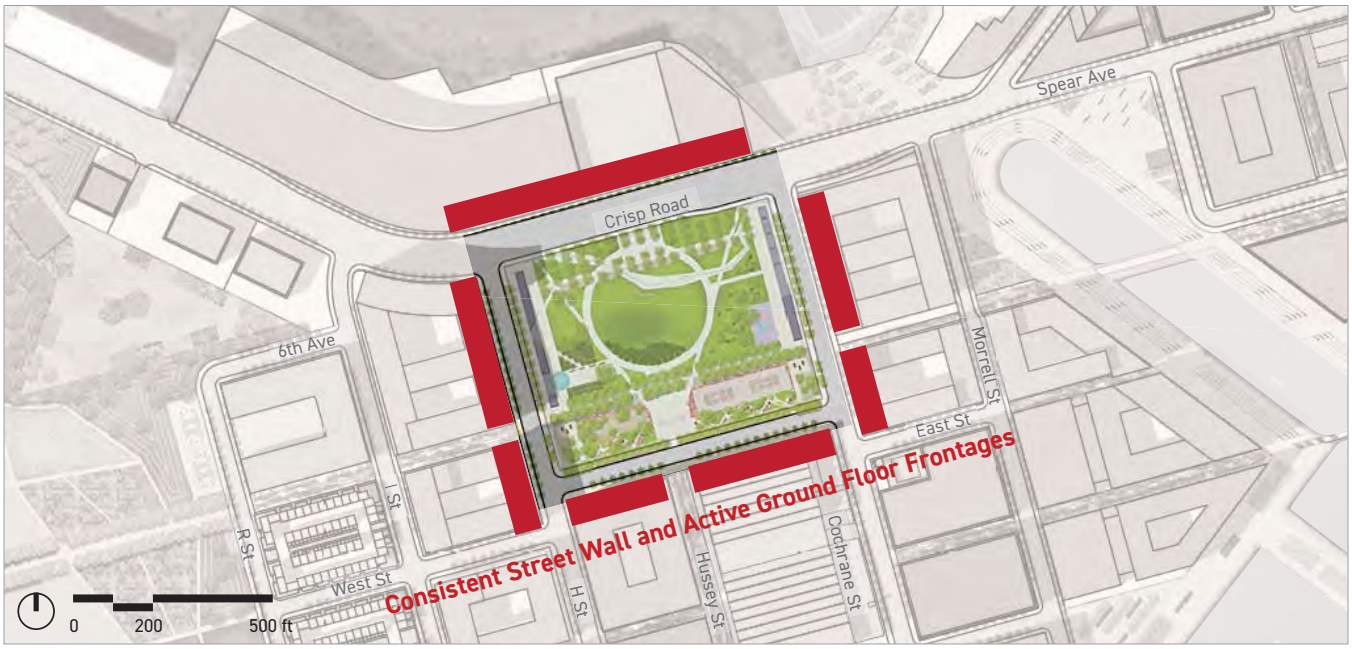


Figure 3.5a: KEY DESTINATIONS AND FEATURES - GREEN ROOM

- New buildings frame the Green Room to reinforce the historic legacy of large buildings through scale, massing, and consistent street walls.
- The district design represents and brings together multiple histories of the Shipyard with iconic adaptive reuse structures.
- One of two outdoor civic "rooms," the Green Room is situated at the heart of the Warehouse District. It is designed as a park with community programs, gatherings, and festivals.
- A pavilion dedicated to Maya Angelou offers a moment of quiet reflection.

1 & 2. Green Room Examples

3.6 Water Room

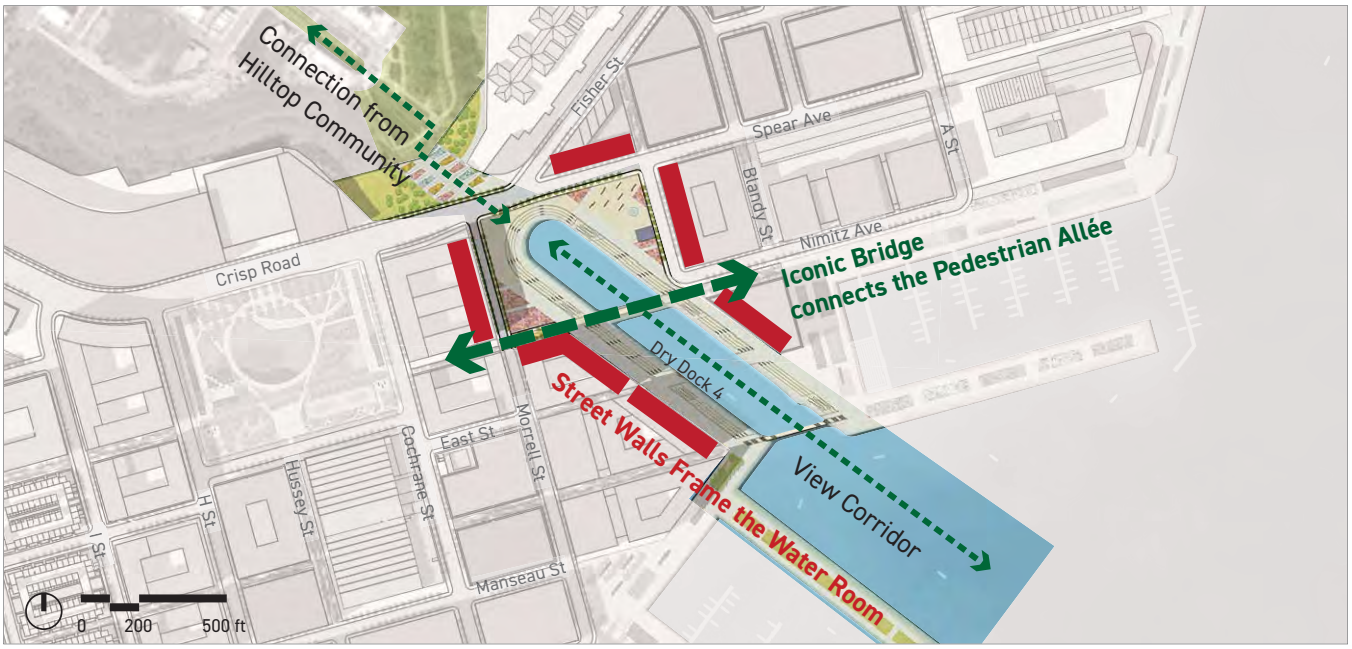


Figure 3.6a: KEY DESTINATIONS AND FEATURES - WATER ROOM

- Buildings around the Water Room are scaled and designed to create consistent street walls that frame this contemporary public space.
- The buildings create an unobstructed view corridor and frame a grand stair with generous access from the top of Hilltop Park down to the Waterfront.
- One of two outdoor civic "rooms," the Water Room is a four-acre civic square that weaves the most striking shoreline feature—Dry Dock 4—into the heart of the shipyard development.
- An iconic bridge connects the Pedestrian Allée.

1 & 2. Water Room Examples

1

2

3.7 Pedestrian Allée

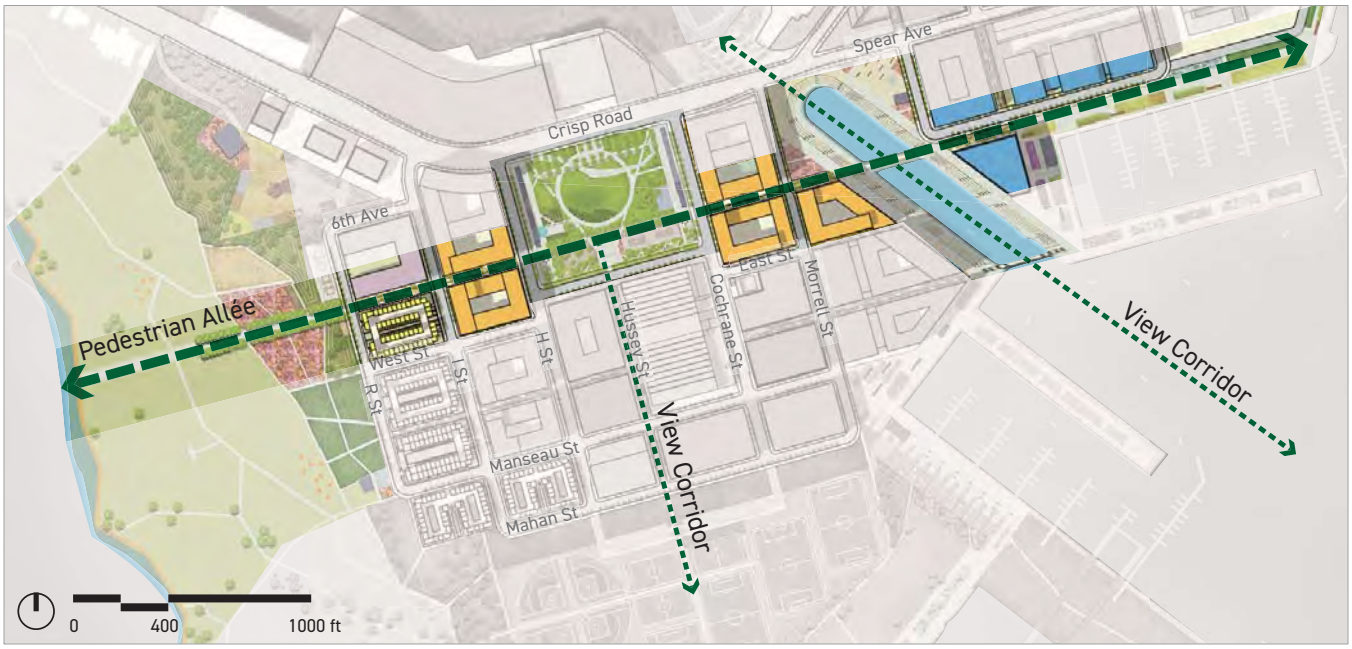


Figure 3.7a: KEY DESTINATIONS AND FEATURES - PEDESTRIAN ALLÉE

- Building Step Backs along the Mid-Block Breaks bring light to the corridor, while the consistent street walls define and frame view corridors.
- Ground Floor Activation at the base of the buildings and concentrated retail zones create a safe and exciting walking experience.
- The sequence of appropriately scaled open spaces—with a mix of low-rise residential, mid-rise residential, office and research buildings, and ground-floor activation—creates multiple experiences.
- A generous east-west pedestrian and bicycle path connects major public spaces such as the Water Room, the Green Room, Waterfront Open Spaces, and the Bay Trail.

1 & 2. Pedestrian Allée Examples

1

2

3.8 Waterfront Open Spaces

Figure 3.8a: KEY DESTINATIONS AND FEATURES - WATERFRONT OPEN SPACES

- Through bulk and massing, buildings in districts are scaled appropriately. Compared with the adjacent residential buildings to the north, buildings in the Wharf District increase in scale to emphasize the Dry Docks and Naval piers. Buildings may step down in height towards the northern and southern waterfront open spaces.
- Building parcels along the development perimeter provide access to the waterfront open spaces that host a number of diverse experiences such as promenades for walking, a marina where sailing can dispatch, thriving natural habitats, and a regional sports facility to draw people from across the region.

1 & 2. Waterfront Open Space Examples

1

2

4 DESIGN STANDARDS & GUIDELINES

4.1-4.25	Building Design	50
4.26-4.27	Private Open Space	134
4.28-4.31	Signage	146
4.32	Lighting	160
4.33	Private Infrastructure	162

4 Design Standards & Guidelines

The Design Standards and Guidelines provide regulatory controls that guide development to align with the HPS2 Vision. Controls consist of Intent, Definitions, Standards, and Guidelines. Certain controls include an Application section that outlines additional information including intent, definitions, and guidance on application of Standards.

Intent: Describes the principal goals, objectives and rationale of each Standard and/or Guideline; as well as alignment of specific features or provisions to the project vision, principles, design drivers and physical framework.

Standard: Mandatory, objective and quantifiable specifications or other requirements applicable to the Project.

Guideline: Mandatory specifications or requirements that are inherently qualitative and therefore require interpretation.

Application: Provides direction on implementation of Standards and Guidelines.

Standards and Guidelines function as a system of controls to shape development consistent with the City and community aspirations for an active, vibrant, livable and distinctive waterfront district. The Intent, Standards, and Guidelines are used to describe and delineate each of the four key development categories: Building Design, Private Open Space, Building Signage, and Building Lighting.

Refer to Chapter 6 for all Term Definitions.

Anticipated Development Map

- R1 Residential Density I (15-75 Units Per Acre)
- R2 Residential Density II (50-125 Units Per Acre)
- R4 Residential Density IV (175-285) Units Per Acre)
- ART Artist or Maker
- CM Commercial (Includes Office, R&D, Retail & Hotel Uses)
- CU Community Use
- OS Parks & Open Space
- U Infrastructure / Utility
- Shared Parking Structures*
- Priority Ground Floor Activation

*Shared Parking Structures are permitted on Blocks 1 and 32 (locations to be determined upon Schematic Design approval)

Land uses are governed by the Redevelopment Plan. This figure is an illustrative example that is subject to change.

Block 36B is the currently identified location for the Fire Station lot, subject to change pursuant to the Disposition and Development Agreement (DDA). The Fire Station is exempt from the following:
-Building Setbacks
-Building Height
-Street Wall
-Ground Floor Activation
-Blank Wall

Figure 4.0a: ANTICIPATED DEVELOPMENT MAP *Illustrative use only*

CHAPTER 4 TABLE OF CONTENTS

Building Design

4.1 Block Sizes and Mid-Block Breaks 50
4.1.1 Mid-Block Break Lot Divisions and Locations 50

4.2 Building Setback 56
4.2.1 Building Setbacks 56
4.2.2 Mid-Block Break Setback 56

4.3 Developable Area Coverage 59
4.3.1 Developable Area Coverage 59

4.4 Building Height 60
4.4.1 Building Height 60
4.4.2 MBB Building Stepbacks 62
4.4.3 Building Height Exceptions 62
4.4.4 Roof Area Building Height Exception 63
4.4.5 Street Wall 65
4.4.6 Implied Façade 65
4.4.7 Street Wall Exceptions for Adaptive Reuse 65
4.4.8 Street Wall Exceptions for Recessed Areas 65

4.5 Architectural Controls by Building Scale 67
4.5.1 Architectural Controls by Building Scale 67
4.5.2 Maximum Plan Length 67

4.5A Flow Chart for Architectural Controls 68

4.6 FC Façade Composition 70
4.6.1 Façade Composition (FC) 70
4.6.2 Block to Block Variation 71
FC1 Façade Modulation Strategies 72
FC2 Façade Articulation Strategies 76
FC3 Façade Fenestration Strategies 78
FC4 Material/Color Strategies 80

4.7 BM Bulk and Massing 81
4.7.1 Bulk and Massing Strategies 81
BM1 Significant Building Breaks 82
BM2 Upper Floor Stepbacks 84
BM3 Façade Variation (FV) 86

4.8 BE/PE Building and Public Realm Enhancements 88
4.8.1 Building and Public Realm Enhancement Measures for M, L, XL Buildings 88
BE1 Apply One[1] Additional Bulk/Massing Control 89
BE2A Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Per Street Fronting Elevation) 89
BE2B Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Multiple Street Fronting Elevations) 89
BE3 Provide Visual and Physical Access to Interior Courtyard and/or Atrium 89
BE4 Permanently Open Public Access to Open Space 89
BE5 Reduction in Floor Plate Area of Upper Floors 90
BE6 Expressive Entrances 90
BE7 Increased Transparency 90
BE8 Distinct Corner Architectural Feature 90
BE9 Roof Expression 91
BE10 Additional Active Entrances 91
BE11 Ground Floor Activation Step-Up 91

PE1 Public Access through the Building 91
PE2 Public Access through Open Space Connection 91

4.9 Tower Controls 92
4.9.1 Tower Locations 92
4.9.2 Tower Floor Aspect Ratio 92
4.9.3 Tower Height Variation 92
4.9.4 Tower Massing and Articulation 92
4.9.5 Tower Mechanical Equipment 92
4.9.6 Tower Mechanical Equipment Screening 92

4.10 Projections 94
4.10.1 Projections 94
4.10.2 Habitable Projections 94
4.10.3 Non-Habitable Projections 94
4.10.4 Other Projections 94
4.10.5 Projection Exemptions 94
4.10.6 Maximum Projection Area 94

4.11 Ground Floor Activation 95
4.11.1 Zone 1 and 2 Active Entrances 97
4.11.2 Zone 3 Active Entrances 97
4.11.3 Active Ground Floor Depth 97
4.11.4 Ground Floor Height 97
4.11.5 Waterfront Activation 97
4.11.6 Guidelines for Ground Floor Residential Design 97
4.11.7 Ground Floor Activation 98
4.11.8 Shared Parking Structures Activation 98
4.11.9 Ground Floor Active Use Transparency 100
4.11.10 Ground Floor Active Use Glass and Glazing 100

4.12 Building Entries 103
4.12.1 Primary Building Entries 103
4.12.2 Green Room Building Entries 103
4.12.3 Ground Floor Residential Unit Entries 103
4.12.4 Building Entries 103

4.13 Parking and Service Entrances 104
4.13.1 Parking and Service Entrances Locations 104
4.13.2 Combined Parking and Service Entrances 104
4.13.3 Separate Parking and Service Entrances 104
4.13.4 Maximum Parking and Service Entrances 104
4.13.5 Parking and Service Entrances 104
4.13.6 Parking and Service Entrances (Blocks 38 & 45) 104

4.14 Screening 106
4.14.1 Screening 106
4.14.2 Screening of Utilities Visible at Grade 106
4.14.3 Screening Materials 107
4.14.4 Screening for Rooftop Equipment 107
4.14.5 Screening for Upper Floor Parking 107
4.14.6 Screening for Ground Floor Parking 107
4.14.7 Rooftop Screening for Parking 107

4.15 Shared Parking Structures 108
4.15.1 Shared Parking Structure Locations 108
4.15.2 Number of Shared Parking Structures 108
4.15.3 Shared Parking Structure Design 108
4.15.4 Convertible Shared Parking Structures 108
4.15.5 Floor Heights for Convertible Shared Parking Structures 109
4.15.6 Shared Parking Structure Lighting 109
4.15.7 Shared Parking Structure Ground Floor Uses 109

4.16 Rooftops 110
4.16.1 Rooftop Façades 110

4.17 Blank Walls 112
4.17.1 Ground Floor Blank Walls 112
4.17.2 Upper Floor Blank Walls 112

4.18 Daylight 113
4.18.1 Residential Daylight 113
4.18.2 Commercial Daylight 113

4.19 Façade Material 114
4.19.1 Bird-Safe Design 114
4.19.2 Material Quality 114
4.19.3 Material Selection 114
4.19.4 Ground Floor Materials 114
4.19.5 Marine Environment Materials 114
4.19.6 Prohibited Materials 114

4.20 Class I - Bicycle Parking 123
4.20.1 Bicycle Parking Capacity 123
4.20.2 Bicycle Parking Location 123

4.21 Vehicular Parking and Loading 124
4.21.1 Vehicle Parking and Loading 124

4.22 Skyway Connections 126
4.22.1 Skyway Connections 126

4.23 Green Room Datum 128
4.23.1 Green Room Datum 128

4.24 Adaptive Reuse 130
4.24.1 Adaptive Reuse 130
4.24.2 Adaptive Reuse Exemptions 132

4.25 Key Sites Blocks 28 and 40 133
4.25.1 Key Sites Blocks 28 & 40 133

Private Open Space

4.26 Private Open Space 134
4.26.1 Private Open Space 134
4.26.2 Private Common Open Space on Waterfront Blocks 134
4.26.3 Private Setbacks 134
4.26.4 Fences 134
4.26.5 Defensible Space 135
4.26.6 Orientation 135
4.26.7 Planting Palette 135
4.26.8 Irrigation 135

4.27 Private Open Space - Mid-Block Breaks 144
4.27.1 Public Access 144
4.27.2 Throughway Dimensions 144
4.27.3 Surfaces 144
4.27.4 Street Trees 144
4.27.5 Lighting 144
4.27.6 Community Spaces 145
4.27.7 Landscaping 145
4.27.8 Minimizing Vehicular Speeds 145

Signage

4.28 Building Signage 146

4.29 All Signs 148
4.29.1 Transparency 148
4.29.2 Concealed Electrical Signage Elements 148
4.29.3 Typefaces & Colors 148
4.29.4 Sign Materials 148
4.29.5 Graphic Style 148
4.29.6 Integration 148
4.29.7 New Technology Signs 149
4.29.8 Sign Illumination 149
4.29.9 Prohibited Signage 150

4.30 Permanent Signs 151
4.30.1 Commercial Wall Signage 151
4.30.2 Storefront and Retail Wall Signage 152
4.30.3 Residential Wall Signage 152
4.30.4 Projecting Signs 153
4.30.5 Window Signs 154
4.30.6 Identifying, Freestanding, or Directional Signs 155
4.30.7 Canopy/Awning Signage 156
4.30.8 Street or Unit Address Signs Nameplates 157

4.31 Temporary Signs 158
4.31.1 Temporary Signs 158
4.31.2 Portable Signs 159

Lighting

4.32 Building Lighting 160
4.32.1 Glare Reduction 160
4.32.2 Energy Consumption 160
4.32.3 Building Entrances 161
4.32.4 Dark Sky 161
4.32.5 Dark Sky Exemption 161

Private Infrastructure

4.33 Private Infrastructure 162
4.33.1 Odor Control at the Recycled Water Facility 162
4.33.2 Screening of Eco-District or Eco-Grid Utilities Visible at Grade 162

This page is intentionally left blank.

4.1 Block Sizes and Mid-Block Breaks

4.1.1 Mid-Block Break Lot Divisions and Locations

INTENT

Mid-Block Breaks (MBBs) are intended to allow public access through private development blocks to promote connectivity and walkability and create a finer grain circulation system.

MBBs are regulated by the CPHPS2 Infrastructure Plan, Transportation Plan, and Streetscape Master Plan.

Mid-Block Break Specification Book will be provided per the DRDAP.

DEFINITIONS

"Mid-Block Breaks or MBBs"
A publicly accessible pedestrian, bicycle and/or vehicle lane way on private property as identified in *Figure 4.1.b*.

"Mid Block Break Width"
The mandatory Street Wall to Street Wall width for a MBB and associated Setback zones.

"EVA"
Emergency Vehicular Access.

"Street Wall"
The aggregate effects of the façades of buildings along a property line adjacent to a street or open space. The typical context for this term is in defining the public realm and framing or engaging the street.

"Block Sizes"
Block Sizes and legal parcels are defined in the Final Map. Approximate parcel dimensions are provided in *Figure 4.1b* and are subject to change. Block sizes may be legal parcels or may be part of a legal parcel.

STANDARDS

4.1.1 Mid-Block Break Lot Divisions and Locations

Mid-Block Break locations and widths shall be built as defined in *Figure 4.1a*. MBB Widths shall be used to define the location of the Street Wall. Street Wall to Street Wall dimensions shall not be greater or less than required MBB Width. Refer to *Figure 4.1a*.

MBB locations across blocks shall be aligned. The first developed MBB establishes the required centerline for subsequent MBB alignment. All required amenities including street trees, lighting, and seating shall occur within the MBB Parcel or the adjacent Setback Zones. Refer to *Figure 4.1b* and Section 4.27 Private Open Space - Mid-Block Breaks.

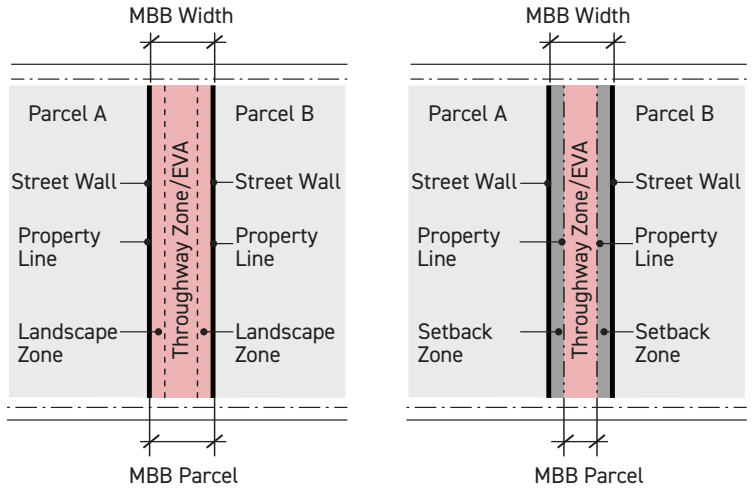


Figure 4.1a: MID-BLOCK BREAK LOT DIVISIONS

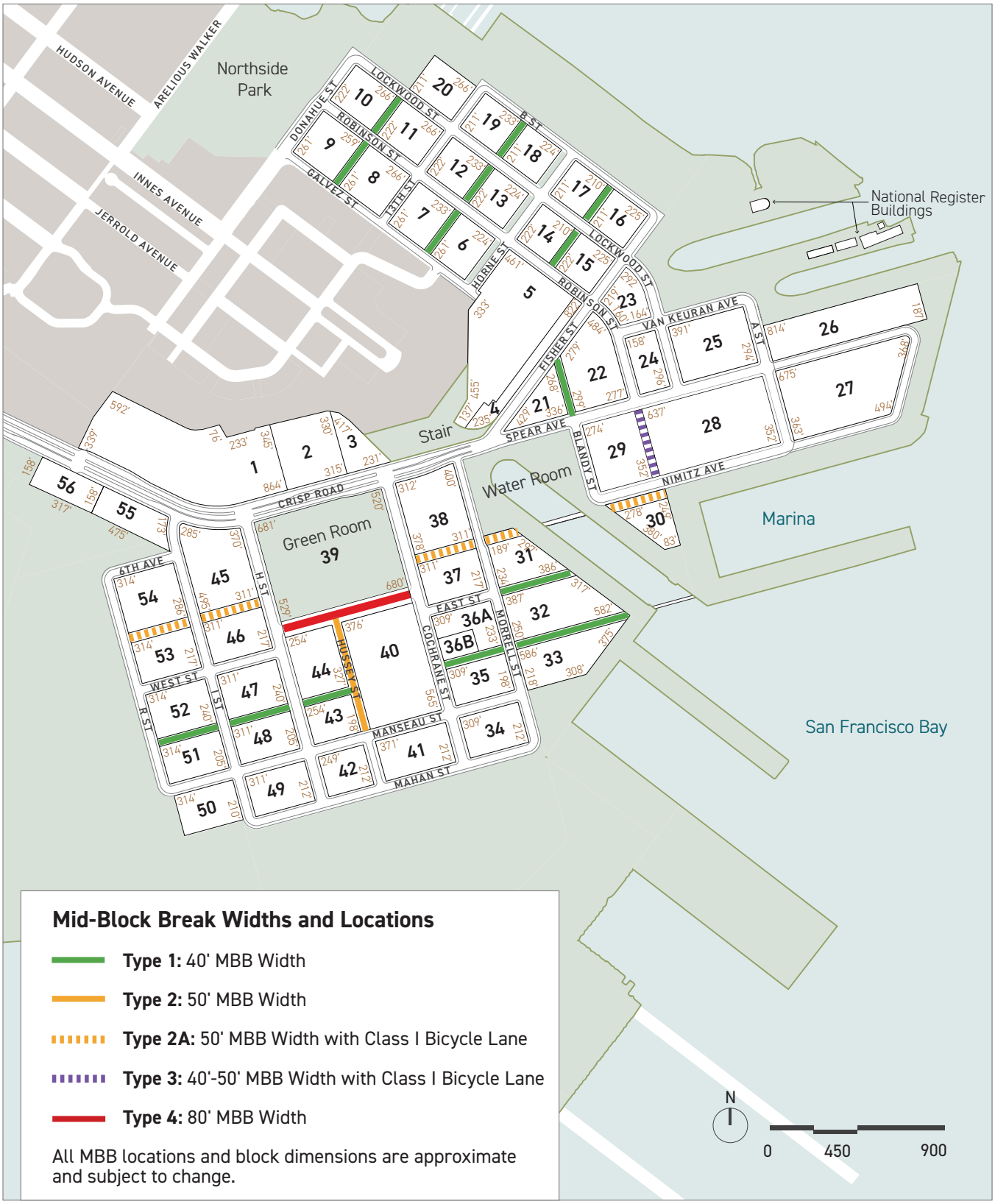


Figure 4.1b: MID-BLOCK BREAK WIDTHS AND LOCATIONS

4.1 Block Sizes and Mid-Block Breaks Cont'd

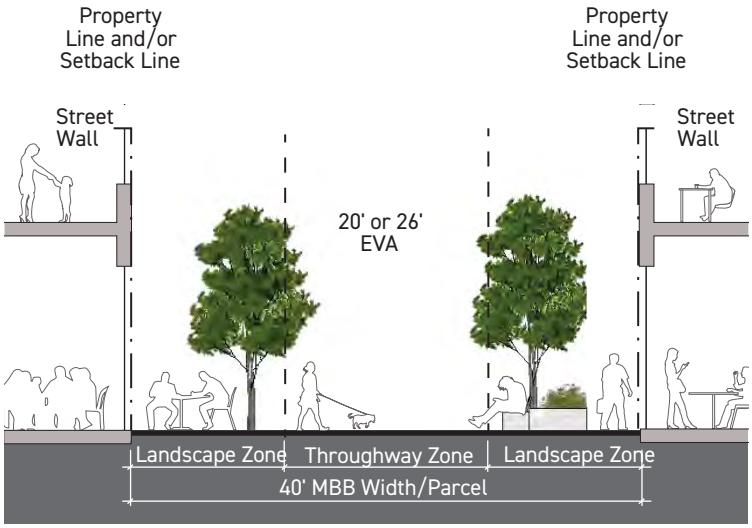


Figure 4.1c: TYPE 1 MID-BLOCK BREAK WIDTH (40') COMMERCIAL

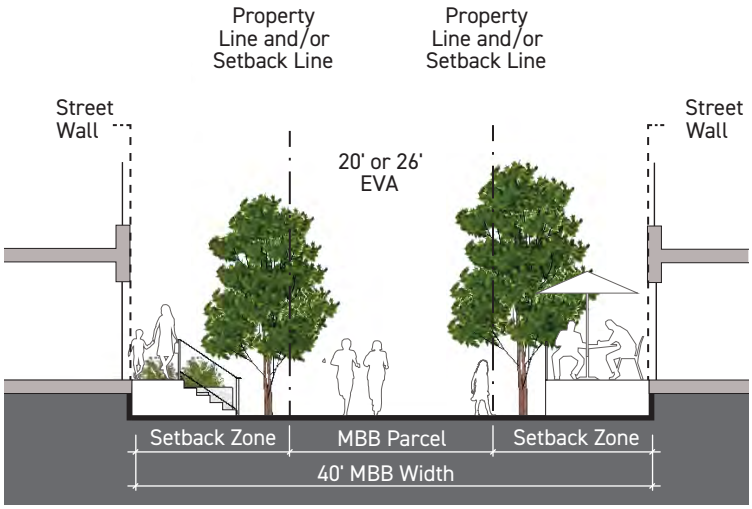


Figure 4.1d: TYPE 1 MID-BLOCK BREAK WIDTH (40') RESIDENTIAL

4.1 Block Sizes and Mid-Block Breaks Cont'd

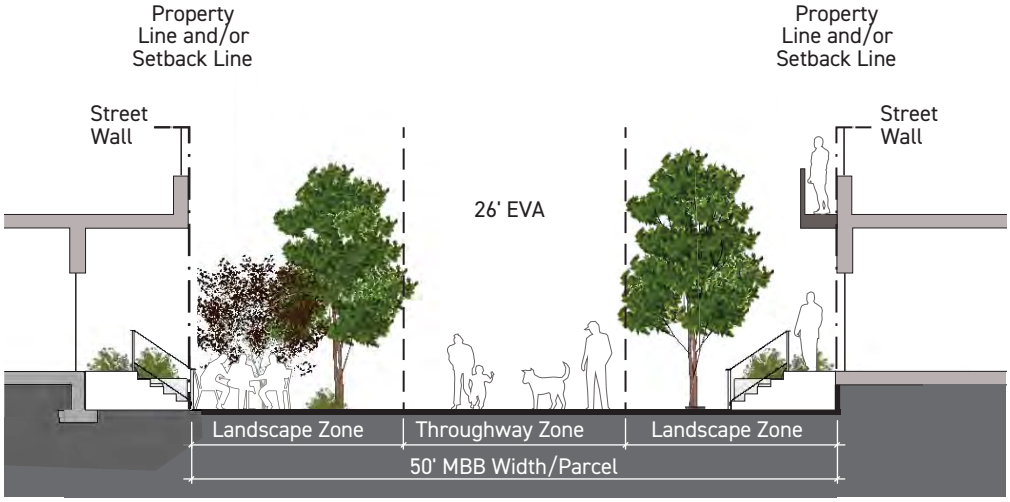


Figure 4.1e: TYPE 2 MID-BLOCK BREAK WIDTH (50')

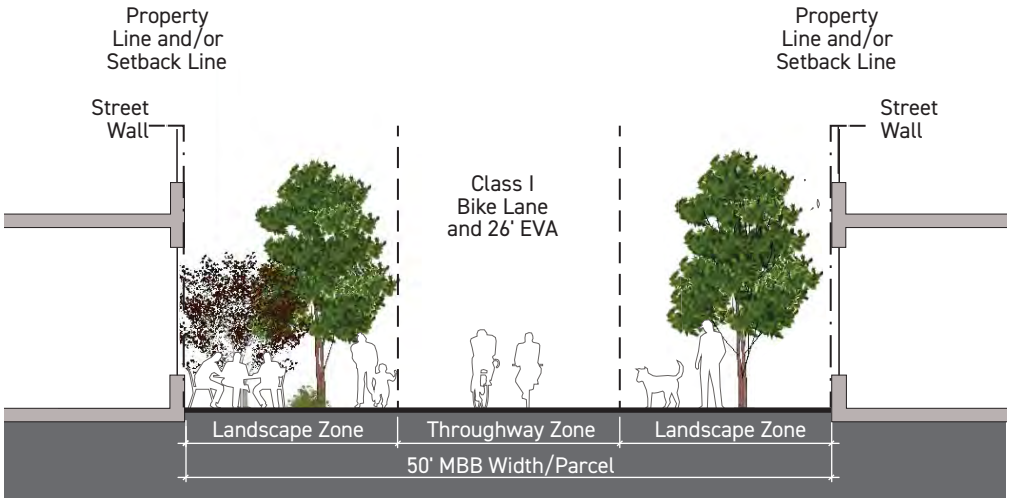


Figure 4.1f: TYPE 2A MID-BLOCK BREAK WIDTH (50') WITH CLASS I BICYCLE LANE

4.1 Block Sizes and Mid-Block Breaks Cont'd

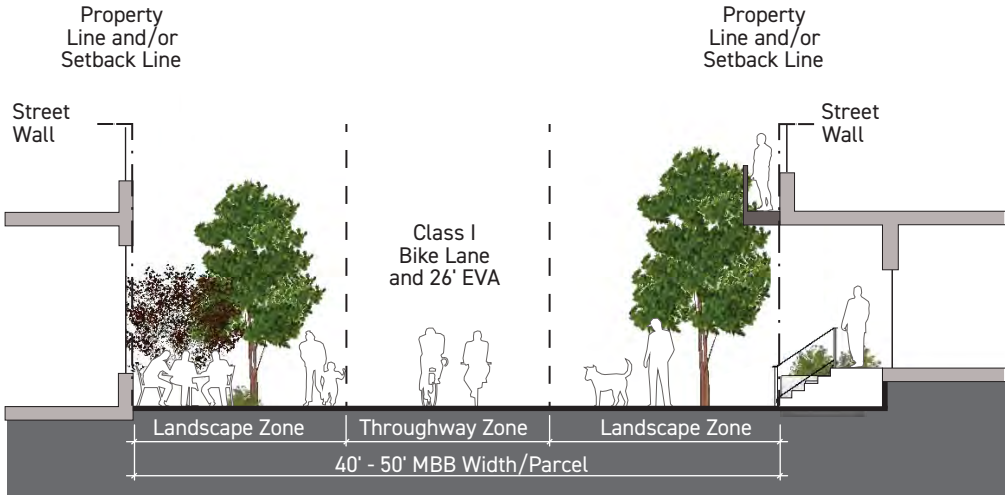


Figure 4.1g: TYPE 3 MID-BLOCK BREAK WIDTH (40' - 50') WITH CLASS I BICYCLE LANE

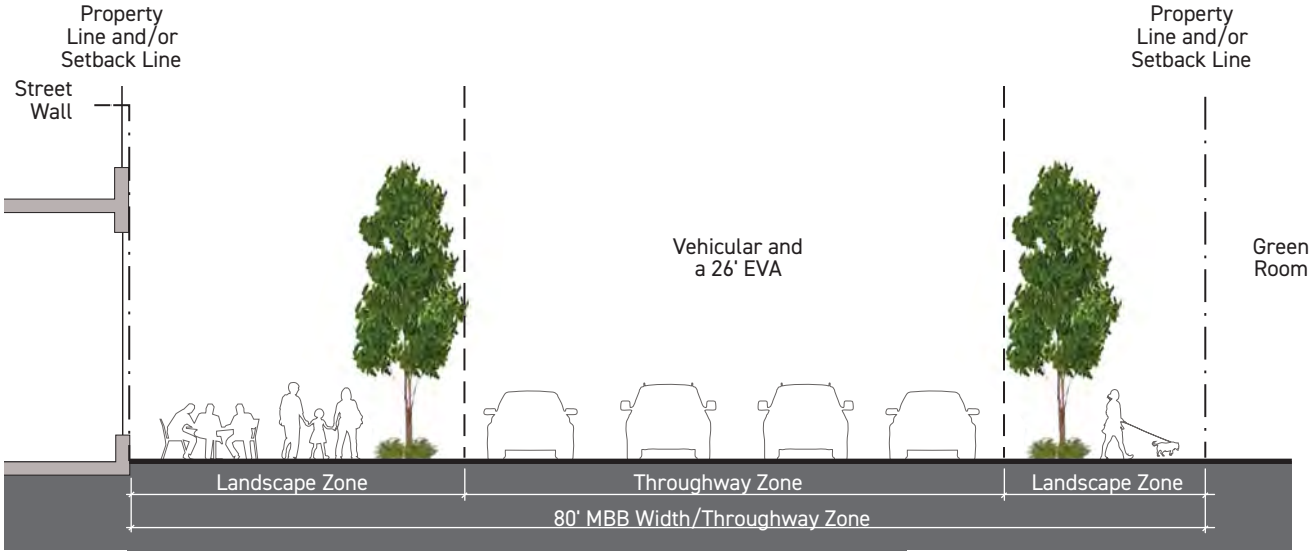


Figure 4.1h: TYPE 4 MID-BLOCK BREAK WIDTH (80')

This page is intentionally left blank.

4.2 Building Setback

4.2.1 Building Setback
4.2.2 Mid-Block Break Setback

INTENT

Setback requirements provide a minimum and maximum range for Building Face locations and describe a relationship between the building and the public right-of-way for each building location.

Setback Zones 1 and 2 provide an urban Street Wall that frames the public realm and establishes a relationship for buildings fronting streets and public gathering spaces.

Setback Zones 3 through 6 provide spaces for transitions between the public and private realm, including but not limited to landscaping, stoops, and porches. These spaces increase the amount of privacy for ground floor residential units. Larger Setbacks on Robinson and Lockwood Streets, Zones 5 and 6, provide additional area for wider sidewalks, sidewalk seating, landscaping and stoops that will create a sense of arrival into the Shipyard from the neighborhoods to the north on these transportation corridors and bicycle routes.

DEFINITIONS

"Building Face"
A plane of the exterior wall of the building along a public right-of-way, open space, or other publicly accessible space. The term is typically used in the context of its relationship to an adjacent street or public area. Where a minimum Street Wall is required, the Building Face aligns with the maximum Setback.

DEFINITIONS

"Setback"
The required horizontal distance between the Building Face and a property line. See *Figure 4.2a*.

STANDARDS

4.2.1 Building Setback

The Building Face is required to be set back from a property line by a horizontal distance of no less than the minimum Setback and no greater than the maximum Setback as established by *Figure 4.2b*.

Setback requirements do not apply to existing buildings if retained or adaptively reused.

The Setback zone shall be used to create one or more of the following:

- Residential private open spaces (4.26)
- Building entries (4.12)
- Commercial open spaces
- Publicly accessible plazas
- Outdoor seating zones
- Walk-up windows for vending
- Stoops and unit entries (4.12 & 4.26)
- Fences (4.26)
- Stormwater treatment
- Below-grade parking structures (with adequate depth to meet landscape standards for setback area above)
- Screened utility areas (4.14)
- Landscape areas (4.27)
- Or similar
- Refer to Section 4.26 Private Open Space.

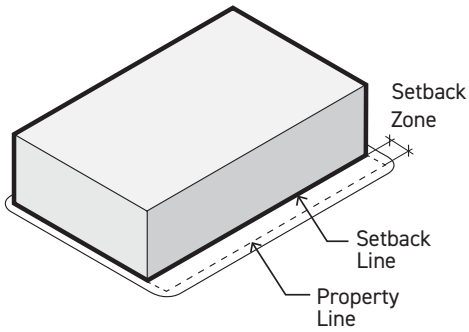


Figure 4.2a: BUILDING SETBACK

Allowable projections into the setback zone are controlled in Standard 4.10.1 Projections.

4.2.2 Mid-Block Break Setback

Setbacks along MBBs are subject to change depending on the final MBB property line location. Setback lines shall be set so that the Street Wall location is located at the MBB Width dimension required in Section 4.1 and *Figure 4.2b*.

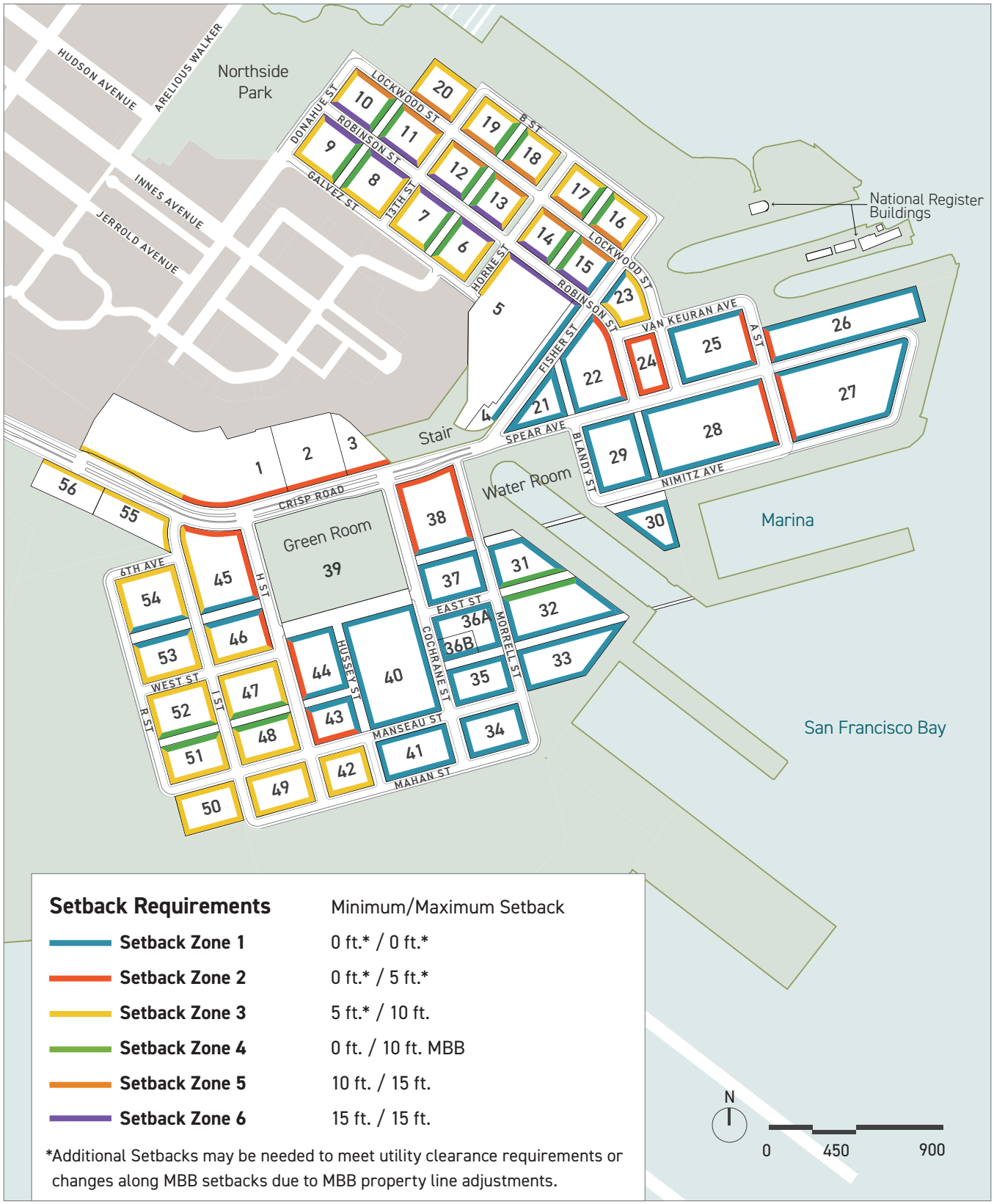


Figure 4.2b: SETBACK REQUIREMENTS

Figure 4.2c: VIEW LOOKING SOUTH *Massing study for illustrative purposes only.*

Figure 4.2d: VIEW LOOKING NORTH *Massing study for illustrative purposes only.*

4.3 Developable Area Coverage

4.3.1 Developable Area Coverage

INTENT

To regulate the Building Envelope by building lot coverage at various height thresholds in order to ensure that the overall bulk of buildings is at an appropriate scale.

DEFINITIONS

"Developable Area"
All land inside the legal property line, excluding Setbacks.

"Coverage"
The percentage of Floor Plate in relation to the Developable Area that is regulated at various height thresholds, as indicated in *Figure 4.3a and Figure 4.3b.*

"Floor Plate"
The Gross Floor Area for an individual floor level of a building.

"Gross Floor Area"
Definition provided in Chapter 6.

STANDARDS

4.3.1 Developable Area Coverage

Developable Area coverage by all habitable and non-habitable building area, including structured parking, is limited as indicated below:

Residential and Residential Mixed-Use Buildings:

Building Height (ft.)	Maximum Allowable Area (Gross sq. ft.)
0-40	100% of Developable Area
41-85	75% of Developable Area
86-120	30,000 sq. ft. maximum (block 45)
121+	12,500 sq. ft. maximum (blocks 15 and 23)

Non-Residential Buildings:

Building Height (ft.)	Maximum Allowable Area (Gross sq. ft.)
0-40	100% of Developable Area
41-95	90% of Developable Area
96-120	80% of Developable Area

For buildings over [120] ft. in height, additional tower design standards apply. Refer to 4.9 Tower Controls.

Shared Parking Structures are not subject to 4.3.1 Developable Area Coverage standard.

Buildings may span multiple parcels between Blocks 1, 2, and 3, Blocks 36A and 36B, and Blocks 55 and 56, respectively.

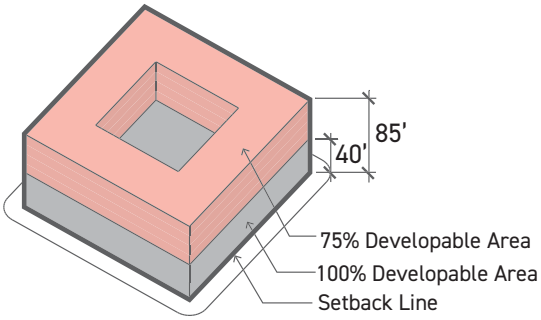


Figure 4.3a: DEVELOPABLE AREA COVERAGE RESIDENTIAL & RESIDENTIAL MIXED-USE BUILDINGS

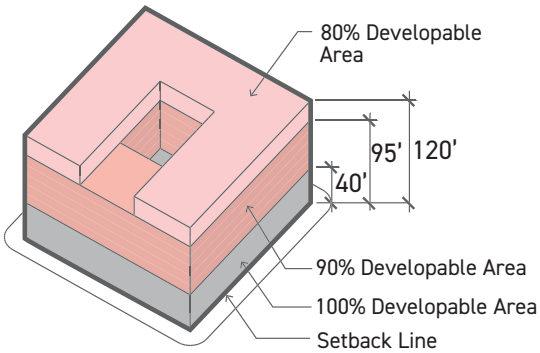


Figure 4.3b: DEVELOPABLE AREA COVERAGE NON-RESIDENTIAL BUILDINGS

4.4 Building Height

4.4.1 Building Height

INTENT

Maximum Building Height, Street Wall, and Stepback requirements establish the building scale in each district. Taller buildings frame urban open spaces and define a skyline that steps down from the hillside towards the waterfront, optimizing views and facilitating the transition to the natural landscape. Stepbacks on the south side of residential and retail focused Mid-Block Breaks allow additional daylight to open space.

DEFINITIONS

"Stepback"
The distance that upper levels of a building may be inset from the primary Building Face.

"Implied Façade"
An Implied Façade is a Building Face that completes the apparent massing through vertical and horizontal architectural elements, such as the roof line, columns, angular shifts, or other elements, that maintain the visual continuity of the Street Wall.

STANDARDS

4.4.1 Building Height

Maximum height requirements are established for all development blocks, as illustrated in *Figure 4.4c*.

Building Height is measured from the highest corner at finished sidewalk grade to the average point on the finished roof in the case of a flat roof, and from the average height of the rise in the case of a pitched or stepped roof, or similarly sculpted roof form. See *Figure 4.4a*.

For parcels adjacent to streets with a slope greater than 5%, Building Height is determined by measuring at the mid-point of the building at the sidewalk grade adjacent to each street-fronting Building Face. The maximum height envelope may extend from one frontage up to a depth of half the distance to the opposite side of the block. Multiple frontages may be used to determine maximum Building Height envelope. See *Figure 4.4b*.

Towers shall be located within the Flexible Tower Zone, as shown in *Figure 4.4c*.

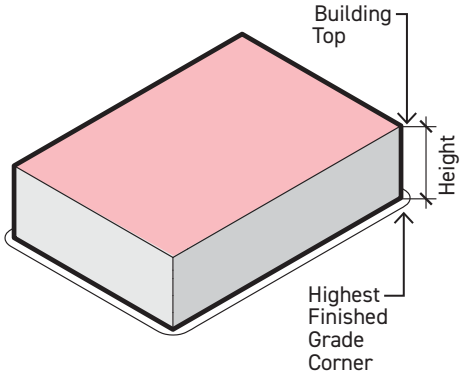


Figure 4.4a: BUILDING HEIGHT

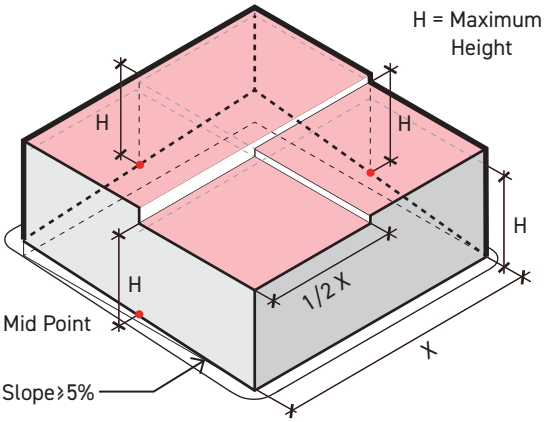


Figure 4.4b: BUILDING HEIGHT ON SLOPE

Figure 4.4c: MAXIMUM BUILDING HEIGHT

4.4 Building Height Cont'd

4.4.2 Mid-Block Break Building Stepbacks
4.4.3 Building Height Exceptions

INTENT

To increase the amount of sunlight that reaches the ground plane of Mid-Block Breaks.

STANDARDS

4.4.2 Mid-Block Break Building Stepbacks

Stepbacks are required at designated locations as indicated in *Figure 4.4c*.

Stepbacks shall occur at a minimum of a 1:1.2 ratio above [45] ft. in building height. The first [70] ft. of building frontage perpendicular to H and Cochrane Streets are exempt. See *Figure 4.4d* and *Figure 4.4e*.

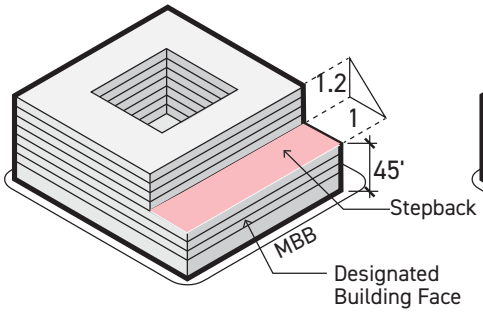


Figure 4.4d: BUILDING STEPBACK

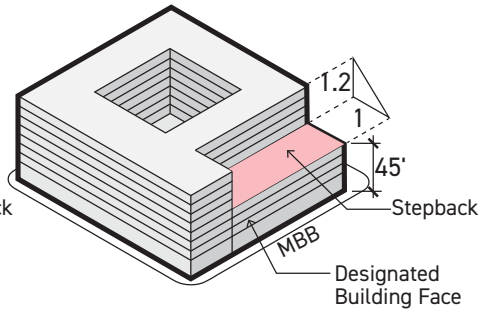


Figure 4.4e: BUILDING STEPBACK

INTENT

To define the type, number, height, and area of elements allowed to exceed the maximum Building Height.

STANDARDS

4.4.3 Building Height Exceptions

The following may extend up to [16] ft. above the maximum Building Height:

- Spires, towers, and other non-habitable architectural features
- Mechanical equipment and appurtenances necessary to the operation or maintenance of the building or structure itself, including chimneys, ventilators, plumbing vent stacks, cooling towers, water tanks, elevator, stair and mechanical penthouses, skylights, window-washing equipment and associated screens
- Sustainable building systems and roof-mounted equipment, such as solar collectors and wind turbines
- Habitable amenity spaces

4.4 Building Height Cont'd

4.4.4 Roof Area Building Height Exception

STANDARDS

Ventilators, vent stacks and mechanical exhaust systems for laboratory uses may extend above the maximum Building Height as necessary to the operation of the building only to the extent required by the corresponding codes. (i.e. building code, health code, etc.).

The screening of Roof-Mounted Equipment shall be stepped back from top of parapet at a ratio of 1:1.2 and no less than ten[10] ft. from the parapet or roof edge. See *Figure 4.4f*.

Parapets may extend up to four[4] ft. above the maximum Building Height.

4.4.4 Roof Area Building Height Exception

The total square footage of enclosed area(s) within rooftop Screening and penthouses shall be no greater than 30% of the total roof area. See *Figure 4.4g*.

Enclosed habitable amenity spaces covering not more than [2,500] sq. ft. of the overall roof area and appurtenant to outdoor amenity spaces may extend up to [16] ft. above the maximum Building Height. See *Figure 4.4h*.

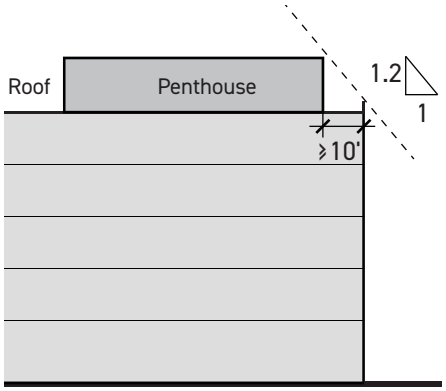


Figure 4.4f: PENTHOUSE STRUCTURE REQUIREMENTS

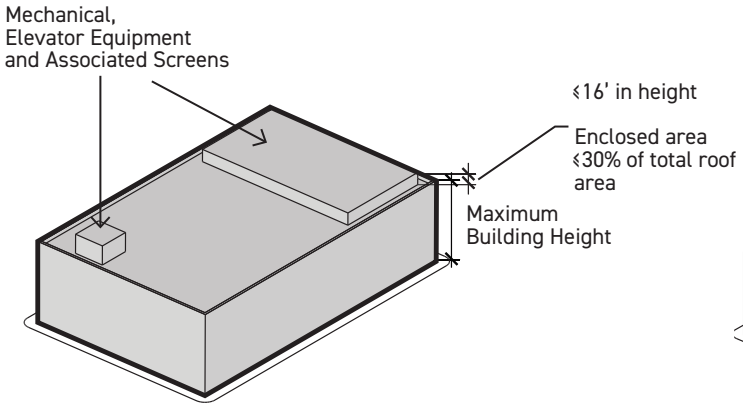


Figure 4.4g: BUILDING HEIGHT EXCEPTION

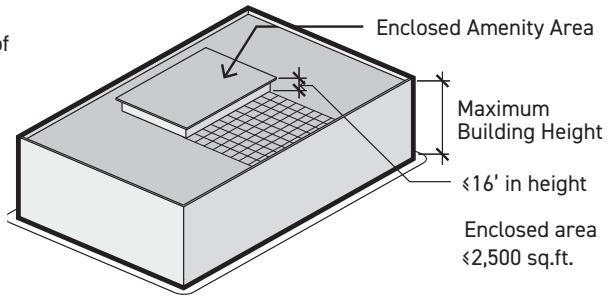


Figure 4.4h: BUILDING HEIGHT EXCEPTIONS ENCLOSED AMENITY AREA

4.4 Building Height Cont'd

4.4.5 Street Wall
4.4.6 Implied Façade
4.4.7 Street Wall Exceptions for Adaptive Reuse
4.4.8 Street Wall Exceptions for Recessed Areas

INTENT

To create a strong Building Face that defines the public realm by ensuring a minimum amount of the Building Face is located at the setback line.

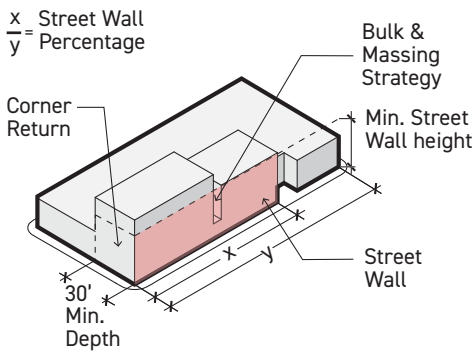


Figure 4.4i: STREET WALL

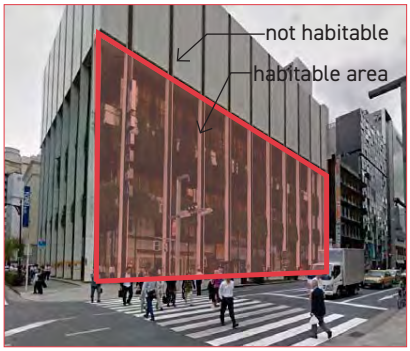


Figure 4.4j: IMPLIED FAÇADE

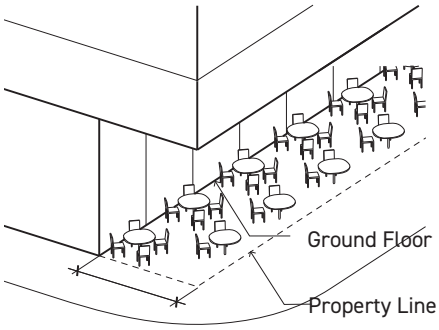


Figure 4.4k: COVERED OUTDOOR SEATING

STANDARDS

4.4.5 Street Wall

Minimum Street Wall heights and Street Wall percentage requirements are established by *Figure 4.4l*.

The Street Wall shall occur within an area bounded by the minimum and maximum Setbacks. The minimum height shall be maintained for a minimum depth of [30] ft. from the Street Wall. In the case of a corner where two different Street Wall heights adjoin, the higher of the two shall prevail for the required depth of [30] ft. Street Wall requirements are calculated independently for each Street Fronting Elevation. Refer to *Figure 4.4i*.

Bulk and Massing and Façade Composition strategies as defined in Section 4.6 and Section 4.7 that are used to meet the Standard requirement shall be counted toward the required Street Wall percentage.

4.4.6 Implied Façade

A required Street Wall may be achieved by an Implied Façade that complies with the height and percentage requirements of the Street Wall Standard. Height of the Street Wall shall be met by habitable building area. Refer to *Figure 4.4j*.

4.4.7 Street Wall Exceptions for Adaptive Reuse

Street Wall requirements do not apply to Adaptive Reuse buildings if retained.

4.4.8 Street Wall Exceptions for Recessed Areas

Street Wall Zones 1-A, 1-B and 2 permit covered outdoor areas at the ground floor, recessed from the Street Wall up to [15] ft. in depth, to allow for patio spaces, entrances, publicly accessible plazas, outdoor seating zones, and/or walk-up windows. The outdoor area shall be no greater than two Stories in height and the Street Wall shall be maintained for the Building above the recessed area. Such an outdoor area shall be immediately accessible by an entrance to the building. Refer to *Figure 4.4k*.

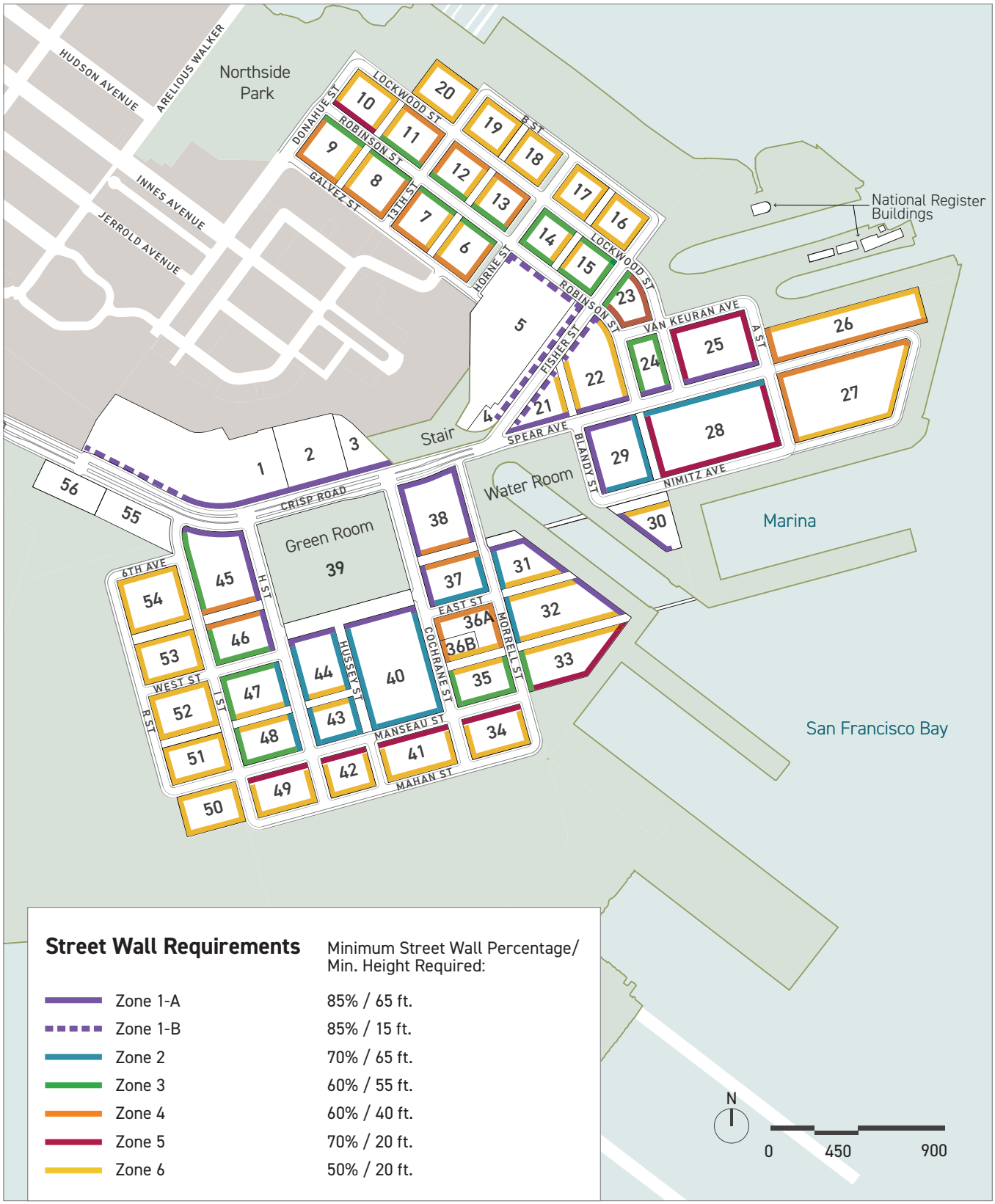


Figure 4.4l: STREET WALL REQUIREMENTS

Figure 4.4m: BUILDING SIZES: S, M, L, XL

4.5 Architectural Controls by Building Scale

4.5.1 Architectural Controls by Building Scale
4.5.2 Maximum Plan Length

INTENT

To determine which controls apply, refer to Flow Chart for "4.5A Architectural Controls by Building Scale Cont'd" (Page 68) which outlines a path to compliance for each building size category. The sections following the Flow Chart describe how Façade Composition, Bulk and Massing, Building and Public Realm Enhancements are regulated and applied.

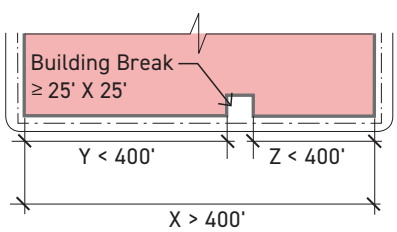


Figure 4.5a: FLOOR PLATE AREA AND MAXIMUM PLAN LENGTH

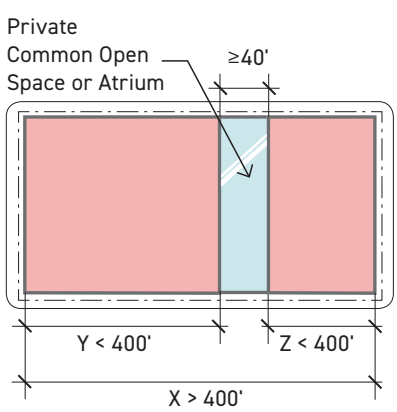


Figure 4.5b: MAXIMUM PLAN LENGTH

DEFINITIONS

"Maximum Plan Length"
The maximum linear dimension of a building measured in plan along a building elevation parallel to the immediately adjacent public right-of-way, MBB, or public open space.

"Street Fronting Elevation"
Building façades facing onto a public right-of-way, MBB, or public open space.

"Small Buildings" (S): Small Buildings include all buildings that have a Maximum Plan Length that is less than [150] ft. in length.

"Medium Buildings" (M): Medium Buildings include all buildings that have a Maximum Plan Length greater than [150] ft. in length along any facade and have a maximum Floor Plate less than [70,000] sq. ft.

"Large Buildings" (L): Large Buildings include all buildings with a maximum Floor Plate between [70,000] and [100,000] sq. ft.

"Extra Large Buildings" (XL): Extra Large Buildings include all buildings with a maximum Floor Plate greater than [100,000] sq. ft.

STANDARDS

4.5.1 Architectural Controls by Building Scale

Buildings have been grouped in four[4] categories: Small (S), Medium (M), Large (L) and Extra Large (XL). All buildings shall meet the Façade Composition Standards. In addition to Façade Composition Standards, Medium, Large and Extra Large buildings shall follow Bulk and Massing Standards and Building and Public Realm Enhancement Standards (see Flow Chart on page 68).

4.5.2 Maximum Plan Length

No Street Fronting Elevation shall have a Maximum Plan Length greater than [400] ft. without one[1] of the following: See *Figure 4.5a*.

- A building break that is at minimum [25] ft. by [25] ft. in dimension and extends from roof plane to sidewalk grade.
- A private common open space or Atrium that connects through to the opposite side of the block. Open space may include Skyways. Open space shall be at minimum [40] ft. wide in each dimension with a view to the sky. See *Figure 4.5b*.

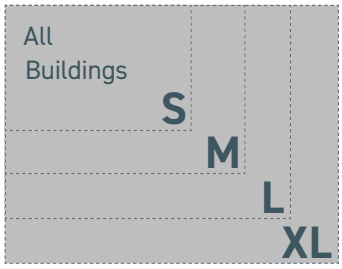
4.5A Architectural Controls by Building Scale Cont'd

FLOW CHART FOR ARCHITECTURAL CONTROLS

All Buildings shall meet the Façade Composition Standards. In addition to Façade Composition Standards, Medium, Large and Extra Large Buildings shall follow Bulk and Massing Standards and Building and Public Realm Enhancement Standards.

FC

4.6.1 Façade Composition

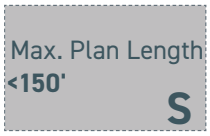


Apply two[2] Façade Compositions:
See Page 70

- **FC1** Façade Modulation
- **FC2** Façade Articulation
- **FC3** Fenestration
- **FC4** Material/Color

BM

4.7.1 Bulk and Massing



No Bulk and Massing Approaches or Building and Public Realm Enhancement Measures Required

Apply one[1] Bulk and Massing Approach:
See Page 81

- **BM1** Significant Breaks
- **BM2** Upper Floor Stepbacks
- **BM3** Façade Variation

BE/PE

4.8.1 Building and Public Realm Enhancements

Floor Plate:
<70,000 SF
M

Apply at least one[1] Building or Public Realm Enhancement Measure (BE/PE)

Floor Plate:
70,000-100,000 SF
L

Apply Option L1
Apply at least three[3] Building Enhancement Measures (BE)

or Option L2
Apply at least one[1] Building Enhancement Measure (BE)
Apply at least one[1] Public Realm Enhancement Measure (PE)

Floor Plate:
>100,000 SF
XL

Apply Option XL1
Apply at least four[4] Building Enhancement Measures (BE)

or Option XL2
Apply at least two[2] Building Enhancement Measures (BE)
Apply at least one[1] Public Realm Enhancement Measure (PE)

Building Enhancement Measures (BE):

See Page 88

- **BE1** Apply one[1] Additional Bulk and Massing Approach
- **BE2** Orient Private Courtyards and/or Atria onto a Public Right-of-Way or MBB
- **BE3** Visual and Physical Access to Interior Courtyard/Atrium
- **BE4** 24/7 Access to Open Space
- **BE5** Reduction in Floor Plate Area of Upper Floors
- **BE6** Expressive Entrance
- **BE7** Increased Transparency
- **BE8** Distinct Corner Architecture Feature
- **BE9** Roof Expression
- **BE10** Additional Active Entries
- **BE11** Additional Ground Floor Activation

Public Realm Enhancement Measures (PE):

- **PE1** Public Access through the Building
- **PE2** Public Access through Open Space Connections

4.6 FC Façade Composition

4.6.1 Façade Composition

INTENT

To create character, distinction, and visual interest on the facades of all buildings.

DEFINITIONS

"Façade Composition"
Large scale facade geometry and smaller scale facade tectonics, including material selection and detailing.

"Street Fronting Elevation"
Building façades facing onto a public right-of-way, MBB, or public open space.

"Variations in Façade Composition"
Variations in Façade Composition create visual interest and avoid monotony. This can be achieved by using either two[2] different Facade Compositions or by using two [2] distinctly different designs of the same Facade Composition. In case of the latter, the two [2] designs must be recognizably different in expression.

STANDARDS

4.6.1 Façade Composition

Street Fronting Elevations of all buildings shall have a minimum of two [2] Façade Compositions. The same application shall not fulfill the requirement for more than one Façade Composition.

Choose two[2] Facade Compositions:

FC1 Façade Modulation

FC2 Façade Articulation

FC3 Fenestration

FC4 Material/Color

Figure 4.6a: BUILDING A

Example: Building A uses the following two[2] Facade Compositions:
See *Figure 4.6a*.

FC1 Façade Modulation:
Angular Shift and Horizontal Shift

FC3 Fenestration:
Punched Windows

Figure 4.6b: BUILDING B

Example: Building B uses the following two[2] Facade Compositions.
See *Figure 4.6b*.

FC2 Façade Articulation:
Sun Shading Devices

FC3 Fenestration:
Boxed Windows and Curtain Wall

4.6 FC Façade Composition Cont'd

4.6.2 Block to Block Variation

INTENT

To provide architectural variety and visual interest from Block to Block by demonstrating distinction between opposing Block faces and between Block faces adjacent to each other along a street, MBB, or other open space.

STANDARDS

4.6.2 Block to Block Variation

Buildings shall be distinct from one[1] Block Façade to adjacent Block Façade by incorporating variations in at least two[2] Façade Compositions. See *Figure 4.6c.*

Vary façade with two[2] Compositions:

FC1	Façade Modulation	**FC3**	Fenestration
FC2	Façade Articulation	**FC4**	Material/Color

Example: If Block A and Block B both use the same Façade Modulation (FC1) and Fenestration (FC3), then Block A and B shall be a distinct variation from one another in their Material/Color (FC4) and Façade Articulation (FC2). See *Figure 4.6c* and *Figure 4.6d.*

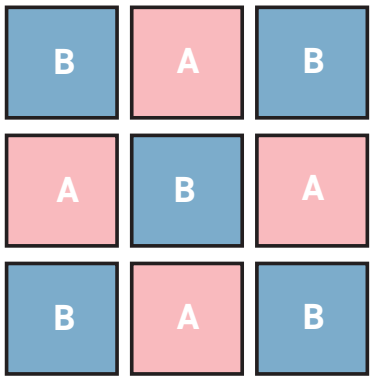


Figure 4.6c: BLOCK TO BLOCK VARIATION (ADJACENT BLOCK FAÇADES SHALL BE DISTINCT FROM BLOCK A)

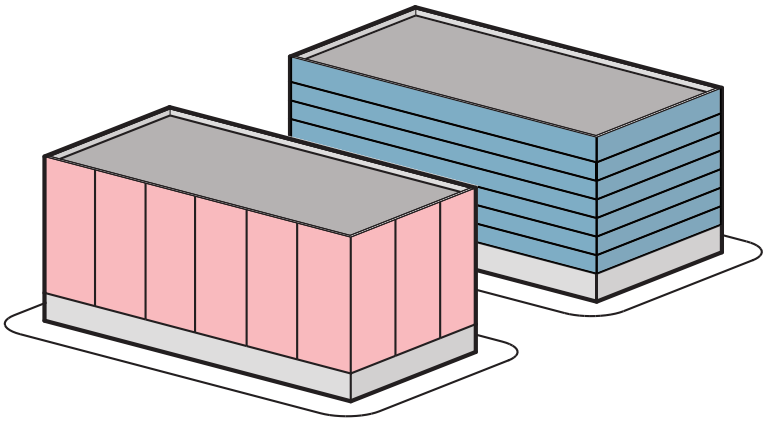


Figure 4.6d: BLOCK A (VERTICAL ARTICULATION AND MATERIAL COLOR) BLOCK B (HORIZONTAL ARTICULATION AND MATERIAL COLOR)

4.6 FC Façade Composition Cont'd

FC1 Façade Modulation Strategies

INTENT

To shape building massing and provide visual interest, scale, and rhythm to a building and/or building Façade.

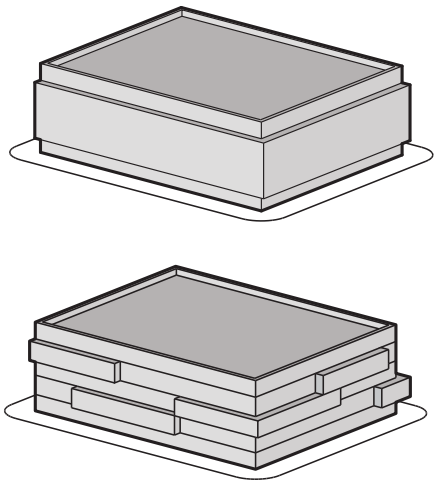


Figure 4.6e: HORIZONTAL SHIFT

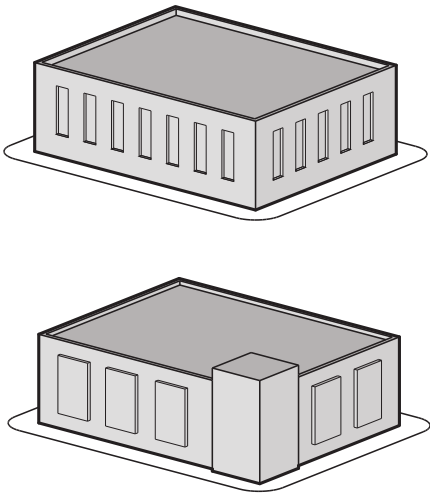


Figure 4.6f: VERTICAL SHIFT

APPLICATION

FC1 Façade Modulation

Façade Modulations shall include plan shifts in the Façades, expressions of building structure, Building Projections, and other strategies that provide visual interest and depth that is recognizable from a distance. Plan shifts and framing shall be a minimum of two [2] ft. in depth. The extent and scale of Facade Modulations shall be proportional to and in keeping with the scale of the entire building. Double skins and structural expressions that are character-defining features of the façade have no minimum depth requirements.

Changes in the Façade plane made for the application of the Façade Modulation may be used to create an Implied Façade.

MODULATION STRATEGIES

The following are a non-exhaustive list of Façade Modulation strategies:

"Horizontal Shift"
The Façade is defined by horizontal subdivisions which project forward or push back from each other. The horizontal subdivisions may, but need not be, determined by the location of the building floor slabs.
See *Figure 4.6e*.

"Vertical Shift"
The Façade is subdivided into "bays" that protrude or recess from a predetermined datum. These bays may be expressive of a programmatic or structural characteristic of the building. See *Figure 4.6f*.

4.6 FC Façade Composition Cont'd

FC1 Façade Modulation Strategies

1

1. & 2. Horizontal Shift Example
3. 4. & 5. Vertical Shift Example

2

3

4

5

4.6 FC Façade Composition Cont'd

FC1 Façade Modulation

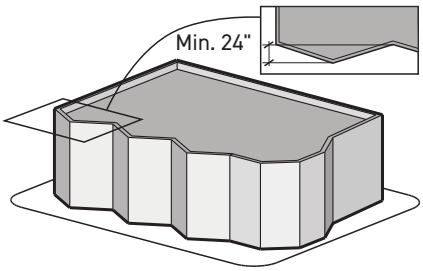


Figure 4.6g: ANGULAR SHIFT

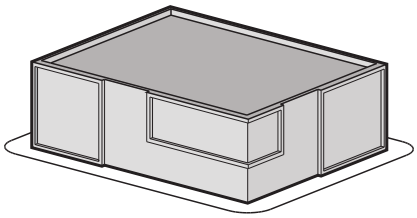


Figure 4.6h: FRAMING

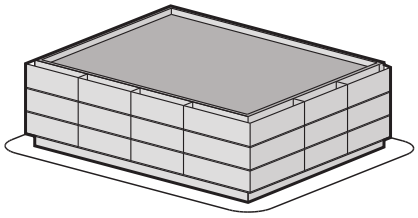


Figure 4.6i: DOUBLE SKIN

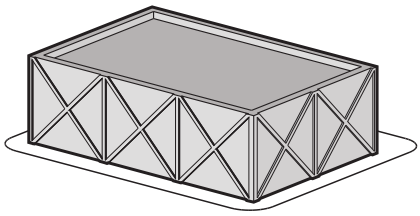


Figure 4.6j: STRUCTURAL EXPRESSION

MODULATION STRATEGIES

"Angular Shift"
A series of sloped or faceted surfaces along the façade. Angular shifts shall be minimum [24] in. in depth. See *Figure 4.6g*.

"Framing"
Elements of a Façade can be identified as modules through the use of a frame or framing element. A frame can be a continuous protrusion which follows some perimeter at the façade scale. See *Figure 4.6h*.

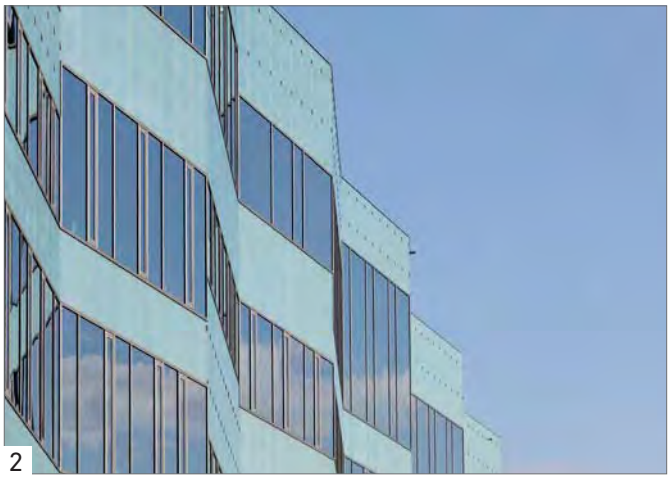
"Double Skin"
A Façade system created by a second enclosure, typically lighter and slightly translucent or perforated, outboard of the main exterior Building Envelope. A double skin may have operable components and is meant to add depth and intricacy by way of light and shadows along the Façade. See *Figure 4.6i*.

"Structural Expression"
Actual structural elements such as beams, columns, cross-bracing, or fastenings can naturally break up a building's Façade if made visible along a building's exterior. See *Figure 4.6j*.

4.6 FC Façade Composition Cont'd

FC1 Façade Modulation

1



2

3

4

5

1. Double Skin Example
2. Angular Shift Example
3. Structural Expression Example
4. Angular Shift Example
5. Framing Example

4.6 FC Façade Composition Cont'd

FC2 Façade Articulation

INTENT

To create a cohesive Façade system. Facade Articulation strategies are intended to create visual interest, texture, and shadows, through the tectonics, materiality, and craft of the facade.

DEFINITION

"Façade Articulation"
Expressions of material properties, craft, treatment, pattern and/or assembly that create visible shadows and/or texture across the Building Façade.

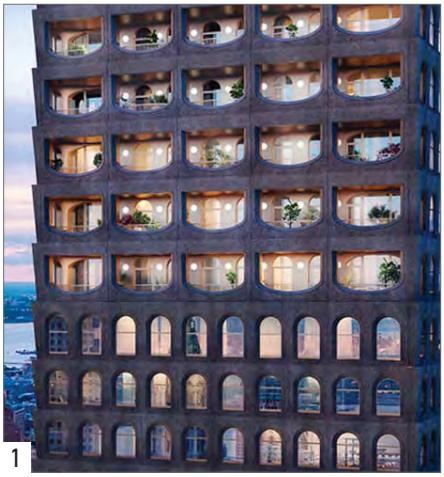
APPLICATION

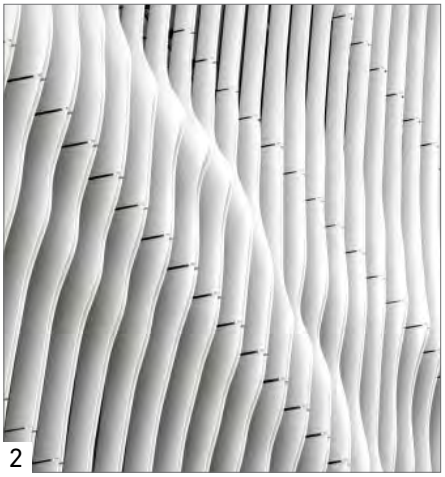
FC2 Façade Articulation

Articulation can either emphasize distinct components of a Façade or create smooth, continuous transitions between elements to emphasize the "whole." A non-exhaustive list of strategies are listed below:

Articulation Strategies:

- Vertical Recesses
- Horizontal Extensions
- Architectural Fins
- Louvers
- Shading Devices
- Cornices
- Punched Openings
- Window Reveals
- Screening Devices
- Balconies
- Or Similar


1


2

3

1. Punched Openings Example
2. Architectural Fins Example
3. Balcony Example

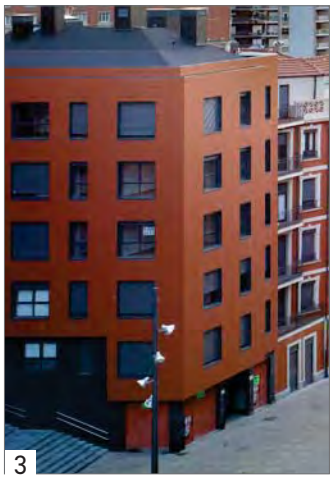
4.6 FC Façade Composition Cont'd

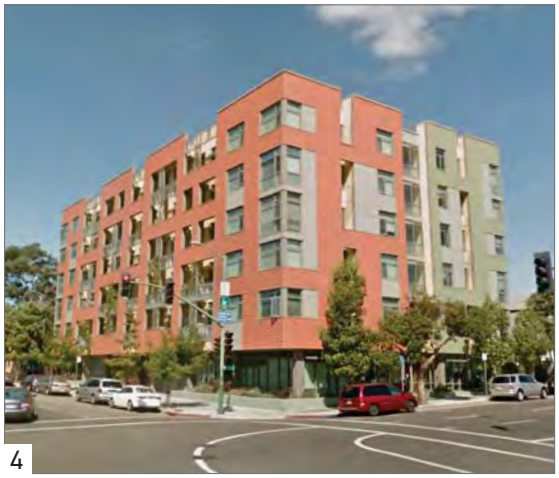
FC2 Façade Articulation

1

2

1. Vertical Recesses and Punched Openings Example
2. Architectural Fins and Louvers Example
3. Punched Openings Example
4. Balcony, Extensions and Recesses Example
5. Punched Openings Example
6. Shading Devices and Cornice Example


3


4

5

6

4.6 FC Façade Composition Cont'd

FC3 Fenestration

INTENT

Building Fenestration strategies are Façade composition elements that contribute to the character of a building and the feel of the urban environment. These strategies modulate Daylight and potential for natural ventilation in buildings.

DEFINITION

"Fenestration"
The design, construction, or presence of openings in a building. Fenestration includes windows, doors, louvers, vents, wall panels, skylights, storefronts, curtain walls, and sloped systems.

APPLICATION

FC3 Fenestration

Fenestration strategies include a variety of techniques to bring Daylight into a building and help define the character of a building. Fenestration strategies include shape, size, pattern, rhythm, and location of façade apertures.

Successful fenestration strategies stand out as a central component or feature of a building's enclosure. Such strategies strengthen the expression of the building's architectural character. A non-exhaustive list of strategies are listed below:

Fenestration Strategies:

- Glass Curtain Wall
- Punched Window
- Window Wall
- Double Skin
- Boxed Window
- Bay Window
- Glazed Atrium at the façade
- Or Similar

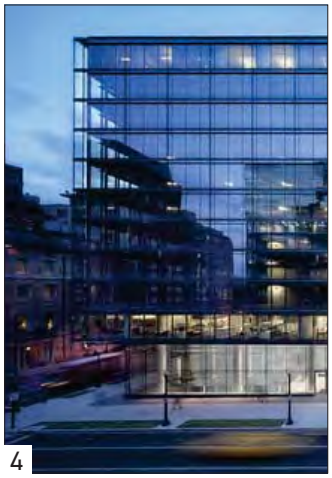
4.6 FC Façade Composition Cont'd

FC3 Fenestration

1

2

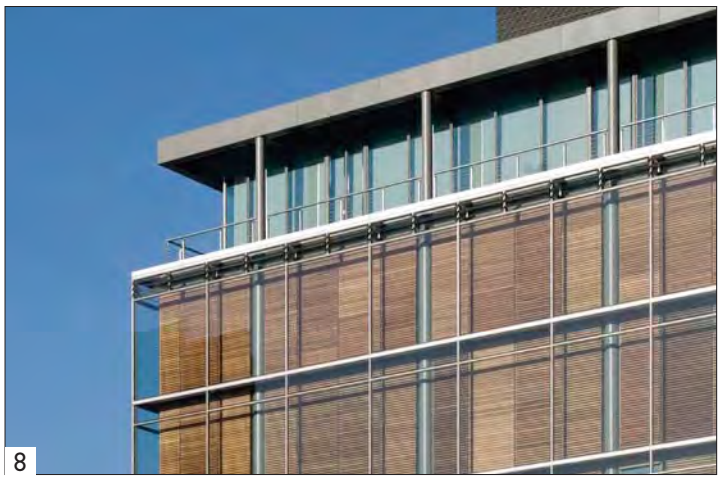
3


4

5

6

7


8

1. Punched Windows Example
2. Punched Windows + Curtain Wall Example
3. Punched Windows Example
4. Curtain Wall Example
5. Curtain Wall and Atrium Example
6. Curtain Wall with Boxed Windows Example
7. Window Wall Example
8. Double Skin Example

4.6 FC Façade Composition Cont'd

FC4 Material/Color

INTENT

The intentional application of Material/Color creates a defined architectural vocabulary that provides visual interest and contributes to the urban character. The materiality, patina, texture, color and craftsmanship respond to the unique quality of the district.

DEFINITION

"Material/Color"
The application of materials, color, shades and texture for a building when used as a quality- and character-defining features of the Façade.

For the purposes of meeting standard 4.6.1 Façade Composition, Variations in Material/Color strategies shall include a change in color and a change in material or a change in application of material such as change in pattern and/or texture. Color differences alone do not qualify as a variation.

APPLICATION

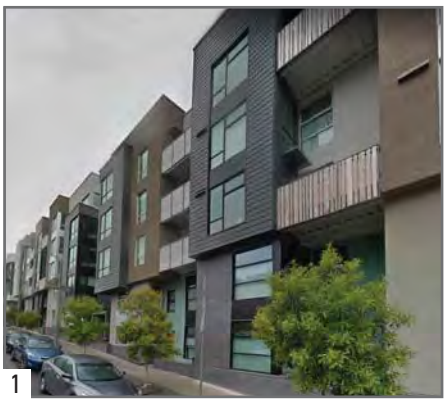
FC4 Material/Color

Material and color may be used as a volumetric application, as an organizing element, or to create contrast between different building elements. Refer to 4.6 Façade Materials. A non-exhaustive list of strategies are as follows:

Material/Color Strategies:
- Volumetric Application
- Organizing Feature
- Structural
- Tectonics
- Character Defining Feature

2

3


1

4

1. Materials and Colors as a Volumetric Application Example
2. Metal used as Monolithic Application Example
3. Brick as Organizing Element Example
4. Character-Defining Façade Composition Example

4.7 BM Bulk and Massing

4.7.1 Bulk and Massing Approach

INTENT

To facilitate a varied urban form and shape building scale and geometry. To reflect neighborhood character and provide a human-scale pedestrian realm as well as an attractive skyline when viewed from afar.

DEFINITIONS

"Bulk and Massing"
Bulk and Massing regulations are the combination of controls (lot size, lot coverage, open space, yards, heights and setbacks) that determine the maximum Building Envelope.

"Apparent Face"
The unbroken plane of a Building within a single Façade composition.

"Primary Façade Plane"
The plane that incorporates the primary Façade of a Street Fronting Elevation.

STANDARDS

4.7.1 Bulk and Massing Approach

Medium, Large, and Extra Large Buildings shall use at least one[1] of the following approaches for breaking up the Bulk and Massing of Building Façades greater than [150] ft. in length. Buildings are not required to use the same Bulk and Massing Approach for every Façade.

Choose at least one[1] approach:

BM1 Significant Breaks

BM2 Upper Floor Stepbacks

BM3 Façade Variation

4.7 BM Bulk and Massing Cont'd

BM1 Significant Breaks

INTENT

To reduce the Bulk and Massing of buildings by the introduction of vertical breaks within the Façade Plane. Such breaks may articulate building mass or provide rhythm to the Facade.

APPLICATION

BM1 Significant Breaks

An Apparent Face on a Street Fronting Elevation shall be no greater than [150] ft. in length without a Significant Break in the Primary Façade Plane.

Significant Breaks shall be in the form of vertical interruptions within the Primary Façade Plane that are at least as wide and deep as 10% of the longest adjoining Apparent Building Face. (Example: If the longest Apparent Face is [100] ft. in length, the Significant Break shall be at least ten[10] ft. wide and ten[10] ft. deep; if the longest Apparent Face is [150] ft. in length, the Significant Break shall be at least [15] ft. wide and [15] ft. deep.)

Significant Breaks shall extend from the roof plane to a building height of [25] ft. or less from the sidewalk grade. The break may extend to grade.

Significant Breaks may occur at any rhythm or length of a Primary Façade Plane. The minimum Significant Break dimension is two[2] ft. by two[2] ft.

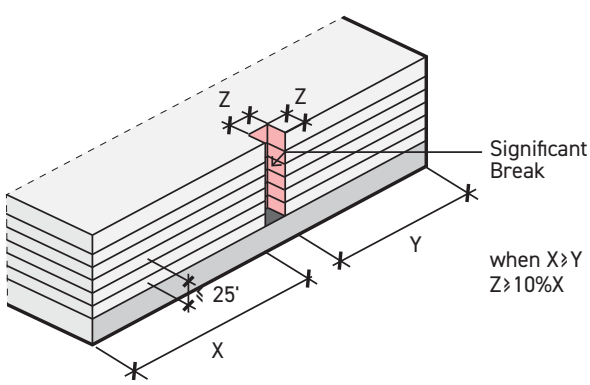


Figure 4.7a: SIGNIFICANT BREAKS A

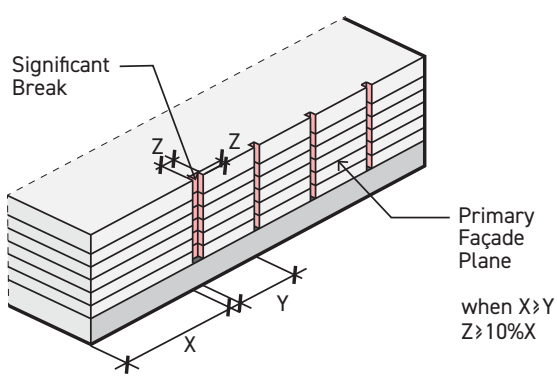


Figure 4.7b: SIGNIFICANT BREAKS B

4.7 BM Bulk and Massing Cont'd

BM1 Significant Breaks

1. & 2. Significant Break

4.7 BM Bulk and Massing Cont'd

BM2 Upper Floor Stepbacks

INTENT

To reduce the Bulk and Massing of buildings by stepping back the upper floors and thereby reducing the perceived height of the building, and to provide more sunlight to the public realm while reinforcing the character and providing visual interest to the building and roof plane.

APPLICATION

BM2 Upper Floor Stepbacks

At a minimum, the topmost floor of the building shall step back from the Primary Façade Plane.

The Stepback shall be an average minimum of ten[10] ft. from the Primary Façade Plane.

A minimum of 60% of the façade length shall step back a minimum of ten[10] ft. from the Primary Façade Plane.

Upper floor(s) shall Stepback at the following heights:

STEPBACK REQUIREMENTS BY BUILDING HEIGHT	
Building Height	Stepback Height
≤85 ft.	Top floor or lower
85 - 120 ft.	86 ft. or lower

Figure 4.7c: STEPBACK REQUIREMENTS BY BUILDING HEIGHT

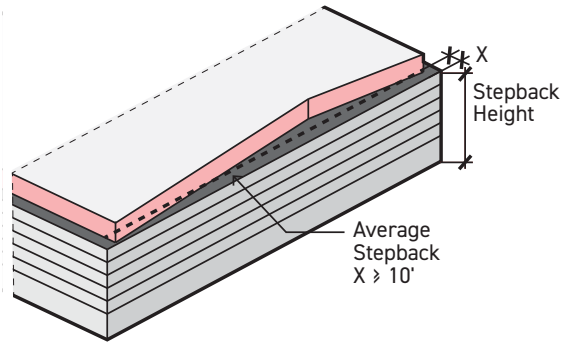


Figure 4.7d: AVERAGE MINIMUM STEPBACK

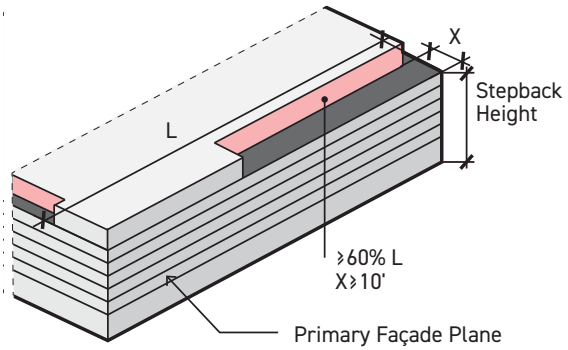


Figure 4.7e: MINIMUM LENGTH OF STEPBACK

4.7 BM Bulk and Massing Cont'd

BM2 Upper Floor Stepbacks

1. Upper Floor Building Stepback

4.7 BM Bulk and Massing Cont'd

BM3 Façade Variation

INTENT

To reduce the appearance of building bulk by incorporating significant changes within the Primary Façade's composition.

DEFINITION

"Variation"
A significant change or difference in form, proportion, position, condition, quantity, level or other compositional characteristic. Variation describes adjacent elements comprising both similar and different attributes that are recognizable as related.

APPLICATION

BM3 Façade Variation

Façades on all Street Fronting Elevations greater than [150] ft. in length shall be broken down into smaller Façade segments, or Apparent Faces, through significant changes in Façade Composition. The significant change may be a Horizontal Variation, a Vertical Variation, or a combination of Horizontal and Vertical Variations, including an angular Variation in the façade.

A significant change in Façade Composition shall include a Variation in at least two[2] of the following Façade Compositions: Modulation, Articulation, Fenestration, and/or Material/Color.

FV1 Horizontal Variations
At least two[2] Horizontal Variations shall occur for any façade that exceeds [150] ft. in length representing a building base, middle and top. Or at least one[1] Horizontal Variations with a Vertical Variation in at least one[1] of the horizontal façade compositions. See *Figure 4.7f* and *Figure 4.7g*.

FV2 Vertical Variations
A Variation in Façade Composition shall occur at a minimum [150] ft. or less of façade plan length. The adjacent apparent face shall be at least 10% as wide as the longest adjoining apparent face. Variations may occur at any rhythm or cadence. See *Figure 4.7h* and *Figure 4.7i*.

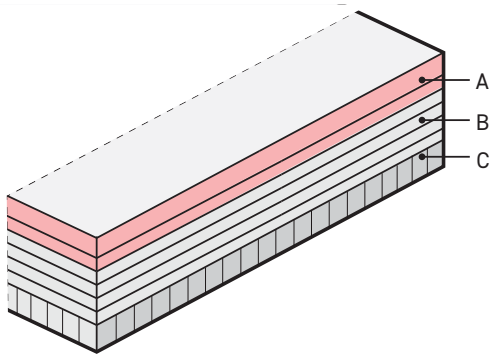


Figure 4.7f: EXAMPLE OF FV1 HORIZONTAL VARIATION A

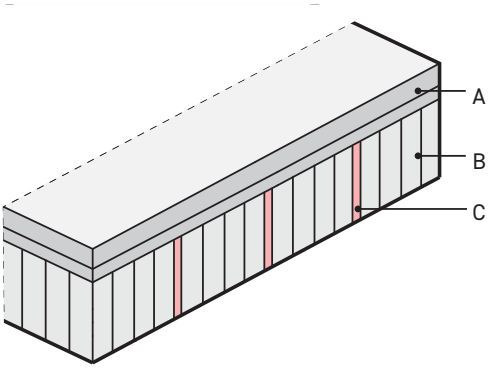


Figure 4.7g: EXAMPLE OF FV1 HORIZONTAL VARIATION B

4.7 BM Bulk and Massing Cont'd

BM3 Façade Variation

1

2

1. Façade Variation FV1 Horizontal
2. Façade Variation FV2 Vertical

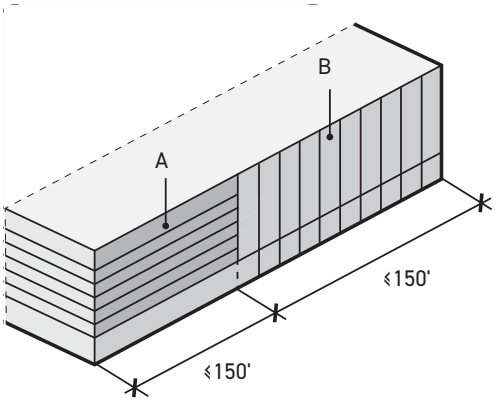


Figure 4.7h: EXAMPLE OF FV2 VERTICAL VARIATION A

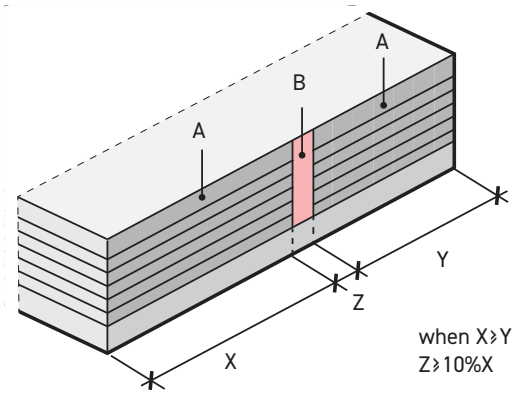


Figure 4.7i: EXAMPLE OF FV2 VERTICAL VARIATION B

4.8 BE/PE Building and Public Realm Enhancements

4.8.1 Building and Public Realm Enhancement Measures for M, L, XL Buildings

INTENT

To break down the scale of buildings and to create sufficient relationships between the interior of the building and the Public Realm through enhancement measures that shape architectural and spatial features.

DEFINITIONS

"Building Enhancement"
An architectural design feature that improves the character of the building and adds interest to the design.

"Public Realm Enhancement"
An expansion of the pedestrian network that provides public access through private developments.

STANDARDS

4.8.1 Building and Public Realm Enhancement Measures for M, L, XL Buildings

Medium (M), Large (L) and Extra Large (XL) buildings shall apply additional enhancement measures as outlined below. The required number of enhancement measures apply to and shall be visible from each Street Fronting Elevation. Any combination of building and Public Realm Enhancement Measures may be applied to a building so that the minimum required number of measures are visible from each Street Fronting Elevation. (Example: a Distinct Corner would apply to two[2] Street Fronting Elevations; an Expressive Entrance would only apply to each Street Fronting Elevation from which it is visible.)

Medium Buildings (M)
Medium Buildings shall apply at least one[1] additional Building Enhancement Measures and/or Public Realm Enhancement Measure.

Large Buildings (L)
Large Buildings shall apply at least three[3] additional Building Enhancement Measures or shall apply at least one[1] additional Building Enhancement Measure and at least one[1] Public Realm Enhancement Measure.

Extra Large Buildings (XL)
Extra Large Buildings shall apply at least four[4] additional Building Enhancement Measures or shall apply at least two[2] additional Building Enhancement Measures and at least one[1] Public Realm Enhancement Measure.

4.8 BE/PE Building and Public Realm Enhancements

BE Building Enhancement Measures
PE Public Realm Enhancement Measures

Cont'd

BUILDING ENHANCEMENT MEASURES (BM)

BE1 Apply One[1] Additional Bulk/Massing Approach
Apply one[1] additional approach from the 4.7.1 Bulk and Massing Approach. See *Figure 4.8a*.

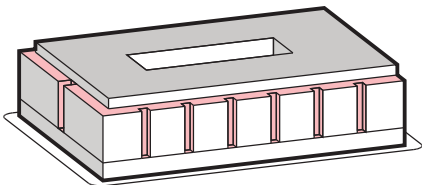


Figure 4.8a: BE1 - APPLY ONE ADDITIONAL BULK/MASSING CONTROL (EXAMPLE: SIGNIFICANT BREAKS + UPPER FLOOR STEPBACK EXAMPLE)

BE2A Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Per Street Fronting Elevation)
A minimum of one[1] private courtyard and/or Atrium shall face onto a public right-of-way or Mid-Block Break. Courtyards and Atria shall be of a minimum dimension of [40] ft. x [40] ft. Lowest level of courtyards and/or Atria shall be no higher than [25] ft. from sidewalk grade. See *Figure 4.8b*.

BE2B Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Multiple Street Fronting Elevations)
A minimum of two[2] open-air courtyards shall face onto two[2] public rights-of-way or Mid-Block Breaks or HPS2 open spaces. The two[2] open-air courtyard area dimensions shall be a total of 20 percent of the longest Street Fronting Elevation. Courtyards and Atria shall be of a minimum dimension of [40] ft. x [40] ft. All Street Fronting Elevations receive credit for applying this measure. See *Figure 4.8b*.

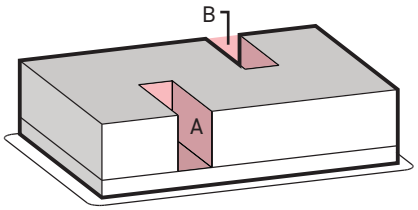


Figure 4.8b:
BE2A - COURTYARD/ATRIA A OR B
BE2B - COURTYARD/ATRIA A + B

BE3 Provide Visual and Physical Access to Interior Courtyard and/or Atrium
Provide Visual and Physical Access through an open-air portal entry into an interior courtyard or direct access into an Atrium from a public right-of-way, open space or Mid-Block Break. Visual access into the building shall be at minimum [25] ft. wide and a minimum two[2] stories in height. The lowest level of courtyards and/or Atria shall be no higher than [25] ft. from sidewalk grade. The physical access may be public or private. See *Figure 4.8c*.

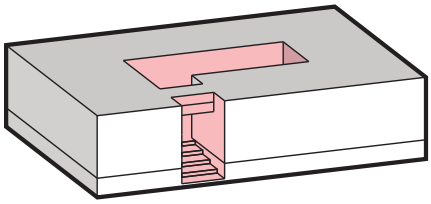


Figure 4.8c: BE3 - PROVIDE VISUAL AND PHYSICAL ACCESS TO INTERIOR COURTYARD AND/ OR ATRIUM

BE4 Permanently Open Public Access to Open Space
Provide ground floor open space with no fencing or barriers that is permanently open and accessible to the public. Ground floor publicly accessible open space shall have a minimum dimension of [40] ft. by [40] ft. See *Figure 4.8d*.

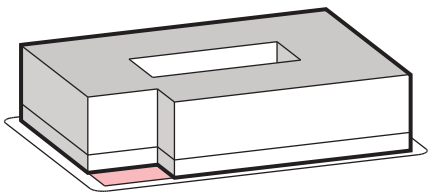


Figure 4.8d: BE4 - PERMANENTLY PUBLIC ACCESS TO OPEN SPACE

4.8 BE/PE Building and Public Realm Enhancements

BE Building Enhancement Measures
PE Public Realm Enhancement Measures

Cont'd

BE5 Reduction in Floor Plate Area of Upper Floors
Provide an additional 30% reduction of Floor Plate at the upper levels as follows: for buildings [75] ft. and taller, reduce the upper two levels by 30% of Floor Plate relative to the floor beneath; for buildings less than [75] ft. tall, reduce the top Floor Plate by 30% relative to the floor beneath. Each Street Fronting Elevation receives credit for applying this measure. See *Figure 4.8e.*

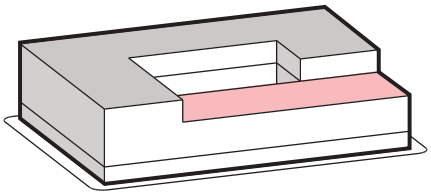


Figure 4.8e: BE5 - REDUCTION IN FLOOR PLATE AREA OF UPPER FLOORS

BE6 Expressive Entrance
Provide an Expressive Entrance to enhance identity and visual access into the building. For residential buildings, the Expressive Entrance shall be at minimum [20] ft. wide along the façade and a minimum two[2] stories in height. For commercial and mixed-use buildings, the Expressive Entrance shall be at minimum [35] ft. wide along the façade and a minimum two[2] stories in height. See *Figure 4.8f*.

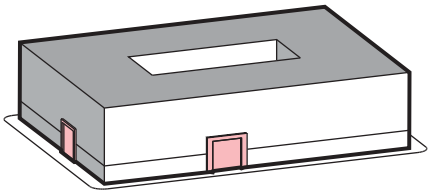


Figure 4.8f: BE6 - EXPRESSIVE ENTRANCE

BE7 Increased Transparency
For commercial buildings, provide a minimum 60% Transparency for the entire Street Fronting Elevation. For residential buildings, provide a minimum 35% Transparency for the entire Street Fronting Elevation. Areas counted in meeting this requirement must be comprised of Transparent Glazing. See *Figure 4.8g*.

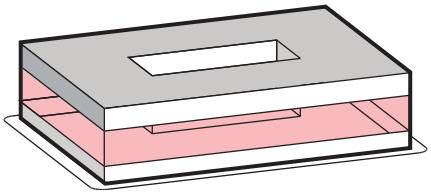


Figure 4.8g: BE7 - INCREASED TRANSPARENCY

BE8 Distinct Corner Architectural Feature
Provide a distinct architectural feature of special character and design that accentuates a change or interruption in the architectural language of the building. The corner element shall be at least [25] ft. in width and change in height by a minimum of five[5] ft. above or below the adjacent roof line and/or be integrated with a Roof Expression. See *Figure 4.8h*.

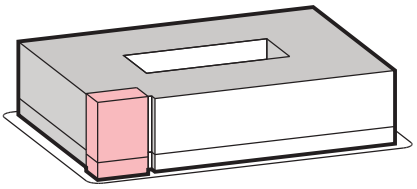


Figure 4.8h: BE8 - DISTINCT CORNER ARCHITECTURAL FEATURE

4.8 BE/PE Building and Public Realm Enhancements

BE Building Enhancement Measures
PE Public Realm Enhancement Measures

Cont'd

BE9 Roof Expression
A roof expression shall be observed as a recognizable shape or profile against the sky as visible from eye-level in the adjacent pedestrian realm. It may accentuate a change or interruption in the architectural language of the building. See *Figure 4.8i*.

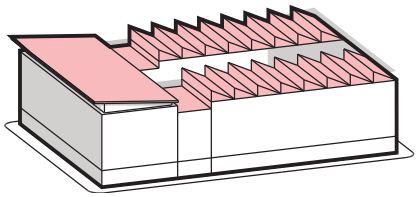


Figure 4.8i: BE9 - ROOF EXPRESSION

BE10 Additional Active Entrances
For Ground Floor Zones 1 and 2, provide a total of two[2] Active Entrances per [75] ft. of Street Fronting Elevation. For Zone 3, provide a total of two[2] Active Entrances per [100] ft. of Street Fronting Elevation. Refer to 4.11 Ground Floor Activation. See *Figure 4.8j*.

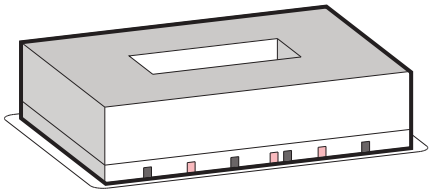


Figure 4.8j: BE10 - ADDITIONAL ACTIVE ENTRANCES

BE11 Additional Ground Floor Activation
Increase Ground Floor Activation from that required by designated Ground-Floor Active Use Zone to meet the percentage of Ground Floor Activation required by the next higher Ground-Floor Active Use Zone (see Ground-Floor Activation Plan on Page 95). Example: Building in Ground-Floor Active Use Zone 2 increases Ground Floor Activation to meet the requirements of Ground-Floor Active Use Zone 1.

PUBLIC REALM ENHANCEMENT MEASURES

PE1 Public Access through the Building
Provide at-grade public access during business hours extending through to the opposite side of the block. Public access shall provide access between a public right-of-way, Mid-Block Break or HPS2 open space to another public right-of-way, Mid-Block Break or HPS2 open space. This pass-through shall be at a minimum two[2] stories in unobstructed height and [25] ft. in width. Above the lowest two[2] stories, public access pass-through may be crossed by catwalks, Skyway connections, habitable spaces, and/or floor plates. All Street Fronting Elevations receive credit for applying this measure. See *Figure 4.8k*.

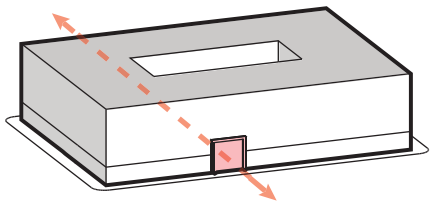


Figure 4.8k: PE1 - PUBLIC ACCESS THROUGH THE BUILDING

PE2 Public Access through Open Space Connection
Provide at-grade public access during business hours in the form of a private common open space that connects through to the opposite side of the block. Open space shall be open to the sky at a minimum of [40] ft. in width. Skyways may be located over open spaces. All Street Fronting Elevations receive credit for applying this measure. See *Figure 4.8l*.

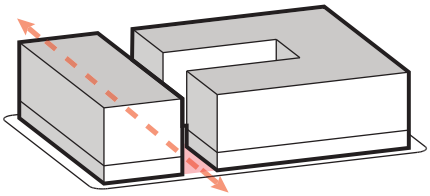


Figure 4.8l:
PE2 - PUBLIC ACCESS THROUGH OPEN SPACE CONNECTION

4.9 Tower Controls

4.9.1 Tower Locations
4.9.2 Tower Floor Aspect Ratio
4.9.3 Tower Height Variation
4.9.4 Tower Massing and Articulation
4.9.5 Tower Mechanical Equipment
4.9.6 Tower Mechanical Equipment Screening

INTENT

To provide standards particular to Towers. Where Towers are designed to meet the ground, Tower standards apply to the entire Tower, all the way to the ground. Where Tower designs are integrated with a podium on the same block, all other standards apply to the portion of the block that is not within the footprint of the tower above.

DEFINITIONS

"Floor Aspect Ratio"
The ratio that controls the proportions of the Floor Plate. Floor Aspect Ratio compares the shorter plan dimension of the Floor Plate to the longer plan dimension. A square Floor Plate would have an aspect ratio of 1:1.

STANDARDS

4.9.1 Tower Locations

Towers shall be located within the flexible tower zones and Towers "A" and "B" shall be a minimum [160] ft. apart. See *Figure 4.9a*.

4.9.2 Tower Floor Aspect Ratio

To maintain the slender appearance of Towers, the Floor Plates shall not exceed [12,500] sq. ft. and the Floor Aspect Ratio shall range between 1:1.2 and 1:1.6. A rectangular Floor Plate without notches is an acceptable form. See *Figure 4.9b*.

4.9.3 Tower Height Variation

The Towers on Blocks 15 and 33 shall differ in height from one another by at least 33%.

4.9.4 Tower Massing and Articulation

Towers shall be stepped, sculpted, tapered, and/or have FC2 - Façade Articulation.

If stepped, the building shall have a 33% reduction in floor area for the top 10% of floors. If sculpted, tapered, or articulated, the maximum floor area for the Tower above [85] ft. in height shall be no greater than the equivalent maximum floor area if there was a 33% reduction in floor area for the top 10% of floors.

4.9.5 Tower Mechanical Equipment

Mechanical Equipment shall not exceed the Maximum Building Height of the Tower by more than 10%. The mechanical equipment shall not occupy a floor plate greater than [10,625] sq. ft. (85% of the allowable floor plate size).

4.9.6 Tower Mechanical Equipment Screening

Mechanical equipment shall be screened from view to its full vertical extent.

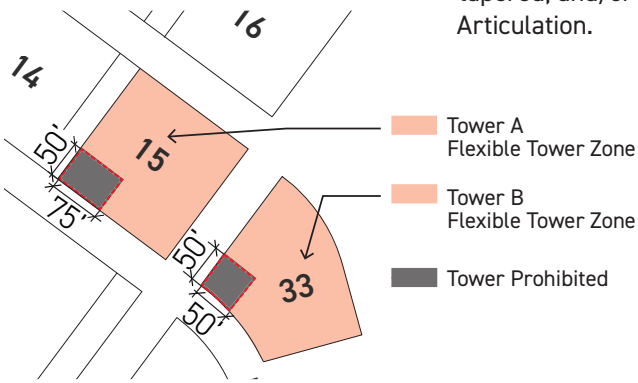


Figure 4.9a: FLEXIBLE TOWER ZONE

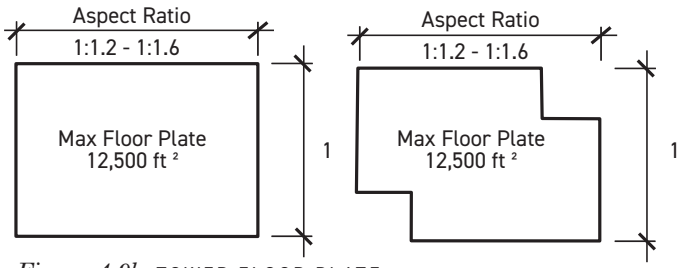


Figure 4.9b: TOWER FLOOR PLATE

4.9 Tower Controls Cont'd

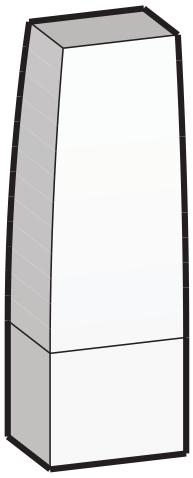


Figure 4.9c: TAPERED TOWER EXAMPLE

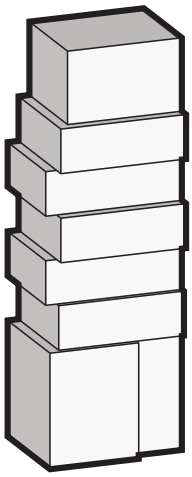


Figure 4.9d: SCULPTED TOWER EXAMPLE

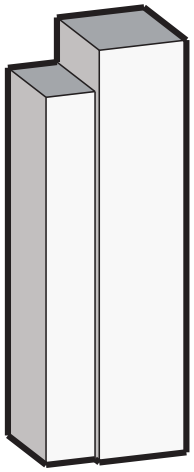


Figure 4.9e: STEPPED TOWER EXAMPLE

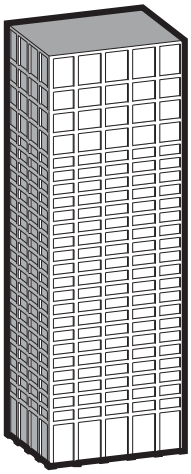


Figure 4.9f: FAÇADE ARTICULATION TOWER EXAMPLE

1

2

3

4

1. Tapered Tower Example
2. Sculpted Tower Example
3. Stepped Tower Example
4. Facade Articulation Tower Example

4.10 Projections

4.10.1 Projections
4.10.2 Habitable Projections
4.10.3 Non-Habitable Projections
4.10.4 Other Projections
4.10.5 Projection Exemptions
4.10.6 Maximum Projection Area

INTENT

To provide visual interest and architectural creativity.

DEFINITIONS

"Habitable Projection"
A portion of the building enclosed by walls and a roof which extends beyond the property or minimum Setback line. Examples include a bay window, a corner element, or a regularly occurring Façade modulation that extends through some or all floors of a building.

"Non-Habitable Projection"
A portion of the building not enclosed by walls and a roof which extends beyond the property or minimum Setback line. Examples include usable balconies or outdoor decks, structural projections, screens, Awnings, fins, or similar architectural elements.

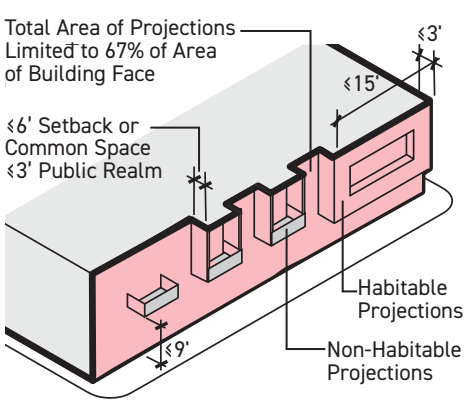


Figure 4.10a: PROJECTIONS

STANDARDS

4.10.1 Projections

Projections into the Setback area, right-of-way, Mid-Block Break, or public open space are allowed as follows:See *Figure 4.10a*.

4.10.2 Habitable Projections

A habitable space may project three[3] ft. beyond the Building Face, either into a Setback zone or into the public realm. No individual Habitable Projection may exceed [15] ft. in length. All Projections shall have a minimum vertical clearance of nine[9] ft. above the sidewalk. All Projections shall have a minimum separation distance equal to the depth of the Projection.

4.10.3 Non-Habitable Projections

Non-habitable spaces may extend into Setbacks or private open spaces by no more than six[6] ft. into a Setback or private open spaces or in no case over three[3] ft. into the public realm. No individual Non-Habitable Projection may exceed [15] ft. in length. All Projections shall have a minimum vertical clearance of nine[9] ft. above the sidewalk. All Projections shall have a minimum separation distance equal to the depth of the Projection.

4.10.4 Other Projections

Decorative elements such as belt courses, cornices, sills and eaves that extend not more than [30] in. beyond the building face are exempt from this standard.

4.10.5 Projection Exemptions

Decks, patios and steps at the first floor of occupancy that extend to the property line are exempt from this standard.

Fences and railings up to [42] in. in height are exempt from this standard.

Retail signs, canopies and awnings that do not extend more than five[5] ft. beyond the property line with a minimum vertical clearance above the sidewalk of at least nine[9] ft. are exempt from this standard.

4.10.6 Maximum Projection Area

The cumulative total of all types of projections shall not exceed 67% of the Building Face.

4.11 Ground Floor Activation

INTENT

To create an interesting and inviting pedestrian environment and to enhance neighborhood safety and security by encouraging "eyes on the street." The goal of Ground Floor design is to employ architectural methods to increase visibility and foster activity while also deterring unwanted behaviors.

DEFINITIONS

"Active Uses"
Ground Floor land uses that create an interesting and inviting pedestrian environment that enhance neighborhood safety and security by encouraging, "eyes on the street," visibility and vibrancy.

"Active Entrance"
A building entrance into an active Ground Floor use. Entrance may be public or private. Single uses may have multiple active Ground Floor entries.

"Active Frontage"
Building Façade length lined with Active Uses

Type "A" Active Uses:
- Retail
- Restaurants
- Community uses
- Commercial lobbies
- Entertainment uses
- Or similar

Type "B" Active Uses:
- Commercial services
- Medical offices
- Storefront offices
- Commercial and residential lobbies
- Parking Structure lobbies
- Professional services
- On-site sales and leasing offices
- Childcare facilities
- Private common open spaces or atria
- Maker spaces
- Art-related uses such as publicly accessible gallery spaces
- Amenity spaces
- Co-working spaces
- Open offices
- Conference rooms
- Cafeterias
- Break rooms
- Bicycle Workshop
- Bicycle Parking*
- Or similar

Type "C" Active Uses:
- Residential lobbies
- Residential amenity spaces
- Stoop porches
- Terraces
- Ground Floor dwelling units with direct, individual pedestrian access to a public right-of-way, MBB or public open space (Ground Floor studio units, embedded one bedrooms and senior housing units are not required to have direct access)

Non-Active Uses:
- Vehicle parking
- Parking and loading entrances
- Emergency egress
- Mechanical and utility rooms
- Exit stairwells and service shafts
- Or similar

4.11 Ground Floor Activation Cont'd

*Bicycle Parking may be considered an Active Use if it is consistent with the Guidelines below:

- Bicycle Parking rooms shall have circulation space along the entire street-facing perimeter.
- Direct and secure access shall be provided from the sidewalk or pedestrian easement.
- Bicycle Parking shall be visually interesting and can use graphics, art, color, etc. to meet this requirement.
- Bicycle Parking Façade shall provide direct visual access into the bicycle parking room. Individual Bicycle Parking stalls or racks can be screened from the Public Realm for security.
- Bicycle Parking shall be well lit but light trespass and glare shall be kept to a minimum.

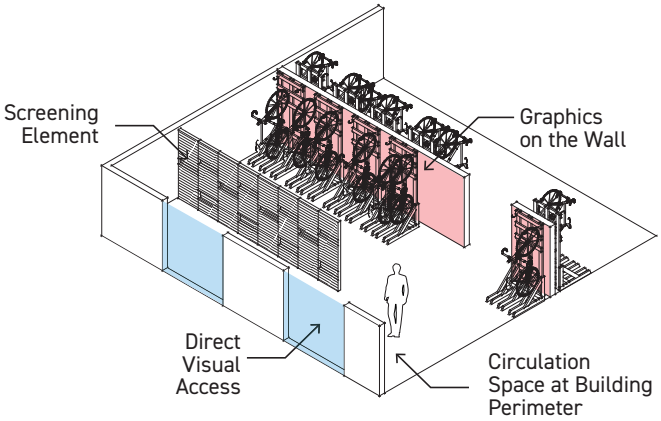


Figure 4.11a: BICYCLE PARKING

1. & 2. Active Bicycle Storage Examples

4.11 Ground Floor Activation Cont'd

4.11.1 Zone 1 and 2 Active Entrances
4.11.2 Zone 3 Active Entrances
4.11.3 Active Ground Floor Depth
4.11.4 Ground Floor Height
4.11.5 Waterfront Activation
4.11.6 Guidelines for Ground Floor Residential Design

INTENT

To create an interesting and inviting pedestrian environment through increased activity in and out of Ground Floor Active Uses and to maintain an adequate size and scale of Active Use spaces.

STANDARDS

4.11.1 Zone 1 and 2 Active Entrances

Each Street Facing Elevation in Zones 1 and 2 shall have a minimum average of one[1] Active Entrances per [75] ft. or less of Active Frontage. See *Figure 4.11b.*

4.11.2 Zone 3 Active Entrances

Each Street Facing Elevation in Zone 3 shall have a minimum average of one[1] Active Entrances per [100] ft. or less of Active Frontage. See *Figure 4.11b.*

4.11.3 Active Ground Floor Depth

The minimum depth of ground floor active uses for all non-residential buildings, not including service corridors, is [20] ft.; for residential buildings the minimum is ten[10] ft.

4.11.4 Ground Floor Height

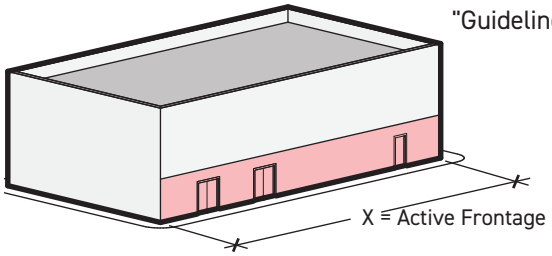
Type "A" and Type "B" active uses shall have a minimum ground floor to floor height of [15] ft.

4.11.5 Waterfront Activation

A minimum [3,500] sq. ft. of publicly accessible Type "A" use shall be provided along the waterfront façades of Blocks 26, 27 or 28. The Type "A" Active Use may be located in one or multiple spaces and/or blocks.

4.11.6 Guidelines for Ground Floor Residential Design

Ground floor residential Active Uses shall follow the San Francisco "Guidelines for Ground Floor Residential Design."



$\frac{X}{150} * [2] =$ Entries Req. for Zone 1 & 2 $\quad \frac{X}{100} * [1] =$ Entries Req. for Zone 3

Figure 4.11b: ACTIVE ENTRANCES CALCULATION

4.11 Ground Floor Activation Cont'd

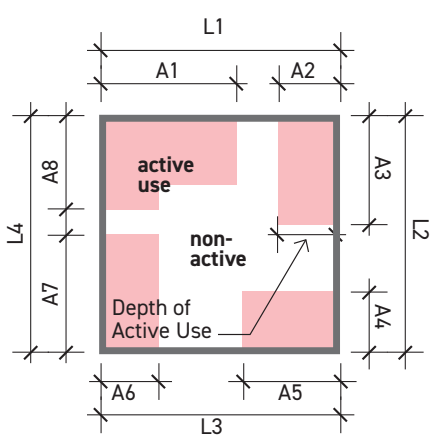
4.11.7 Ground Floor Activation
4.11.8 Shared Parking Structures Activation

INTENT

To maintain a minimum amount of active ground floor frontages on all public right-of-ways, Mid-Block Breaks, and public open spaces.

DEFINITIONS

"Shared Parking Structure"
A separate structure providing Accessory Parking to off-site lawful non-Accessory uses and not attached to or included within a building containing a lawful non-Accessory use.



$$\frac{(A1 + A2 + A3 + A4 + A5 + A6 + A7 + A8)}{(L1 + L2 + L3 + L4)} = \% \text{ Active}$$

Figure 4.11c: ACTIVE USE PERCENTAGE CALCULATION

STANDARDS

4.11.7 Ground Floor Activation

The percentage of Ground Floor Activation is calculated by taking the total combined length of all Active Frontages around the perimeter of a Block and dividing by the overall length of all Façades within that same Block. See *Figure 4.11c.*

At Zones 1, 2 and 3, each Street Facing Elevation shall have a minimum of 50% Active Uses.

Zone 1
Buildings shall contain a minimum 85% of Type "A" Active Frontages uses on the Ground Floor.

Zone 2 and 3
Buildings shall contain a minimum 75% of Active Frontages on the Ground Floor. Active uses shall consist of those established in *Figure 4.11d.*

Zone 4
Shared Parking Structures in Zone 4 shall comply with 4.11.8 Shared Parking Structures Activation. If buildings in Zone 4 are built as primarily commercial or residential uses, Ground Floor activation rules for Zones 2 and 3 shall apply.

4.11.8 Shared Parking Structures Activation

All corners of Shared Parking Structures shall include Type "A", "B" or "C" Active Uses for a minimum of [20] ft. by [20] ft. dimension. In addition, Shared Parking Structures shall include a minimum of 25% of Type "A", "B" or "C" Active Uses on the ground floor.

If two[2] Shared Parking Structures face one another, at least one[1] of the two facing façades shall include at minimum 75% of active uses on the ground floor.

Figure 4.11d: GROUND FLOOR ACTIVATION REQUIREMENTS

4.11 Ground Floor Activation Cont'd

4.11.9 Ground Floor Active Use Transparency
4.11.10 Ground Floor Active Use Glass and Glazing

INTENT

To provide visual access to the Ground Floor Building interior, enhance Public Realm safety by providing "eyes on the street", to provide lighter color architectural materials at the ground floor and to minimize blank walls.

DEFINITIONS

"Transparent Glazing"
Glass and glazing systems that are designed to provide visual access and light transmittance.

"Active Use Transparency"
The surface area of Transparent Glazing as a proportion of the surface area of the Ground Floor Active Frontage.

STANDARDS

4.11.9 Ground Floor Active Use Transparency

Active Frontage shall be fenestrated with transparent windows and doorways and allow visibility to the inside of the Building to meet the minimum percentage for each Active Use type as follows and as illustrated in *Figure 4.11e.*

4.11.10 Ground Floor Active Use Glass and Glazing

Ground Floor and retail storefront glass shall be maximum 15% reflective, visible light transmittance greater than 80%, and without tint or coloration in the glass substrate. Non-storefront glazing may have up to 50% reflectivity.

Transparent Glazing shall be used to allow a constant relationship between the inside space and the public realm. Dark tinted and/or opaque glazing is not permitted.

Type "A" and "B":
Active Frontage shall incorporate no less than 60% of transparent glazing in the vertical zone between four[4] ft. and eight[8] ft. in height from finished Ground Floor.

Type "C":
Active Frontage for Residential units shall incorporate no less than 30% of Transparent Glazing in the vertical zone between four[4] ft. and eight[8] ft. in height from the finished ground floor.

Lobby and amenity spaces shall be 60% transparency glazing in the vertical zone between four[4] ft. and eight[8] ft. in height from the finished Ground Floor.

1 & 2. Ground Floor Transparency Examples

1

2

Area of Transparent Façade(sq. ft.) between 4 ft. and 8 ft. in Height / Length of Active Frontage(ft) *4 ft. = % of Transparency

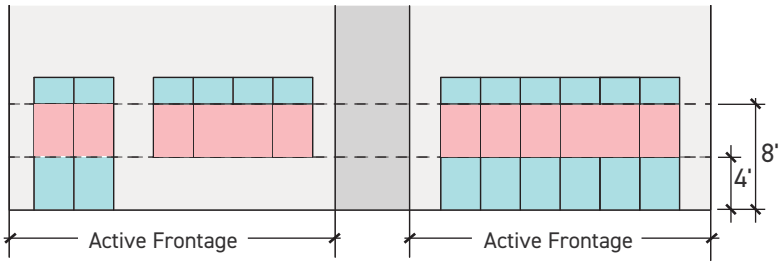


Figure 4.11e: GROUND FLOOR TRANSPARENCY CALCULATION

4.11 Ground Floor Activation Cont'd

This table summarizes the ground floor design controls of the four different Ground Floor Activation zones. Each of the controls listed here is defined in Section 4.11 and 4.17.

Ground Floor Frontage	Zone 1	Zone 2	Zone 3	Zone 4
4.11 Active Uses	Type "A"	Type "A" or "B"	Type "A","B" or "C"	Type "A","B" or "C"
4.11.1 & 4.11.2 Active Entrances	Each Street Facing Elevation in Zones 1 and 2 shall have a minimum average of one[1] active entrances per [75] ft. or less of Façade length		Each Street Facing Elevation in Zone 3 shall have a minimum average of one[1] active entrances per [100] ft. or less of Façade length	N/A
4.11.6 Ground Floor Activation	Buildings shall contain a minimum 85% of Type "A" Active Frontages uses on the Ground Floor	Buildings shall contain a minimum 75% of Active Frontages on the Ground Floor Each Street Facing Elevation shall have a minimum 50% of Active Uses		N/A
4.11.7 Shared Parking Structure Activation	N/A	N/A	N/A	All corners of Shared Parking Structures shall include Type"A", "B" or "C" Active Uses for a minimum of [20] ft. by [20] ft. dimension. In addition, Shared Parking Structures shall include a minimum of 25% of Type "A", "B" or "C" Active Uses on the ground floor If two[2] Shared Parking Structures face one another, at least one[1] of the two facing Façades shall include at minimum 75% of Active Uses on the Ground Floor
4.17.1 Ground Floor Blank Walls	(Not active use zone): Each Blank Wall shall not occupy over eight[8] linear ft. of Street Fronting Elevation. The total amount of Blank Wall shall be limited to 20% of the total Active Frontage.		Each Blank Wall shall not occupy over [12] linear ft. of Street Fronting Elevation. The total amount of Blank Wall shall be limited to 30% of the total Active Frontage.	N/A
4.17.2 Upper Floor Blank Walls	For all buildings, upper level Blank Walls shall not occupy over [30] linear ft. for the entire height of the façade above the base. The total amount of Blank Wall shall be limited to 50% of the total upper-level Building Façade. Shared property-line Building faces are exempt.			For Shared Parking Structures, Screening and/or openings shall not be considered Blank Walls. Green walls that are a significant architectural feature of the Façade will not be considered a Blank Wall Site utilities on Blocks 36B, 55 and/or 56 and Adaptive Reuse Buildings are exempt from the Blank Wall standard.

Figure 4.11f: GROUND FLOOR ACTIVATION ZONE CHART

4.11 Ground Floor Activation Cont'd

This table summarizes the ground floor design controls of the three different Ground Floor Activation types. Each of the controls listed here is defined in Section 4.11.

Ground Floor Frontage	Type "A"	Type "B"	Type "C"
4.11.3 Active Ground Floor Depth	All non-residential Buildings, not including service corridors, is [20] ft. For residential buildings the minimum is ten[10] ft.		
4.11.4 Ground Floor Heights	Minimum ground floor to floor height of [15] ft.		N/A
4.11.5 Waterfront Activation	Minimum [3,500] sq. ft. of publicly accessible Type "A" use shall be provided along the waterfront Façades of Blocks 26, 27 or 28. The amount of use may be in one or multiple spaces and/or Blocks	N/A	N/A
4.11.9 Ground Floor Active Use Transparency	Active Frontage shall be fenestrated with transparent windows and doorways and allow visibility to the inside of the Building to meet the minimum percentage for each Active Use type.		
4.11.10 Ground Floor Active Use Glass and Glazing	Active Frontage shall incorporate no less than 60% of transparent glazing in the vertical zone between four[4] ft. and eight[8] ft. in height from finished Ground Floor.		Active Frontage for Residential units shall incorporate no less than 30% of Transparent Glazing in the vertical zone between four[4] ft. and eight[8] ft. in height from the finished Ground Floor. Lobby and amenity spaces shall be 60% transparency glazing in the vertical zone between four[4] ft. and eight[8] ft. in height from the finished Ground Floor.

Figure 4.11g: GROUND FLOOR ACTIVATION TYPE CHART

4.12 Building Entries

4.12.1 Primary Building Entries
4.12.2 Green Room Building Entries
4.12.3 Ground Floor Residential Unit Entries
4.12.4 Building Entries

INTENT

To provide Ground Floor activation, pedestrian access to buildings and architectural articulation.

DEFINITIONS

"Primary Building Entries"
The main entries to a building.

STANDARDS

4.12.1 Primary Building Entries

All buildings shall have a Primary Building Entry from a public right-of way, public open space, publicly accessible private open space, or Mid-Block Break.

4.12.2 Green Room Building Entries

Where a building is facing the Green Room, the Primary Building Entry shall front the Green Room

4.12.3 Ground Floor Residential Unit Entries

Ground Floor residential units shall be elevated above the street by a minimum average of between two[2] ft. and four[4] ft. Where street grades are in excess of 5% slope, the average height may exceed four[4] ft. in height.

GUIDELINES

4.12.4 Building Entries

Entrances shall be easily identifiable and well-lit for convenience, visual interest and increased safety. commercial/retail entrances shall be easily identifiable and distinguishable from residential entrances.

1. Clearly Defined Building Entry Example
2. Primary Building Entry Example
3. Entry to Residential Example

1

2

3

4.13 Parking and Service Entrances

4.13.1 Parking and Service Entrances Locations
4.13.2 Combined Parking and Service Entrances
4.13.3 Separate Parking and Service Entrances
4.13.4 Maximum Parking and Service Entrances
4.13.5 Parking and Service Entrances
4.13.6 Parking and Service Entrances (Blocks 38 & 45)

INTENT

Strategically locate Parking and Service Entrances in order to mitigate adverse impacts to pedestrians and bicyclists.

DEFINITIONS

"Parking Entrance"
Entries allowing vehicular access to parking areas, including Shared Parking Structures, podium parking, and/or below grade parking.

"Service Entrance"
Entries allowing vehicular access for trucks and/or deliveries, loadings, and/or access to trash rooms.

STANDARDS

4.13.1 Parking and Service Entrances Locations

Parking and Service Entrances are permitted in locations established by *Figure 4.13b*.

4.13.2 Combined Parking and Service Entrances

Each combined parking ingress and egress for off-street parking shall be a maximum width of [24] ft. This may be increased to a maximum of [27] ft. where:

- there is shared access to off-street parking and loading; or
- the extra width is necessary to accommodate the fleet of emergency services or utility providers.

4.13.3 Separate Parking and Service Entrances

Separate vehicular ingress/egress shall each be a maximum width of [11] ft. and be spaced at a minimum of [60] ft. apart.

4.13.4 Maximum Parking and Service Entrances

The sharing of parking and Service Entrances is encouraged. The number of entrances is limited to two[2] ingress and two[2] egress points per block plus one[1] Service Entrance. Shared vehicular entrances shall be a minimum of [40] ft. from block corners and [20] ft. from building entrances.

4.13.5 Parking and Service Entrances

Block 25 may host a transit center. Shall this block require loading access, the design of that access will be developed in close coordination with SFMTA to minimize any potential conflicts with the transit center operations.

GUIDELINES

4.13.6 Parking and Service Entrances (Blocks 38 & 45)

Blocks 38 and 45 shall minimize the impact of parking and Service Entrances on public open spaces. Options to minimize the impact may include providing separate ingress and egress access, locating parking and service access on an MBB, or similar strategies.

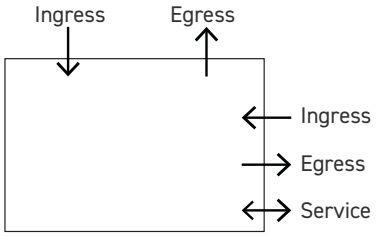


Figure 4.13a: PARKING INGRESS AND EGRESS PER BLOCK

Figure 4.13b: PARKING AND SERVICE ENTRANCES

4.14 Screening

4.14.1 Screening
4.14.2 Screening of Utilities Visible at Grade

INTENT

To mitigate any adverse impacts of utilities, equipment, and vehicles on the Public Realm.

DEFINITIONS

"Screening"
A physical visual barrier that obstructs or obscures the view of an object or objects. Screening may include shading devices, trellises, canopies, fences, landscaping, and architectural treatments.

STANDARD

4.14.1 Screening

Screening is required to limit visibility of the following facilities and conditions:

- At-grade utilities visible from the Public Realm
- Utilities in the Setback areas
- Ground Floor utilities, mechanical rooms, and alcoves with exterior walls
- Eco-District or Eco-Grid utilities and utility facilities visible above ground
- Rooftop mounted equipment
- Vehicles in parking stalls, rooftops and ramps at shared parking garage structures and podium parking garages

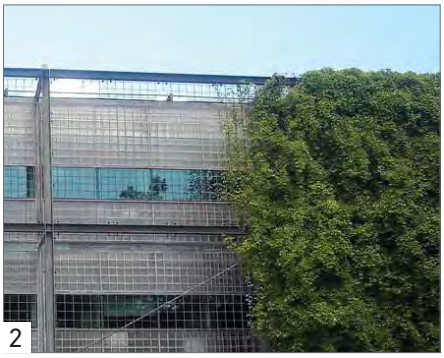
Solar collectors and wind turbines are exempt.

4.14.2 Screening of Utilities Visible at Grade

Enclosure or Screening shall be designed as a logical extension of and/or compatible with the adjacent Building and an integral part of the overall Building design. Screening material and detailing shall be comparable in quality to that of the rest of the Building. Landscaping alone shall not qualify as Screening of at-grade utilities.

1. Metal Screening Example
2. Landscaping and Metal Screening Example
3. Metal Screening Example

1


2

3

4.14 Screening Cont'd

4.14.3 Screening Materials
4.14.4 Screening for Rooftop Equipment
4.14.5 Screening for Upper Floor Parking
4.14.6 Screening for Ground Floor Parking
4.14.7 Rooftop Screening for Parking

4.14.3 Screening Materials

Screening materials shall be durable and high quality. Screening shall be consistent with the architectural character of the building.

Examples of Screening Materials:

- **Landscaping:** Planting must include systems for maintenance, such as irrigation.
- **Concrete:** Cast-in-place or pre-cast concrete
- **Metal:** Panels, sheet materials, or shingles
- **Wood:** Paneling, and other natural materials
- **Glass:** Clear, colored, or translucent with reflectivity up to 50%.

4.14.4 Screening for Rooftop Equipment

Rooftop mechanical equipment and appurtenances to be used in the operation or maintenance of a building shall be arranged so as not to be visible from any point at or below the roof level of the subject building. Rooftop mechanical equipment shall be obscured by walls, parapet, or Screening.

Enclosure or Screening shall be designed as a logical extension of the building form and integral part of the overall building design. Cladding and detailing shall be comparable in quality to that of the rest of the building.

If the required Screening is an extension of the building wall below, the architectural treatment or characteristics shall be continued on the "screen" and the top of the equipment shall be below the maximum Building Height. Height Exceptions are noted in 4.4.3.

4.14.5 Screening for Upper Floor Parking

All parapet edges and/or façades shall be designed to screen vehicles from public view at all levels.
All parapet edges of parking trays, including the roofs, shall be high enough to screen adjacent properties from light trespass from vehicle headlights and direct view of building lighting.

Parking above the ground level shall be screened in a manner that accentuates ground floor uses, minimizes mechanical features and is in keeping with the overall massing and architectural vocabulary of the building.

4.14.6 Screening for Ground Floor Parking

Parking at the ground level shall be located at a minimum [25] ft. from any Setback line facing a public Right-of-way, MBB, or Open Space. Ground Floor parking in Shared Parking Structures and vertical mechanical parking structures may be located up to the Setback line. Ground Floor screening may include non-habitable spaces such as art installations, murals, green walls, landscaping, or similar uses.

4.14.7 Rooftop Screening for Parking

All exposed-to-the-sky parking stalls shall have shading or screening of one of the following types: trellises, solar collectors, PV trellises, trees, glass canopies, fabric shade structures or similar devices, such that parked vehicles cannot be viewed from any point below the roof level and not easily-viewed from adjacent buildings or public vista points.

4.15 Shared Parking Structures

4.15.1 Shared Parking Structure Locations
4.15.2 Number of Shared Parking Structures
4.15.3 Shared Parking Structure Design
4.15.4 Convertible Shared Parking Structures

INTENT

To provide architecturally integrated parking facilities that meet the needs and demands of the surrounding neighborhood.

DEFINITIONS

"Shared Parking Structure"
A separate structure providing Accessory Parking to off-site lawful non-Accessory uses and not attached to or included within a building containing a lawful non-Accessory use.

"Convertible"
A Shared Parking Structure designed to be converted into another use and/or designed to be mechanized and deconstructable.

STANDARDS

4.15.1 Shared Parking Structure Locations

Shared Parking Structures shall only be located on Blocks 1, 14, 22, 24, 32, 35, or 43. Shared Parking Structures on any other block not facing the waterfront, the Green Room or the Water Room shall require OCII Commission approval as a Secondary Use, pursuant to Secondary Use approval standards in the Plan. If a use other than a Shared Parking Structure is constructed in a Ground Floor Zone 4, the Ground Floor zone shall be revised to match the zone across the street, except along Robinson Street, which shall be Zone 2, Blocks 22, 24.

4.15.2 Number of Shared Parking Structures

A maximum number of seven[7] Shared Parking Structures shall be permitted in HPS2. An increase in number of Shared Parking Structures beyond seven[7] in HPS2 shall require OCII Commission approval as a Secondary Use, pursuant to Secondary Use approval standards in the Plan, as well as to better serve the transportation and circulation needs of HPS2 while enhancing the pedestrian-level activation and urban design of HPS2.

4.15.3 Shared Parking Structure Design

Shared Parking Structures shall comply with all applicable Standards and Guidelines, including, but not limited to, Architectural Controls by Building Scale, Section 4.5.

4.15.4 Convertible Shared Parking Structures

Shared Parking Structure shall be Convertible. All floors shall be flat except required ramps for vehicular circulation.

Exception: A Shared Parking Structure that does not comply with the convertibility standard shall contain a 25% increase in Ground

4.15 Shared Parking Structures Cont'd

4.15.5 Floor Heights for Convertible Shared Parking Structures
4.15.6 Shared Parking Structure Lighting
4.15.7 Shared Parking Structure Ground Floor Uses

Floor Active Frontage over the minimum amount required in the Ground Floor Zones on *Figure 4.11d*. Shared Parking on Block 32 shall contain a minimum of 75% Active Frontage.

4.15.5 Floor Heights for Convertible Shared Parking Structures

Ground Floor height for Convertible Shared Parking Structures shall be a minimum [15] ft. All upper floors shall have nine[9] ft. clear floor to ceiling height. If a mechanical parking system does not contain structural floors, it is exempt from this Standard.

4.15.6 Shared Parking Structure Lighting

Security lighting shall be directed away from surrounding land uses using state-of-the-art fixtures to minimize light trespass and glare.

GUIDELINES

4.15.7 Shared Parking Structure Ground Floor Uses

Shared Parking Structures shall include Ground Floor facilities that support commuter cyclists including at least one[1] of the following: bike share facilities, changing rooms and showers, bike repair shops, bike racks, and/or secure bike storage.

1. Lighting at Parking Garage Example
2. Screening Example
3. Lighting at Parking Garage Example

1

2

3

4.16 Rooftops

4.16.1 Rooftop Façades

INTENT

To create distinctive or interesting roofs where visible from the hilltop or adjacent buildings.

DEFINITIONS

"High Albedo"
Materials that reflect sunlight and limit the amount of heat gained through those materials. High Albedo Roofing materials are chosen to reduce unwanted heating of roof surfaces.

"Vegetated Roof Covers"
A roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane.

GUIDELINES

4.16.1 Rooftop Façades

Rooftops visible from the hilltop, adjacent buildings, and/or from spaces within the same building shall be designed as a "fifth façade".

The "fifth façade" can be met in the following ways: Where building roofs are free of solar panels, mechanical equipment, or other sustainability infrastructure, they shall be designed to include systems such as roofing materials with high albedo surfaces to reduce heat island effect or vegetated roof covers in order to reduce heat island effect and slow rainwater runoff.

1. Roof with Vegetated Cover Example
2. Roof with Solar Panel Example
3. Roof with Mechanical Equipment Example

1

2

3

This page is intentionally left blank.

4.17 Blank Walls

4.17.1 Ground Floor Blank Walls
4.17.2 Upper Floor Blank Walls

INTENT

To limit the location and expanse of Blank Walls and to provide greater building articulation and visual interest, especially at the Ground Floor level.

DEFINITIONS

"Blank Wall"
A building façade area greater than four[4] linear ft. in length parallel to the property line where there is not an entrance, window, or any building articulation, including solid doors and mechanical area wall(s).

STANDARDS

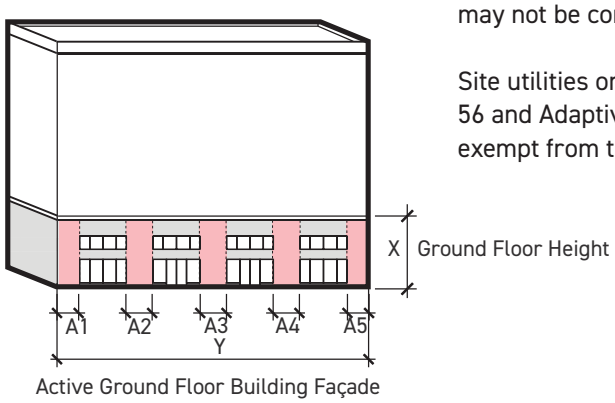
4.17.1 Ground Floor Blank Walls

Active Ground Floor Frontage Zone 1 & 2 (Not active use zone):
Each Blank Wall shall not occupy over eight[8] linear ft. of Street Fronting Elevation. The total amount of Blank Wall shall be limited to 20% of the total Active Frontage.

Active Ground Floor Frontage Zone 3:
Each Blank Wall shall not occupy over [12] linear ft. of Street Fronting Elevation. The total amount of Blank Wall shall be limited to 30% of the total Active Frontage. See *Figure 4.17a.*

Green walls that are a significant architectural feature of the Façade may not be considered a Blank Wall.

Site utilities on Blocks 36B, 55 and/or 56 and Adaptive Reuse Buildings are exempt from the Blank Wall standard.



Zone 1 & 2 (A ≤ 8')

$$\frac{(A1+A2+A3+A4+A5)X}{XY} = \leq 20\%$$

Zone 3 (A ≤ 12')

$$\frac{(A1+A2+A3+A4+A5)X}{XY} = \leq 30\%$$

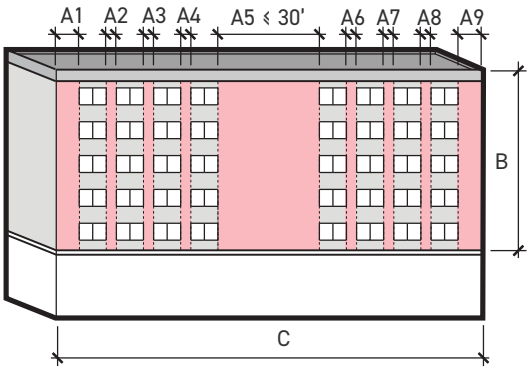
Figure 4.17a: GROUND FLOOR BLANK WALLS CALCULATION

4.17.2 Upper Floor Blank Walls

For all buildings, upper level Blank Walls shall not occupy over [30] linear ft. for the entire height of the façade above the base. The total amount of Blank Wall shall be limited to 50% of the total upper-level building Façade. Shared property-line Building Faces are exempt.

For Shared Parking Structures, screening and/or openings shall not be considered Blank Walls.
Green walls that are a significant architectural feature integrated into the Façade will not be considered a Blank Wall.

Site utilities on Blocks 36B, 55 and/or 56 and Adaptive Reuse Buildings are exempt from the Blank Walls standards. See *Figure 4.17b.*



$$\frac{(A1+A2+A3+A4+A5+A6+A7+A8+A9)X}{BC} = \leq 50\%$$

Figure 4.17b: UPPER FLOOR BLANK WALLS CALCULATION

4.18 Daylight

4.18.1 Residential Daylight
4.18.2 Commercial Daylight

INTENT

To ensure regularly occupied building areas have access to Daylight.

DEFINITION

"Daylight"
The controlled admission of natural light, direct sunlight, and diffused-skylight into a building to reduce electric lighting and save energy.

"Regularly Occupied Floor Area"
An area where one[1] or more individuals normally spend time (more than one[1] hour per person per day on average) seated or standing as they work, study, or perform other focused activities inside a building.

STANDARDS

4.18.1 Residential Daylight

All residential units shall have at least one[1] bedroom or living area with a window facing outside with an unobstructed view of a minimum [25] ft. clear dimension. See *Figure 4.18a.*

4.18.2 Commercial Daylight

Option 1:
All Regularly Occupied Floor Areas of commercial buildings shall have direct access and/or a view to the exterior courtyard of the building or a daylit Atrium space. See *Figure 4.18b.*

-OR-

Option 2:
At a minimum, 55% of the Regularly Occupied Floor Area shall be within a Floor Plate depth dimension of no greater than two and a half [2.5] times the glazing height. See *Figure 4.18c.*

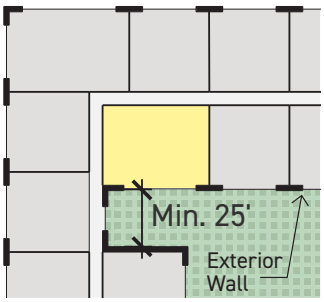


Figure 4.18a: RESIDENTIAL DAYLIGHT

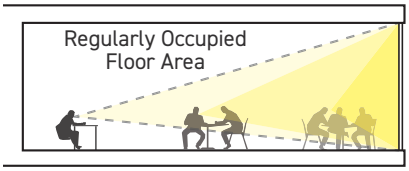


Figure 4.18b: COMMERCIAL DAYLIGHT OPTION 1

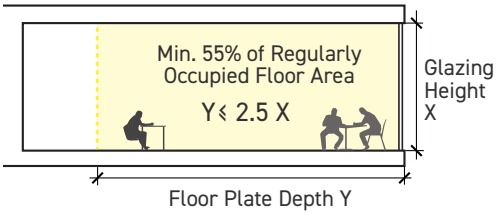


Figure 4.18c: COMMERCIAL DAYLIGHT OPTION 2

4.19 Façade Material

4.19.1 Bird-Safe Design
4.19.2 Material Quality
4.19.3 Material Selection
4.19.4 Ground Floor Materials
4.19.5 Marine Environment Materials
4.19.6 Prohibited Materials

INTENT

To ensure the durability and quality of materials particularly at the Ground Floor that will enhance the pedestrian visual experience.

Material and craft are essential to maintaining a reference to the past use of the site as a Shipyard.

Care shall be taken to reference the streetscape improvements such that the materiality of each district is harmonious as a whole, reinforcing the intention to achieve a subtle variation for each various district.

STANDARDS

4.19.1 Bird-Safe Design

All buildings shall fully comply with bird-safe measures established in the Mitigation Monitoring and Reporting Program for HPS2.

GUIDELINES

4.19.2 Material Quality

Materials shall be high quality, durable, and consistent with industry standards of contemporary architecture.

4.19.3 Material Selection

Material selection and application shall reflect the Material Palette. See material palette in *Figure 4.19a* for reference. The material palette does not preclude the use of other materials or finishes not listed if they are applied in concert with a strategy that fits the HPS2 Vision.

Building materials and colors shall be carefully selected to achieve harmony with neighboring buildings, be environmentally sensitive, and contribute to a varied urban street fabric.

4.19.4 Ground Floor Materials

Active Frontages shall be designed with high-quality materials that offer color, variety, wear resistance, and visual interest to the pedestrian.

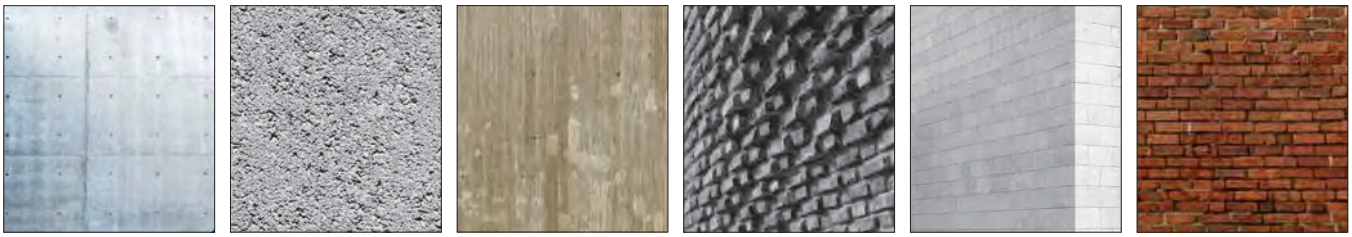
- Consider fine grained material modules and textures at Ground Floor façades to enhance the pedestrian realm and provide contrast to the upper levels.
- Ground Floor Façades shall be finished with more than one[1] material and be unique to the individual program or building.

4.19.5 Marine Environment Materials

Due to the marine environment, materials selected shall demonstrate performance related to moisture protection, maintenance requirements, durability, and ultra violet resistance.

4.19.6 Prohibited Materials

Vinyl and fabric awnings are prohibited. Dryvit as a material is prohibited.

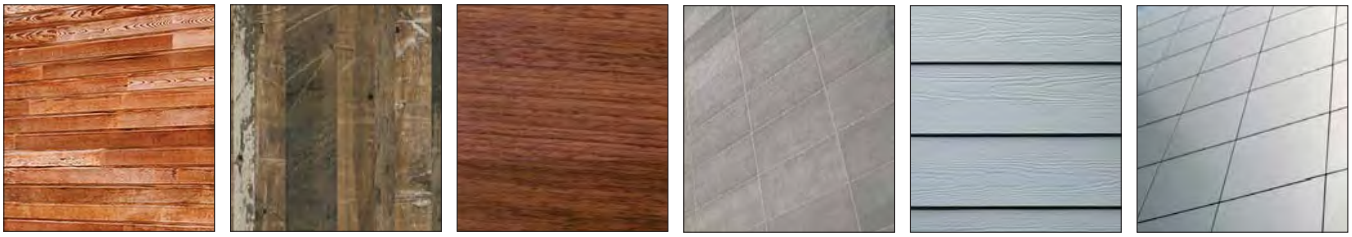


CONCRETE
Cast-in-place or pre-cast

MASONRY
Veneer or structural

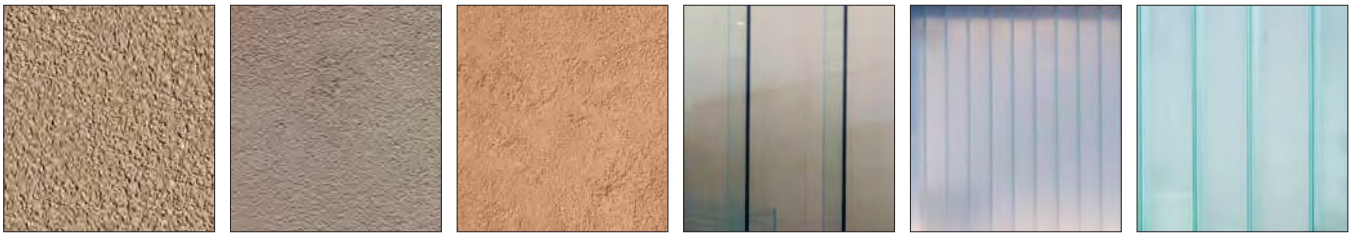
STONE
Veneer or structural

METAL
Panels, siding, sheet materials, or shingles (metal panels shall be minimum [18] gauge)



WOOD
Siding, paneling, and other natural materials (wood shall be FSC-Certified)

COMPOSITES
Cementitious board, and other composite materials



CEMENT PLASTER
May be used only in combination with other permitted materials

GLASS
Clear, colored, or translucent with reflectivity up to 50%

Figure 4.19a: MATERIAL PALETTE

4.19 Façade Material Cont'd

Water Room Palette

APPLICATION

ELEMENTAL MATERIALS:
The use of the following material and color palette is encouraged for the buildings fronting the Water Room and Dry Dock 4. See *Figure 4.19b*.

Materials at this location shall reflect the elemental qualities inherent in the idea of a Water Room.

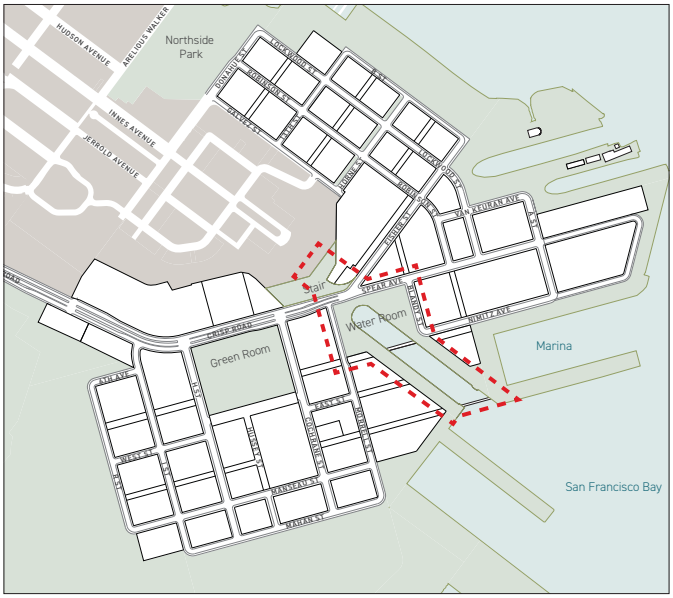


Figure 4.19b: LOCATION OF WATER ROOM

INDUSTRIAL/NAVAL CONCRETE

TINTED CONCRETES/COLORED AGGREGATES/ASPHALT

LIGHT STONE/ PRECAST CONCRETE

DARK STONE/ PRECAST CONCRETE

DARK METALS (STANDARD USE)

WARM METALS (STANDARD USE)

GLASS

BACK-PAINTED GLASS/ TRANSLUCENT SCREENS

TERRACOTTA BAGUETTES

Material and Color Palette is inspirational and can be used in conjunction with other materials.

Figure 4.19c: MATERIAL PALETTE

4.19 Façade Material Cont'd

Development Perimeter Palette

APPLICATION

POROUS & EARTHEN MATERIALS:
The use of the following material and color palette is encouraged for the waterfront and open space edges of the Shipyard North and Warehouse Districts. See *Figure 4.19d*.

Materials in this location shall relate the built environment along the edges of the development to the open spaces, the waterfront, and the sense of the natural topography of the shoreline.

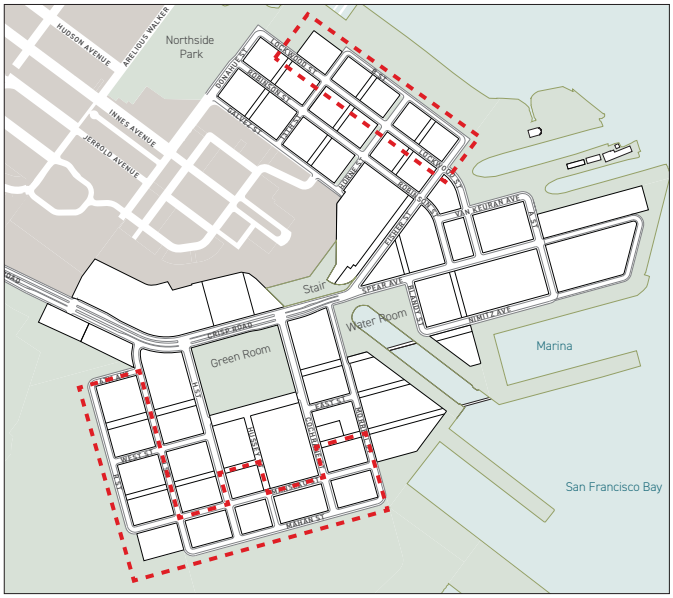
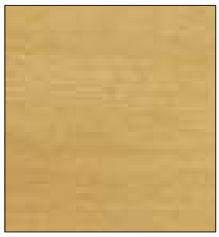


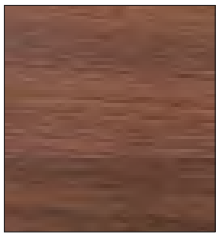
Figure 4.19d: LOCATION OF DEVELOPMENT PERIMETER

CROSS-LAMINATED TIMBER

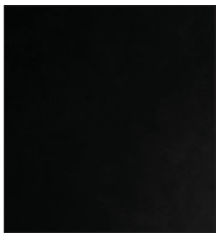
WARM METALS (SPECIAL USE)

GLAZING


WOODS (MODULAR OR FIELD)

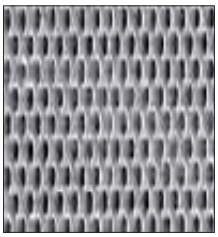


PRECAST CONCRETE


PRECAST CONCRETE

DARK METALS

GREEN WALLS


PERFORATED MESH/ EXPANDED METALS

CONCRETES

MASONRY (PREFAB PANELS OR IN SITU)

Material and Color Palette is inspirational and can be used in conjunction with other materials.

Figure 4.19e: MATERIAL PALETTE

4.19 Façade Material Cont'd

Green Room Palette

APPLICATION

"INVERSE" MATERIALS:
The use of the following material and color palette is encouraged for the buildings fronting the Green Room. See *Figure 4.19f*.

Materials at this location shall contribute to the urban edge and Street Wall of the Green Room, while allowing for ample Daylight into the buildings. A sense of lightness shall be perceptible from the Green Room.

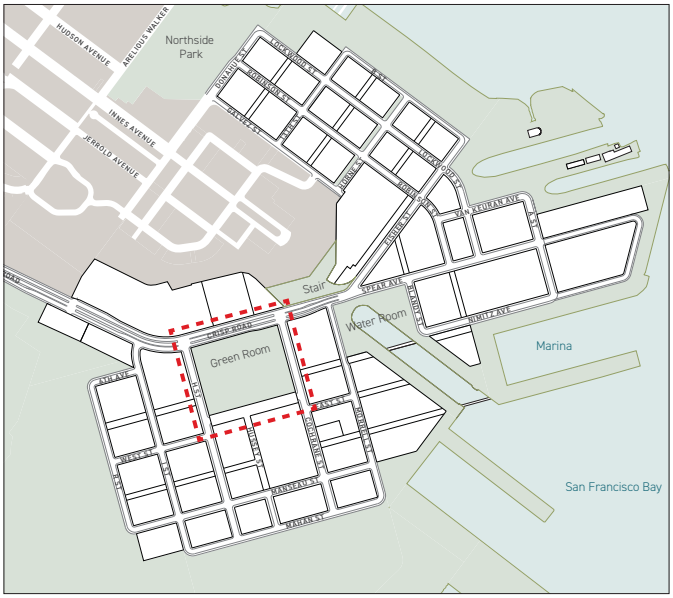
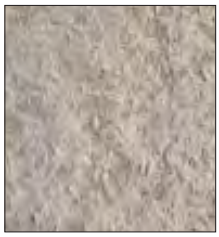
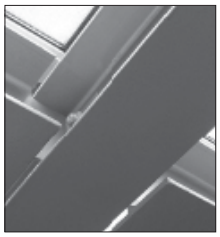


Figure 4.19f: LOCATION OF GREEN ROOM


LIGHT STONE/ PRECAST CONCRETE

DARK STONE/ PRECAST CONCRETE

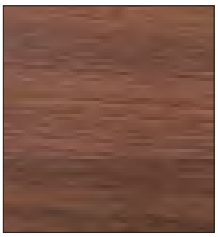

EXPOSED STEEL

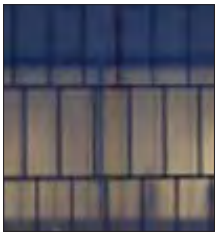
CROSS-LAMINATED TIMBER/GLULAM

WARM METALS (STANDARD USE)

BACK-PAINTED GLASS/ TRANSLUCENT SCREENS

WOODS (MODULAR OR FIELD)




TINTED/OPAQUE GLAZING/SPANDRELS

DARK METALS

GROUND LEVEL GLASS FOR RETAIL(TRANSPARENT)

Material and Color Palette is inspirational and can be used in conjunction with other materials.

Figure 4.19g: MATERIAL PALETTE

4.19 Façade Material Cont'd

Research District and Transit Hub Palette

APPLICATION

INDUSTRIAL MATERIALS:
The use of the following material and color palette is encouraged for the waterfront and open space edges of the Shipyard North and Warehouse Districts. See *Figure 4.19h*.

Materials at this location shall reference the former industrial uses of buildings on these blocks.

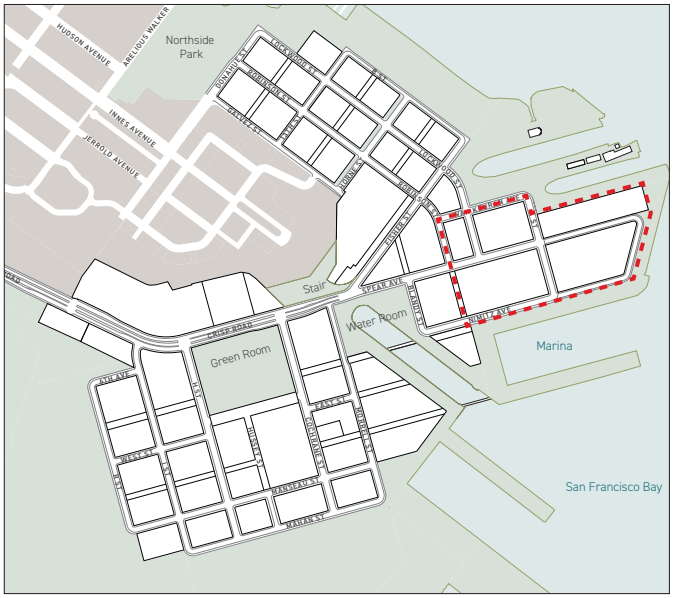
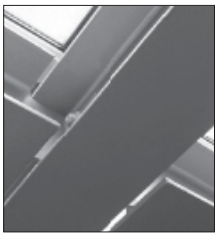
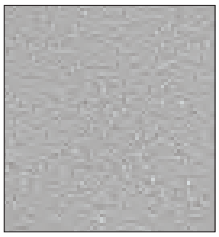


Figure 4.19h: LOCATION OF RESEARCH DISTRICT AND TRANSIT HUB


EXPOSED STEEL


LIGHT METALS

DARK METALS

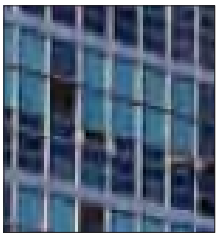
PRECAST CONCRETE/ METALS

STRUCTURAL STEEL/ CURTAIN WALLS

GLASS Façade/ CONCRETED STRUCTURE

METAL FINS

CAST IN PLACE CONCRETE


GLASS CURTAIN WALL

TERRACOTTA BAGUETTES

Material and Color Palette is inspirational and can be used in conjunction with other materials.

Figure 4.19i: MATERIAL PALETTE

4.19 Façade Material Cont'd

Pedestrian Allée Palette

APPLICATION

MATERIAL VARIETY:
The use of the following material and color palette is encouraged for the Pedestrian Allée. See *Figure 4.19j*.

Materials that front the Pedestrian Allée shall provide varied experience as one moves through the allée. Materials shall reinforce the scale of the buildings and be compatible with the adjacent districts.

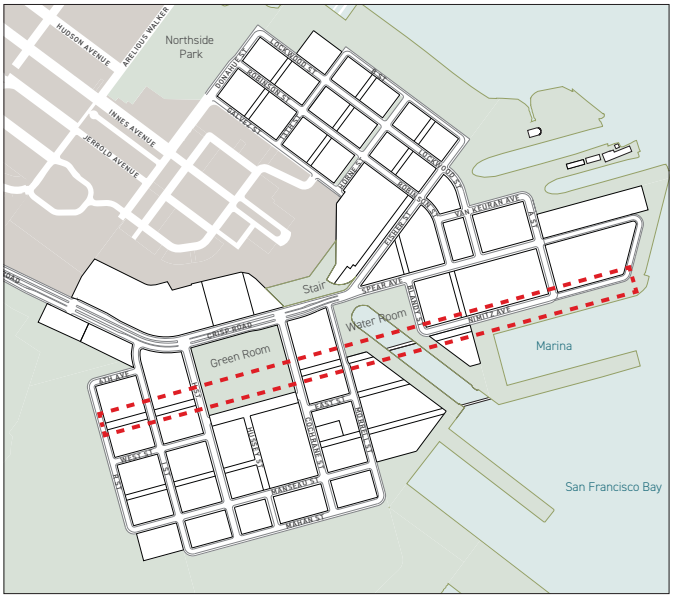
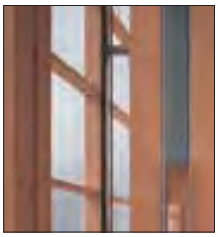


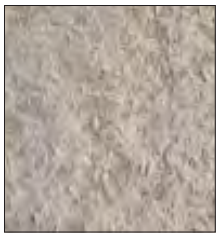
Figure 4.19j: LOCATION OF PEDESTRIAN ALLÉE


CROSS-LAMINATED TIMBER

MASONRY (PREFAB PANELS OR IN SITU)

WOODS (MODULAR OR FIELD)

DARK METALS


LIGHT STONE / PRECAST CONCRETE

DARK STONE / PRECAST CONCRETE

METAL FINS

TERRACOTTA BAGUETTES

Material and Color Palette is inspirational and can be used in conjunction with other materials.

Figure 4.19k: MATERIAL PALETTE

4.19 Façade Material Cont'd

Fisher Street Palette

APPLICATION

URBAN EDGE:
The use of the following material and color palette is encouraged for Fisher Street. See *Figure 4.19l*.

Materials at this location shall reinforce an urban edge along Fisher Street.

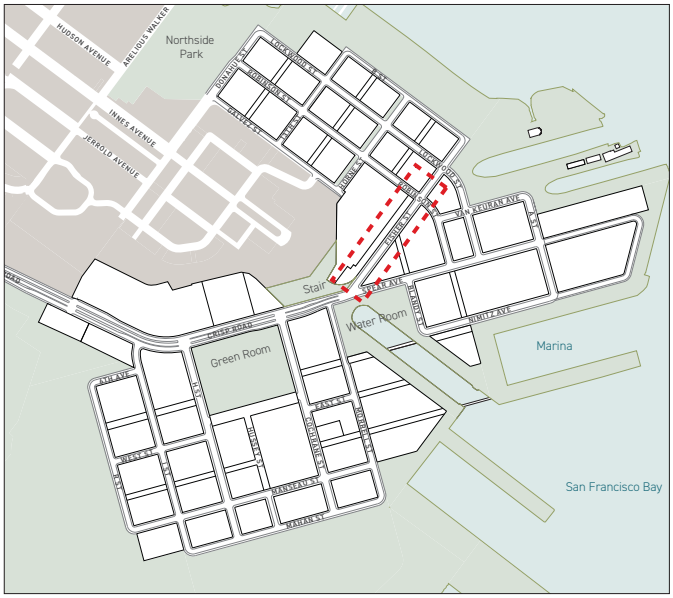
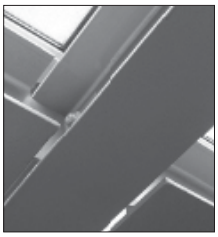


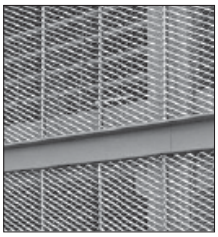
Figure 4.19l: LOCATION OF THE VILLAGE CENTER

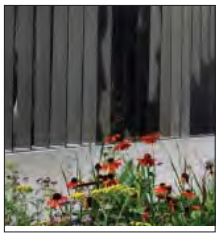

EXPOSED STEEL

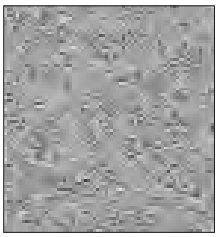
GLASS

TRANSLUCENT GLAZING

CORRUGATED STEEL


METAL FINS


METAL FINS


POLISHED STANDARD CONCRETE

Material and Color Palette is inspirational and can be used in conjunction with other materials.

Figure 4.19m: MATERIAL PALETTE

This page is intentionally left blank.

4.20 Class I - Bicycle Parking

4.20.1 Bicycle Parking Capacity
4.20.2 Bicycle Parking Location

INTENT

To provide safe, secure and convenient bicycle parking for residents, workers and visitors.

DEFINITIONS

"Class I - Bicycle Parking"
Spaces in secure, weather-protected facilities intended for use as long-term, overnight, and workday bicycle storage by dwelling unit residents, non-residential occupants, and employees.

STANDARDS

4.20.1 Bicycle Parking Capacity

Class I Bicycle parking shall be provided at the following ratios for the occupied floor area:

Office/R+D	1sp/5,000 sf
Community/Arts	1sp/5,000 sf
Retail/Restaurants	1sp/7,500 sf
Maker Spaces	1sp/7,500 sf
Hotel	1sp/30 room
School	4sp/classroom
Childcare	1sp/20 children
Residential	1sp/unit up to 100 units
	1sp/4 units above 100 units
Group/Senior Housing	1sp/10 units

4.20.2 Bicycle Parking Location

Class I Bicycle parking shall be provided for new building construction and adaptive re-use buildings. Bicycle Parking access shall be conveniently located, which may include locations on floors other than the ground floor, provided that pathways to reach Bicycle Parking are designed specifically to accommodate bicycles, (e.g. elevator sizes, hallway widths, etc shall be adequately sized for bicycles specifically).

Commercial bicycle parking may be consolidated in a separate building that is located either adjacent to or across the street from an access point to the subject building.

4.21 Vehicle Parking and Loading

4.21.1 Vehicle Parking and Loading

INTENT

To limit the number of vehicle parking spaces by land use and ensure adequate loading and service areas.

STANDARDS

4.21.1 Vehicle Parking and Loading

Parking and Loading minimum and maximum ratios shall be as follows in Figure 4.21a, Figure 4.21b, Figure 4.21c ,and Figure 4.21d. Parking may be provided in individual buildings together with the Principal or Secondary Use(s) served by such Parking or provided in Shared Parking Structures which serve one or more lawfully-permitted uses within HPS2.

MAXIMUM PARKING REQUIREMENTS	
Land Use	Rate
Residential	1 per unit
Regional Retail	3.0 per 1,000 sq. ft.
Neighborhood Retail/Maker Space	3 per 1,000 sq. ft.
Office	1 per 1,000 sq. ft.
Research and Development	1.3 per 1,000 sq. ft.
Hotel	0.25 per room
Film Arts Center	1 per 8 seats up to 1,000 seats, 1 per 10 above 1,000 seats
Artist's Space	1 per 2,000 sq. ft.
Community Uses	1 per 2,000 sq. ft.
Institution/School	0.07 per 1,000 sq. ft.
Marina Slips	0.6 per slip

Figure 4.21a: MAXIMUM PARKING REQUIREMENTS

CAR SHARE PARKING SPACE REQUIREMENTS	
Number of Residential Units	Number of Required Car Share Parking Spaces
0-49	0
50-200	1
201 or more	2, plus 1 for every 200 dwelling units over 200
Number of Parking Spaces Provided for Non-Residential Uses or in a Non-Accessory Parking Facility	Number of Required Car Share Parking Spaces
0-24	0
25-49	1
50 or more	1, plus 1 for every 50 parking spaces over 50

Figure 4.21b: CAR SHARE PARKING SPACE REQUIREMENTS

4.21 Vehicle Parking and Loading Cont'd

4.21.1 Vehicle Parking and Loading

OFF-STREET FREIGHT LOADING SPACE REQUIREMENTS OUTSIDE OF MEDIUM- AND HIGH-DENSITY RESIDENTIAL BLOCKS		
Land Use	Size of Use	Number of Spaces Required (per block)
Retail, Wholesale, Manufacturing, Live/Work	0-10,000 sq. ft.	0
	10,000 - 60,000 sq. ft.	1
	60,000 - 100,000 sq. ft.	2
	> 100,000 sq. ft.	3, plus 1 for each additional 80,000 sq. ft.
Offices, Hotels, Residential and All Other Uses	0-100,000 sq. ft.	0
	100,000 - 200,000 sq. ft.	1
	200,000 - 500,000 sq. ft.	2
	> 500,000 sq. ft.	3, plus 1 for each additional 400,000 sq. ft.

Figure 4.21c: OFF-STREET FREIGHT LOADING SPACE REQUIREMENTS OUTSIDE OF MEDIUM- AND HIGH-DENSITY RESIDENTIAL BLOCKS

OFF-STREET FREIGHT LOADING SPACE LIMITS MEDIUM- AND HIGH-DENSITY RESIDENTIAL BLOCKS		
Land Use	Size of Use	Number of Space Permitted (per block)
Non-Residential Uses	0-50,000 sq. ft.	1
	>50,000 sq. ft.	1 space per 50,000 sq. ft.
Residential - Low Density	0 - 100 units	1
Residential - High Density	> 100 units	1, plus 1 additional loading space for every 200 additional units
Total Number of Loading Spaces Allowed for Any Single Building (all uses)		4

Figure 4.21d: OFF-STREET FREIGHT LOADING SPACE LIMITS MEDIUM- AND HIGH-DENSITY RESIDENTIAL BLOCKS

4.22 Skyway Connections

4.22.1 Skyway Connections

INTENT

To provide upper level connections between buildings.

DEFINITION

"Skyways"
Upper level connections between buildings are primarily for pedestrians although they could also be used for small service vehicles. Skyways may be enclosed or open air.

STANDARDS

4.22.1 Skyway Connections

Skyways are permitted in the locations indicated in *Figure 4.22a* and only to the extent described below.

All Skyways shall provide a minimum of [30] ft. of vertical clearance below, to allow full pedestrian and automobile access at grade. Each Skyway shall be no wider than [30] ft. and no taller than one[1] story in height. Ground level landscaping may be adjusted as required to allow for solar access.

MBBs between Blocks 44 & 43, 35 & 36, and 28 & 29 shall have no more than two[2] Skyways each. The MBB between Blocks 32 & 33 shall have no more than three[3] Skyways.

Figure 4.22a: SKYWAY CONNECTIONS

4.23 Green Room Datum

4.23.1 Green Room Datum

INTENT

To provide a consistent architectural expression to unify the façades framing the Green Room.

DEFINITIONS

"Datum"
An articulation strategy on the building façade that, by its continuity and regularity, serves to gather, measure, and organize the pattern of forms and spaces.

STANDARDS

4.23.1 Green Room Datum

All buildings facing the Green Room are required to incorporate an architectural expression of the established Datum. This may be achieved by modulation in the building Façade, a change in material, or another architectural feature.

The Datum elevation shall be set by the first building constructed on the Green Room and be located between [15] ft. and [30] ft. above the sidewalk grade for that building. All future buildings around the Green Room are to match the approximate initial Datum elevation (minor deviations in Datum height, less than three[3] ft. may occur).

Datum Articulation Strategies

Choose at least one[1] strategy:

DS1 Cornice at the Datum
DS2 Change in material at the Datum
DS3 Change in color at the Datum
DS4 Change in building articulation at the Datum
DS5 Change in building modulation at the Datum
DS6 Canopies located at the Datum
DS7 Increase Ground Floor Transparency facing the Green Room to 80% for commercial façades and 60% for residential façades for the entire area up to the Datum
DS8 Applied Materials at the Datum

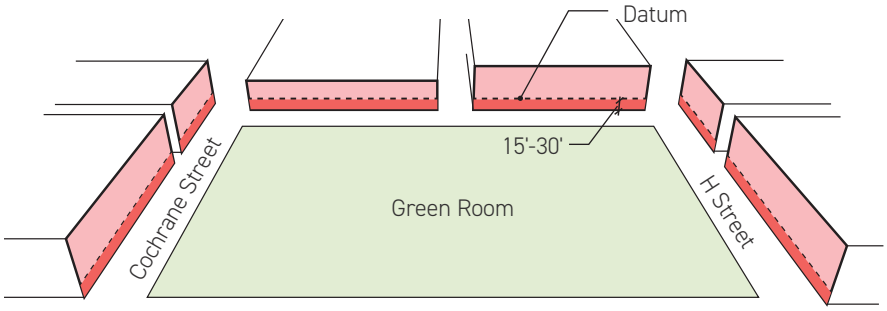


Figure 4.23a: GREEN ROOM DATUM

4.23 Green Room Datum Cont'd

1

2

3

4

5

6

1. Datum: Cornice Creates Datum Example
2. Datum: Change in Architectural Articulation / Modulation Example
3. Datum: Change in Material and Plane Example
4. Datum: Canopy Example
5. Datum: Change in Color and Plane Example
6. Datum: Change in Transparency Example

4.24 Adaptive Reuse

4.24.1 Adaptive Reuse

INTENT

There are a number of buildings that have not been officially recognized as cultural resources that reflect historic development patterns of the Hunters Point Shipyard and provide visual interest, cohesion, and a sense of the history of the site. As such, the following standards are intended to encourage the retention of these character-enhancing structures.

DEFINITIONS

"Adaptive Reuse"
Reuse or recreation of an existing structure in part or whole, in a manner that maintains the essence and character-defining building elements of the existing structure. Projects that propose adaptive reuse of any of the following buildings (140, 204, 205, 207, 211, 224, 231, 253) shall provide a written summary of compliance with the then-current Secretary of the Interior's Standards and Guidelines for Rehabilitation.

"Character-Enhancing Structures"
Buildings or structures that may be adaptively reused to enhance the neighborhood character and sense of place, as shown in Figure 4.24a. Detailed information regarding the specific designations of National Register Buildings and others to be studied or considered for retention can be found in the companion documents. (Refer to Section 1.2)

STANDARDS

4.24.1 Adaptive Reuse

When adopted, the Adaptive Reuse of an existing building shall retain at least one[1] public expression of a character-defining building element from the list below for the portions of the building that remain:

Building Elements

1. **Roof Profile:** Retain or replicate at least 50% of the character-defining roof profile.
2. **Structural System:** Retain, retrofit or replicate at least 75% of the character-defining external or internal structural systems. The structural system need not perform in its original function to be considered a character-defining feature.
3. **Building Enclosure:** Retain, replicate or rebuild at least 75% of the building enclosure in a manner that is consistent with the existing character, but may be different in materiality and transparency so long as such qualities are publicly expressed.
4. **Character-Defining Features:** Demonstrate a comprehensive and cohesive scheme that incorporates multiple features of one[1] or more character-defining building elements. Such scheme shall publicly express such character and represent a creative re-imagining of the existing building features without necessarily meeting the quantitative requirements of the three[3] building elements noted above (Roof Profile, Structural System, Building Enclosure).

1. Adaptive Reuse Example
2. Adaptive Reuse Example

1

2

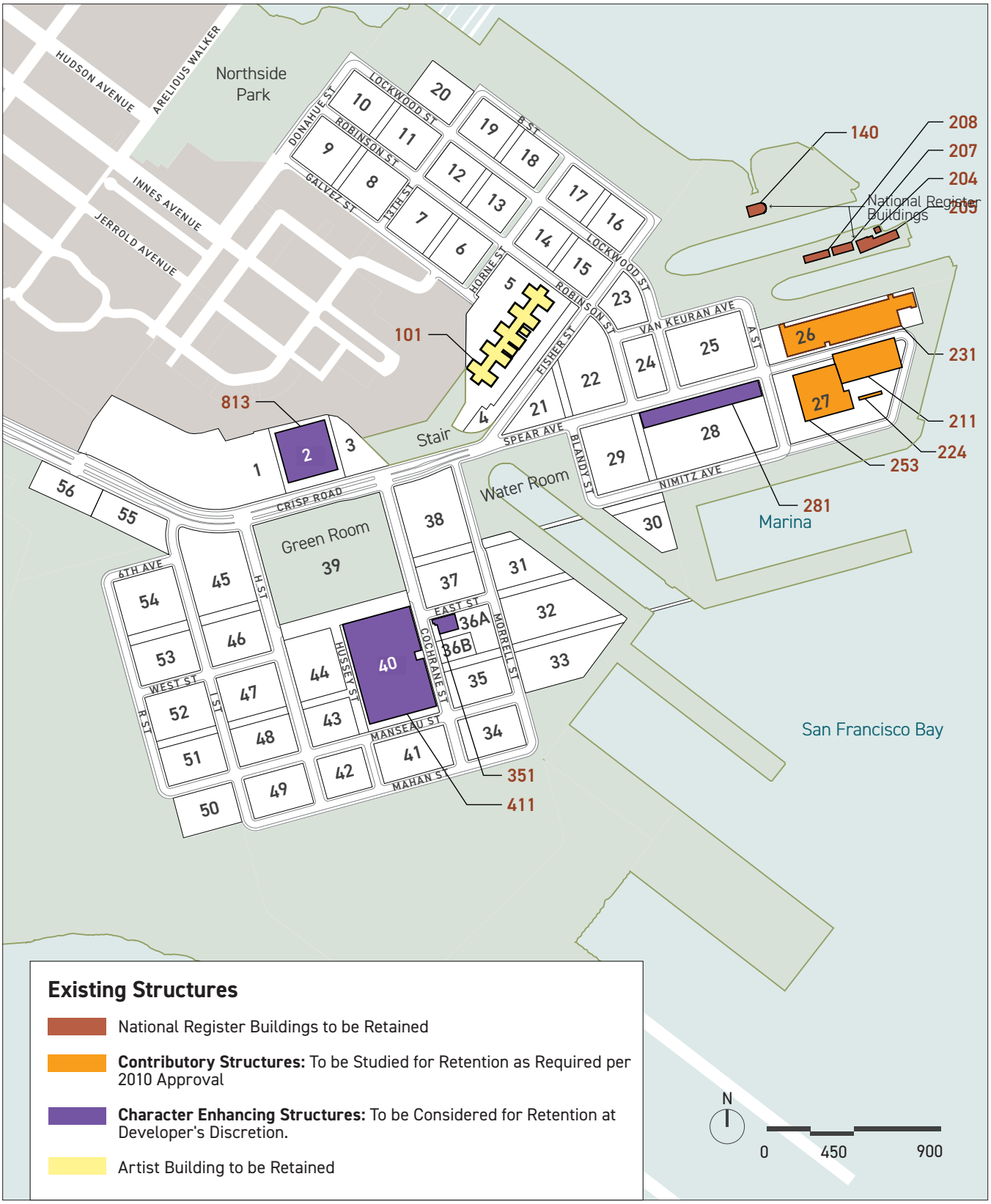


Figure 4.24a: EXISTING STRUCTURES

4.24 Adaptive Reuse Cont'd

4.24.2 Adaptive Reuse Exemptions

STANDARDS

4.24.2 Adaptive Reuse Exemptions

Where other standards in this document conflict with the Adaptive Reuse Standards or prevent the retention of a Contributory or Character-Enhancing Structure, the Adaptive Reuse project shall be exempt from such Standards. Specifically, development projects that comply with the Adaptive Reuse Standards shall be exempt from the following (other standard exemptions will be considered on a case-by-case basis):

4.2.1 Building Setback
4.3.1 Developable Area Coverage
4.4.5 Street Wall
4.5.2 Maximum Plan Length
4.6.1 Façade Composition
4.7.1 Bulk and Massing Approach
4.16.1 Rooftop Façades
4.17.1 Ground Floor Blank Walls
4.17.2 Upper Floor Blank Walls
4.23.1 Green Room Datum

Additions to Contributory or Character-Enhancing Structures are also exempt from these Standards. Designs are allowed to increase the height of the existing structure within the allowable Building Height. Vertical and horizontal additions should be clearly identifiable, but visually harmonious with the existing building's features and scale.

Development improvements extending horizontally outside of the original footprint shall comply with all relevant standards if the addition is not extending, highlighting, or reacting/responding to the character of the features of the existing structure.

4.25 Key Sites Blocks 28 and 40

4.25.1 Key Sites Blocks 28 and 40

INTENT

To assure that buildings on Blocks 28 and 40 are either retained pursuant to the Adaptive Reuse controls, or are redeveloped with exemplary architectural design.

STANDARDS

4.25.1 Key Sites Blocks 28 and 40

In addition to all applicable standards for new construction, apply one[1] additional **BE/PE** Building or Public Realm Enhancement Measure.

In addition, apply one[1] of the options below:

Option 1
Allow pedestrian access through the site at the Ground Floor using the following strategies:

- Provide Ground Floor public access through the block
- Public access shall be open during regular business hours
- The connection may be open to air or enclosed
- Upper floor connections above the pedestrian throughway area are permitted
- The scale of the connection shall be of a width and height that is inviting to the public

Option 2
Develop an architectural quality that meets or exceeds the expression and character of the Adaptive Reuse building using the following strategies:

- Building design shall be uniquely identifiable from afar
- Building design shall enhance the pedestrian experience through incorporation of tactile and fine grain materials
- Building design shall evoke or reference the character-defining elements of the building it replaces

4.26 Private Open Space

4.26.1 Private Open Space
4.26.2 Private Common Open Space on Waterfront Blocks
4.26.3 Private Setbacks
4.26.4 Fences

INTENT

To provide opportunities for individuals to seek a moment of respite or congregate with others in open space.

DEFINITION

"Residential Private Individual Open Space"
Intended for the use of individual residents within a unit and include terraces, patios, balconies, rooftop spaces and other similar areas.

"Residential Private Common Open Space"
Intended to be shared by all residents/users within a building or building cluster and includes rooftop spaces, internal courtyards, gardens, pools, play areas, and other similar areas.

STANDARDS

4.26.1 Private Open Space

Every residential building shall have a minimum net usable Private Open space equivalent to [60] sq. ft. per unit. Private Open Space shall be located on the same parcel as the residents it serves. Any combination of private or common open space may be used to count towards meeting this requirement.

Private Individual Open Space
Residential Private Individual Open Space shall be a minimum of [36] sq. ft. with a six[6] ft. linear dimension.

Private Common Open Space
Residential Private Common Open Space shall be a minimum [15] ft. linear dimension.

A Projection shall maintain nine[9] ft. of vertical clearance to the ground floor in order for the space beneath the Projection to be considered an open space. See *Figure 4.26a* to *Figure 4.26g*.

4.26.2 Private Common Open Space on Waterfront Blocks

Residential buildings adjacent to the waterfront shall have a courtyard opening to the waterfront.

4.26.3 Private Setbacks

The Setback zone of all residential buildings shall be used either to create high quality, usable open space for street facing units, or in the case of building entrances to create a transition zone between private-use and the public realm. Permitted uses within the Setback zone include street-facing stairs, stoops, porches, patios, landscaping, driveways and entry plazas. The Setback zone shall be landscaped with high quality materials from the building edge to the public sidewalk. Residential Ground Floor open space shall follow San Francisco "Guidelines for Ground Floor Residential Design".

4.26.4 Fences

In order to define Private Open Spaces of Ground Floor units, the following can be used: fences, railings, gates, grilles, planters and retaining walls to delineate private from public space. Such elements may be up to three[3] ft. high. If less than 25% opaque, such elements may be up to three and a half[3.5] ft. high.

4.26 Private Open Space Cont'd

4.26.5 Defensible Spaces
4.26.6 Orientation
4.26.7 Planting Palette
4.26.8 Irrigation

GUIDELINES

4.26.5 Defensible Spaces

Stoops and patios shall provide safety measures to ensure the space is defensible. Defensible design includes gates and railings, planters, and appropriate landscaping to provide a buffer from the street, while also allowing for visual connections between the street and the residence.

4.26.6 Orientation

Buildings shall maximize solar access and views of private common open spaces. Balconies on high-rise towers are encouraged to be located away from building corners that face the prevailing wind direction.

4.26.7 Planting Palette

Native and climate appropriate plants are encouraged.

4.26.8 Irrigation

Water demand shall be minimized by carefully controlling irrigation timing and application as well as plant selection.

1

2

3

4

1. Private Common Open Space - Rooftop Example
2. Private Individual Open Space - Balcony Example
3. Private Common Open Space - Internal Courtyard Gardens Example
4. Private Individual Open Space - Front Yard Example

4.26 Private Open Space Cont'd

Setback Zone 1 - Refer to Page 56 Setback requirements

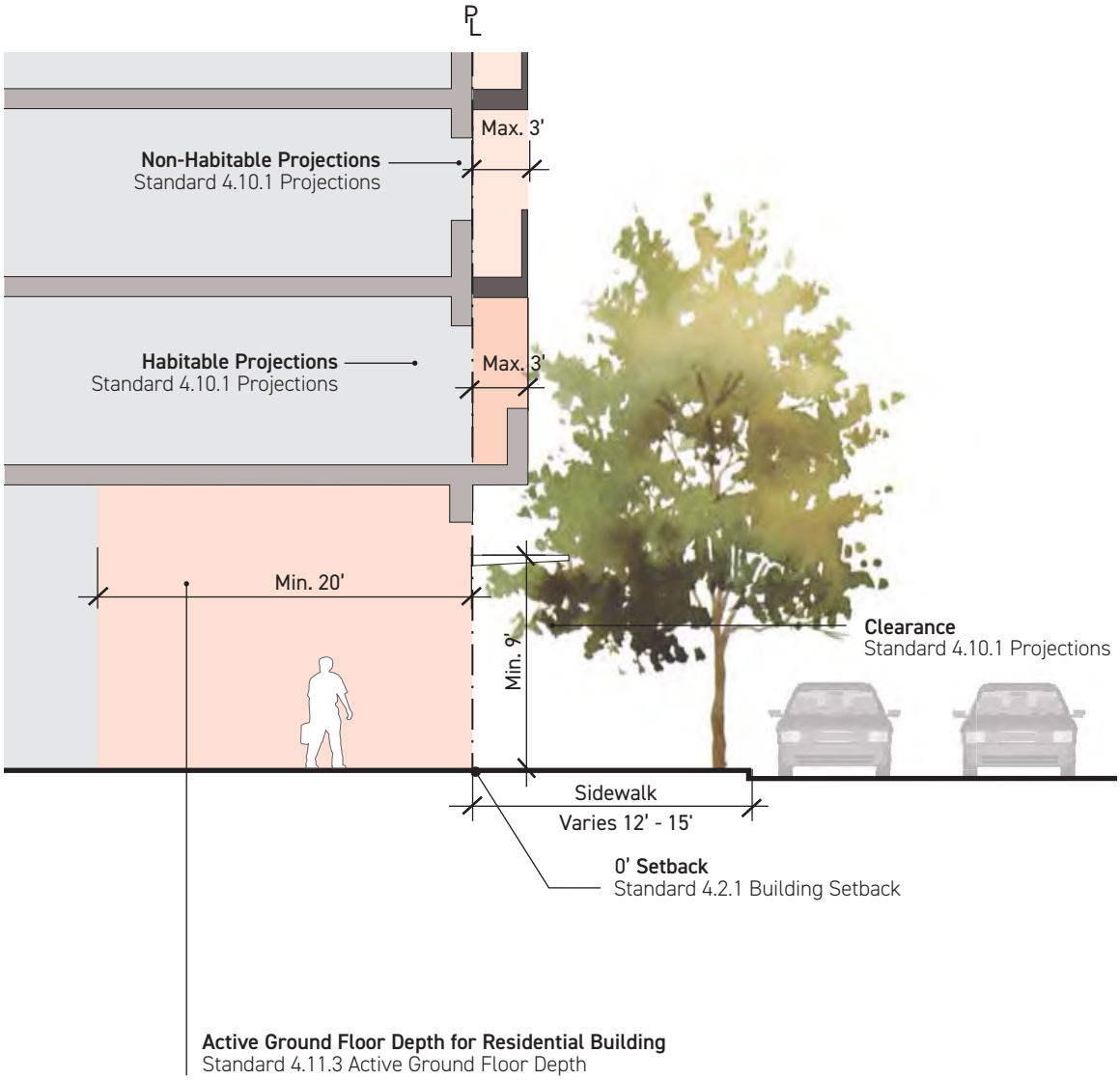


Figure 4.26a: SETBACK ZONE 1 (0' MIN./0' MAX.)

0 5' 10' 20'

4.26 Private Open Space Cont'd

Setback Zone 2 Variation 1 - Refer to Page 56 Setback requirements

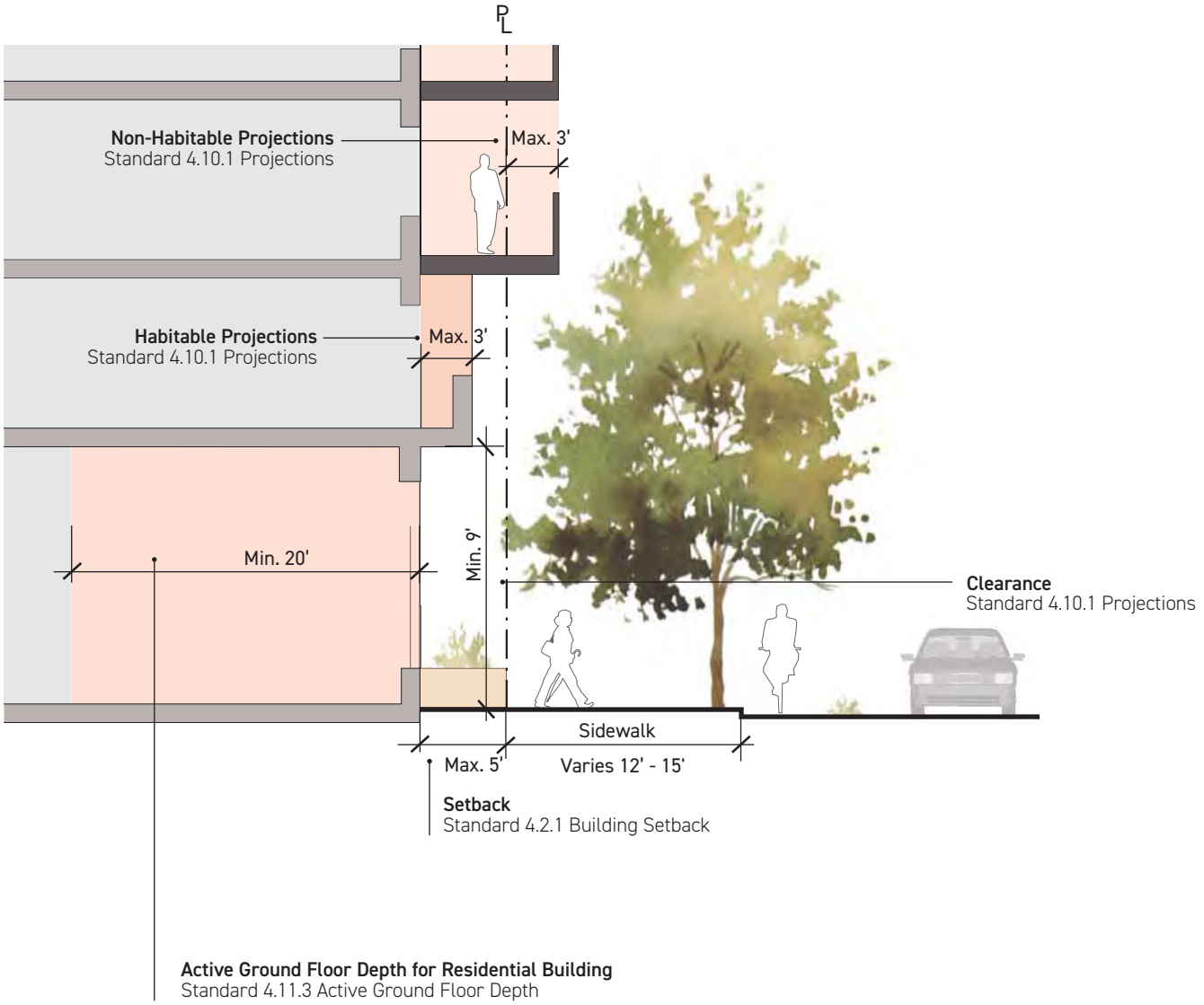


Figure 4.26b: SETBACK ZONE 2 VARIATION 1 (0' MIN./5' MAX.)

0 5' 10' 20'

4.26 Private Open Space Cont'd

Setback Zone 2 Variation 2 - Refer to Page 56 for Setback requirements

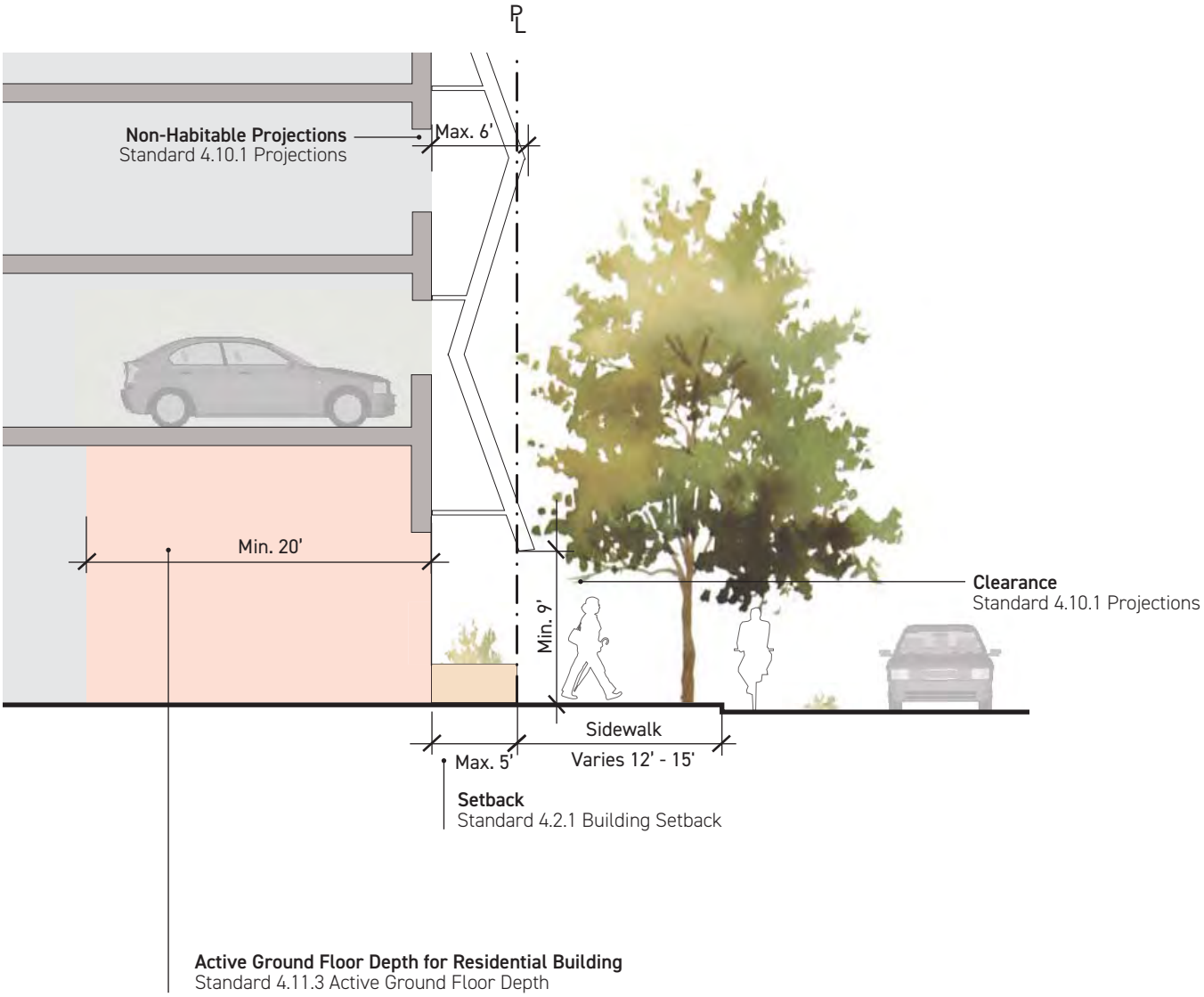


Figure 4.26c: SETBACK ZONE 2 VARIATION 2 (0' MIN./5' MAX.)

4.26 Private Open Space Cont'd

Setback Zone 3 - Refer to Page 56 for Setback requirements

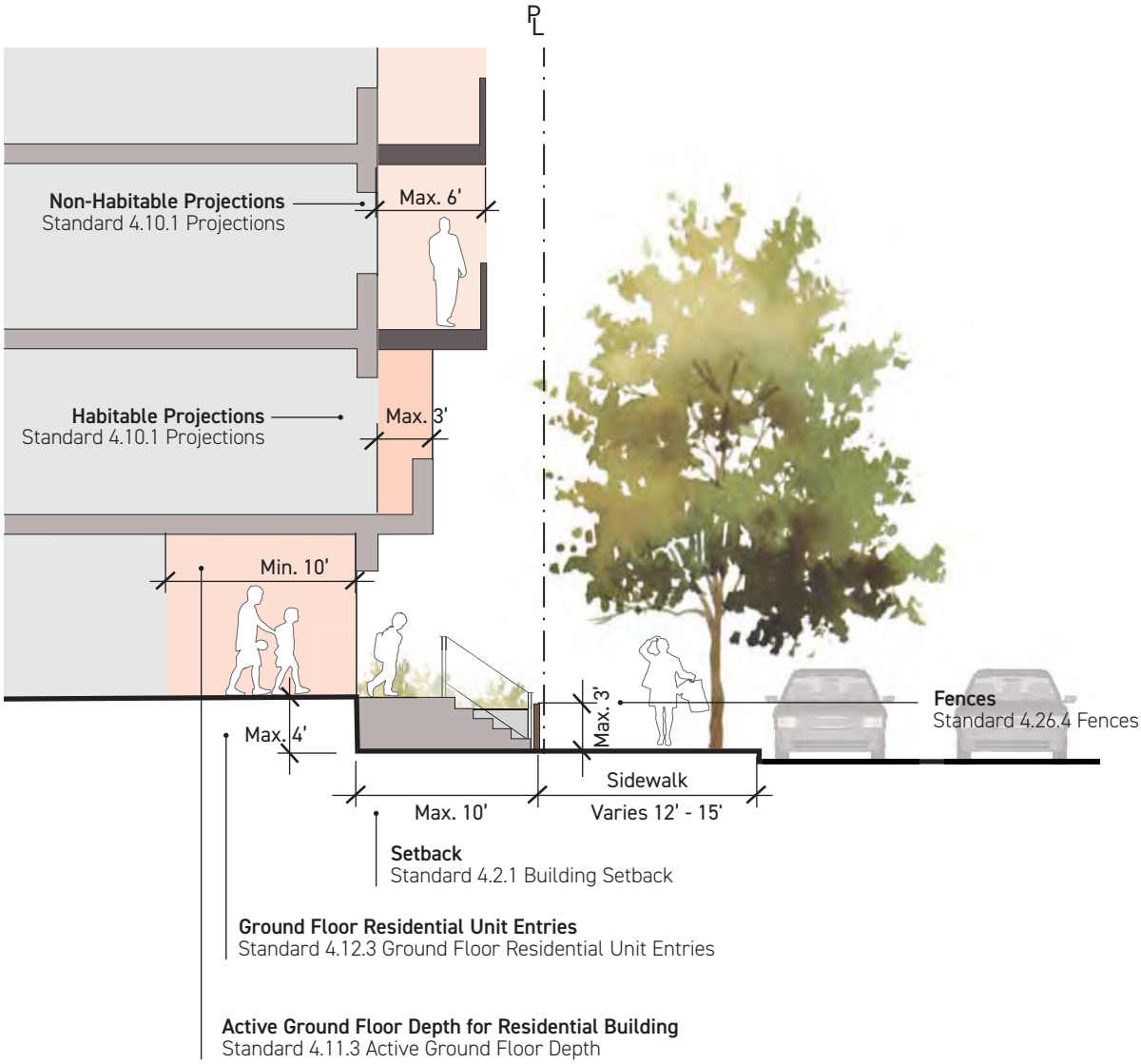


Figure 4.26d: SETBACK ZONE 3 (5' MIN./10' MAX.)

0 5' 10' 20'

4.26 Private Open Space Cont'd

Setback Zone 4 - Refer to Page 56 for Setback requirements

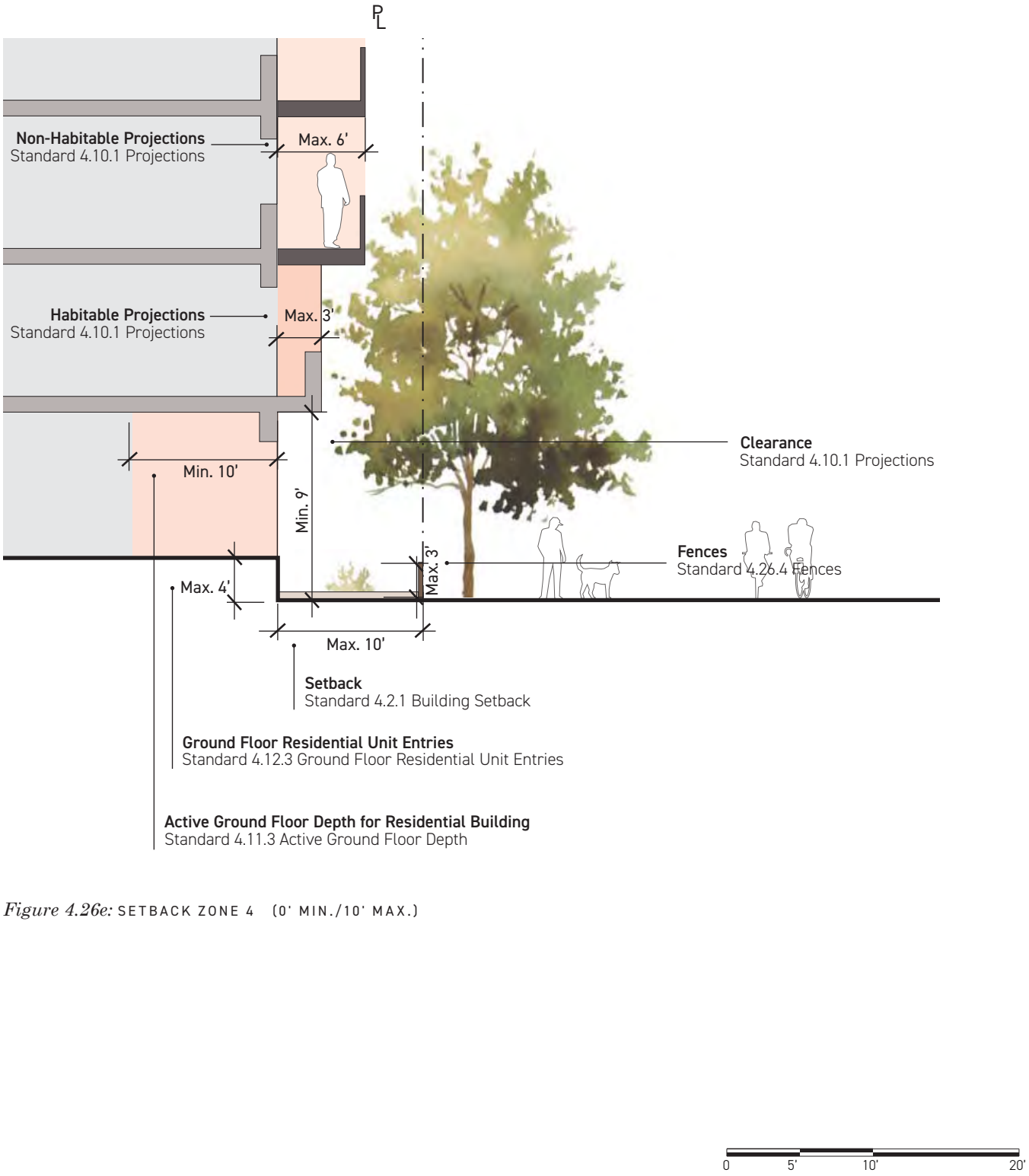


Figure 4.26e: SETBACK ZONE 4 (0' MIN./10' MAX.)

4.26 Private Open Space Cont'd

Setback Zone 5 - Refer to Page 56 for Setback requirements

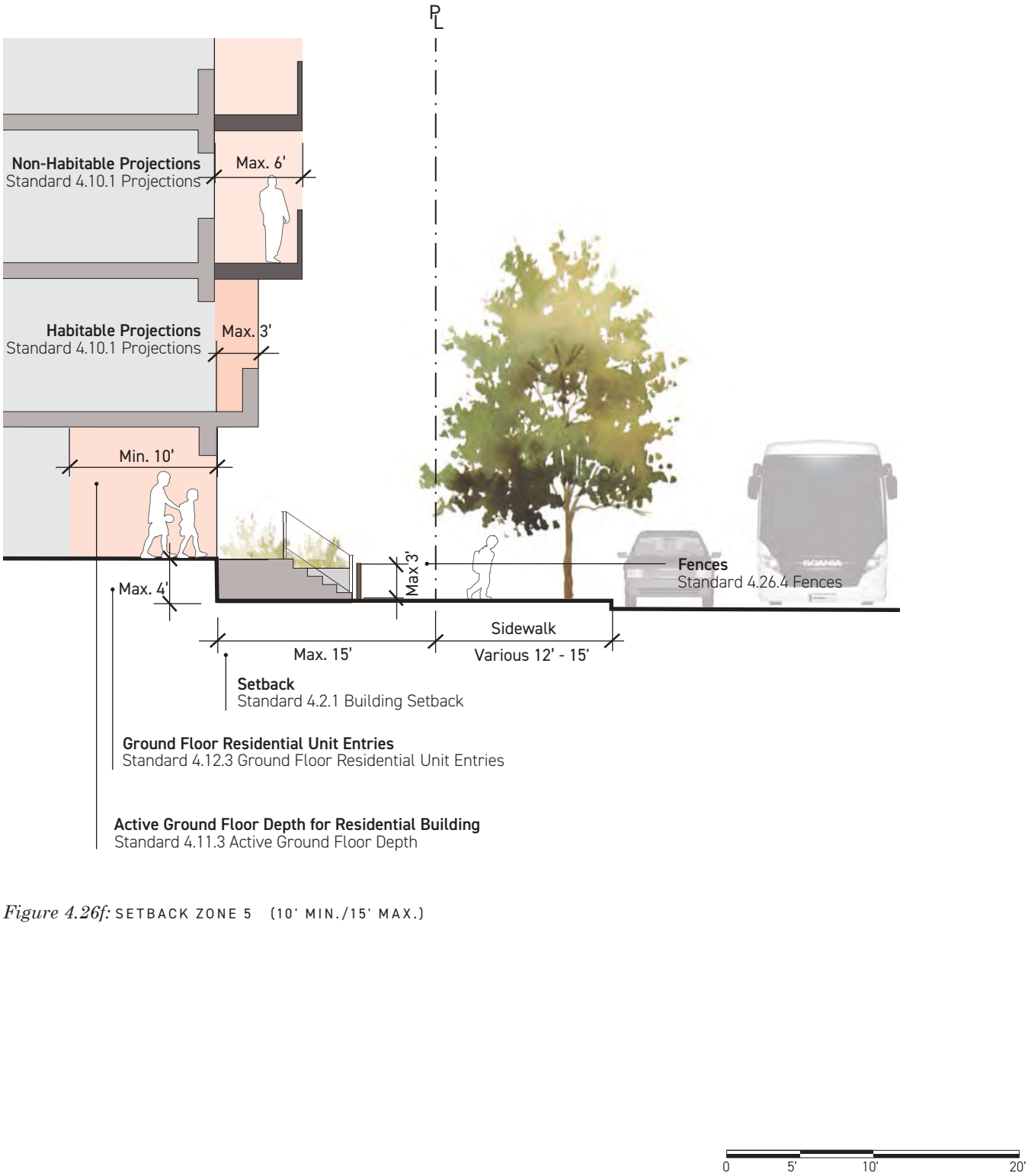


Figure 4.26f: SETBACK ZONE 5 (10' MIN./15' MAX.)

4.26 Private Open Space Cont'd

Setback Zone 6 - Refer to Page 56 for Setback requirements

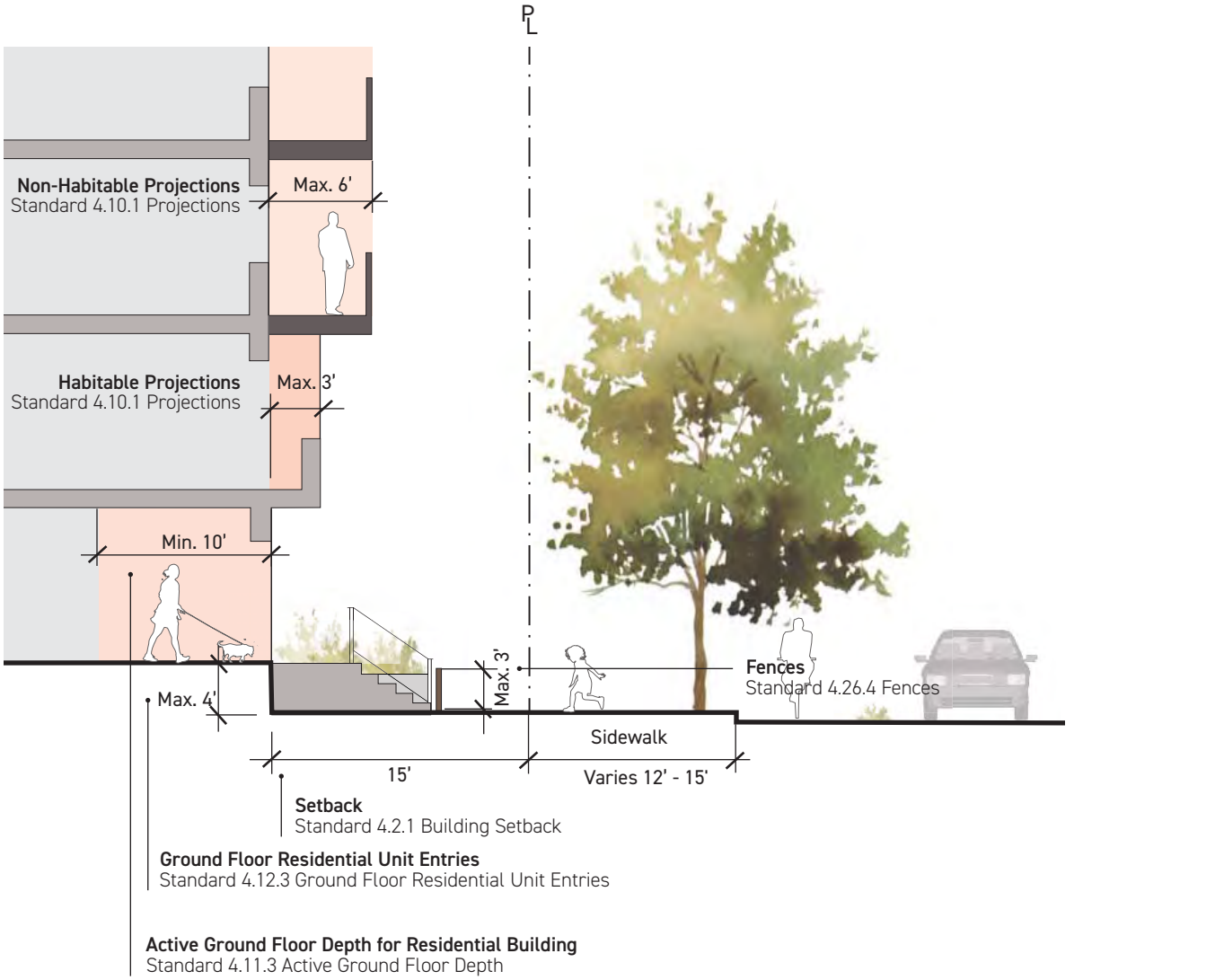


Figure 4.26g: SETBACK ZONE 6 (15' MIN./15' MAX.)

This page is intentionally left blank.

4.27 Private Open Space - Mid-Block Breaks

4.27.1 Public Access
4.27.2 Throughway Dimensions
4.27.3 Surfaces
4.27.4 Street Trees
4.27.5 Lighting

INTENT

Mid-Block Breaks (MBBs) are intended to allow public access through private development blocks to promote connectivity and walkability and create a finer grain circulation system.

MBBs are regulated by the CPHPS2 Infrastructure Plan, Transportation Plan, and Streetscape Master Plan.

Block sizes may be legal parcels or may be part of a legal parcel.

Mid-Block Break Specification Book will be provided per the DRDAP.

Residential Mid-Block-Breaks
Residential Mid-Block-Breaks will be domestic in character with defined transition zones between the public throughway and the Ground Floor residential units and amenity spaces. Residential Mid-Block Breaks may accommodate pedestrian, bicycle and low-volume vehicular access. The design will prioritize pedestrian access and safety, incorporate traffic-calming design elements and other Public Realm amenities. Residential spaces such as terraces, Stoops, or porches may spill into landscaped Setback zones. Ground Floor residential units will be slightly raised above-grade, to allow for privacy and Stoops, while access to ground-floor amenity spaces may further activate the Mid-Block Break and provide 'eyes on the street'.

Commercial Mid-Block-Breaks
Commercial Mid-Block-Breaks will be more public in nature and framed by uses such as Ground Floor retail storefronts, office and amenity spaces. Commercial Mid-Block Breaks may accommodate pedestrian, bicycle and low-volume vehicular access. The design will prioritize pedestrian access and safety, incorporate traffic-calming design elements and other public realm amenities. Interior active uses such as workspaces and restaurant seating may spill out into the Mid-Block Breaks. Landscape plantings, furnishings, gathering spaces and other design elements may serve as visual cues to differentiate pedestrian-dedicated areas from shared pedestrian or vehicular zones.

STANDARDS

4.27.1 Public Access

Mid-Block Breaks shall have unrestricted public access.

4.27.2 Throughway Dimensions

All Mid-Block Breaks shall have a pedestrian path with a minimum dimensions of ten[10] ft. in width. The access may be configured as two five[5] foot paths on either side of the Mid-Block Break or as one ten[10] foot path. A pedestrian path may be shared with bicycles and vehicles.

4.27.3 Surfaces

Hardscape surfaces within the MBB Width including throughway and landscape zones/Setback zones shall be limited to 80% of the ground plane.

4.27.4 Street Trees

A double row of street trees shall be planted at a spacing that is not greater than [30] ft. on center. Tree planters should be a minimum of [28] sq. ft. in size each. Trees may be located in the Mid-Block Break or in private Setback zones.

4.27.5 Lighting

Adequate lighting shall be provided to ensure pedestrian and vehicular safety and may be located in the Mid-Block Break or in the Setback zones.

4.27 Private Open Space - Mid-Block Breaks Cont'd

4.27.6 Community Spaces
4.27.7 Landscaping
4.27.8 Minimizing Vehicular Speeds

GUIDELINES

4.27.6 Community Spaces

Social spaces, seating and places for informal play are encouraged and may be located in the Mid-Block Break or in the Setback zones.

4.27.7 Landscaping

All Mid-Block Breaks are intended to be an outdoor room. Rich landscaping is encouraged so the drive aisle (in the case of a vehicular lane way) is subordinate. This includes street trees, shrub beds, patios and steps, benches, and lighting. Landscape planters can be raised or at grade based on architectural design. Landscaping may be located in the Mid-Block Break or in the Setback zones.

4.27.8 Minimizing Vehicular Speeds

Features to reduce vehicle speeds are encouraged, such as narrow drive aisle and offsets in the drive aisle alignment.

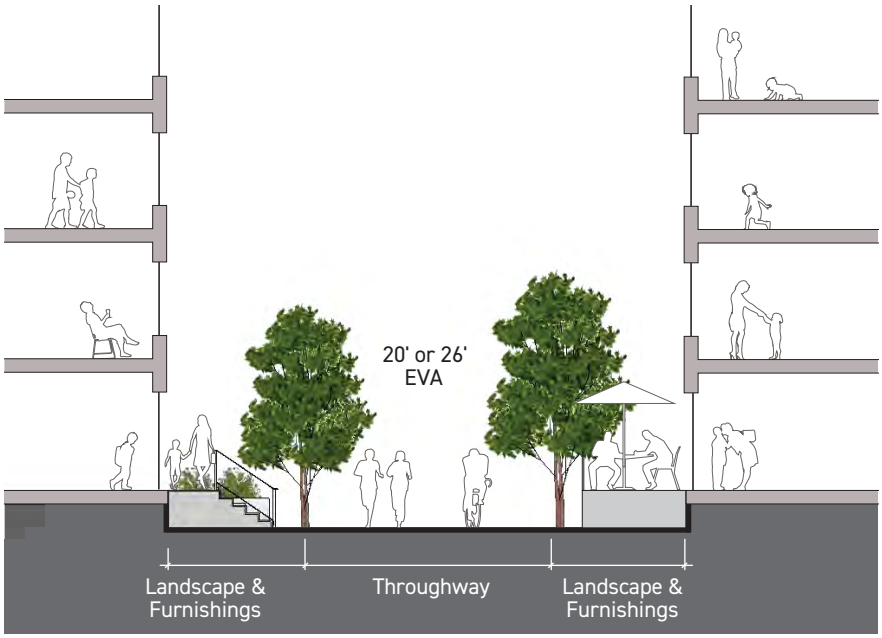


Figure 4.27a: RESIDENTIAL MID-BLOCK BREAK

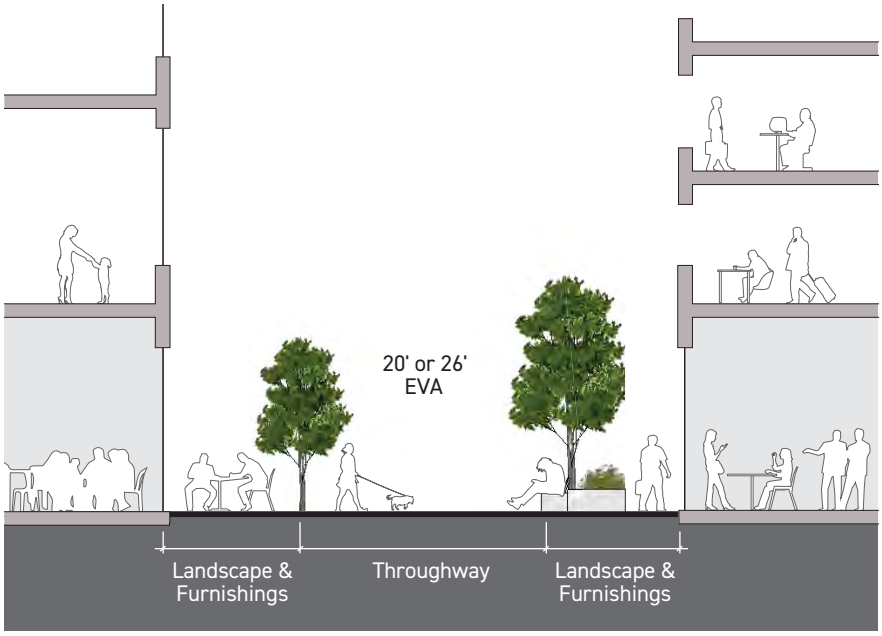


Figure 4.27b: COMMERCIAL MID-BLOCK BREAK

4.28 Building Signage

DEFINITIONS

"Sign"
Any structure, part thereof, or device or inscription which is located upon, attached to, or painted, projected or represented on any land or right-of-way; or on the outside of any building or structure including an Awning, Canopy, marquee or similar appendage; or affixed to the glass on the outside or inside of a window so as to be seen from the outside of the building, and which displays or includes any numeral, letter, word, model, banner, emblem, insignia, symbol, device, light, trademark, or other representation used as, or in the nature of, an announcement, advertisement, attention-arrester, direction, warning, or designation by or of any person, firm, group, organization, place, commodity, product, service, business, profession, enterprise or industry.

Two or more Sign faces shall be deemed to be a single Sign if such faces are contiguous on the same plane, or are placed back to back to form a single structure and are at no point more than two[2] ft. from one another. Also, on Awnings or marquees, two[2] or more faces shall be deemed to be a single Sign if such faces are on the same Awning or marquee structure.

"Business/Retail Signage"
A Sign which directs attention to the primary business, commodity, service, industry or other activity which is sold, offered, or conducted on the premises upon which the Sign is located or to which it is affixed. Where a number of businesses, services, industries or other activities are conducted on the premises, or a number of commodities, services, or other activities with different brand names or symbols are sold on the premises that one or more of those businesses, commodities, services, industries or other activities by brand name or symbol as an accessory function of the business Sign, provided that such advertising is integrated with the remainder of the business Sign, and provided also that any limits which may be imposed by the following standards on the area of the individual Signs and the area of the Signs on the property are not exceeded. The primary business, commodity, service, industry or other activity on the premises shall mean the use which occupies the greatest area of the premises upon which the business Sign is located, or to which it is affixed.

SIGN TYPES

Sign types for HPS2 are divided into two[2] general categories: Permanent Signs and Temporary Signs.

Permanent Signs
- Building Wall Signs
- Projecting or Blade Signs
- Canopy or Awning Signs
- Window Signs
- Street or Unit Address Signs
- Identifying Signs
- Freestanding or Directional Signs

Temporary Signs
- Temporary Signs
- Portable Signs

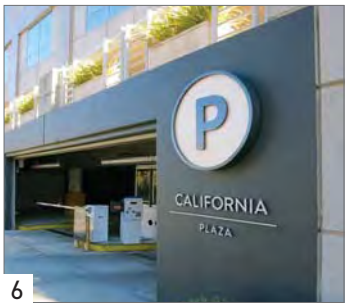
1.	Hand-painted Wall Graphics Example
2 & 5-8.	Building Wall Signs Example
3.	Temporary Graphics and Signs Example
4.	Awning Signs Example
9.	Canopy Signs Example
10.	Projecting or Blade Signs Example
11.	Window Signs Example
12 & 13.	Street and Unit Address Signs Example
14.	Directional Signs Example
15.	Identifying & Freestanding Signs Example
16.	Directional Signs Example & Freestanding Signs Example

1

3

4

5



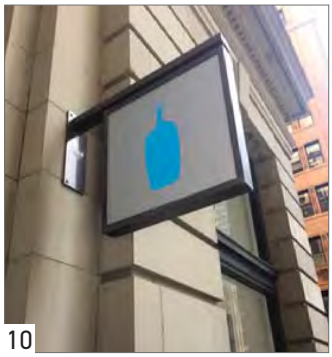
6

2

7

8

9


10

11

12

13

14

15

16

4.29 All Signs

4.29.1 Transparency
4.29.2 Concealed Electrical Signage Elements
4.29.3 Typefaces & Colors
4.29.4 Sign Materials
4.29.5 Graphic Style
4.29.6 Integration

STANDARDS

4.29.1 Transparency

Window signage shall not diminish transparency for the area of the Sign. Where window Signs are used, they shall maintain a high degree of visibility between interior and exterior spaces.

4.29.2 Concealed Electrical Signage Elements

All electrical signage elements such as wires, exposed conduit, junction boxes, transformers, ballasts, switches, and panel boxes shall be concealed from view.

4.29.3 Typefaces & Colors

Sign typefaces shall be legible to approaching vehicles and pedestrians and of a scale that is appropriate with the neighboring buildings, allowing for larger formats in more urban or retail-oriented areas and smaller formats on residential neighborhood streets. Tenants may use their type style and brand on signage.

4.29.4 Sign Materials

High quality materials, workmanship and detailing are encouraged in the design of building Signs. Sign materials and overall scale shall be complimentary to the buildings' architectural materials and thoughtfully integrated into the building's wall detailing and fenestration. Sign materials shall be selected that are durable and weather resistant and appropriate for the marine environment typical of the site. Where window Signs are used, Sign materials shall maintain a high degree of transparency, avoiding large opaque shapes. Refer to FC4- Façade Composition - Material/Color for building materials palette reference examples.

4.29.5 Graphic Style

Visually representational Signs with a creative graphic or iconic character are encouraged to allow for clearer interpretation and a variety of graphic styles. Wall Signs are encouraged to employ individual, dimensional pan-channel lettering and/or logos. Cabinet Signs shall be allowed, but only where integral to the tenant's identity.

4.29.6 Integration

Signage shall be appropriate to the District's buildings and streetscapes; designed to relate to use, composition, scale, and architecture. Signage shall be considered an important architectural and artistic feature within the overall building design.

4.29 All Signs Cont'd

4.29.7 New Technology Signs
4.29.8 Sign Illumination

STANDARDS

4.29.7 New Technology Signs

Signage using new forms of technology, such as dynamic content Signs, digital displays, or light projections may be appropriate where it is integrated into the building façade or behind the window glass. The displays shall be designed, located, oriented, and operated in a manner that has no adverse safety impacts.

Restrictions on New Technology Signs may include, but are not limited to:

- Large format digital displays that may be considered "digital billboards".
- Limiting the hours of operation of the electronic Sign, generally between 5 am and midnight.
- Limiting the amount and frequency of animation, or ensuring the content on dynamic content or digital Signs has a minimum dwell time and transition time of [15] seconds.
- Limiting Sign brightness.
- Locating the Sign inside a business premises and set back from window glazing.
- Orienting the face of the Sign away from the adjoining street network and away from residential buildings / neighborhoods or facing the Green Room or the Bay. No flashing Signs.

4.29.8 Sign Illumination

Building wall, window or projecting Sign lighting may be externally or internally illuminated. Freestanding Sign types may be externally or internally illuminated; or during business hours, directly illuminated. However, cabinet Signs with internally face-lit plastic Sign faces are prohibited.

The amount of Sign illumination hours per day shall be limited to normal business hours, except as noted for electronic Signs.

Decorative, external light source fixtures are encouraged for externally illuminated Signs. However, junction boxes, tubing, conduits and raceways shall be concealed or incorporated into the design of the Sign structure to the greatest extent possible. No exposed LED, neon or other lighting sources is allowed.

1. Digital Display Sign

1

4.29 All Signs Cont'd

4.29.9 Prohibited Signage

STANDARDS

4.29.9 Prohibited Signage

The following types of Signs and Sign conditions are not permitted:

- Signs attached to a building that extend or are located above the roof line of the building to which it is attached
- Wind Signs which are composed of one or more banners, flags, or other objects, except official City, State or Federal flags, mounted serially and fastened in such a manner as to move upon being subjected to pressure by wind
- Revolving Signs which rotate or spin
- Blinking or flashing Signs which exhibit rapidly changing levels of illumination
- Balloon or inflated Signs constructed of materials supported by inflated means
- Billboards, specifically a large graphic panel designed to carry outside advertising
- Posters or handbills of a temporary nature not contained in a designated wall-mounted or freestanding poster case or display fixture
- Signs that obstruct the passage or sight lines of motorists, bicyclists or pedestrians
- Signs that replicate, mimic or could be mistaken as a traffic control device
- Signs with mirror-reflective materials, colors or finishes. Reflective materials exclude LED signs behind glass
- Signs with sound, vibration, odor or other emissions, unless the emission is necessary as part of a community message or to meet applicable disability standards
- Video, moving or flashing Signs
- Exposed LED or neon Signs

4.30 Permanent Signs

4.30.1 Commercial Wall Signage

INTENT

Wall Signs utilizing the building structure as a mounting surface.

DEFINITIONS

"Wall Sign"
A Sign painted directly on the wall or mounted flat against a building wall with its copy or graphics parallel to the wall to which it is attached and not protruding more than the thickness of the Sign.

"Sign Area"
Sign Area is defined as the area of a Sign that is used for display purposes. Sign Area shall be calculated by measuring the size of a rectangle large enough to contain the entire Sign's display, graphics, and text that form an integral part of the display or are used to differentiate such Sign from the background against which it is placed. The calculation of Sign Area excludes the necessary supports or uprights on which such Sign is placed.

STANDARDS

4.30.1 Commercial Wall Signage

Commercial wall signage is used to highlight the building name, district identity, or primary tenant.

One[1] commercial Wall Sign is allowed for each building façade.

For commercial Wall Signs, the maximum height of a Sign affixed to a building shall be [24] ft. from sidewalk grade.

The area of all commercial building Wall Signs shall not exceed [125] sq. ft. for each building frontage. In no case shall any one[1] Wall Sign be taller than five[5] ft. in height.

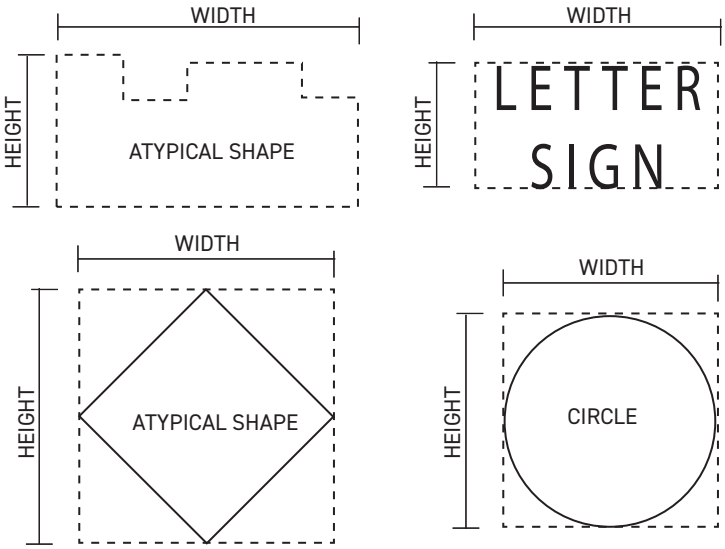


Figure 4.30a: SIGN AREA CALCULATION DIAGRAM

4.30 Permanent Signs Cont'd

4.30.2 Storefront and Retail Wall Signage
4.30.3 Residential Wall Signage

STANDARDS

4.30.2 Storefront and Retail Wall Signage

No more than two[2] Wall Signs per single-tenant retail space are permitted. If a single-tenant retail space has more than one[1] street frontage, an additional Sign beyond the two[2] allowed on the main frontage is permitted on each additional frontage.

The area of all storefront or retail tenant Wall Signs shall not exceed two[2] sq. ft. for each one[1] linear ft. of street frontage occupied by the business measured along the wall to which the Signs are attached, or up to [100] sq. ft. for each street frontage, whichever is less. In no case shall the Wall Sign or combination of Wall Signs cover more than 50% of the surface of any wall, excluding openings.

The maximum height of a storefront or retail Sign affixed to a building shall be the bottom of the window sill of the first story, or [24] ft., whichever is lower.

4.30.3 Residential Wall Signage

Residential Wall Signs shall not exceed [20] sq. ft. total, except for Wall Signs providing the primary identification of multi-unit residential buildings, which shall not exceed [25] sq. ft. and one[1]ft. in height and shall be located at the building entrance, or up to [100] sq. ft. for each building frontage, whichever is less.

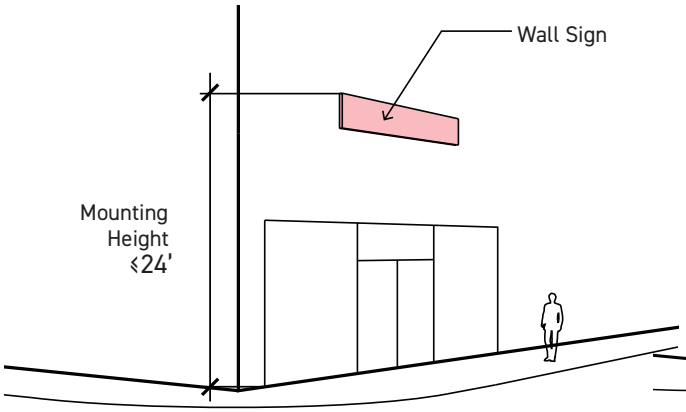


Figure 4.30b: BUILDING WALL SIGN

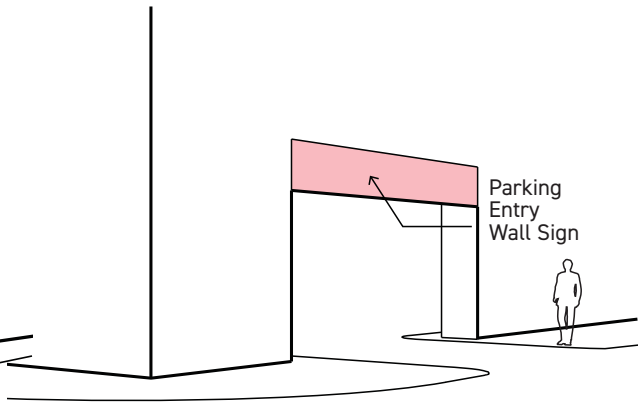


Figure 4.30c: ENTRY WALL SIGN

4.30 Permanent Signs Cont'd

4.30.4 Projecting Signs

INTENT

Projecting Signs are attached to a building and project perpendicularly from the mounting surface. They are intended to provide long distance visibility to approaching vehicles and pedestrians.

DEFINITIONS

"Projection"
The horizontal distance by which the furthermost point used in measuring the area of a Sign extends beyond a Street Property Line or a building Setback line.

STANDARDS

4.30.4 Projecting Signs

No part of a Projecting Sign shall project more than 75% of the horizontal distance from the Property Line to the curb line, or six[6] ft. six[6] in. from face of building, whichever is less. One[1] Projecting Sign is allowed per Ground Floor business and shall not exceed [24] sq. ft. in area. Corner businesses are allowed one[1] primary Projecting Sign per street frontage. Projecting Signs for retail tenants shall be attached below the second floor window sill level.

The height of a Projecting Sign shall not exceed [24] ft., or the height of the wall to which it is attached, or the height of the lowest of any residential windowsill on the wall to which it is attached, whichever is lowest, but bottom of Sign shall be least ten[10] ft. above sidewalk grade. Text shall be no greater than one[1] ft. in height.

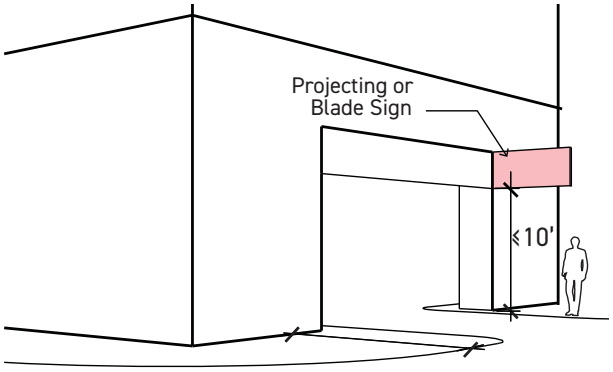


Figure 4.30d: PROJECTING SIGN

4.30 Permanent Signs Cont'd

4.30.5 Window Signs

INTENT

Window Signs provide messaging on, or behind, window glazing at building frontages.

DEFINITIONS

"Window Sign"
A Sign painted or applied directly on the surface of a window glass or placed behind the surface of a window glass.

STANDARDS

4.30.5 Window Signs

Window Signs applied to building glazing shall not cover more than a maximum of 30% of the storefront glazing area. Glazing transparency shall be maintained within the window graphics zone, avoiding large opaque shapes or materials.

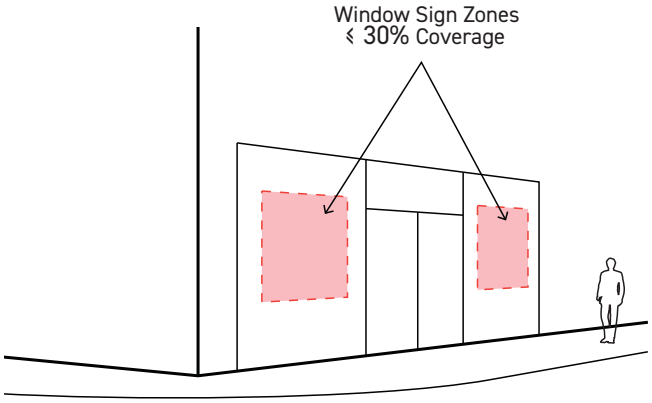


Figure 4.30e: WINDOW SIGNS

4.30 Permanent Signs Cont'd

4.30.6 Identifying, Freestanding, or Directional Signs

INTENT

Identifying Signs serve as the primary project or parcel identification, and are placed at the primary district entry points.

A Freestanding Sign is permitted in lieu of a Projecting Sign, if the building or buildings are recessed from the Street Property Line.

DEFINITIONS

"Freestanding & Directional"
Signs detached from the building and in no part supported by the building providing identification, information or direction to a building or group of buildings.

STANDARDS

4.30.6 Identifying, Freestanding, or Directional Signs

The maximum height for free-standing or Identifying Signs shall not exceed [12] ft., nor exceed [24] sq. ft. in total area. The existence of a Freestanding business Sign will preclude the placement of a Freestanding Identifying Sign on the same lot.

The location of pedestrian Directional Signs associated with a building or group of buildings shall not exceed a maximum height of eight[8] ft., nor more than [12] sq. ft. in total area.

Freestanding or Identifying Signs shall be limited to the Setback zone.

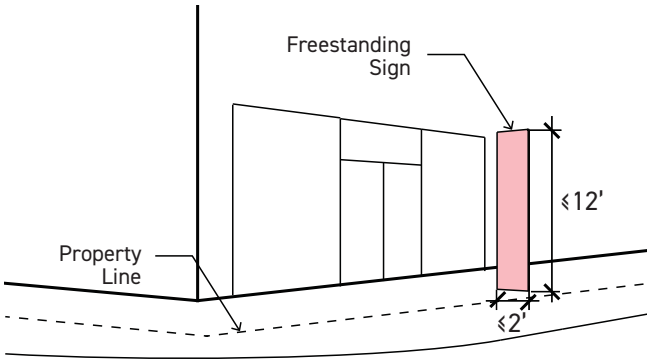


Figure 4.30f: FREESTANDING SIGNS

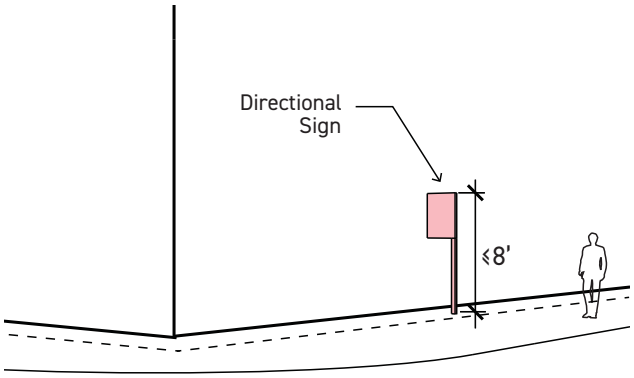


Figure 4.30g: DIRECTIONAL SIGNS

4.30 Permanent Signs Cont'd

4.30.7 Canopy/Awning Signage

INTENT

Signage or graphics messaging applied to an awning or projecting canopy structure in lieu of Projecting Signs.

DEFINITIONS

"Awning"
A light roof-like structure, supported entirely by the exterior wall of a building, consisting of a moveable frame covered with approved materials, extending over doors and windows, with the purpose of providing protection from sun and rain and embellishment of the façade.

"Canopy"
A light roof-like structure, supported by the exterior of a building, consisting of a fixed or frame covered with approved cloth, plastic or metal, with the purpose of providing protection from sun and rain and embellishment of the façade.

STANDARDS

4.30.7 Canopy/Awning Signage

Any signage on projecting building Awnings or Canopies shall not exceed a total of [24] sq. ft.. Residential projects may utilize signage on Awnings over the primary multi-unit entryway. Awning or Canopy Sign copy shall be non illuminated ,constructed of metal or fabric covered metal frame.

The bottom of any Awning or Canopy Sign shall be at least ten[10] ft. above finished grade.

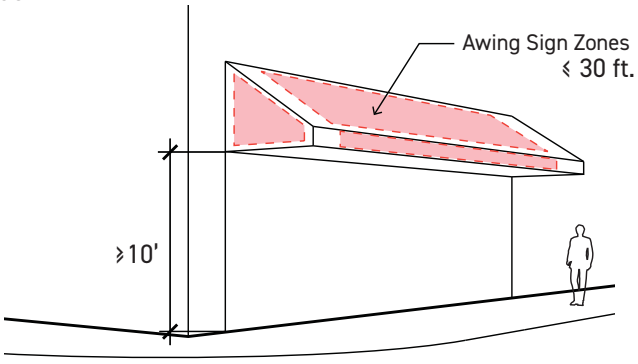


Figure 4.30h: AWNING SIGNS ZONES

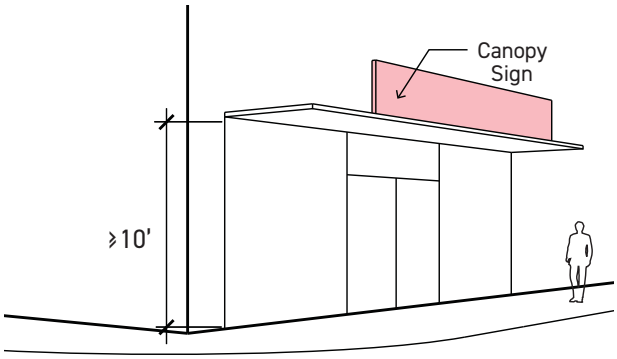


Figure 4.30i: CANOPY SIGNS

4.30 Permanent Signs Cont'd

4.30.8 Street or Unit Address Signs, Nameplates

INTENT

Street address or unit address signs provide address identification visible from streets and walkways. Nameplate Signs designate the names or individual name and professional occupations of persons in a building.

STANDARDS

4.30.8 Street or Unit Address Signs, Nameplates

Street address or unit identification applied to the building at entries shall be clearly visible from street, and shall comply with San Francisco Fire Department requirements, and shall not exceed eight[8] sq. ft. in total area. Nameplate Signs also shall be associated with the building wall adjacent to building entries, and shall not exceed two[2] sq. ft. in total area.

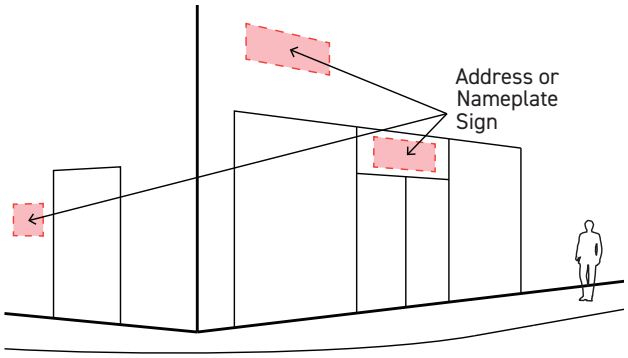


Figure 4.30j: ADDRESS OR NAMEPLATE SIGNS

4.31 Temporary Signs

4.31.1 Temporary Signs

INTENT

Freestanding, window-mounted, wall-mounted or barricade graphics or signage intended to be temporary in nature and duration.

1

1. Temporary Signs Example

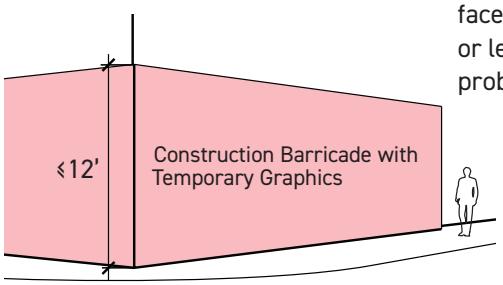


Figure 4.31a: TEMPORARY BARRICADE GRAPHICS ZONES

STANDARDS

4.31.1 Temporary Signs

Temporary, freestanding Signs shall not exceed [12] ft. in height, nor exceed a total area of [50] sq. ft.

Temporary construction project identification Signs or graphics shall not exceed [500] sq. ft. and shall be removed within seven[7] days of contract completion. Project signage is limited to one[1] Sign per frontage. Where there is more than one entity (e.g. general contractor, architect, broker etc.), a single project Sign shall be used, stating the name and contact information of all entities. Opaque storefront signage or coverings used during construction at Ground Floor storefronts such as applied film or other temporary window obscuring techniques are allowed while spaces remain unoccupied.

Temporary signage areas/applications shall be maintained free of posters, graffiti and in an otherwise presentable manner.

Temporary construction safety fencing, barricades or scaffolding are allowed to be covered with construction wrap/super graphics. Construction wrap/super graphics are allowed placed along the full length of temporary safety fencing or scaffolding up to [12] ft. high, but shall not restrict or obstruct vehicular or pedestrian access to the construction site, or information required to be publicly displayed, including but not limited to contractor contact information, regulatory and directional signage.

Construction wrap shall not be affixed to a fence, barricade or scaffolding unless the fence, barricade and/or scaffolding is constructed to withstand the consequence of wind and other loads.

All construction wrap/super graphics shall bear the name of the installer and a local or toll-free phone number, labeled “Service Number”, located on the face on the wrap at a minimum size of two[2] in., where citizens may contact or leave word for the installer of the banner regarding maintenance or repair problems.

4.31 Temporary Signs Cont'd

4.31.2 Portable Signs

INTENT

Portable Signs are movable Sign units placed adjacent to the business or tenant entry or frontage.

DEFINITIONS

"Portable"
Signs which are freestanding, movable and not permanently anchored or attached to the ground.

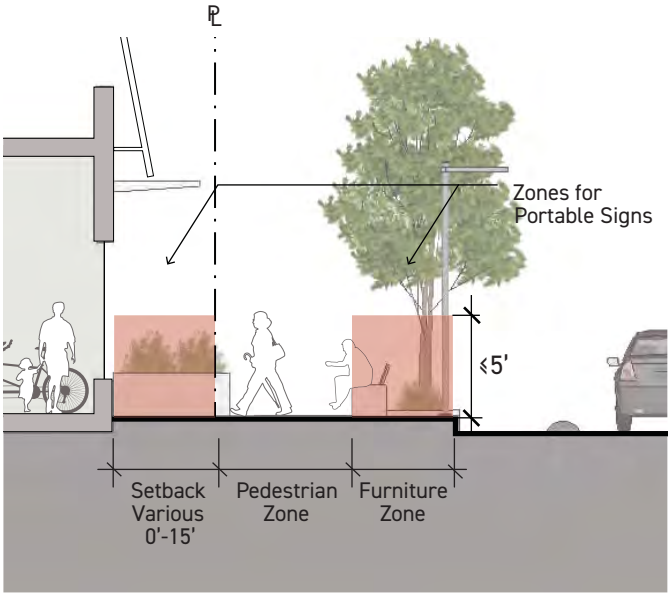
STANDARDS

4.31.2 Portable Signs

Portable Signs, such as sandwich boards, "A frames" or similar temporary Sign structures, are permitted and limited to no more than one[1] per business. All Portable Signage shall be located within frontage or furnishing zones not to exceed [20] ft. wide on sidewalks, or within open spaces fronting the businesses. Portable Signage shall not exceed five[5] ft. in height, nor be larger than ten[10] sq. ft. in area.

Portable Signs shall be sited so as to not obstruct the passage or sight lines of motorists, bicyclists or pedestrians.

1



1. Portable Signs Example

Figure 4.31b: PORTABLE SIGNS PLACEMENT ZONES

4.32 Building Lighting

4.32.1 Glare Reduction
4.32.2 Energy Consumption

INTENT

Building designs are encouraged to use lighting in innovative and engaging ways to create an attractive and secure environment, both during the day and at night. However, lighting shall not dominate the urban character of the neighborhood. Lighting shall be integrated with the design of the building, in harmony with building architecture, highlighting significant architectural features where appropriate; such as Signs, entrances, walkways, or display windows.

GUIDELINES

4.32.1 Glare Reduction

Lighting shall be designed to minimize glare and light trespass into neighboring buildings.

4.32.2 Energy Consumption

Smart lighting technology shall be incorporated where feasible or practical, such as those with automated controls that adjust based on occupancy or daylight availability, or use motion sensors. High-efficiency technology such as LED lighting with advanced controls, shall be utilized to minimize energy consumption.

4.32 Building Lighting Cont'd

4.32.3 Building Entrances
4.32.4 Dark Sky
4.32.5 Dark Sky Exception

STANDARDS

4.32.3 Building Entrances

Lighting at Building Entrances shall be provided for security. Pedestrian paths into and around the ground floor and stairways linking parking structures to public ways of the parking structure shall be well-lit at night.

GUIDELINES

4.32.4 Dark Sky

Lighting shall be shielded to prevent light from emitting above a 90-degree angle. Any lighting source located on rooftop parking shall be a full cutoff type.

4.32.5 Dark Sky Exception

Temporary accent lighting may be appropriate to create art, illuminate art, or highlight architectural features.

1

2

1. & 2. Entrances and Ground Level Lighting Examples

4.33 Private Infrastructure

4.33.1 Odor Control at the Recycled Water Facility
4.33.2 Screening of Eco-District or Eco-Grid Utilities Visible at Grade

INTENT

To implement odor control methods at the Recycled Water Treatment Facility and screening controls for above grade infrastructure on private property to mitigate any adverse impacts of utilities and equipment on the public realm.

GUIDELINES

4.33.1 Odor Control at the Recycled Water Facility

If the recycled water facility is constructed, the facility's odor control methods identified in the supporting environmental analysis will be implemented.

Odor control methods could include enclosed and covered process tanks, a suction blower to capture air from one or more unit processes, a scrubber system, and the off-site processing of sludge.

The operator shall post a telephone number in a conspicuous place at the facility to accept odor complaints, and in the highly unlikely event that the facility develops an odor issue, the existing odor control measures will be repaired or maintained, or additional odor control measures will be implemented until the odor issue is completely addressed.

4.33.2 Screening of Eco-District or Eco-Grid Utilities Visible at Grade

Enclosure or Screening shall be designed as a logical extension of and/or compatible with the adjacent building and an integral part of the overall building design. Screening material and detailing shall be comparable in quality to that of the rest of the building. Landscaping alone shall not qualify as Screening of at-grade utilities.

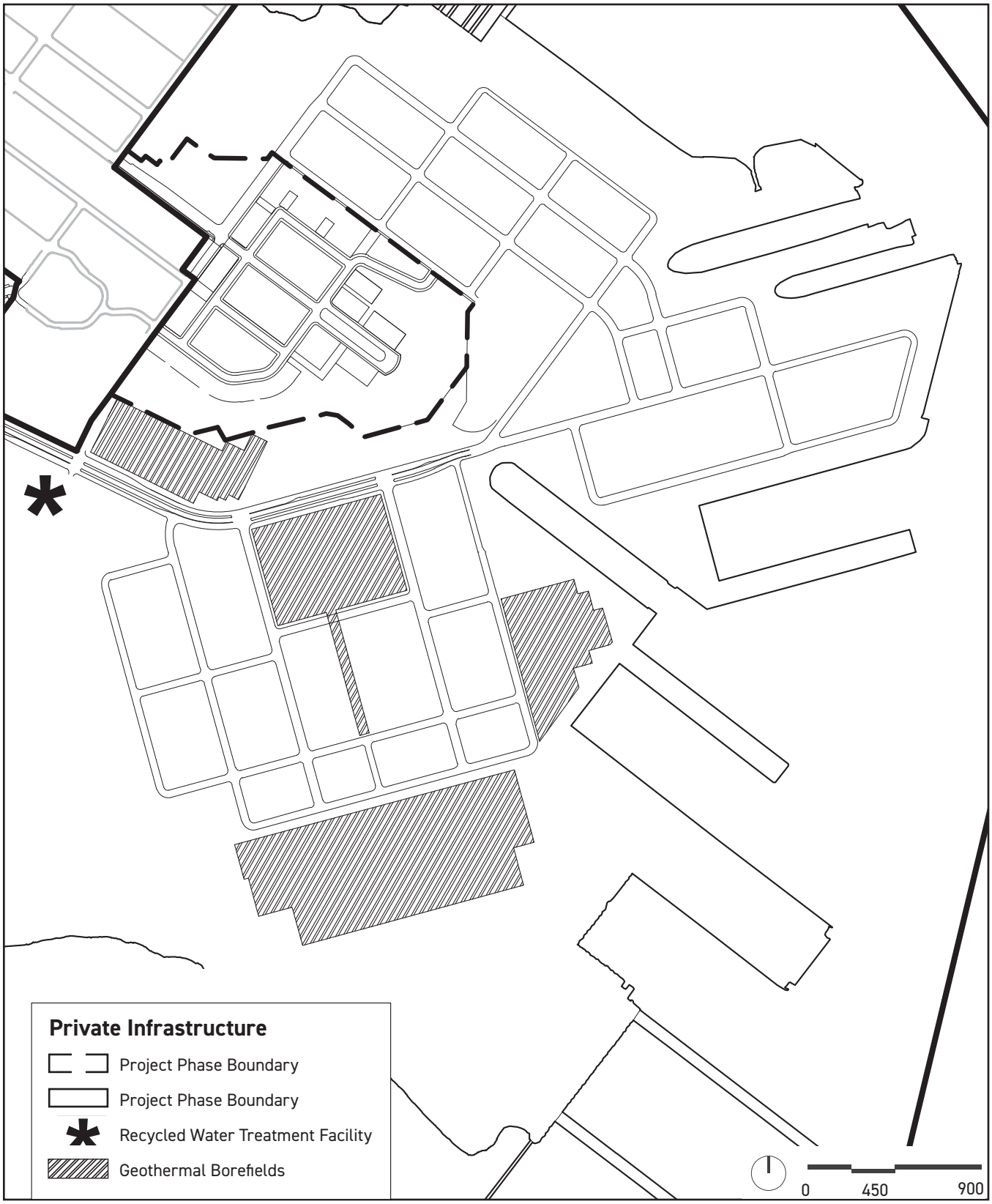


Figure 4.33a: PRIVATE INFRASTRUCTURE

5 IMPLEMENTATION

5.1 Review & Approval of Design Documents 167

5.2 Deviations and Variances 168

5.3 Process for Amendment of the Design for Development Documents 169

5 Implementation

5.1 Review and Approval of Design Documents

The Design Review and Document Approval Procedures (DRDAP) establishes the processes by which applications for approvals are to be submitted and subsequently reviewed by the Commission of the Office of Community Investment and Infrastructure (OCII). Specific to the D4D, the DRDAP further establishes the processes and time lines for OCII review of architectural and design documents– including Schematic Design, Design Development and Construction Documents – for various improvements within the Shipyard that are subject to the Disposition and Development Agreement or Owner Participation Agreement.

The OCII and City agencies having jurisdiction have entered into an Interagency Cooperation Agreement that sets forth the City agencies' obligations in connection with review and approval of applications pursuant to the DRDAP, as well as review and approval of various permits, subdivision maps, and other authorizations required from the City.

As provided in the Shipyard Plan, OCII review of any application relating to development within the Shipyard shall be evaluated for consistency with the allowable land use set forth in the HPS Redevelopment Plan and in this Design for Development document.

5.2 Deviations and Variances

The owner of any property that is subject to this Design for Development document may make a written request for either a deviation or a variance from the design standards or any other provision of this document. A deviation is a minor modification no greater than ten[10] percent of a dimensional or numerical building standard. Only the following standards may be considered for a Deviation:

4.1.1 Block Sizes (dimensions only)
4.2.1 Building Setback
4.4.4 Roof Area Building Height Exception
4.4.5 Street Wall Requirement (Required Percentage of Build-up Only)
4.10.1 Projections
BM1 Significant Building Breaks (dimensions only)
BM2 Upper Floor Stepbacks (dimensions only)
BM3 Façade Variation (dimensions only)
4.11.3 Active Ground Floor Depth
4.11.9 Active Use Ground Floor Transparency
4.12.3 Ground Floor Residential Unit Entries
4.13.5 Parking and Service Entrances (dimensions only)
4.17.1 Ground Floor Blank Walls
4.17.2 Upper Floor Blank Walls
4.18.2 Commercial Daylight
4.22.1 Skyway Connections (dimensions only)
4.23.1 Green Room Datum
4.26.1 Private Open Space
4.26.4 Fences
4.27.4 Street Trees

Deviations must meet the purpose and intent statements of the Design for Development and may be authorized by the OCII Director. To the extent reasonably possible, proposed Deviations must be identified at the time of Schematic Design Document submittal pursuant to the DRDAP. The OCII Director's approval or disapproval of proposed Deviations shall be limited to a determination of its compliance with the Design for Development, the Redevelopment Plan and any applicable Redevelopment Requirements. Should a request for Deviation be made after OCII Commission approval of Schematic Design, the OCII Director, in her or his sole discretion, may seek comment and guidance from the public and OCII Commission on the granting of any deviations.

Variance decisions must be made by the OCII Commission. A request for a variance must state fully the grounds for the application and include relevant facts in support of the application. The OCII Commission may grant a variance from development controls under the following circumstances:

> Due to unique physical constraints or other circumstances applicable to the property, the enforcement of development regulations would result in difficulties for the development and create undue hardship for the owner or developer, or would constitute an unreasonable limitation beyond the intent of the D4D; and
>
> The effect of the variance would be in harmony with the goals of the D4D, and would not be materially detrimental to public welfare, neighboring property or nearby improvements.

The OCII Commission's decision to grant or deny a variance is final, and not appealable to either the San Francisco Planning Commission or the Board of Supervisors.

5.3 Process for Amendment of the Design for Development Document

D4D amendments require approval of both the San Francisco Planning Commission and the OCII Commission.

6 APPENDIX

6.1	Checklist	172
6.2	Building Design Application Studies	180
6.3	Sitewide Diagrams	190
6.4	Term Definitions	193
6.5	List of Figures	200
6.6	Image Credits	202

6.1 Checklist

Building Design

STANDARD		NOTES
☐ **4.1**	**Block Sizes and Mid-Block Breaks**	
☐ 4.1.1	Mid-Block Break Locations	
☐ **4.2**	**Building Setback**	
☐ 4.2.1	Building Setbacks	
☐ 4.2.2	Mid-Block Break Setback	
☐ **4.3**	**Developable Area Coverage**	
☐ 4.3.1	Developable Area Coverage	
☐ **4.4**	**Building Height**	
☐ 4.4.1	Building Height	
☐ 4.4.2	MBB Building Stepbacks	
☐ 4.4.3	Building Height Exceptions	
☐ 4.4.4	Roof Area Building Height Exception	
☐ 4.4.5	Street Wall	
☐ 4.4.6	Implied Façade	
☐ 4.4.7	Street Wall Exceptions for Adaptive Reuse	
☐ 4.4.8	Street Wall Exceptions for Recessed Areas	
☐ **4.5**	**Architectural Controls by Building Scale**	
☐ 4.5.1	Architectural Controls by Building Scale	
☐ 4.5.2	Maximum Plan Length	
	Flow Chart for Architectural Controls	
☐ **4.6**	**FC** **Façade Composition**	
☐ 4.6.1	Façade Composition (FC)	
☐ 4.6.2	Block to Block Variation	
☐	**FC1** Façade Modulation Strategies	
☐	**FC2** Façade Articulation Strategies	
☐	**FC3** Façade Fenestration Strategies	
☐	**FC4** Material/Color Strategies	

STANDARD			NOTES
☐ **4.7**	**BM**	**Bulk and Massing**	
☐ 4.7.1	Bulk and Massing Approach		
☐	BM1	Significant Building Breaks	
☐	BM2	Upper Floor Stepbacks	
☐	BM3	Façade Variation (FV)	
☐ **4.8**	**BE/PE**	**Building and Public Realm Enhancements**	
☐ 4.8.1	Building and Public Realm Enhancement Measures for M, L, XL Buildings		
☐	BE1	Apply One[1] Additional Bulk/Massing Control	
☐	BE2A	Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Per Street Fronting Elevation)	
☐	BE2B	Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Multiple Street Fronting Elevations)	
☐	BE3	Provide Visual and Physical Access to Interior Courtyard and/or Atrium	
☐	BE4	24/7 Public Access to Open Space	
☐	BE5	Reduction in Floor Plate Area of Upper Floors	
☐	BE6	Expressive Entrances	
☐	BE7	Increased Transparency	
☐	BE8	Distinct Corner Architectural Feature	
☐	BE9	Roof Expression	
☐	BE10	Additional Active Entrances	
☐	BE11	Additional Ground Floor Activation	
☐	PE1	Public Access through the Building	
	PE2	Public Access through Open Space Connection	
☐ **4.9**	**Tower Controls**		
☐ 4.9.1	Tower Locations		
☐ 4.9.2	Tower Floor Aspect Ratio		
☐ 4.9.3	Tower Height Variation		
☐ 4.9.4	Tower Massing and Articulation		
☐ 4.9.5	Tower Mechanical Equipment		
☐ 4.9.6	Tower Mechanical Equipment Screening		

6.2 Checklist cont'd

STANDARD		NOTES
☐ **4.10**	**Projections**	
☐ 4.10.1	Projections	
☐ 4.10.2	Habitable Projections	
☐ 4.10.3	Non-Habitable Projections	
☐ 4.10.4	Other Projections	
☐ 4.10.5	Projection Exemptions	
☐ 4.10.6	Maximum Projection Area	
☐ **4.11**	**Ground Floor Activation**	
☐ 4.11.1	Zone 1 and 2 Active Entrances	
☐ 4.11.2	Zone 3 Active Entrances	
☐ 4.11.3	Active Ground Floor Depth	
☐ 4.11.4	Ground Floor Height	
☐ 4.11.5	Waterfront Activation	
☐ 4.11.6	Guidelines for Ground Floor Residential Design	
☐ 4.11.7	Ground Floor Activation	
☐ 4.11.8	Shared Parking Structures Activation	
☐ 4.11.9	Ground Floor Active Use Transparency	
☐ 4.11.10	Ground Floor Active Use Glass and Glazing	
☐ **4.12**	**Building Entries**	
☐ 4.12.1	Building Entries	
☐ 4.12.2	Green Room Building Entries	
☐ 4.12.3	Ground Floor Residential Unit Entries	
☐ 4.12.4	Building Entries	
☐ 4.12.5	Guidelines for Ground Floor Residential Design	
☐ **4.13**	**Parking and Service Entrances**	
☐ 4.13.1	Parking and Service Entrances Locations	
☐ 4.13.2	Combined Parking and Service Entrances	
☐ 4.13.3	Separate Parking and Service Entrances	
☐ 4.13.4	Maximum Parking and Service Entrances	
☐ 4.13.5	Parking and Service Entrances	
☐ 4.13.6	Parking and Service Entrances (Blocks 38 & 45)	
☐ 4.13.7	Residential Mechanical Parking	

STANDARD		NOTES
☐ **4.14**	**Screening**	
☐ 4.14.1	Screening	
☐ 4.14.2	Screening of Utilities Visible at Grade	
☐ 4.14.3	Screening Materials	
☐ 4.14.4	Screening for Rooftop Equipment	
☐ 4.14.5	Screening for Upper Floor Parking	
☐ 4.14.6	Screening for Ground Floor Parking	
☐ 4.14.7	Rooftop Screening for Parking	
☐ **4.15**	**Shared Parking Structures**	
☐ 4.15.1	Shared Parking Structure Locations	
☐ 4.15.2	Number of Parking Structures	
☐ 4.15.3	Shared Parking Structure Design	
☐ 4.15.4	Convertible Shared Parking Structures	
☐ 4.15.5	Floor Heights for Convertible Shared Parking Structures	
☐ 4.15.6	Shared Parking Structure Lighting	
☐ 4.15.7	Shared Parking Structure Materials	
☐ 4.15.8	Shared Parking Structure Ground Floor Uses	
☐ **4.16**	**Rooftops**	
☐ 4.16.1	Rooftop Façades	
☐ **4.17**	**Blank Walls**	
☐ 4.17.1	Ground Floor Blank Walls	
☐ 4.17.2	Upper Floor Blank Walls	
☐ **4.18**	**Daylight**	
☐ 4.18.1	Residential Daylight	
☐ 4.18.2	Commercial Daylight	

6.3 Checklist cont'd

STANDARD		NOTES
☐ **4.19**	**Façade Material**	
☐ 4.19.1	Bird-Safe Design	
☐ 4.19.2	Material Quality	
☐ 4.19.3	Material Selection	
☐ 4.19.4	Ground Floor Materials	
☐ 4.19.5	Marine Environment Materials	
☐ 4.19.6	Prohibited Materials	
☐ **4.20**	**Class I - Bicycle Parking**	
☐ 4.20.1	Bicycle Parking Capacity	
☐ 4.20.2	Bicycle Parking Location	
☐ **4.21**	**Vehicular Parking and Loading**	
☐ 4.21.1	Vehicle Parking and Loading	
☐ **4.22**	**Skyway Connections**	
☐ 4.22.1	Skyway Connections	
☐ **4.23**	**Green Room Datum**	
☐ 4.23.1	Green Room Datum	
☐ **4.24**	**Adaptive Reuse**	
☐ 4.24.1	Adaptive Reuse	
☐ 4.24.2	Adaptive Reuse Exemptions	
☐ **4.25**	**Key Sites Blocks 28 and 40**	
☐ 4.25.1	Key Sites Blocks 28 & 40	

Private Open Space

STANDARD		NOTES
☐ **4.26**	**Private Open Space**	
☐ 4.26.1	Private Open Space	
☐ 4.26.2	Private Common Open Space on Waterfront Blocks	
☐ 4.26.3	Private Setbacks	
☐ 4.26.4	Fences	
☐ 4.26.5	Defensible Space	
☐ 4.26.6	Orientation	
☐ 4.26.7	Planting Palette	
☐ 4.26.8	Irrigation	
☐ **4.27**	**Private Open Space - Mid-Block Breaks**	
☐ 4.27.1	Public Access	
☐ 4.27.2	Throughway Dimensions	
☐ 4.27.3	Surfaces	
☐ 4.27.4	Street Trees	
☐ 4.27.5	Lighting	
☐ 4.27.6	Community Spaces	
☐ 4.27.7	Landscaping	
☐ 4.27.8	Minimizing Vehicular Speeds	

6.4 Checklist cont'd

Signage

STANDARD		NOTES
☐ **4.28**	**Building Signage**	
☐ **4.29**	**All Signs**	
☐ 4.29.1	Transparency	
☐ 4.29.2	Concealed Electrical Signage Elements	
☐ 4.29.3	Typefaces & Colors	
☐ 4.29.4	Sign Materials	
☐ 4.29.5	Graphic Style	
☐ 4.29.6	Integration	
☐ 4.29.7	New Technology Signs	
☐ 4.29.8	Sign Illumination	
☐ 4.29.9	Prohibited Signage	
☐ **4.30**	**Permanent Signs**	
☐ 4.30.1	Commercial Wall Signage	
☐ 4.30.2	Storefront and Retail Wall Signage	
☐ 4.30.3	Residential Wall Signage	
☐ 4.30.4	Projecting Signs	
☐ 4.30.5	Window Signs	
☐ 4.30.6	Identifying, Freestanding, or Directional Signs	
☐ 4.30.7	Canopy/Awning Signage	
☐ 4.30.8	Street or Unit Address Signs Nameplates	
☐ **4.31**	**Temporary Signs**	
☐ 4.31.1	Temporary Signs	
☐ 4.31.2	Portable Signs	

Lighting

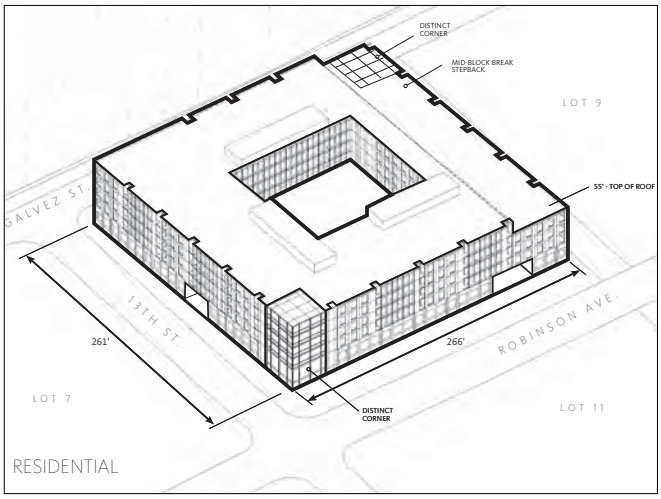
STANDARD		NOTES
☐ **4.32**	**Building Lighting**	
☐ 4.32.1	Glare Reduction	
☐ 4.32.2	Energy Consumption	
☐ 4.32.3	Building Entrances	
☐ 4.32.4	Dark Sky	
☐ 4.32.5	Dark Sky Exemption	

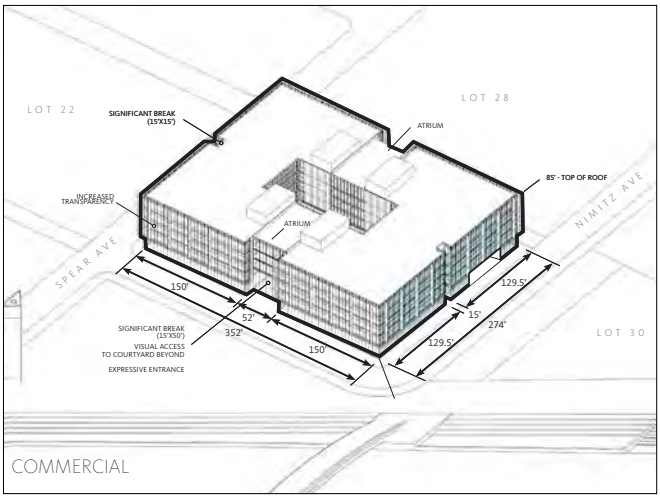
Private Infrastructure

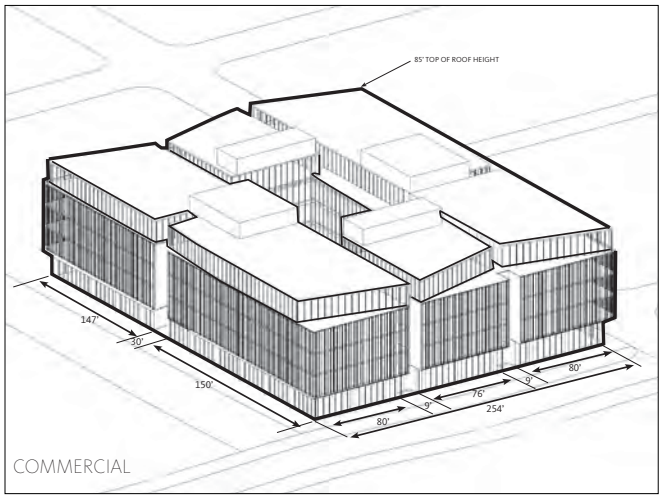
☐ **4.33**	**Odor Control at the Recycled Water Facility**	
☐ 4.33.1	Odor Control at the Recycled Water Facility	

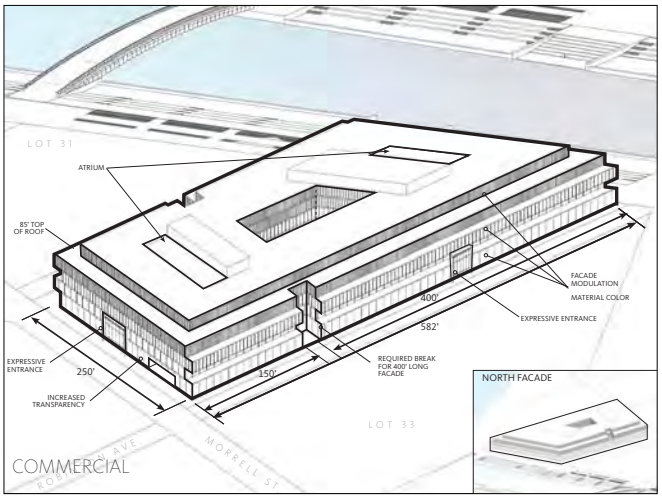
6.5 Building Design Application Studies

The following building studies illustrate how the Guidelines and Standards apply in combination for M, L and XL buildings to support the vision for HPS2. These options illustrate an example of real world applications and the building envelopes do not necessarily maximize allowable block coverage. Selected controls and enhancement measures are indicated in bold. These designs are for illustrative purposes only.






85' TOP OF ROOF HEIGHT
147'
30'
150'
80'
9'
76'
9'
254'
80'
COMMERCIAL

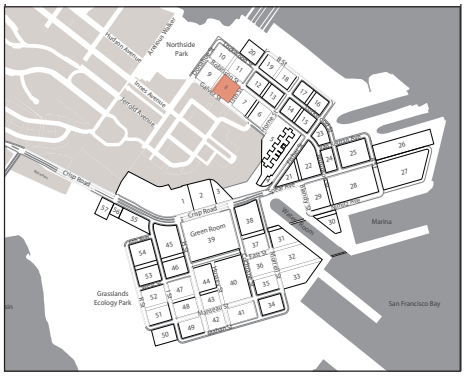

LOT 31
ATRIUM
85' TOP OF ROOF
FACADE MODULATION
MATERIAL COLOR
EXPRESSIVE ENTRANCE
400'
582'
EXPRESSIVE ENTRANCE
250'
REQUIRED BREAK FOR 400' LONG FACADE
150'
INCREASED TRANSPARENCY
NORTH FACADE
LOT 33
MORRELL ST
COMMERCIAL

6.5.3 MEDIUM BUILDING (RESIDENTIAL - BLOCK 8)

BUILDING SIZE:

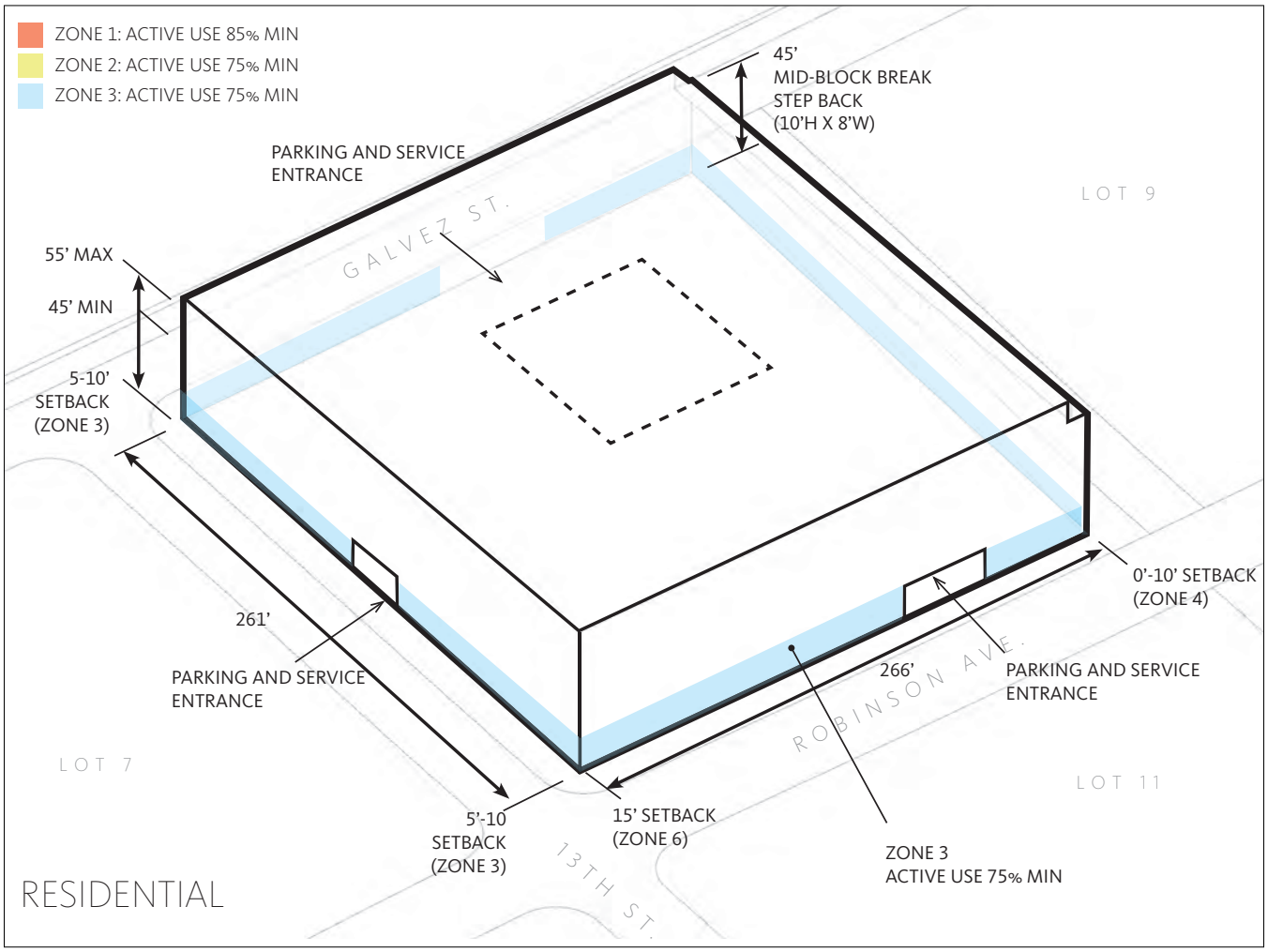
M

1 Bulk and Massing Control
and
1 Building Enhancement or
1 Public Realm Enhancement



SITE

BUILDING DESIGN STANDARDS
Zoning: Residential
Lot Area: ~ 69,233 SF
Developable Area:
0'-40' : 100%
41'-95' : 75%
Gross Floor Area: 311,549 SF
Setback: 5'-10' (Zone 3), 0'-10' (Zone 4-MBB), 15' (Zone 6)
Plan Length: 250'
Number of Stories: 5
Building Height: 45' Min / 55' Max)
Street Wall: 50%/20' (Typical)



STEP 1

FACADE COMPOSITION (FC), PICK TWO

FC1. Façade Modulation Strategies
FC2. Façade Articulation Strategies
FC3. Façade Fenestration Strategies
FC4. Material/Color Strategies

STEP 2

BULK AND MASSING (BM)

BM1. Significant Building Breaks
BM2. Upper Floor Stepbacks
BM3. Façade Variation (pick two)
- Façade Modulation
- Façade Articulation
- Fenestration/ Transparency
- Material Color

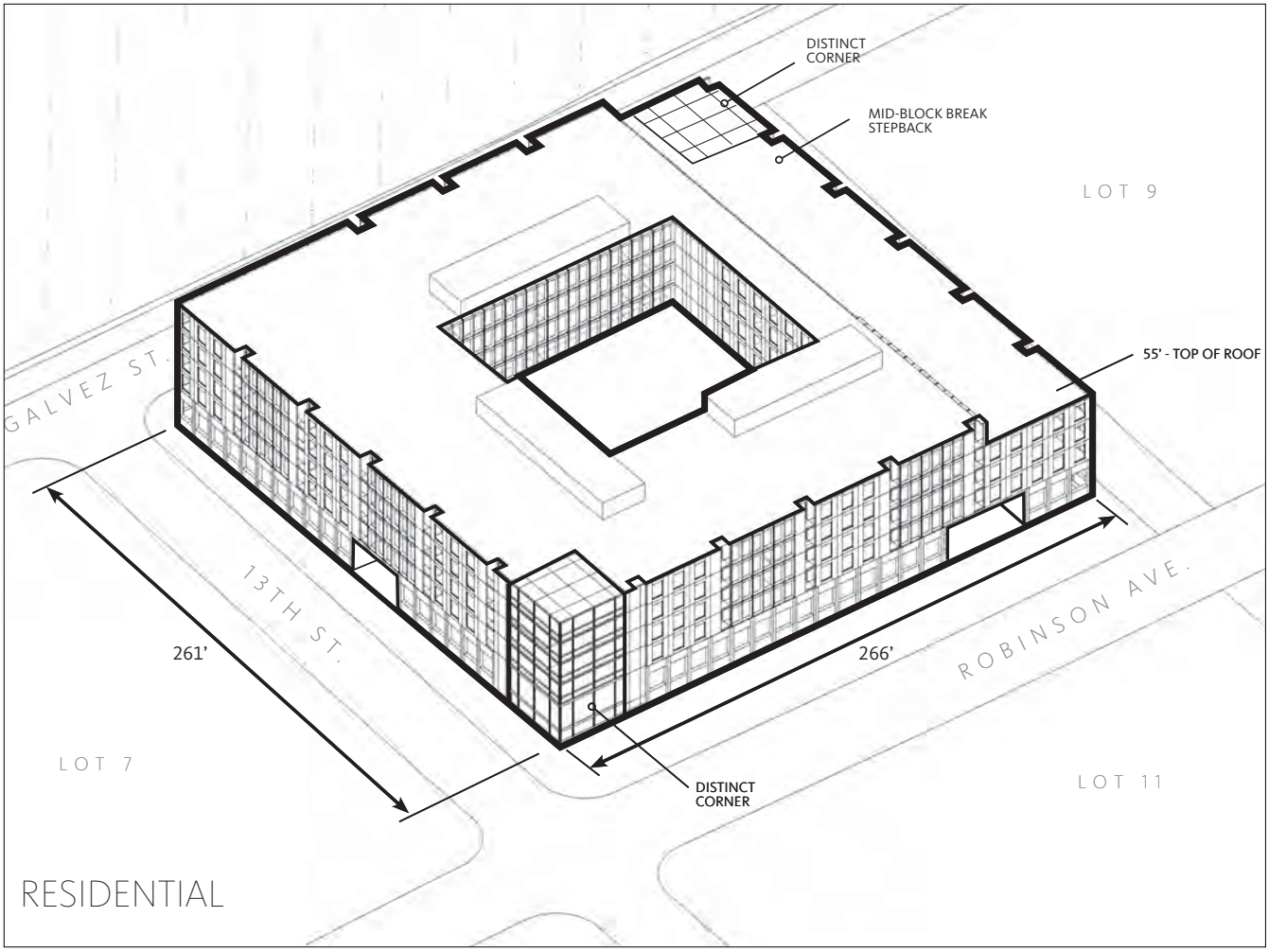
STEP 3

BUILDING ENHANCEMENT (BE)

BE1. Apply One [1] Additional Bulk/Massing Control
BE2A. Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Per Street Fronting Elevation)
BE2B. Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Multiple Street Fronting Elevations)
BE3. Provide Visual and Physical Access to Interior Courtyard and/or Atrium
BE4. Permanently Open Public Access to Open Space
BE5. Reduction in Floor Plate Area of Upper Floors
BE6. Expressive Entrances
BE7. Increased Transparency
BE8. Distinct Corner Architectural Feature
BE9. Roof Expression
BE10. Additional Active Entries
BE11. Additional Ground Floor Activation

PUBLIC REALM ENHANCEMENT (PE)

PE1. Public Access Through the Building
PE2. Public Access though Open Space Connection

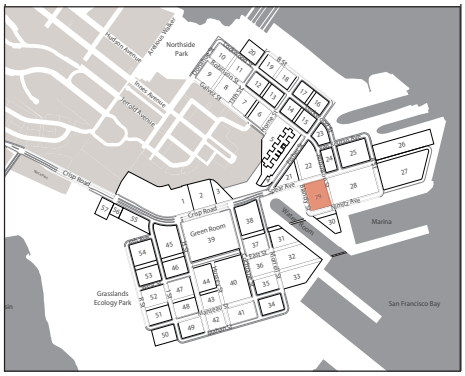


6.5.4 LARGE BUILDING (COMMERCIAL - BLOCK 29)

BUILDING SIZE:

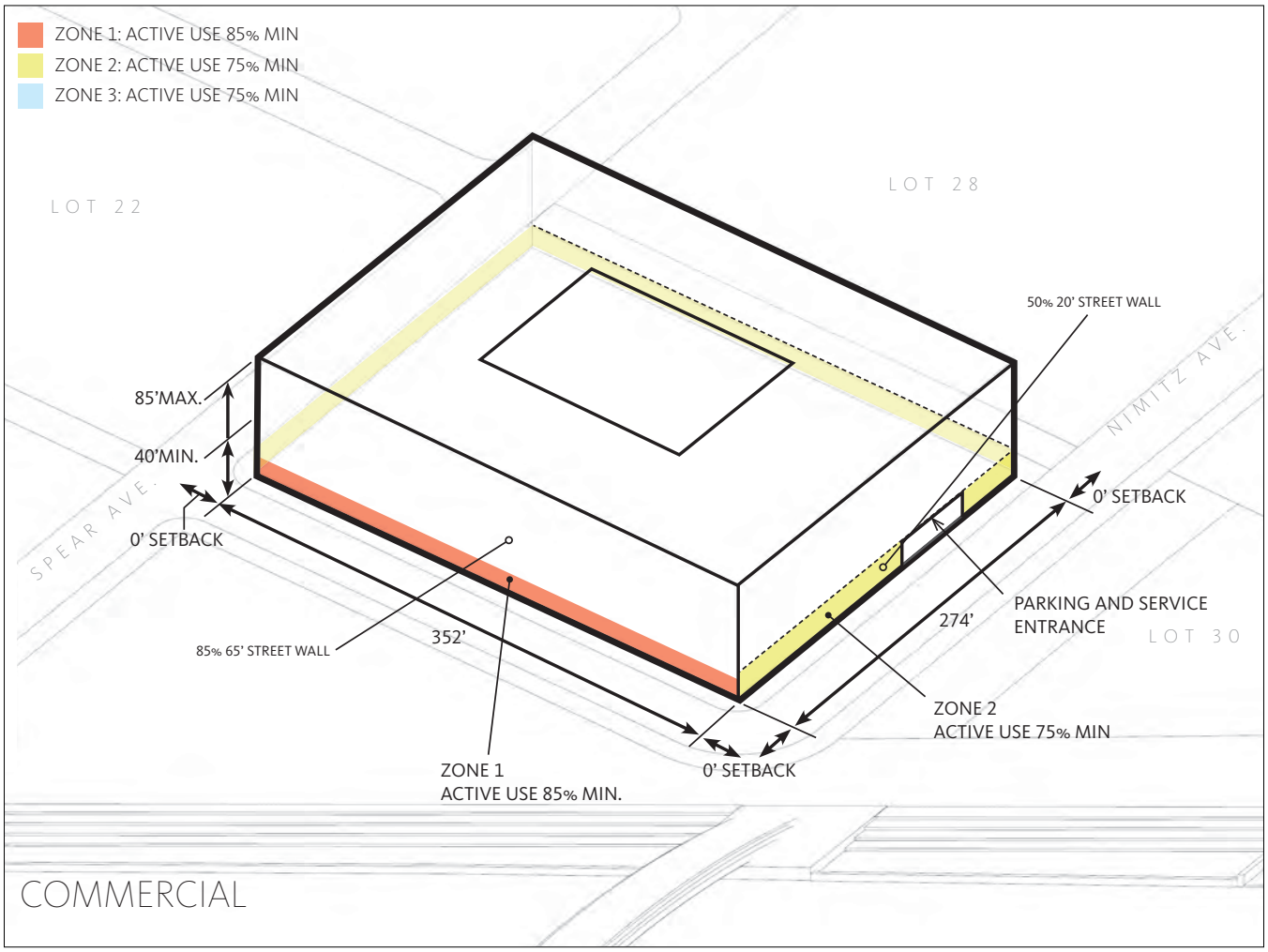
L

1 Bulk and Massing Control
and
3 Building Enhancements
or
1 Building Enhancement and
1 Public Realm Enhancement



SITE

BUILDING DESIGN STANDARDS
Zoning: Commercial
Lot Area: 96,478 SF
Developable Area:
0-40' : 100%
41'-95' : 90%
96'-120' : 80%
Gross Floor Area: 410,032 SF
Setback: 0' (Zone 1)
Plan Length: 350'
Number of Stories: 5
Building Height: 40' Min / 85' Max)
Street Wall: 85%/60', 50%/20'



STEP 1

FACADE COMPOSITION (FC), PICK TWO

FC1. Façade Modulation Strategies
FC2. Façade Articulation Strategies
FC3. Façade Fenestration Strategies
FC4. Material/Color Strategies

STEP 2

BULK AND MASSING (BM)

BM1. Significant Building Breaks
BM2. Upper Floor Stepbacks
BM3. Façade Variation (pick two)
- Façade Modulation
- Façade Articulation
- Fenestration/ Transparency
- Material Color

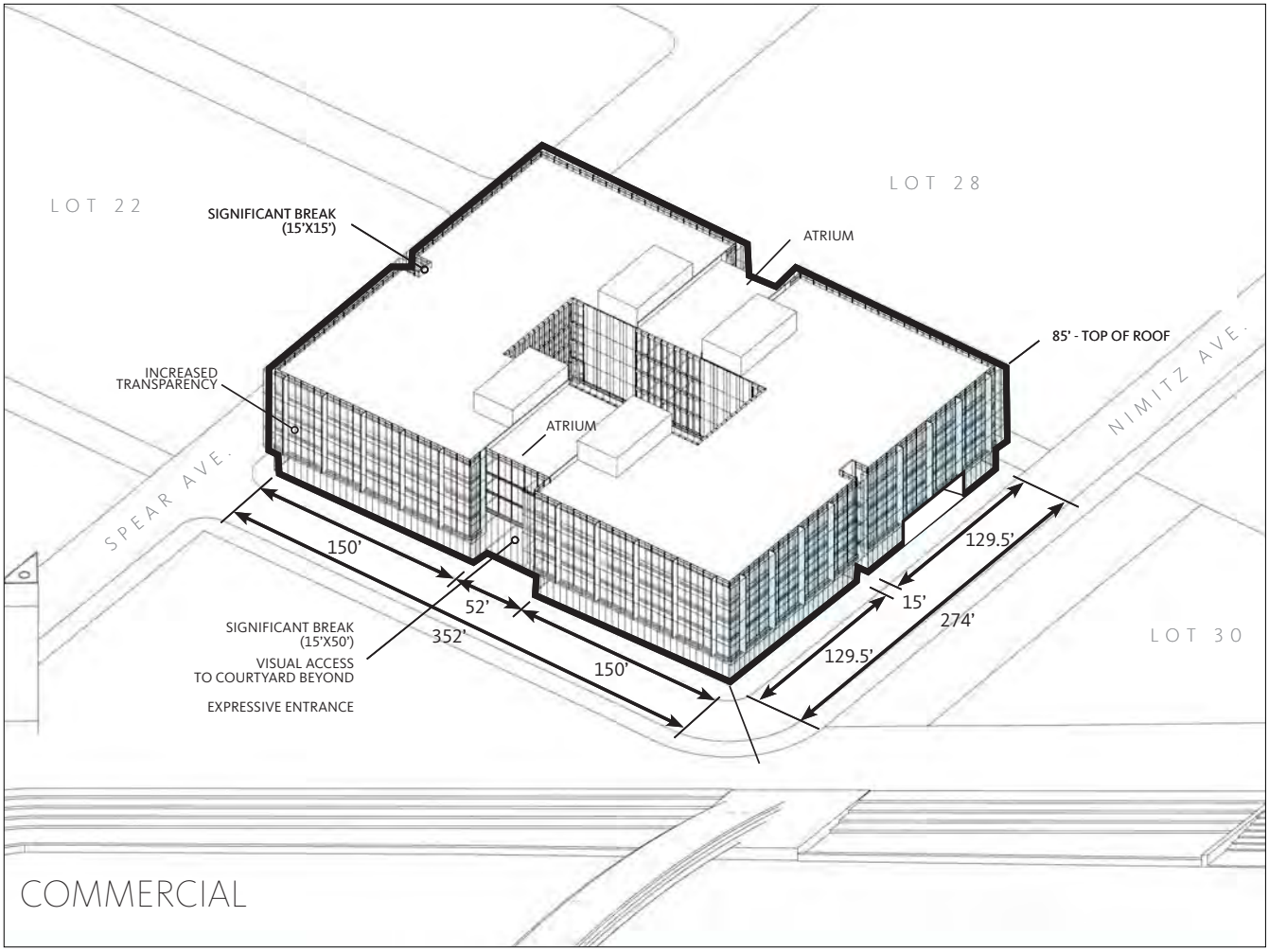
STEP 3

BUILDING ENHANCEMENT (BE)

BE1. Apply One [1] Additional Bulk/Massing Control
BE2A. Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Per Street Fronting Elevation)
BE2B. Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Multiple Street Fronting Elevations)
BE3. Provide Visual and Physical Access to Interior Courtyard and/or Atrium
BE4. Permanently Open Public Access to Open Space
BE5. Reduction in Floor Plate Area of Upper Floors
BE6. Expressive Entrances
BE7. Increased Transparency
BE8. Distinct Corner Architectural Feature
BE9. Roof Expression
BE10. Additional Active Entries
BE11. Additional Ground Floor Activation

PUBLIC REALM ENHANCEMENT (PE)

PE1. Public Access Through the Building
PE2. Public Access though Open Space Connection

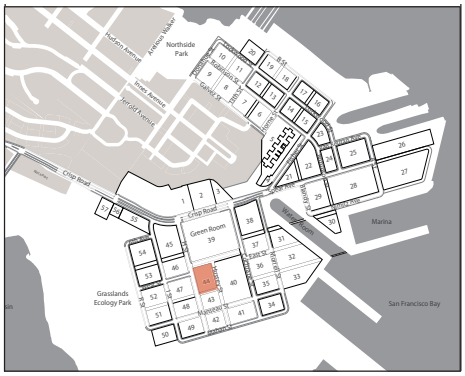


6.5.5 LARGE BUILDING (COMMERCIAL - BLOCK 44)

BUILDING SIZE:

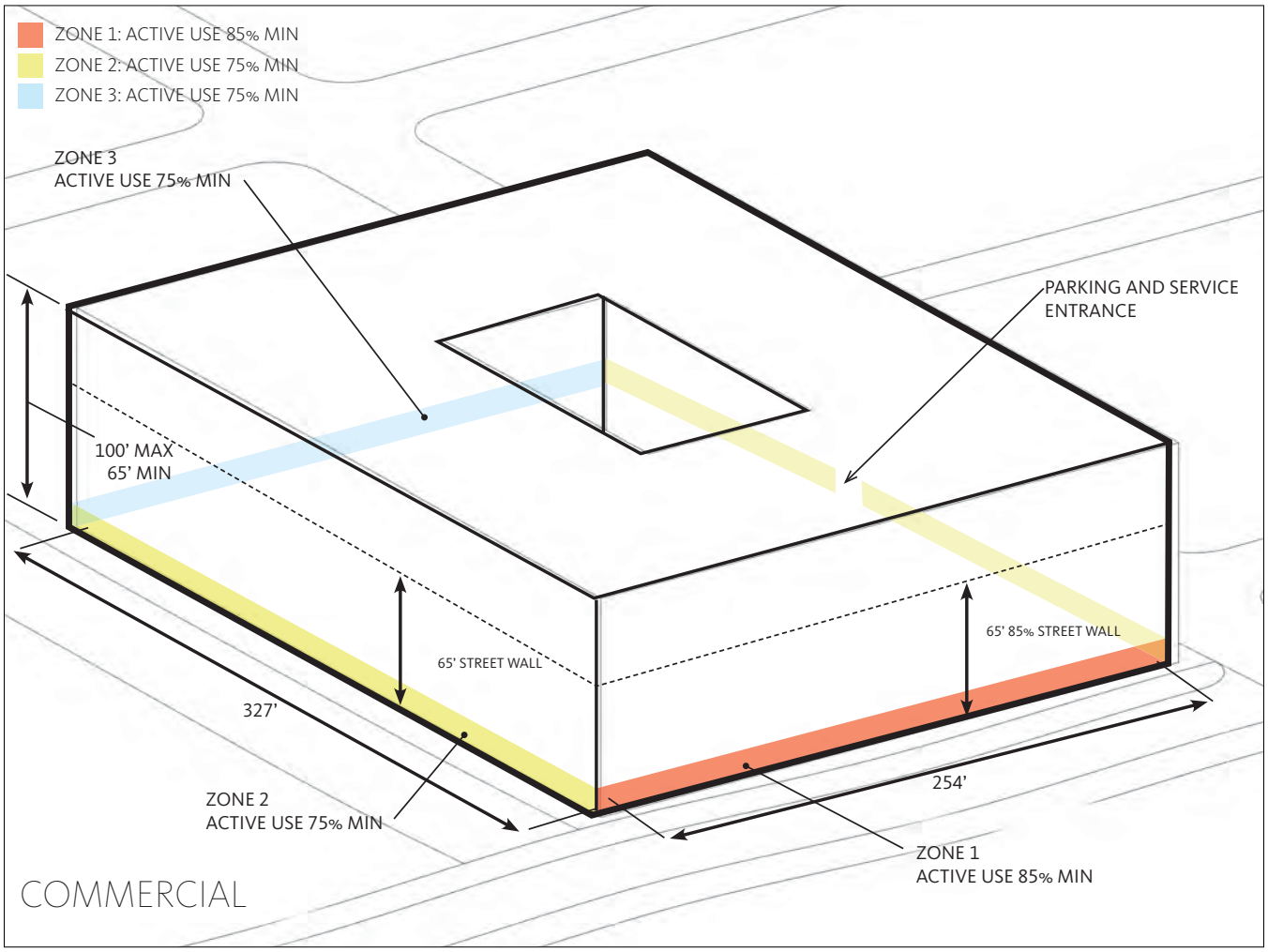
L

1 Bulk and Massing Control
and
3 Building Enhancements
or
1 Building Enhancement and
1 Public Realm Enhancement



SITE

BUILDING DESIGN STANDARDS
Zoning: Residential
Lot Area: 83,017 SF
Developable Area:
0-40' :100%
41'-95' : 90%
96'-120' : 80%
Gross Floor Area: 415,082
Setback: 0' (Zone 1), 0'-5' (Zone 2)
Plan Length: 363'
Number of Stories: 5
Building Height: 40' Min / 85' Max)
Street Wall: 85%/60



STEP 1

FACADE COMPOSITION (FC), PICK TWO

FC1. Façade Modulation Strategies
FC2. Façade Articulation Strategies
FC3. Fenestration Strategies
FC4. Material / Color Strategies

STEP 2

BULK AND MASSING (BM)

BM1. Significant Building Breaks
BM2. Upper Floor Stepbacks
BM3. Façade Variation (pick two)
- Façade Modulation
- Façade Articulation
- Fenestration/ Transparency
- Material Color

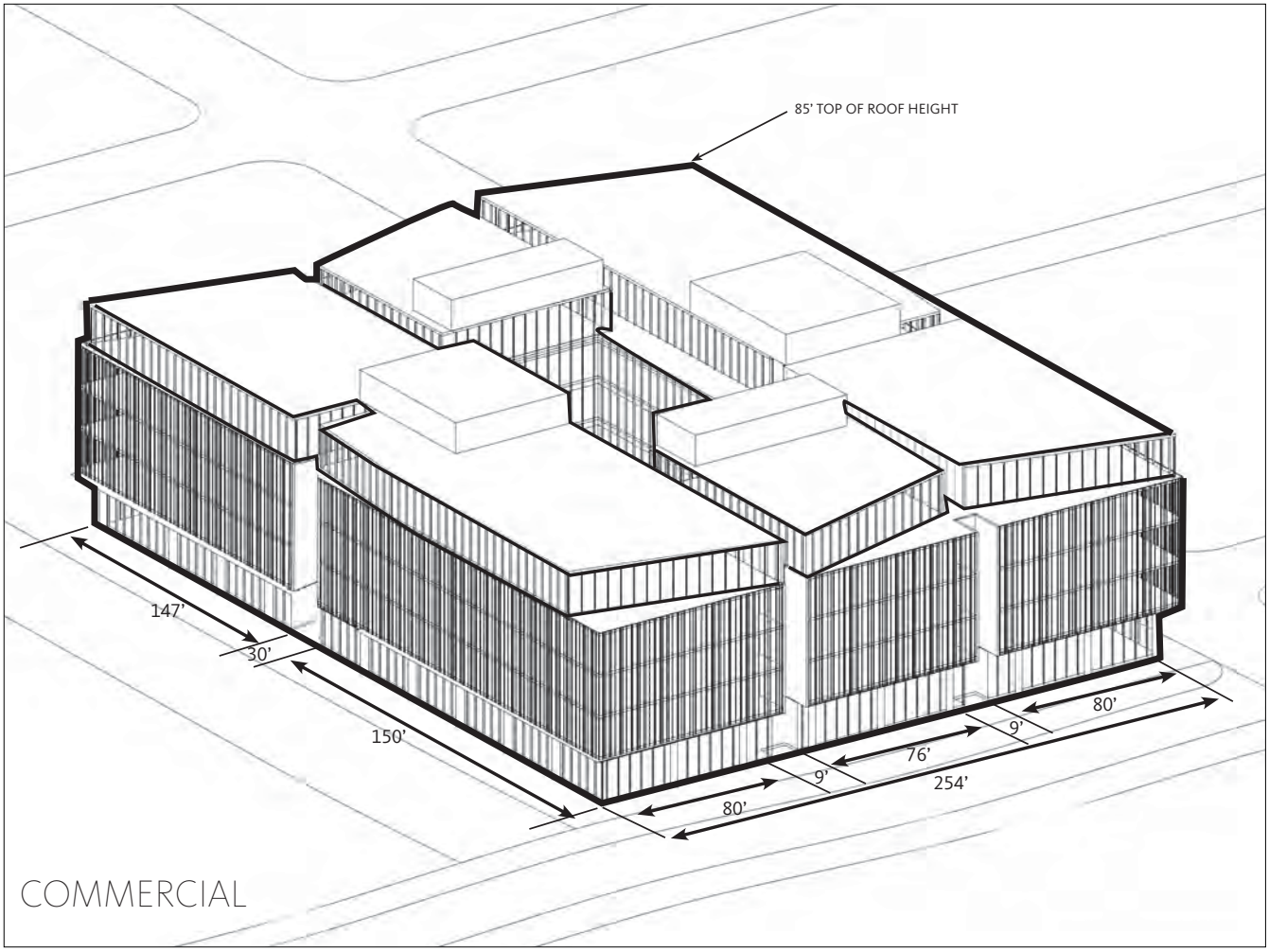
STEP 3

BUILDING ENHANCEMENT (BE)

BE1. Apply One [1] Additional Bulk/Massing Control
BE2A. Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Per Street Fronting Elevation)
BE2B. Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Multiple Street Fronting Elevations)
BE3. Provide Visual Access to Interior Courtyard and/ or Atrium
BE4. Permanently Open Public Access to Open Space
BE5. Reduction in Floor Plate Area of Upper Floors
BE6. Expressive Entrances
BE7. Increased Transparency
BE8. Distinct Corner Architectural Feature
BE9. Roof Expression
BE10. Additional Active Entries
BE11. Additional Ground Floor Activation

PUBLIC REALM ENHANCEMENT (PE)

PE1. Public Access Through the Building
PE2. Public Access though Open Space Connection

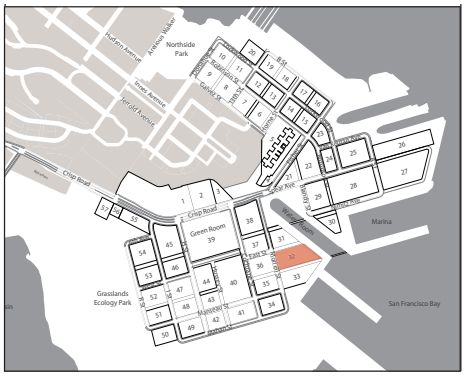


6.5.6 EXTRA-LARGE BUILDING (COMMERCIAL - BLOCK 32)

BUILDING SIZE:

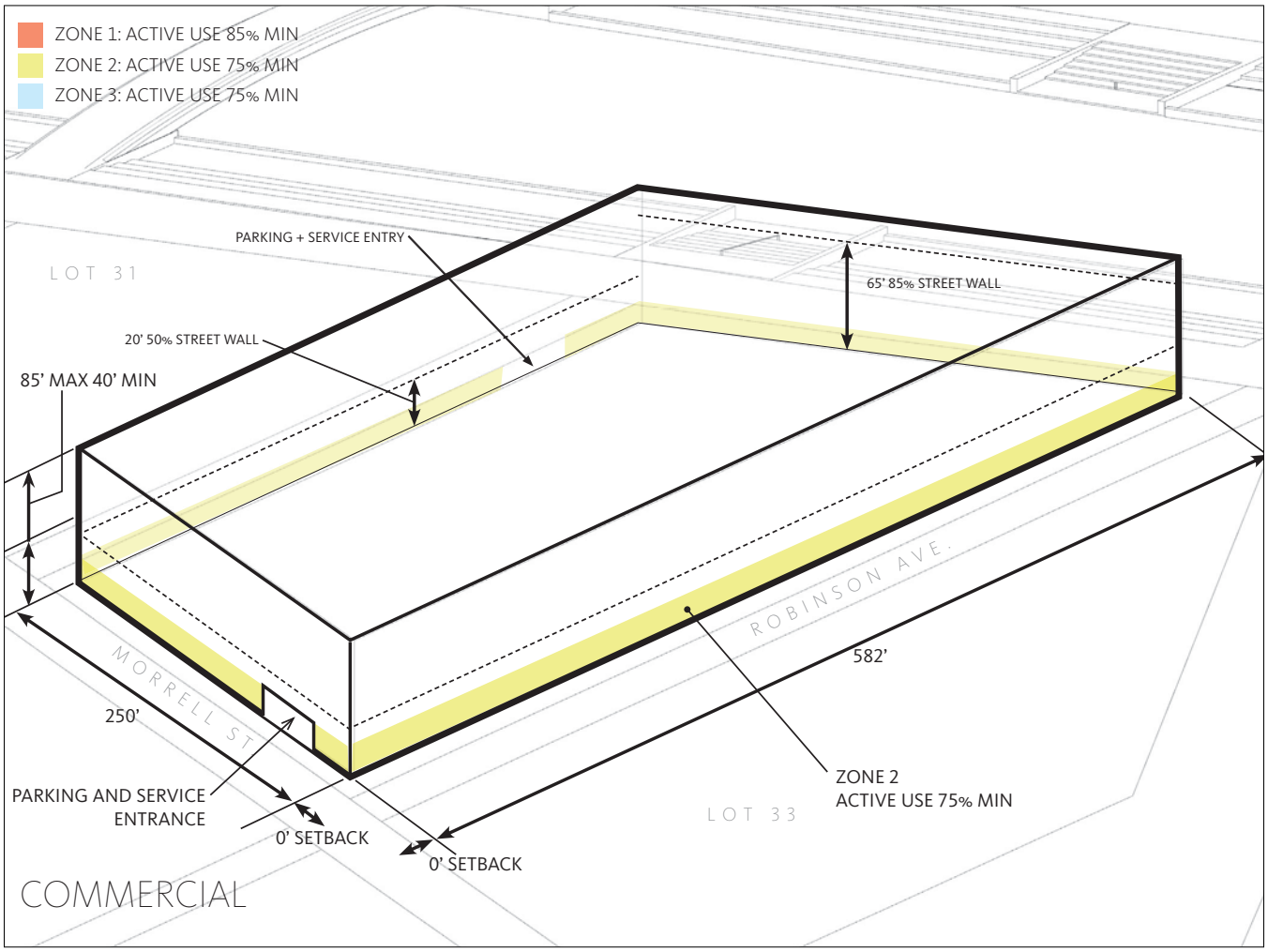
XL

1 Bulk and Massing Control
and
4 Building Enhancements
or
2 Building Enhancements and
1 Public Realm Enhancement



SITE

BUILDING DESIGN STANDARDS
Zoning: Commercial
Lot Area: 121,012 SF
Developable Area:
0-40' : 100%
41'-95' : 90%
96'-120' : 80%
Gross Floor Area: 514,301 SF
Setback: 0' (Zone 1)
Plan Length: 395'
Number of Stories: 5
Building Height: 40' Min / 85' Max)
Street Wall: 85%/60', 50%/20'



STEP 1

FACADE COMPOSITION (FC), PICK TWO

FC1. Façade Modulation Strategies
FC2. Façade Articulation Strategies
FC3. Façade Fenestration Strategies
FC4. Material/Color Strategies

STEP 2

BULK AND MASSING (BM)

BM1. Significant Building Breaks
BM2. Upper Floor Stepbacks
BM3. Façade Variation (pick two)
- Façade Modulation
- Facade Articulation
- Fenestration/ Transparency
- Material Color

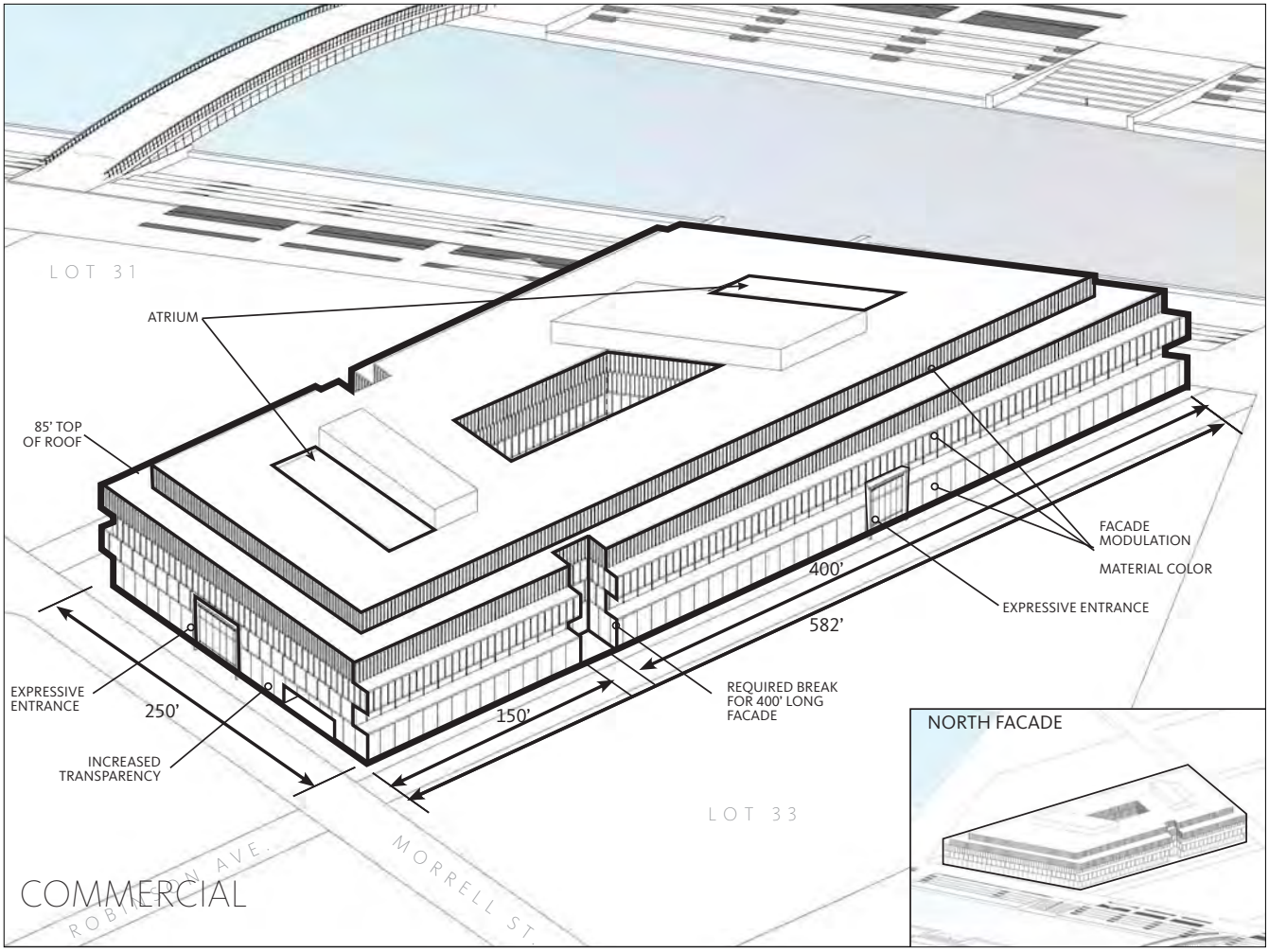
STEP 3

BUILDING ENHANCEMENT (BE)

BE1. Apply One [1] Additional Bulk/Massing Control
BE2A. Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Per Street Fronting Elevation)
BE2B. Orient Private Courtyards and/or Atria Onto a Public ROW or MBB (Multiple Street Fronting Elevations)
BE3. Provide Visual and Physical Access to Interior Courtyard and/or Atrium
BE4. Permanently Open Public Access to Open Space
BE5. Reduction in Floor Plate Area of Upper Floors
BE6. Expressive Entrances
BE7. Increased Transparency
BE8. Distinct Corner Architectural Feature
BE9. Roof Expression
BE10. Additional Active Entries
BE11. Additional Ground Floor Activation

PUBLIC REALM ENHANCEMENT (PE)

PE1. Public Access Through Building
PE2. Public Access though Open Space Connection



6.6 Sitewide Diagrams

6.6.7 DISTRICTS MAP

Figure 6.3a: DISTRICTS AND DEVELOPMENT BLOCKS

6.6.8 ROUGH FINISH GRADES

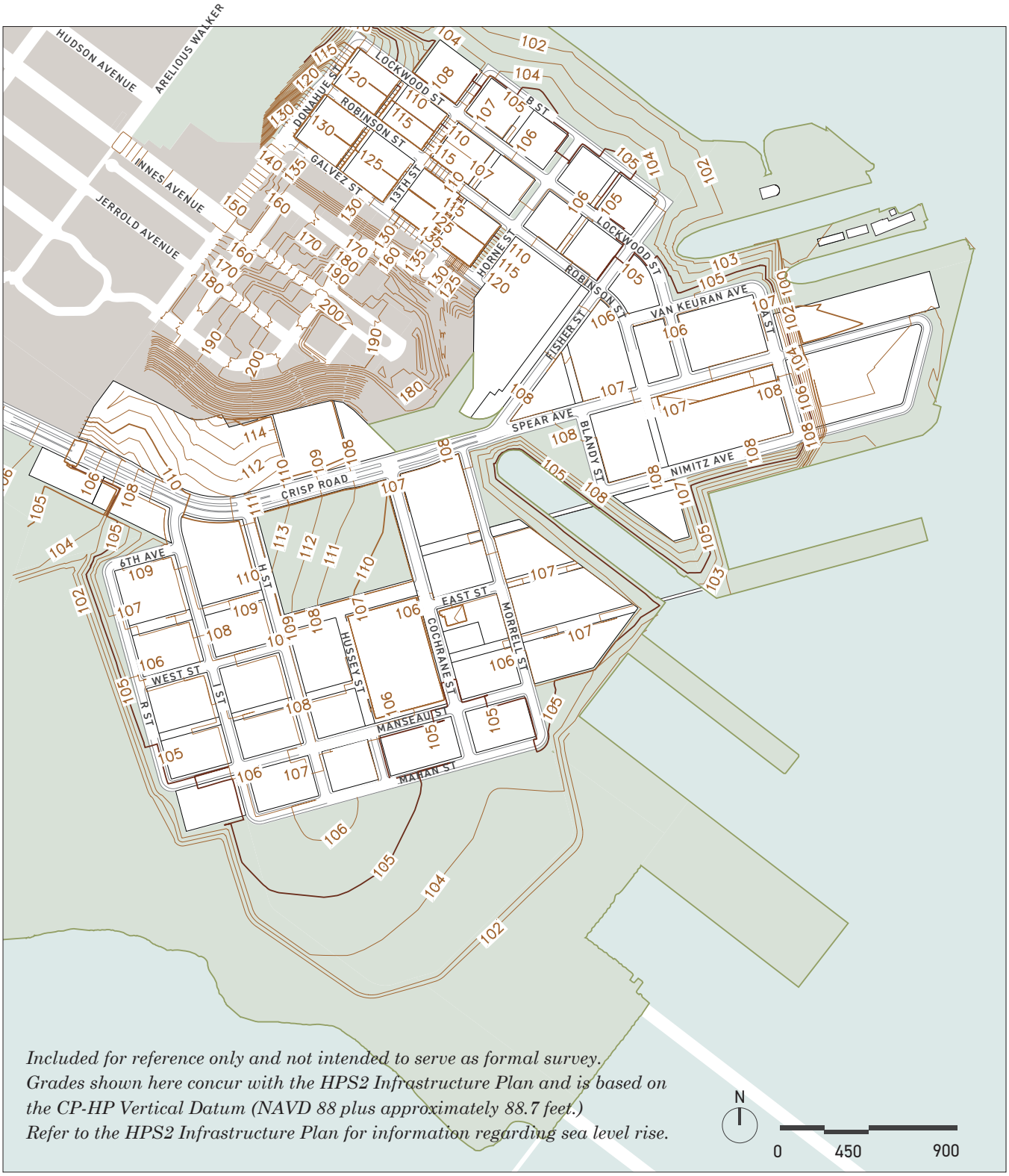


Figure 6.3b: TOPOGRAPHY

6.6.9 PHASING

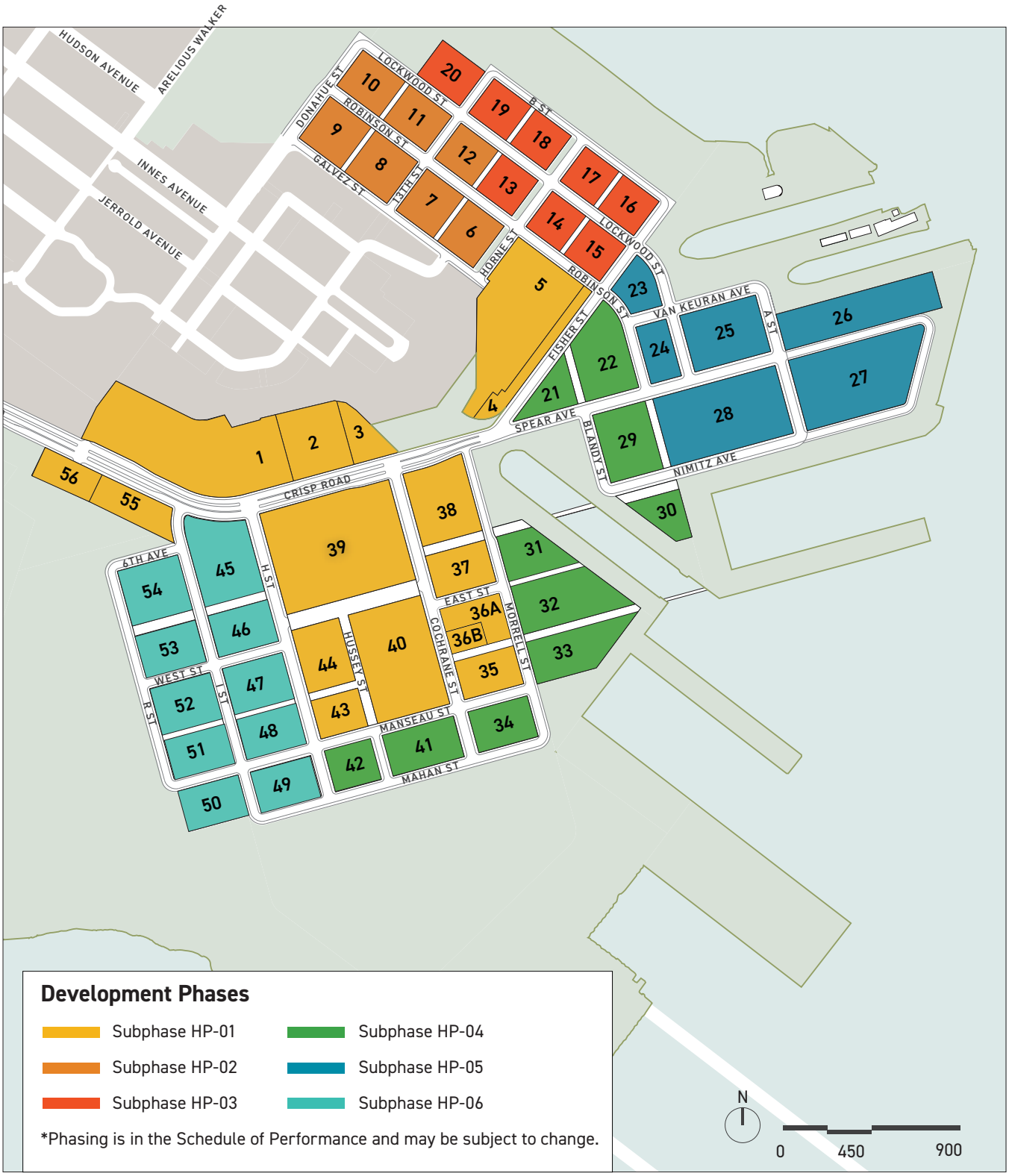


Figure 6.3c: DEVELOPMENT PHASES

6.7 Term Definitions

Terms used in the D4D shall have the meaning defined in Part XI of the HPS Redevelopment Plan, or as otherwise outlined below. In the event of inconsistency between a term definition in the HPS Redevelopment Plan and the D4D, the term definition in the HPS Redevelopment Plan shall prevail:

Active Entrance	A building entrance into an Active Use. Entrance may be public or private. Single uses may have multiple Active Entries.
Active Frontage	Building façade length lined with Active Uses.
Active Uses	Ground floor land uses that create an interesting and inviting pedestrian environment that enhances neighborhood safety and security by encouraging "eyes on the street," visibility and vibrancy.
Active Use Transparency	The surface area of Transparent Glazing as a proportion of the surface area of the Active Frontage.
Adaptive Reuse	Reuse or re-creation of an existing structure, in part or in whole, in a manner that maintains the essence and character-defining building elements of the existing structure.
Agency	The Office of Community Investment and Infrastructure, or Successor Agency to the San Francisco Redevelopment Agency.
Apparent Face	The unbroken plane of a building with a single façade composition.
Atrium	A multi-leveled enclosed building area that is glazed on one [1] or more sides and includes roof glazing and/or skylights.
Awning	A light, roof-like structure, supported entirely by the exterior wall of a building, consisting of a moveable frame covered with approved materials, extending over doors and windows, with the purpose of providing protection from sun and rain and embellishment of the façade.
Blank Wall	A building façade area greater than four [4] linear ft. in length, parallel to the property line where there is not an entrance, window, or any building articulation, including solid doors and mechanical area wall(s).
Block	An area bounded by a public right-of-way, open space, or Mid-Block Break.
Block Sizes	Block Sizes and legal parcels are defined in the Final Map. Approximate parcel dimensions are provided in *Figure 4.1b* and are subject to change. Block sizes may be legal parcels or may be part of a legal parcel.
Building Enhancement	An architectural design feature that improves the character of the building and adds interest to the building overall.
Building Entry	Building doors not including service or loading access, parking entries, or locked fire exits.

Building Envelope	The exterior dimensions dictating the maximum dimensions of width, depth, height, and bulk, within which a building may exist on a given site.
Building Face	A plane of the exterior wall of the building along a public right-of-way, open space, or other publicly accessible space. The term is often used in context with its relationship to an adjacent street or public area. In instances where a minimum Street Wall requirement presides, the Building Face aligns with the build-to line.
Building Height	Building Height is measured from the highest corner at finished sidewalk grade to the average point on the finished roof in the case of a flat roof, and the average height of the rise in the case of a pitched or stepped roof, or similarly sculpted roof form. For parcels adjacent to streets with a slope greater than 5%, Building Height is determined by measuring at the mid-point of the building at the sidewalk grade adjacent to each street-fronting Building Face. The maximum height envelope may extend from one frontage up to a depth of half the distance to the opposite side of the block. Multiple frontages may be used to determine maximum Building Height envelope.
Building Projection	A portion of the building that extends beyond the primary Building Face, either into a Setback or beyond the property line.
Bulk and Massing	Bulk and Massing regulations are the combination of controls (lot size, lot coverage, open space, yards, heights, and setbacks) that determine the maximum Building Envelope.
Business/Retail Signage	A Sign which directs attention to the primary business, commodity, service, industry or other activity which is sold, offered, or conducted on the premises upon which the Sign is located or to which it is affixed.
Canopy	A light, roof-like structure, supported by the exterior of a building, consisting of a fixed frame covered with approved cloth, plastic, or metal, with the purpose of providing protection from sun and rain, and embellishment of the façade.
Calculating Sign Area	Sign area is defined as the area of a sign that is used for display purposes. Sign area shall be calculated by measuring the size of a rectangle large enough to contain the entire sign's display, graphics, and text that form an integral part of the display or are used to differentiate such sign from the background against which it is placed. The calculation of Sign Area excludes the necessary supports or uprights on which such sign is placed.
Canopy or Awning Signs	Lettering or graphics applied to projecting architectural awnings or canopies at the first floor.
Character-enhancing Structure	Buildings or structures that may be adaptively reused to enhance neighborhood character and sense of place. Character-enhancing Buildings are 281, 351, 411, and 813.
Class I Bicycle Parking	Spaces in secure, weather-protected facilities intended for use as long-term, overnight, and workday bicycle storage by dwelling unit residents, non-residential occupants, and employees.

Clearly Defined Building Entry	A clearly identifiable building entry is expressed by such elements as taller volumes, recessed doorways, canopies, lighting, public art, special materials, and/or paving.
Convertible Parking	A Shared Parking Structure designed to be converted into another use and or designed to be mechanized and deconstructable.
Coverage	The percentage of Floor Plate in relation to the Developable Area that includes the total horizontal area when viewed in plan. Coverage is regulated at various height thresholds.
Datum	An articulation strategy on the building façade that, by its continuity and regularity, serves to gather, measure, and organize the pattern of forms and spaces.
Daylight	The controlled admission of natural light, direct sunlight, and diffused skylight into a building to reduce electric lighting and save energy.
Developable Area	All land inside the legal property line, excluding Setbacks.
District	A grouping of development blocks that share a number of similar characteristics.
EVA	Emergency Vehicular Access.
Extra Large Building (XL)	Buildings with a maximum floor plate area greater than [100,000] sq. ft.
Façade	Any vertical exterior face or wall of a building that is adjacent to or fronts a street, public or semi-private right-of-way, park, or plaza.
Façade Articulation	Expressions of material properties, craft, treatment, pattern, and/or assembly that create visible shadows and/or texture across the building façade. Facade Articulation strategies are intended to create visual interest, texture, and shadows through the tectonics, materiality, and craft of the facade.
Façade Composition	The design of large scale building form and smaller scale facade tectonics, including material selection and detailing.
Façade Modulation	
Fenestration	The design, construction, or presence of openings in a building. Fenestration includes windows, doors, louvers, vents, wall panels, skylights, storefronts, curtain walls, and slope glazed systems.
Floor Aspect Ratio	The ratio that controls the proportions of the Floor Plate. Floor Aspect Ratio compares the shorter plan dimension of the Floor Plate to the longer plan dimension. A square Floor Plate would have an aspect ratio of 1:1.
Floor Plate	The Gross Floor Area for an individual floor level of a building.
Freestanding or Directional Signs	Signs detached from the building, and in no part supported by the building, providing identification, information, or direction to a building or group of buildings.
Gateway	A primary vehicular or pedestrian point of entry into the development project, typically at a key intersection between two or more public streets.

Gross Floor Area	The sum of the gross areas of the several floors of a building or buildings, measured from the exterior faces of exterior walls or from the centerlines of walls separating two buildings. Where columns are outside and separated from an exterior wall (curtain wall) that encloses the building space or are otherwise so arranged that the curtain wall is clearly separate from the structural members, the exterior face of the curtain wall shall be the line of measurement, and the area of the columns themselves at each floor shall also be counted.
	
	Shall include, but not be limited to, the following:
	• Basement and cellar space, including tenants' storage areas and all other spaces except that used only for storage or services necessary to the operation or maintenance of the building itself
	• Elevator shafts, stairwells, exit enclosures, and smoke-proof enclosures at each floor
	• Floor space in penthouses except as specifically excluded in this definition
	• Attic space capable of being made into habitable space
	• Floor space in balconies or mezzanines in the interior of the building
	• Floor space in open or roofed porches, arcades, or exterior balconies, if such porch, arcade, or balcony is located above the ground floor or first floor of occupancy above basement or garage and is used as the primary access to the interior space it serves
	• Any floor area dedicated to accessory or non-accessory parking
	
	Shall not include the following:
	• Mechanical equipment, appurtenances, and areas necessary to the operation or maintenance of the building itself if located at an intermediate story of the building and forming a complete floor level
	• Outside stairs to the first floor of occupancy at the face of the building which the stairs serve, or fire escapes
	• Required off-street loading and required car-share parking
	• Bicycle parking
	• Balconies, porches, roof decks, terraces, courts, and similar features, except those used for primary access provided that:
	  • If more than 70 percent of the perimeter of such an area is enclosed, either by building walls (exclusive of a railing or parapet not more than three feet eight inches high) or by such walls and interior lot lines, and the clear space is less than 15 feet in either dimension, the area shall not be excluded from Gross Floor Area unless it is fully open to the sky
	  • If more than 70 percent of the perimeter of such an area is enclosed, either by building walls (exclusive of a railing or parapet not more than three feet eight inches high), or by such walls and interior lot lines, and the clear space is 15 feet or more in both dimensions: (i) The area shall be excluded from Gross Floor Area if
	  • If, however, 70 percent or less of the perimeter of such an area is enclosed by building walls (exclusive of a railing or parapet not more than three feet eight inches high) or by such walls and interior lot lines, and the open side or sides face on a yard, street or court whose dimensions satisfy the requirements.

Ground Floor	The lowest story of a building that is at or nearest to sidewalk grade other than a basement or cellar as defined in the Building Code.

Habitable Projections	A portion of the building enclosed by walls and a roof which extends beyond the property or minimum Setback line. Examples include a bay window, a corner element, or a regularly occurring façade modulation that extends through some or all floors of a building.
High Albedo	Materials that reflect sunlight and limit the amount of heat gained through those materials. High Albedo Roofing materials are chosen to reduce unwanted heating of roof surfaces.
Horizontal Shift	A horizontal change in the building façade. A horizontal change shall include at least one floor of the building façade.
Identifying Signs	Primary parcel identification signs, which may be projecting, wall-mounted, or freestanding.
Implied Façade	An Implied Façade is a Building Face that completes the apparent massing through vertical and horizontal architectural elements, such as the roof line, columns, angular shifts, or other elements, that extend to and maintain the Street Wall.
Large Building (L)	Buildings with a maximum floor plate area between [70,000] and [100,000] sq. ft.
Lot Coverage	The percentage of the lot area that is covered by building area, which includes the total horizontal area when viewed in plan.
Maker Space	Uses for contemporary forms of small-scale manufacturing, repair, and post-manufacturing activities. Maker Space should typically include a retail component, and may include several other uses within a single space, including but not limited to light industrial, office, research and development, and Neighborhood Retail Sales and Services, among many others.
Material/Color	The application of materials, color, shades, and texture for a building when used as a quality- and character-defining feature of the façade.
Maximum Plan Length	The maximum linear dimension of a building measured in plan along a building elevation parallel to the immediately adjacent public right-of-way, MBB, or Public Open Space.
Medium Building (M)	Buildings that have a maximum plan dimension greater than [150] ft. in length along any facade and have a maximum floor plate area less than [70,000] sq. ft.
Mid-Block Breaks or MBBs	A pedestrian, bicycle, and/or vehicle lane way on private property.
Mid Block Break Width	The mandatory Street Wall to Street Wall width for a MBB and associated Setback Zones.
Non-habitable Projections	A portion of the building not enclosed by walls and a roof which extends beyond the property or minimum setback line. Examples include usable balconies or outdoor decks, structural projections, screening, awnings, and fins. Or similar architectural elements.
Parking Entrance	Entries allowing vehicular access to parking areas, including Shared Parking Structures, podium parking, and/or below grade parking.
Portable Signs	Signs which are freestanding, movable, and not permanently anchored or attached to the ground.

Primary Building Entries	The main entries to a building.
Primary Façade Plane	The plane that incorporates the primary façade of a Street Fronting Elevation.
Projecting or Blade Signs	Signs attached to a building, projecting perpendicular to the mounting surface.
Projection	The horizontal distance by which the furthermost point used in measuring the area of a sign extends beyond a Street Property Line or a Building Setback Line.
Public Realm	An expansion of the pedestrian network that provides public access through private developments.
Public Realm Enhancement	An expansion of the pedestrian network that provides a continuation of public access through private developments.
Regularly Occupied Floor Area	An area where one [1] or more individuals normally spend time (more than one [1] hour per person per day on average) seated or standing as they work, study, or perform other focused activities inside a building.
Residential Private Individual Open Space	Intended for the use of individual residents within a unit and includes terraces, patios, balconies, rooftop spaces and other similar areas.
Residential Private Common Open Space	Intended to be shared by all residents/users within a building or building cluster and includes rooftop spaces, internal courtyards, gardens, pools, play areas, and other similar areas.
Rounding	For purposes of calculating a number, any fraction equal to or greater than one half (1/2) shall be rounded up to the nearest whole number and any fraction less than one half (1/2) shall be rounded down to the nearest whole number.
Roof-Mounted Equipment	Any equipment installed on the roof of a structure, such as air conditioners, compressors, condensers, conduits, pipes, vents, ducts, and sustainable systems such as solar ready equipment.
Screening	A physical visual barrier that obstructs or obscures the view of an object or objects. Screening may include shading devices, trellises, canopies, fences, landscaping, and architectural treatments.
Setback	The required horizontal distance between a building face and a property line.
Service Entrance	Entries allowing vehicular access for trucks and/or deliveries, loading, and/or access to trash rooms.
Shared Parking Structure	A stand-alone structure providing Accessory Parking to off-site, lawful, non-Accessory uses and not attached to or included within a building containing a lawful non-Accessory use.
Sign	A display used to identify a place, business, or a product.
Significant Break	A vertical change in the building façade. A vertical plane break shall be at least as wide as 10% of the longest adjoining façade length.
Skyways	Upper level connections between buildings are primarily for pedestrians, although they could also be used for small service vehicles. Skyways may be enclosed or open air.

Small Building (S)	Buildings that have maximum plan dimensions that are less than [150] ft. in length along each building face and have a maximum floor plate area less than [22,500] sq. ft.
Stepback	The distance that upper levels of a building may be inset from the primary Building Face.
Stoop	An outdoor entryway into residential units raised above the sidewalk level.
Storefront	The façade of a ground-floor Active Use space between the street grade and the ceiling of the first floor.
Story	A level or floor of a building containing a ceiling and floor. A double height or two [2] Story space references two [2] combined levels/floors of space.
Street Fronting Elevation	Building façades facing onto a public right-of-way, MBB, or public open space.
Street Wall	The aggregate effects of the façades of buildings along a property line adjacent to a street or open space. The typical context for this term is in defining the public realm and framing or engaging the street.
Temporary Sign	Construction signs, super graphics applied to construction barricades, fences, project signs, or other temporary structures providing project graphics, development names, consultant information, or residential sales information.
Terrace	A raised, flat platform associated with and usually providing egress from a [usually residential] building.
Tower (High Rise)	Building with shared corridors and vertical circulation with a height greater than [120] ft.
Transparency	The degree of visibility through a building façade; or a characteristic of clear façade materials, such as glass, that provide an unhindered visual connection between the sidewalk and internal areas of the building.
Variation	A significant change or difference in form, proportion, position, condition, quantity, level, or other compositional characteristic. Variation describes adjacent elements comprising both similar and different attributes that are recognizable as related.
Vegetated Roof Covers	A roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane.
View Corridor	A three-dimensional area extending out from a viewpoint. The width of the view corridor depends on the focus of the view. The focus of the view may be a single object, which would result in a narrow corridor, or a group of objects, such as a distinct skyline, which would result in a wide corridor.
Wall	Any building or structure wall area that is not transparent, including solid doors and mechanical area wall(s).
Wall Sign	A Sign painted directly on the Wall or mounted flat against a building wall with its copy or graphics parallel to the Wall to which it is attached and not protruding more than the thickness of the Sign.
Window Sign	A Sign painted or applied directly on the surface of a window glass or placed behind the surface of a window glass.

6.8 List of Figures

Figure 1.0a: Hunters Point Shipyard Phase 2 Site Location in San Francisco 2
Figure 1.1a: Hunters Point Shipyard and Candlestick Point Boundary 3
Figure 1.4a: Project History And Timeline 8
Figure 2.1a: HPS2 Illustrative Plan 20
Figure 3.0a: Districts and Features 28
Figure 3.1a: Warehouse District 31
Figure 3.2a: Village Center 33
Figure 3.3a: Wharf District 35
Figure 3.4a: North Shoreline 37
Figure 3.5a: Key Destinations and Features - Green Room 38
Figure 3.6a: Key Destinations and Features - Water Room 39
Figure 3.7a: Key Destinations and Features - Pedestrian Allée 40
Figure 3.8a: Key Destinations and Features - Waterfront Open Spaces 41
Figure 4.0a: Anticipated Development Map 45
Figure 4.1a: Mid-Block Break Lot Divisions 50
Figure 4.1b: Mid-Block Break Width and Locations 51
Figure 4.1c: Type 1 Mid-Block Break Width (40') 52
Figure 4.1d: Type 1 Mid-Block Break Width (40') 52
Figure 4.1e: Type 2 Mid-Block Break Width (50') 53
Figure 4.1f: Type 2A Mid-Block Break Width (50') 53
Figure 4.1g: Type 3 and 4 Mid-Block Break Width (40' - 50') 54
Figure 4.1h: Type 4 Mid-Block Break Width (50') 54
Figure 4.2a: Building Setback 56
Figure 4.2b: Setback Requirements 57
Figure 4.2c: View Looking South 58
Figure 4.2d: View Facing North 58
Figure 4.3a: Developable Area Coverage Residential & Residential Mixed-Use Building 59
Figure 4.3b: Developable Area Coverage Non-Residential Building 59
Figure 4.4a: Building Height 60
Figure 4.4b: Building Height On Slope 60
Figure 4.4c: Maximum Building Height 61
Figure 4.4d: Building Stepback 62
Figure 4.4e: Building Stepback 62
Figure 4.4f: Penthouse Structure Requirements 63
Figure 4.4g: Building Height Exception 63
Figure 4.4h: Building Height Exceptions Enclosed Amenity Area 63
Figure 4.4i: Street Wall 64
Figure 4.4j: Implied Façade 64
Figure 4.4k: Covered Outdoor Seating 64
Figure 4.4l: Street Wall Requirements 65
Figure 4.4m: Building Sizes: S, M, L, XL 66
Figure 4.5a: Floor Plate Area and Maximum Plan Length 67
Figure 4.5b: Maximum Plan Length 67
Figure 4.6a: Building A 70
Figure 4.6b: Building B 70
Figure 4.6c: Block to Block Variation (Adjacent Block Facades Shall be Distinct from Block A) 71
Figure 4.6d: Block A (Vertical Articulation and Material Color) Block B (Horizontal Articulation and Material Color) 71
Figure 4.6e: Horizontal Shift 72
Figure 4.6f: Vertical Shift 72
Figure 4.6g: Angular Shift 74
Figure 4.6h: Framing 74
Figure 4.6i: Double Skin 74
Figure 4.6j: Structural Expression 74
Figure 4.7a: Significant Building Breaks A 82
Figure 4.7b: Significant Building Breaks B 82
Figure 4.7c: Stepback Requirements by Building Height 84
Figure 4.7d: Average Minimum Stepback 84
Figure 4.7e: Minimum Length Of Stepback 84
Figure 4.7f: Example of FV1 Horizontal Variations A 86
Figure 4.7g: Example of FV1 Horizontal Variations B 86
Figure 4.7h: Example of FV2 Vertical Variations A 87
Figure 4.7i: Example of FV2 Vertical Variations B 87
Figure 4.8a: BE1 - Apply One Additional Bulk/Massing Control (Example: Significant Breaks + Upper Floors Stepback) 89
Figure 4.8b: BE2A - Courtyard/Atria A or B BE2B - Courtyard/Atria A + B 89
Figure 4.8c: BE3 - Provide Visual and Physical Access to Interior Courtyard and/ or Atrium 89
Figure 4.8d: BE4 - Permanently Public Access to Open Space 89

Figure 4.8e: BE5 - Reduction in Floor Plate Area of Upper Floors 90
Figure 4.8f: BE6 - Expressive Entrance 90
Figure 4.8g: BE7 - Increased Transparency 90
Figure 4.8h: BE8 - Distinct Corner Architectural Feature 90
Figure 4.8i: BE9 - Roof Expression 91
Figure 4.8j: BE10 - Additional Active Entrances 91
Figure 4.8k: PE1 - Public Access through the Building 91
Figure 4.8l: PE2 - Public Access through Open Space Connection 91
Figure 4.9a: Flexible Tower Zone 92
Figure 4.9b: Tower Floor Plate 92
Figure 4.9c: Tapered Tower Example 93
Figure 4.9d: Sculpted Tower Example 93
Figure 4.9e: Stepped Tower Example 93
Figure 4.9f: Facade Articulation Tower Example 93
Figure 4.10a: Projections 94
Figure 4.11a: Bicycle Room 96
Figure 4.11b: Active Entrances Calculation 97
Figure 4.11c: Active Use Percentage Calculation 98
Figure 4.11d: Ground Floor Activation Requirements 99
Figure 4.11e: Ground Floor Transparency Calculation 100
Figure 4.11f: Ground Floor Activation Zone Chart 101
Figure 4.11g: Ground Floor Activation Type Chart 102
Figure 4.13a: Parking Ingress and Egress Per Block 104
Figure 4.13b: Parking and Service Entrances 105
Figure 4.17a: Ground Floor Blank Walls Calculation 112
Figure 4.17b: Upper Floor Blank Walls Calculation 112
Figure 4.18a: Residential Daylight 113
Figure 4.18b: Commercial Daylight Option 1 113
Figure 4.18c: Commercial Daylight Option 2 113
Figure 4.19a: Material Palette 115
Figure 4.19b: Location of Water Room 116
Figure 4.19c: Material Palette 116
Figure 4.19d: Location of Development Perimeter 117
Figure 4.19e: Material Palette 117
Figure 4.19f: Location of Green Room 118
Figure 4.19g: Material Palette 118
Figure 4.19h: Location of Research District and Transit Hub 119
Figure 4.19i: Material Palette 119
Figure 4.19j: Location of Pedestrian Allée 120
Figure 4.19k: Material Palette 120
Figure 4.19l: Location of the Village Center 121
Figure 4.19m: Material Palette 121
Figure 4.21a: Maximum Parking Requirements 124
Figure 4.21b: Car Share Parking Space Requirements 124
Figure 4.21c: Off-Street Freight Loading Space Requirements 125
Figure 4.21d: Off-Street Fright Loading Space Limits 125
Figure 4.22a: Skyway Connections 127
Figure 4.23a: Green Room Datum 128
Figure 4.24a: Existing Structures 131
Figure 4.26a: Setback Zone 1 (0' Min./0' Max.) 136
Figure 4.26b: Setback Zone 2 Variation 1 (0' Min./5' Max.) 137
Figure 4.26c: Setback Zone 2 Variation 2 (0' Min./5' Max.) 138
Figure 4.26d: Setback Zone 3 (5' Min./10' Max.) 139
Figure 4.26e: Setback Zone 4 (7' Min./7' Max.) 140
Figure 4.26f: Setback Zone 5 (10' Min./15' Max.) 141
Figure 4.26g: Setback Zone 6 (15' Min./15' Max.) 142
Figure 4.27a: Type 1 Residential Mid-Block Break 145
Figure 4.27b: Type 1 Commercial Mid-Block Break 145
Figure 4.30a: Sign Area Calculation Diagram 151
Figure 4.30b: Building Wall Sign 152
Figure 4.30c: Entry Wall Sign 152
Figure 4.30d: Projecting Sign 153
Figure 4.30e: Window Signs 154
Figure 4.30f: Freestanding Signs 155
Figure 4.30g: Directional Signs 155
Figure 4.30h: Awning Signs Zones 156
Figure 4.30i: Canopy Signs 156
Figure 4.30j: Address or Nameplate Signs 157
Figure 4.31a: Temporary Barricade Graphics Zones 158
Figure 4.31b: Portable Signs Placement Zones 159
Figure 4.33a: Private Infrastructure 160

6.9 Image Credits

1 INTRODUCTION
P2
Figure 1.0a Hunters Point Shipyard Site Location in San Francisco
Satellite Image of San Francisco; Copyright Google Earth

P.08
Figure 1.4a Project History and Timeline
The Ohlone
Courtesy of the Library of Congress

Chinese Shrimp Camps
Courtesy of the Library of Congress

California Dry Dock Co.
Courtesy of the Library of Congress

P.09
Figure 1.4a Project History and Timeline
Navy Expansion
Courtesy of the Library of Congress

P.12-13
1-3. Archival images of the working shipyard
Courtesy of the Library of Congress

2 VISION
P.16
View of the Site towards the Grunning Crane
Photo by Vittoria Zupicich

P.18-19
1. Shipyard Existing Aerial Photo
Photo by Henrik Kam

2. Shipyard Historic Photos
Courtesty of the Library of Congress

3. Shipyard Existing Photo
Photo by Henrik Kam

4. Shipyard Future Development Example
Copyright Getty Images

P.22 - 23
1. Adaptive Reuse Example
Urban Outfitters Corporate Campus, Philadelphia
Photo by Christopher Leaman

2. New Building Example
Małopolska Garden of Arts by Ingarden & Ewý Architects
Photo by Krzysztof Ingarden

3 Shipyard Existing Photo
Photo by Henrik Kam

4. Waterfront Open Space Example
Dusseldorf Waterfront
Sourced: OEBB Online Magazine

P.24 - 25
1. Residential Neighborhood Example
Witte de Withstraat, Rotterdam
Photo by Alamy

4. Office through Adaptive Reuse Example
Photo by Jasper Sanidad

5. Ground Floor Retail Example
Santana Row, San Jose
Photo by Igor Starkov

3. DISTRICTS, KEY DESTINATIONS AND FEATURES
P.30
1. Building 813
Photo by Vittoria Zupicich

2. Building 351
Photo by Vittoria Zupicich

3. Building 411
Photo by Vittoria Zupicich

P.31
1. Mid-Rise Residential Example
Courtesy of Sellen Construction

2. Open Space Example
Sourced: Shutterstock

P.32
1. Building 101
Photo by Angela Lin, Square One Productions

P.33
1. Artists' Studios Examples
Creative Commons

2. Artists' Studios Examples
Building 18 Anthropologie's Headquarter, Philadelphia
Photo by Christopher Leaman

3. Maker Space Examples
TechShop, Brooklyn
Photo by Dana Gordon

P.34
1. Building 231
Copyright Google Streetview

3. Building 253
Photo by Vittoria Zupicich

P.37
1. Residential Tower Example
Gensler rendering

2. Residential Example
Copyright Google Street View

P.38
1. Green Room Examples
Photo by Connie Zhou

2. Green Room Examples
Photo by Jean-Christophe Benoist

P.39
2. Water Room Examples
Photo by Tomasz Majewski

P.40
1. Pedestrian Allee Examples
Copyright Getty Images

P.41
2. Waterfront Open Space Examples
Sourced: Shutterstock

4 BUILDING DESIGN STANDARDS AND GUIDELINES
P. 64
Figure 4.4j: Implied Facade
Copyright Google Streetview

P. 70
Figure 4.6a: Building A
400 Grove Street, San Francisco
Photo by Riki Nishimura

Figure 4.6b: Building B
333 Brannan St., San Francisco
Photo by Riki Nishimura

P.73
1. Horizontal Shift Example
Strato, Paris by Hardel and Le Bihan Architectes
Photo by Vincent Fillon

2. Horizontal Shift Example
1180 Fourth Street, San Francisco
Photo by Riki Nishimura

3. Vertical Shift Example
Copyright Getty Images

4. Vertical Shift Example
LPA O&M Dogpatch
Photo by Riki Nishimura

5. Vertical Shift Example
Copyright Getty Images

P.75
1. Double Skin Example
Wexford County Council by Robin Lee Architecture
Photo by Andrew Lee with Robin Lee Architects

2. Angular Shift Example
Getty Images

3. Structural Expression Example
388 Protreto Ave., San Francisco
Photo by Riki Nishimura

4. Angular in Shift Example
400 Grove, San Francisco
Photo by Riki Nishimura

5. Framing Example
Odin Apartment Building, Seattle
Copyright Google Street View

P.76
1. Punched Openings
130 William Street, New York by Adjaye Associates
Rendering from Adjaye Associates

2. Architectural Fins
Copyright Getty Images

3. Balconies Example
Copyright Getty Images

P.77
1. Vertical Recesses and Punched Openings Example
Copyright Getty Images

2. Architectural Fins and Louvers Example
Copyright Google Streetview

3. Punched Openings Example
Copyright Getty Images

4. Balconies Extension and Recesses Example
609 Oak Street, Oakland
Copyright Google Images Reuse

6. Shading Devices and Cornice Example
1180 Fourth Street, San Francisco
Photo by Riki Nishimura

P.79
1. Punched Windows Example
Copyright Getty Images

2. Punched Windows + Curtain Wall Example
333 Brannan St., San Francisco
Photo by Riki Nishimura

3. Punched Windows Example
Candlestick Point Block 2A, San Francisco
Rendering courtesy of FivePoint

4. Curtain Wall Example
PNC Place, Washington, D.C. by Gensler

5. Curtain Wall and Atrium Example
Copyright Getty Images

6. Curtain Wall with Boxed Windows Example
Copyright Getty Images

7. Window Wall Example
333 Brannan St., San Francisco
Photo by Riki Nishimura

8. Double Skin Example
Copyright Getty Images

P.80
1. Materials and Colors as a Volumetric Application Example
Copyright Google Street View

2. Metal Used as Monolithic Application Example
588 Mission Street, San Francisco
Photo by Riki Nishimura

3. Brick as Organizing Element Example
Chanel Mission Bay, San Francisco
Photo by Riki Nishimura

4. Character-defining Façade Composition Example
WOZOCO by MVRDV, Amsterdam
Photo by Paul Brouns

P.83
1. Significant Break Examples
333 Brannan St., San Francisco
Photo by Riki Nishimura

2. Significant Break Examples
680 Indiana Ave., San Francisco
Photo by Riki Nishimura

P.83
1. Upper Floor Building Step Back
Meridian Building, Wellington by Studio Pacific Architecture
Photo by Simon Devitt

P.87
1. Façade Variation FV1 Horizental
Copyright Getty Images

2. Façade Variation FV2 Vertical
Copyright Getty Images

P.93
1. Tapered Tower Example
Copyright Sedmak, Dreamstime.com

3. Stepped Tower Example
Copyright Getty Images

4. Facade Articulation Tower Example
Rendering from Adjaye Associates

P.96
1. Active Bicycle Storate Examples
Photo by Ryan Gobuty

2. Active Bicycle Storate Examples
Photo by Riki Nishimura

P.100
1. Ground Floor Transparency Examples
Photo by Matthew Millman

2. Ground Floor Transparency Examples
Photo by Scott Frances

P.103
1. Clearly Defined Building Entry Example
Photo by Connie Zhou

2. Primary Building Entry Example
Photo by Riki Nishimura

3. Entry to Residential Example
Copyright Google Street View

P.106
1. Metal Screening Example
Copyright Getty Images

P.109
2. Lighting at Parking Garage Example
Courtesy of May + Russel Architects

P.110
3. Roof With Mechanical Equipment Example
Copyright Getty Images

P.129
1. Cornice Creates Datum Example
Copyright Getty Images

2. Datum: Change In Architectural Articulation / Modulation Example
Copyright Getty Images

3. Datum: Change In Material and Plane Example
Photo by Riki Nishimura

4. Datum: Canopy Example
Copyright Getty Images

5. Datum: Change In Color and Plane Example
Courtesy of KTGY Architecture and Planning

6. Datum: Change In Transparency Example
Photo by Prakash Patel

P. 130
1. Adaptive Reuse for Example
Małopolska Garden of Arts by Ingarden & Ewý Architects
Photo by Krzysztof Ingarden

2. Adaptive Reuse Example
Copyright Gensler

P. 135
1. Private Common Open Space - Rooftop Example
Copyright Getty Images

P. 147
1-16. Signage Examples
Photos by Tom Horton

P. 149
1. Digital Display Sign Example
Photo by Tom Horton

P. 158
1. Temporary Signs Example
Photo by Tom Horton

P. 159
1. Portable Signs Example
Photo by Tom Horton

P. 161
1. Entrances and Ground Level Lighting Examples
Photo by Nic Lehoux

2. Entrances and Ground Level Lighting Examples
Photo by Christa Lachenmaier

FIVEPOINT

Adjaye Associates

Gensler

SEVENTH AMENDMENT TO THE DISPOSITION AND DEVELOPMENT AGREEMENT FOR HUNTERS POINT SHIPYARD PHASE 1 (PHASE 1 DDA)

SUMMARY

The Seventh Amendment to the Phase 1 DDA confirms the reduction in the development entitlement thereunder, consistent with the relocation to the CP/HPS2 Project of 172 residential units and up to 71,000 square feet of commercial square footage initially planned for HPS Phase 1.

DETAILED AMENDMENT OVERVIEW

Transfer of Unbuilt Housing Units to HPS2/CP Project

- Conforming amendments to reflect reduction in the development entitlement consistent with the relocation to the CP/HPS2 Project of 172 residential units initially planned for HPS Phase 1.

Transfer of Unbuilt Commercial Space to HPS2/CP Project

- Conforming amendments to reflect reduction in the development entitlement consistent with the relocation to the CP/HPS2 Project of up to 71,000 GSF of commercial space initially planned for HPS Phase 1. Allowance for up to 11,000 square feet of such commercial space to be transferred back to Phase 1.

Community Benefits Reporting

- Shift in timing of Community Benefits Reporting from Quarterly to Bi-Annually (to allow for coordination with new HPS2/CP Community Benefits bi-annual reporting requirement).

RECORDING REQUESTED BY
and When Recorded Mail To:

Successor Agency to the San Francisco Redevelopment Agency
One South Van Ness Avenue, 5th Floor
San Francisco, California 94103
Attn: Executive Director

This document is exempt from payment of a recording fee pursuant to California Government Code Section 27383.

Recorder's Stamp

SEVENTH AMENDMENT TO DISPOSITION AND DEVELOPMENT AGREEMENT
(Hunters Point Shipyard Phase 1)

This SEVENTH AMENDMENT TO DISPOSITION AND DEVELOPMENT AGREEMENT (HUNTERS POINT SHIPYARD PHASE 1) (this "**Seventh Amendment**"), dated as of _____, 2018 (the "**Seventh Amendment Reference Date**"), is entered into by and between the SUCCESSOR AGENCY TO THE REDEVELOPMENT AGENCY OF THE CITY AND COUNTY OF SAN FRANCISCO, a public body organized and existing under the laws of the State of California (the "**Agency**"), and HPS DEVELOPMENT CO., LP, a Delaware limited partnership ("**Developer**"), with reference to the following facts and circumstances:

RECITALS

A. The Redevelopment Agency of the City and County of San Francisco (the "**Redevelopment Agency**") and Developer entered into that certain Disposition and Development Agreement Hunters Point Shipyard Phase 1, dated as of December 2, 2003, and recorded in the Official Records of the City and County of San Francisco (the "**Official Records**") on April 5, 2005 as Document No. 2005H932190 at Reel I861, Image 564 (the "**Original DDA**"), as amended by that certain First Amendment to Disposition and Development Agreement Hunters Point Shipyard Phase 1, dated as of April 4, 2005 and recorded in the Official Records on April 5, 2005 as Document No. 2005H932191 at Reel I861, Image 565 (the "**First Amendment**"), and as further amended by that certain Second Amendment to Disposition and Development Agreement Hunters Point Shipyard Phase 1, dated as of October 17, 2006 and recorded in the Official Records on October 26, 2006 as Document No. 2006I275571 at Reel J254, Image 429 (the "**Second Amendment**"), and as further amended by that certain Amendment to Attachment 10 (Schedule of Performance For Infrastructure Development And Open Space "Build Out" Schedule of Performance) to the Disposition And Development Agreement Hunters Point Shipyard Phase 1, dated as of August 5, 2008 and recorded in the Official Records on March 24, 2009 as Document No. 2009-I738449 (the "**Third Amendment**"), and as further amended by that certain Fourth Amendment to Disposition and Development Agreement (Hunters Point Shipyard Phase 1), as of August 29, 2008 and recorded in the Official Records on March 24, 2009 as Document No. 2009-

I738450 (the "**Fourth Amendment**"), and as further amended by that certain Fifth Amendment to Disposition and Development Agreement (Hunters Point Shipyard Phase 1), dated as of November 3, 2009 and recorded in the Official Records on November 30, 2009 as Document No. 2009-I879123 (the "**Fifth Amendment**"), and as further amended by that certain Sixth Amendment to Disposition and Development Agreement (Hunters Point Shipyard Phase 1), dated as of December 19, 2012 and recorded in the Official Records on February 11, 2013 as Document No. 2013-J601488 (the "**Sixth Amendment**", together with the Original DDA, the First Amendment, the Second Amendment, the Third Amendment, the Fourth Amendment and the Fifth Amendment, the "**DDA**"). All initially capitalized terms used but not defined herein shall have the meanings ascribed to them in the DDA.

B. The DDA is an Enforceable Obligation under California Health and Safety Code Section 34171(d)(E) and was in existence prior to June 28, 2011. The Oversight Board has recognized and approved the DDA as an Enforceable Obligation, and has approved recognized obligation payment schedules that include various obligations and commitments relating to the DDA. By letter dated December 14, 2012, the California Department of Finance ("**DOF**") made a final and conclusive determination with respect to the DDA as an Enforceable Obligation in accordance with California Health and Safety Code section 34177 .5(i).

C. The DDA allows development of up to 1,600 residential units, up to 80,000 gross square feet of commercial space, and associated parks, open spaces, and community benefits in Phase 1. The Agency has been informed by Developer that of the 1,600 residential units and 80,000 gross square feet of commercial uses allowed under the DDA, Developer intends for up to 1,210 residential units and up to 9,000 gross square feet of commercial space to be constructed by Vertical Developers under and as defined in the DDA. The Agency intends to construct 218 residential units in Phase 1. The remaining 172 residential units (including 18 affordable units) and 71,000 gross square feet of commercial uses originally planned for Phase 1 are instead included within the development under the CP/HPS2 DDA (as defined in the Sixth Amendment) of Candlestick Point and Phase 2 of the Hunters Point Shipyard (the "**CP/HPS2 Project**"). Contemporaneously herewith the Agency and Developer under and as defined in the CP/HPS2 DDA ("**CP/HPS2 Developer**") are amending the CP/HPS2 DDA to make conforming amendments thereto with respect to the foregoing and related matters.

D. On or about the Seventh Amendment Reference Date, the Agency Commission approved this Seventh Amendment.

E. In accordance with the DDA, Developer and the Agency are parties to that certain Community Benefits Agreement Hunters Point Shipyard Phase 1, dated as of April 4, 2005, as amended by that certain First Amendment to Community Benefits Agreement (Hunters Point Shipyard Phase 1), dated as of November 3, 2009 (collectively, the "**Community Benefits Agreement**"), providing for Developer and Vertical Developers to provide certain community benefits in connection with the development of Phase 1. As part of Developer's obligations under the Community Benefits Agreement, it is required to report to the CAC and the Agency from time to time regarding its compliance with such obligations. The Agency and Developer desire to clarify the frequency and procedures for such reporting and provide conformity in reporting obligations between Phase 1 and the CP/HPS2 Project.

F. This Seventh Amendment benefits the taxing entities because it will increase the amount of revenues to the taxing entities by enhancing and promoting the development of Phase 1 and Redevelopment Plan area, facilitate the revitalization of the community and encourage further investment in the area, and generate employment opportunities throughout the Phase 1 and Redevelopment Plan area.

G. By this Seventh Amendment, the Parties desire to amend the DDA to reflect the foregoing, in accordance with the terms set forth herein.

AGREEMENT

ACCORDINGLY, for good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the Agency and Developer agree as follows:

1. Development Program. The DDA is hereby amended as follows:

   (a) Phase 1 Residential Development. The maximum number of Residential Units allowed to be constructed pursuant to the DDA shall be 1,428 units, of which 1,210 shall be available for development by Vertical Developers.

   (b) Phase 1 Commercial Development. The maximum amount of commercial space constructed under the DDA shall be 9,000 square feet of commercial space, which shall be available for development by Vertical Developers. Up to 11,000 gross square feet of the 71,000 gross square feet of commercial uses originally planned to be constructed under the DDA may be reassigned to Developer for use in Phase 1 without amendment to this DDA (and thus added to the foregoing commercial square footage) by written notice from Developer and CP/HPS2 Developer to the Agency.

   (c) Conforming Amendments. The Parties agree that any and all references in the DDA that describe the Phase 1 development program thereunder are hereby amended to the extent applicable to reflect the amendments in this Section 1.

2. Community Benefits Reporting. The Parties agree that the following shall constitute Developer's sole obligations under Section 13 of the Community Benefits Agreement:

   Section 13. Community Benefits Status Report. Commencing as of the Seventh Amendment Effective Date and continuing until issuance of the last Certificate of Completion for Phase 1, Developer shall within thirty (30) days following each Community Benefits Reporting Period (as defined below) submit a Community Benefits Status Report to the Agency. Following each such submission, if requested by the CAC and the Agency, respectively, Developer shall present a summary of such Community Benefits Status Report to the CAC and to the Agency Commission. "**Community Benefits Status Report**" means a written report that describes the status of Developer's and, to the extent known by Developer, each Vertical Developer's compliance with their respective obligations under the Community Benefits Agreement during the immediately preceding period between January 1 and June 30 or July 1 and December 31, whichever is applicable (the "**Community Benefits Reporting Period**"). Developer may (but,

for the avoidance of doubt, shall not be required to) coordinate its reporting pursuant to this Section 13 with similar reporting by CP/HPS2 Developer pursuant to the CP/HPS2 DDA. Each Vertical DDA entered into following the Seventh Amendment Effective Date shall require the applicable Vertical Developer to reasonably cooperate with Developer in preparing such report with respect to such Vertical Developer's obligations under the Community Benefits Plan under and as defined in such Vertical DDA.

3. Miscellaneous.

(a) Incorporation. This Seventh Amendment constitutes a part of the DDA and any reference to the DDA as amended by this Seventh Amendment shall be deemed to include a reference to the DDA as amended by this Seventh Amendment.

(b) Ratification. To the extent of any inconsistency between this Seventh Amendment and the DDA, the provisions contained in this Seventh Amendment shall control. As amended by this Seventh Amendment, all terms, covenants, conditions and provisions of the DDA shall remain in full force and effect

(c) Successors and Assigns. This Seventh Amendment shall be binding upon and inure to the benefit of the respective successors and assigns of the Agency and Developer, subject to the limitations set forth in the DDA.

(d) Counterparts. This Seventh Amendment may be executed in any number of counterparts, each of which shall be an original and all of which together shall constitute one and the same document, binding on all parties hereto notwithstanding that each of the parties hereto may have signed different counterparts. Delivery of this Seventh Amendment may be effectuated by hand delivery, mail, overnight courier or electronic communication (including by PDF sent by electronic mail, facsimile or similar means of electronic communication). Any electronic signatures shall have the same legal effect as manual signatures.

(e) Governing Law; Venue. This Seventh Amendment shall be governed by and construed in accordance with the laws of the State of California. The parties hereto shall not be required to take any actions implementing this Seventh Amendment to the extent inconsistent with the Redevelopment Plan for the Hunters Point Shipyard Redevelopment Project (as amended as of the date of determination, the "**Redevelopment Plan**"). The parties hereto agree that all actions or proceedings arising directly or indirectly under this Seventh Amendment shall be litigated in courts located within the City and County of San Francisco, State of California.

(f) Integration. This Seventh Amendment contains the entire agreement between the parties hereto with respect to the subject matter of this Seventh Amendment. Any prior correspondence, memoranda, agreements, warranties or representations relating to such subject matter are superseded in total by this Seventh Amendment. No prior drafts of this Seventh Amendment or changes from those drafts to the executed version of this Seventh Amendment shall be introduced as evidence in any litigation or other dispute resolution

proceeding by either party hereto or any other person, and no court or other body shall consider those drafts in interpreting this Seventh Amendment.

(g) Further Assurances. The Agency Director and Developer shall execute and deliver all documents, amendments, agreements, and instruments reasonably necessary or reasonably required in furtherance of this Seventh Amendment, including as required in connection with other documents and agreements attached to the DDA or incorporated therein by reference, and other documents reasonably related to the foregoing.

(h) Authority and Enforceability. Developer and the Agency each represents and warrants to the other that the execution and delivery of this Seventh Amendment, and the performance of its obligations hereunder, have been duly authorized by all necessary action, and will not conflict with, result in any violation of, or constitute a default under, any provision of any agreement or other instrument binding upon or applicable to it, or any present law or governmental regulation or court decree.

(i) Effective Date. This Seventh Amendment shall become effective on the latest to occur of (the "**Seventh Amendment Effective Date**"): (w) the date that it is duly executed and delivered by the parties hereto; (x) the effective date of a resolution adopted by the Oversight Board approving this Seventh Amendment; (y) the date of approval or deemed approval of this Seventh Amendment by DOF; and (z) the effective date of a resolution approving this Seventh Amendment adopted by the Agency Commission.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Agency and Developer have each caused this Seventh Amendment to be duly executed on its behalf as of the Seventh Amendment Effective Date.

AGENCY:

Authorized by Agency Resolution No. ___
adopted _____, 2018

Oversight Board Resolution No. ____
Adopted _____, 2018

Approved as to Form:

Jim Morales, General Counsel

By: _____
Aaron Foxworthy, Deputy General Counsel

SUCCESSOR AGENCY TO THE REDEVELOPMENT AGENCY OF THE CITY AND COUNTY OF SAN FRANCISCO, a public body, organized and existing

By: _____
Name: Nadia Sesay
Its: Executive Director

DEVELOPER:

HPS DEVELOPMENT CO., LP,
a Delaware limited partnership

By: CP/HPS Development Co. GP, LLC,
a Delaware limited liability company
its General Partner

By: _____
Name: _____
Title: _____

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of _____

On _____, 2018 before me, _____, Notary Public, personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____
Signature of Notary Public

(Notary Seal)

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of _____

On _____, 2018 before me, _____, Notary Public, personally appeared _____ who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____
Signature of Notary Public

(Notary Seal)

Report

The Economics of Land Use

Fiscal and Economic Impact of Candlestick Point/ Hunters Point Shipyard

Prepared for:

FivePoint Communities

Prepared by:

Economic & Planning Systems, Inc.

March 27, 2018

EPS #171058

Economic & Planning Systems, Inc.
One Kaiser Plaza, Suite 1410
Oakland, CA 94612-3604
510.841.9190 tel
510.740.2080 fax

Oakland
Sacramento
Denver
Los Angeles

www.epsys.com

Table of Contents

1. INTRODUCTION 1
   - Organization of Report 1
2. KEY FINDINGS: 2010 TO 2018 COMPARISON 3
3. KEY FINDINGS: 2018 FISCAL AND ECONOMIC IMPACTS 8
   - General Fund Impacts 8
   - Transit Impacts 9
   - Economic Impacts 9
   - Affordable Housing and Development Impact Fees 10
4. PROJECT DESCRIPTION 19
5. SAN FRANCISCO GENERAL FUND REVENUES 24
   - Assessed Value 25
   - Property Tax 28
   - Property Tax In-Lieu of Vehicle License Fees 28
   - Property Transfer Tax 31
   - Sales Taxes 34
   - Hotel Tax 38
   - Parking Tax 40
6. SAN FRANCISCO GENERAL FUND EXPENDITURES 43
   - Elections 44
   - Assessor 44
   - 311 44
   - Police Services 45
   - Fire Protection 48
   - 911 48
   - Public Health 49
   - Public Works 50
   - Recreation 54
   - Library 54
7. TRANSPORTATION 55
8. DEVELOPMENT IMPACT FEES 56

List of Tables

Table 1 2010 and 2018 Development Program Comparison 3

Table 2 General Fund Revenue and Expenditures at Buildout 5

Table 3 Transportation Revenue and Expenditures at Buildout 6

Table 4 Ongoing Employment at Project Buildout 7

Table 5 General Fund Fiscal Impact (2017$) 11

Table 6 Impacts on Transportation (2017$) 14

Table 7 Direct Employment Estimates 17

Table 8 Ongoing Economic Impacts 18

Table 9 Construction Employment and Income Impacts 18

Table 10 Development Impact Fee Summary 18

Table 11 Development Program Summary 20

Table 12 Development Program and Population Density Assumptions 21

Table 13 Citywide and Project Population and Employment Estimates 23

Table 14 Summary of General Fund Revenue Estimates 24

Table 15 Assessed Value 26

Table 16 Property Tax 29

Table 17 Property Transfer Tax 32

Table 18 Sales Tax 35

Table 19 Hotel Tax 39

Table 20 Parking Tax 41

Table 21 General Fund Expenditures 43

Table 22 Elections 44

Table 23 311 Cost 45

Table 24 Police Services 47

Table 25 Fire Protection 48

Table 26 911 Calls 49

List of Tables

Table 27 Public Health 50

Table 28 Public Works 52

Table 29 Library 54

Table 30 Development Impact Fee Revenue 56

List of Figures

Figure 1 General Fund Net Impact Comparison 13

Figure 2 Cumulative Transportation Impact Comparison 16

1. INTRODUCTION

Economic & Planning Systems, Inc. (EPS) has conducted a fiscal and economic impact evaluation (2018 Analysis) of the Candlestick Point Hunters Point Shipyard (CP/HPS) (Project). This includes analysis of the fiscal impacts on the City and County of San Francisco's (CCSF's) General Fund and Transit Budget as well as the ongoing economic impacts from Project development and the one-time economic impacts from construction activity. This Report provides a detailed description of the assumptions and methodology used, a summary of the key findings of this 2018 Analysis, and a comparison between the results of this 2018 Analysis and the prior 2010 Analysis.[1]

The 2018 fiscal impact analysis is based on inputs/calculations by FivePoint (development schedule, assessed values, and property tax pass-throughs), Fehr & Peers (all transit costs and selected transit revenues), and EPS (all General Fund revenues, selected transit revenues, conversion of transit capital costs into annual debt service payments, and a first-order evaluation of General Fund expenditures). The economic impact analysis is based on FivePoint and EPS estimates of job density for different uses, the overall development program, and TRC estimates of construction jobs. In addition, the incomes, output, and multiplier effects associated with this job growth are estimated using the IMPLAN Economic Impact Model for San Francisco.

In 2010, CCSF requested that the master developer, CP Development Co, obtain a fiscal and economic impact analysis. EPS conducted that original 2010 Impact Analysis (2010 Analysis) with substantial input from CCSF staff and the master developer. The methodology for this 2018 Analysis is broadly consistent with the methodology applied in the original 2010 Fiscal Impact Analysis (2010 Analysis). For the General Fund impact analysis, all revenue items have been re-estimated based on new project and market information/ forecasts and unit costs have been refined based on the latest CCSF budget. Revised transit costs reflect the new development schedule and expected transit capital investments needs, including contingency mitigations in case of capital stock problems. Revised transit costs also include a revised approach to the estimation of T-Third/Central Subway capital and operation costs.[2] The 2018 economic impact analysis uses the same approach as in 2010, updating estimates to reflect the new development program and the latest economic multiplier model. Refinements to any of these core assumptions would affect the fiscal results.

Organization of Report

Following this introductory chapter, **Chapter 2** summarizes the differences between the results of the 2010 and 2018 Analyses. **Chapter 3** then provides a more detailed summary of the outcomes of the 2018 Analysis. The following chapters, **Chapters 4** through **8**, then provide detailed information on the assumptions and methodology that underpin the 2018 estimates of

---

[1] Economic & Planning Systems, Inc., "Fiscal and Economic Impact Analysis of the Candlestick Point-Hunters Point Shipyard Phase II Development Project", June 15, 2010.

[2] For a detailed discussion of transit impacts, see Fehr & Peers, "Fiscal and Economic Impact Report: Transportation Components Memorandum", February 27, 2018.

fiscal and economic impacts. Specifically, **Chapter 4** outlines the development program and associated demographic/economic assumptions; **Chapter 5** describes the Project-related General Fund revenues, **Chapter 6** describes the Project-related General Fund expenditures; **Chapter 7** addresses impacts on transit revenues and expenditures; and **Chapter 8** describes the Project-related development impact fee revenues.

2. KEY FINDINGS: 2010 TO 2018 COMPARISON

A key purpose of this 2018 Fiscal Report is to determine the changes in the fiscal and economic impacts of the CP/HPS Project on the City and County of San Francisco relative to the 2010 Analysis. The findings described in this section summarize the primary differences and their causes. As described below, primary reasons for the improved fiscal performance are improved market conditions and changes in tax rates (e.g. property transfer taxes). **Chapter III** provides more detail on the specific findings of the 2018 Analysis.

- ***The proposed CP/HPS development program has changed since 2010, particularly for nonresidential uses.***

  As shown in **Table 1**, the proposed development program has changed since 2010. In particular, the development program: (1) no longer includes a stadium, (2) incorporates fewer parking spaces, (3) allows for an additional 200,000 square feet in retail space, (4) includes more hotel room development, and, (5) includes capacity for twice as much office/R&D space. The residential program remains consistent with about 10,670 units, including 3,363 below-market rate, workforce, and public housing units.

Table 1 2010 and 2018 Development Program Comparison

Item	2010 Program Description at Buildout	2018 Program Description at Buildout
Residential		
Market-Rate		
For-Sale	6,043 units	5,874 units
Rental	1,113 units	1,435 units
Market-Rate Subtotal	7,156 units	7,309 units
Below Market-Rate		
For-Sales	446 units	584 units
Rental	362 units	243 units
Below Market-Rate Subtotal	808 units	827 units
Workforce Units	892 units	892 units
Public Housing & Agency Units	1,644 units	1,644 units
Residential Total	**10,500** units	**10,672** units
Commercial Uses		
Hotel	150,000 Gross Sq. Ft.	270,000 Gross Sq. Ft.
Regional Retail	635,000 Gross Sq. Ft.	735,000 Gross Sq. Ft.
Neighborhood Retail	250,000 Gross Sq. Ft.	351,000 Gross Sq. Ft.
Commercial Total	**1,035,000** Gross Sq. Ft.	**1,356,000** Gross Sq. Ft.
Other Non-Residential Uses and Parking		
Film & Arts Center	10,000 Gross Sq. Ft.	75,000 Gross Sq. Ft.
Community Use	N/A	100,000 Gross Sq. Ft.
Research & Development	2,650,000 Gross Sq. Ft.	4,415,000 Gross Sq. Ft.
Artist Studio	N/A	255,000 Gross Sq. Ft.
Maker Space	N/A	75,000 Gross Sq. Ft.
Institutional	N/A	410,000 Gross Sq. Ft.
Football Stadium	69,000 Gross Sq. Ft.	N/A
Other Non-Residential Uses Total	**2,729,000** Gross Sq. Ft.	**5,330,000** Gross Sq. Ft.
Public Parking	11,964 Spaces	9,889 Spaces

Sources: Lennar (2010); FivePoint Construction Schedule (November 8, 2017) and FivePoint correspondence (March 2018); Economic & Planning Systems, Inc.

- ***At Project buildout, the net annual Project-related General Fund surplus is expected to be $40.6 million in 2017 constant dollars, compared to $16.1 million in 2010 constant dollars under the 2010 Analysis.***

  Table 2 shows a side-by-side comparison of estimated projected-related General Fund revenues and expenditures at Project buildout for the 2010 and 2018 analyses (in constant 2010 and 2017 dollars respectively). As shown, General Fund revenues at Project buildout are estimated to be 79 percent higher than in 2010, while General Fund expenditures at Project buildout are estimated to be 39 percent higher than in 2010. The level of inflation over this period, as measured by the Consumer Price Index for the San Francisco/San Jose/Oakland area, was 17 percent, accounting for a portion of these increases. When the 2010 numbers are adjusted for inflation, the annual General Fund revenues increase by 53 percent in real terms and the General Fund expenditures increase by about 18 percent in real terms. Over half of the increase in General Fund revenues is tied to the General Fund revenue items driven by the Project's assessed values, including property tax, property transfer tax, and property tax in-lieu of vehicle license fees.[3] Increases in business taxes, sales and use taxes, and transient occupancy taxes also contributed to the increase in General Fund revenues.

- ***The changes in the CP/HPS development program have affected the Project's fiscal impacts, though the effects are modest relative to broader real estate market factors.***

  Market-driven changes and forecasts (that have increased and are expected to continue to increase the development values of market-rate residential in the southeast market area, both initially and through appreciation over time, increased the development values of commercial development, and improved the expected overnight rates at hotels and taxable sales per square foot at the regional retail) are primary drivers of the improved fiscal performance. In addition, increases in property transfer tax rates have substantially increased transfer revenues. Changes in the development program have, however, had a direct effect on some General Fund revenues items, including: (1) increased transient occupancy taxes due to the increased scale of hotel development; (2) increased business taxes due to the increased amount of R&D workspace, payrolls, and business activity; (3) increased sales and use taxes due to the increase in retail development; and, (4) reduced parking taxes due to the reduction in the number of parking spaces.

[3]As with all revenue and expenditure items, the reasons for the changes between 2010 and 2018 are manifold. For example, in addition to improved real estate market conditions, changes in the City's property tax transfer rates and a more specific accounting of the inflationary impacts and the expected land and building transfers also accounted for some of the change in the property transfer taxes.

Table 2 General Fund Revenue and Expenditures at Buildout

Item	2010 Model at Buildout[1] (2010 Constant $$)	Buildout (2035) (2017 Constant $$)	Percent Change
REVENUES			
Business Taxes[2]	$9,048,178	$14,901,834	65%
Hotel Room Tax	$631,519	$4,163,053	559%
Parking Tax	$1,624,915	$1,029,074	-37%
Property Tax	$11,294,241	$17,950,445	59%
Property Transfer Tax	$3,663,254	$12,404,662	239%
Property Tax in Lieu of VLF	$8,432,624	$15,421,155	83%
Sales and Use Tax	$4,918,447	$7,853,629	60%
Gas Electric Steam Users Tax	$739,469	$1,013,935	37%
Telephone Users Tax	$1,158,475	$1,159,024	0%
Water Users Tax	$45,297	$112,668	149%
Fines, Forfeitures & Penalties	$113,601	$124,566	10%
License, Permits, and Franchises	$743,583	$785,420	6%
Sales Tax Allocation to Public Safety	$2,459,224	$3,926,815	60%
Stadium Admission Tax	$218,400	Not Estimated	N/A
Total Revenues	**$45,091,227**	**$80,846,279**	**79%**
EXPENDITURES			
Elections	$360,000	$419,583	17%
Assessor/Recorder	$105,530	$123,565	17%
311	$242,169	$245,482	1%
Police Services	$10,066,737	$13,772,563	37%
Fire Protection	$7,506,617	$8,139,727	8%
911 Emergency Response	$496,267	$1,087,694	119%
San Francisco MTA			
MUNI	$2,907,863	$5,276,675	81%
Other MTA Programs	$4,949,176	$7,653,043	55%
Department of Public Health	$841,597	$1,652,037	96%
DPW (Road Maintenance)	$1,010,231	$1,286,035	27%
Recreation and Parks	$351,703	$343,850	-2%
Library	$186,724	$218,635	17%
Total Expenditures	**$29,024,614**	**$40,218,890**	**39%**
NET REVENUES (COSTS)	**$16,066,613**	**$40,627,389**	**153%**

[1] The 2010 fiscal analysis included access line tax, sales tax realignment to health and welfare, and VLF realignment to health and welfare, bringing total revenues to $50 million. For purpose of comparison, these revenues have been excluded in the 2018 analysis.
[2] Includes business tax and payroll tax revenue in 2010 analysis.

Sources: FivePoint; City and County of San Francisco; Economic & Planning Systems, Inc.

- ***At Project buildout, the net annual Project-related Transit surplus is expected to be $3.4 million in 2018 constant dollars, compared to $1.5 million in 2010 constant dollars under the 2010 Analysis.***

Table 3 shows a side-by-side comparison of estimated projected-related transit revenues and expenditures at Project buildout for the 2010 and 2018 analyses (in constant 2010 and 2017 dollars respectively). As shown **Table 3**, transit revenues at Project buildout are estimated to be one percent higher than in 2010, while transit expenditures are expected to be 6 percent lower than in 2010. In inflation-adjusted terms, both transit revenues and expenditures were higher in 2010 than in 2018, though the net annual surplus was lower, at $1.7 million, than under the 2018 Analysis. For transit revenues, significant changes, both

positive and negative, in individual transit revenue line items effectively balanced each other. For example, transit revenues driven by taxable sales all increased substantially, while revenues tied to the number of parking spaces all decreased substantially. For transit costs, operation costs increased in nominal dollar terms, transit facilities costs increased significantly based on new transit facility costs, and capital facilities costs decreased. The key driver of the reduced capital costs (and for the modest operations costs increases) relate to the revised calculations and timing of the Project's fair-share contributions to the light rail T-Third capital and operation costs.

Table 3 Transportation Revenue and Expenditures at Buildout

Item	Buildout (2010 Constant $$)	Buildout (2035) (2017 Constant $$)	Percent Change
Transit Revenues			
FastPass	$8,825,040	$10,184,000	15%
Farebox Recovery	$2,988,781	$3,034,000	2%
Advertising	$188,361	$813,000	332%
Prop K Sales Tax[1]	$904,994	$1,570,726	74%
On-Street Parking	$2,698,284	$1,250,000	-54%
Parking Tax[2]	$6,499,661	$4,116,296	-37%
Parking Fees and Fines	$2,459,302	$700,000	-72%
State Sales Tax (AB 1107)[3]	$614,806	$981,704	60%
TDA Sales Tax[4]	$1,229,612	$1,963,407	60%
Other[5]	$209,271	N/A	N/A
Annual General Fund Transfer to MUNI[6]	$2,907,863	$5,276,675	81%
Subtotal	**$29,525,975**	**$29,889,808**	**1%**
Transit Expenditures			
Operation Costs	$15,919,609	$17,942,500	13%
Mitigation Costs[7]	$2,988,781	$1,809,743	-39%
Capital Costs	$7,044,474	$3,191,888	-55%
Facilities[8]	$2,106,105	$3,551,808	69%
Subtotal	**$28,058,969**	**$26,495,939**	**-6%**
Net Annual Transportation Impact	**$1,467,006**	**$3,393,869**	**131%**
Cumulative	$7,426,926	$36,242,529	

[1] According to January 2017 Proposition K Sales Tax Expenditure Plan Summary, 40.0% of one-half cent sales tax allocated to transit maintenance and rehabilitation.

[2] According to Proposition A, SFMTA receives 80% of parking tax from off-street, commercial spaces. SFMTA Adopted Operating Budget FY2016, p. 33.

[3] State sales tax (AB 1107 or BART) is a one-half cent sales tax, which allocates 25% to SFMTA and AC Transit (75% to BART). Mtc.ca.gov/our-work/fund-invest.

[4] Transportation Development Act (TDA) sales tax is a tax of one-quarter of one percent on all retail sales, which is used to finance transit. Mtc.ca.gov/our-work/fund-invest.

[5] Other transit revenues were a separate line item in 2010 but have been included in other revenue line items for 2017.

[6] 6.68% baseline of discretionary General Fund revenues are assumed transferred to MUNI. FY2017-18 Controller's Discussion of the Mayor's FY2017-18 Proposed Budget, p. 20.

[7] Potential mitigation capital costs for rolling stock includes 11 motor coaches, 2 trolley coaches, and one light rail vehicle.

[8] Fehr & Peers provided a 2018 facilities cost, which EPS amortized assuming a 5 percent interest rate over 30 years.

Sources: FivePoint; City and County of San Francisco Operating Budget (2016); SFMTA website; Fehr & Peers; Economic & Planning Systems, Inc.

- ***By Project buildout, ongoing economic activity at the Project and associated "multiplier" effects will support about 28,800 new jobs in San Francisco, up 28 percent from 22,500 jobs in the 2010 Analysis.***

Table 4 shows a side-by-side comparison of direct jobs and multiplier (indirect and induced) effects under the 2010 and 2018 analyses. As shown, under the 2018 development program, the proposed employment-generating uses within the Project will generate

approximately about 15,700 jobs under the 2018 development program at Project buildout, with an additional 13,000 jobs in San Francisco generated through indirect and induced effects. This compares to a total of 10,700 direct Project jobs under the 2010 development program and an associated 12,654 indirect and induced jobs. The increased number of jobs supported under the 2018 development program is primarily due to the increase in Research and Development workspace. In addition, the estimated number of direct jobs associated with Project construction activity increased from 5,600 job-years under the 2010 Analysis to 8,327 job-years under the 2018 Analysis, an increase of about 49 percent. The multiplier effects (including indirect and induced jobs) also increased between the 2010 and 2018 Analyses.

Table 4 Ongoing Employment at Project Buildout

Item	2010 Employment	2018 Employment[1]
Residential	420	427
Commercial Uses		
Film & Arts Center (2010 Performance Venue)[2]	87	100
Community Use	N/A	282
Artists' Studios[3]	N/A	300
Hotel	214	386
Office	543	N/A
Regional Retail	1,814	1,838
Neighborhood Retail	926	878
Maker Space	N/A	188
Research & Development	6,250	11,038
Institutional[4]	N/A	200
Commercial Subotal	9,834	15,207
Public Parking[5]	32	37
Parks and Open Space[6]	60	88
Water Taxi[7]	N/A	4
Football Stadium[8]	357	N/A
Other Subtotal	449	129
Total Direct Jobs	**10,703**	**15,763**
Indirect Jobs[9]	7,410	7,724
Induced Jobs[9]	4,390	5,295
TOTAL JOBS	**22,503**	**28,783**

[1] Unless otherwise noted, employment assumptions based on industry standards and previous EPS studies for individual land use types.

[2] Because the type of performance venue has changed since 2010 from a concert hall to a center with a focus on film and performing arts, the employment estimate is founded on EPS' study of movie and theater centers and is based on a building square footage instead of number of events as was done in 2010.

[3] Based on information about number of studios and artists provided by FivePoint.

[4] Based on generalized population density at institutions such as schools.

[5] Includes all off-street parking.

[6] EPS assumption. Open space acreages based on 2018 Modified Project Variant Land Use Program.

[7] FivePoint estimate assumes capacity for 22 passengers plus captain and crew members.

[8] Stadium jobs based on data provided by 49ers (excluding 725 media jobs assumed existing jobs). Assumes 12 football games and 20 other events, 8 hours/shift.

[9] Indirect and induced employment according to IMPLAN input-output modeling software. Includes full- and part-time jobs.

Sources: FivePoint; Minnesota IMPLAN System; Economic & Planning Systems, Inc.

3. KEY FINDINGS: 2018 FISCAL AND ECONOMIC IMPACTS

This chapter provides a detailed discussion of the findings of the 2018 Analysis and is separated into four sections: General Fund (Fiscal) Impacts; Transit (Fiscal) Impacts; Economic Impacts; and, Affordable Housing/Development Impact Fee Investments.

General Fund Impacts

- ***At Project buildout, Project-related annual General Fund revenues to the City are forecast to be more than twice as high as annual Project-related General Fund expenditures.***[4]

  New General Fund revenues associated with CP/HPS development are forecast to be substantially greater than annual General Fund expenditures at estimated project buildout (2035) and beyond. As shown in **Table 2** in the prior chapter, in 2035, Project-related annual General Fund revenues are estimated at $80.8 million, relative to $40.2 million in Project-related annual General Fund expenditures (2017 constant dollar terms). This net inflow will provide the City with the opportunity to enhance investments in a range of services throughout the City. Furthermore, in the mid-2040s when many of the tax increment obligations are expected to have been met, the annual property tax revenues accruing to the City's General Fund will increase substantially, further increasing the annual Project-related surplus. As shown in **Table 2**, property taxes, business taxes, sales and use taxes, and transient occupancy taxes, in particular, provide substantial annual revenues. The revenue streams are more than sufficient to cover the largest expenditure categories, including police services, fire services, and allocations to San Francisco MTA, including $5.3 million to MUNI and $7.7 million to other SFMTA programs/expenditure categories.

- ***With the exception of 2021, City revenues are projected to exceed annual operating costs to serve the Project through Project buildout.***

  New General Fund revenues associated with CP/HPS development are forecast to be greater than annual General Fund expenditures from the first year of new revenue and expenditure generation (2019) through estimated project buildout (2035) and beyond, with the exception of 2021. As shown in **Table 5**, the property transfer taxes associated with early land acquisitions and other revenue categories are sufficient to cover the early public service expenditures associated with the first set of residents and businesses in 2017 through 2020. By 2022, when more substantial development has occurred, the full range of General Fund revenue items are generating more than the estimated General Fund expenditures. This remains the case through buildout, including the point at which Fire Department costs increase significantly (2031). As shown in **Figure 1**, the General Fund annual surpluses develop more quickly and become more substantial than in the 2010 Analysis.

---

[4] EPS has not conducted recent interviews with CCSF staff. The current expenditure estimates are based on the general conclusions and relationships drawn in 2010.

Transit Impacts

- ***At Project buildout, the Project-related annual revenues will be more than sufficient to cover Project-related annual transit expenditures.***

  At Project buildout (and beyond), the combination of Project-related annual transit revenues and the Project-related allocation to MUNI of General Fund revenues, are expected to more than cover Project-related transit expenditures. As shown in **Table 3** in the previous chapter, in 2035, Project-related annual transit revenues are estimated at $29.9 million, including the required General Fund revenue allocation to MUNI of $5.3 million. At the same time, annual transit expenditures are estimated at $26.5 million (including $17.9 million in operations costs, $6.7 million in debt service payments on capital and transit facilities investments, and an additional $1.8 million in debt service on potential capital cost mitigations). The result is a net annual surplus at buildout of approximately $3.4 million.

- ***Transit revenues will exceed costs in every year of Project buildout with the exception of 2021, 2027, and 2028.***

  Transit revenues and costs both accrue incrementally through time as new development occurs and new transit investments are made. The distribution of costs is affected by the assumption that all investments in transit vehicles and facilities can be financed, with costs thereby spread more evenly through time. As shown in **Table 6**, annual transit revenues are greater than transit costs every year except 2021, 2027, and 2028. Outside of the three annual deficits, the Project is expected to generate an annual transit surplus every year, as well as a cumulative surplus that is positive and remains positive from 2029 through 2035. By Project buildout, the analysis shows a positive cumulative transit surplus of approximately $36.2 million (see **Figure 2**).

Economic Impacts

- ***By Project buildout, ongoing economic activity at the Project and associated "multiplier" effects will provide about 28,800 new jobs in San Francisco.***

  As shown in **Table 4** in the previous chapter, proposed employment-generating uses within the Project will generate approximately 15,763 jobs, spanning a broad range of industries and occupations, from entry-level jobs to executive and management positions. Of these jobs, about 11,000 will be in the research and development workspaces, 2,700 associated with the regional and neighborhood retail, and another 2,011 jobs associated with the maker spaces, the institutional uses, the film and art center, and the hotels among other uses. As shown in **Table 8**, these employment-generating uses are expected, annually, to generate about $4.3 billion in direct economic output, add $2.7 billion to San Francisco "Gross Domestic Product" (value-added), and provide $1.9 billion in income. The economic multiplier effects in San Francisco provide significant additional economic impacts, generating an estimated additional 13,000 jobs, $1.3 billion in income, and adding another $2.1 billion to San Francisco "Gross Domestic Product" (value-added).

- ***Throughout the expected period of Project buildout, from 2014 through 2034, construction activity will generate jobs and income. Direct construction jobs are estimated to be about 49 percent above the 2010 estimates.***

  TRC has estimated a schedule of full-time and part-time construction jobs associated with Project development from the start of horizontal development. The number of direct construction jobs varies by year but averages about 400 jobs annually over 20 years, or a total of about 8,327 construction job-years. As shown in **Table 9**, about $716 million in income is associated with these jobs. The construction activity will also generate "multiplier" effects—indirect and induced effects—during the period of construction, adding an additional 2,400 construction job-years in San Francisco and about $204 million in extra income.[5] Consistent with the 2010 analysis, this analysis relies on TRC project-specific estimates of construction jobs through time. It is recognized that these estimates of construction jobs are lower than the estimates indicated by the IMPLAN economic model of the San Francisco economy.

Affordable Housing and Development Impact Fees

- ***In addition to direct investments in affordable housing, the Project will generate substantial property tax increment revenues for additional affordable housing investments.***

  Through Project buildout, a total of $231 million in affordable housing revenues is expected to be generated. At Project buildout and beyond, $29 million in annual property tax increment revenues will continue to be generated to support City investments in affordable housing over-and above the $231 million noted (in 2017 constant dollar terms). In the 2010 Analysis, the equivalent affordable housing revenues were about $135 million (in 2017 constant dollar terms) and $17 million annually from Project buildout.

- ***In addition to direct investments in transportation and transit, and parks and recreation, among other community benefits, the Project will pay school facilities, child-care, and public art development impact fees (or provide the equivalent).***

  According to the 2010 Project Redevelopment Plan, FivePoint will contribute several one-time development impact fees relating to development of the Project. The three applicable impact fees support school facilities, public realm art, and child-care in San Francisco. The total fee payments will amount to $49 million, as shown in **Table 10**, if the developer pays the in-lieu fees (as opposed to building new facilities or art installations).

---

[5] Multiplier effects include economic effects beyond the on-site/direct economic activity. *Indirect* jobs results from jobs created by industry-to-industry spending by direct employees. *Induced* jobs consist of jobs driven by employee (and associated household) spending in the San Francisco economy.

Table 5 General Fund Fiscal Impact (2017$)

	Fiscal Year											
Item	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
REVENUES												
Business Taxes[1]	$0	$0	$0	$12,818	$256,901	$2,463,589	$5,722,887	$5,742,743	$6,524,911	$9,300,931	$9,417,981	$9,514,899
Hotel Room Tax	$0	$0	$0	$0	$0	$2,318,663	$2,318,663	$2,318,663	$2,318,663	$2,318,663	$2,318,663	$2,318,663
Parking Tax	$0	$0	$0	$0	$0	$270,042	$333,158	$377,142	$423,770	$689,310	$691,495	$691,495
Property Tax[2]	$0	$0	$107,023	$256,780	$319,876	$737,116	$1,687,706	$3,304,576	$4,792,966	$6,172,709	$7,561,119	$8,945,570
Property Transfer Tax	$0	$0	$2,574,110	$3,679,743	$1,685,876	$5,877,004	$6,447,469	$11,505,650	$15,695,361	$17,720,361	$15,360,111	$20,400,620
Property Tax in Lieu of VLF	$0	$0	$91,943	$220,598	$274,805	$633,254	$1,449,902	$2,838,948	$4,117,618	$5,302,950	$6,495,727	$7,685,103
Sales Tax	$0	$0	$131,780	$184,399	$400,501	$4,792,671	$5,764,028	$6,705,484	$7,432,159	$7,334,499	$7,394,568	$7,993,529
Gas Electric Steam Users Tax	$0	$0	$0	$872	$17,480	$167,625	$389,391	$390,742	$443,961	$632,844	$640,808	$647,403
Telephone Users Tax	$0	$0	$0	$22,836	$124,575	$243,154	$394,382	$429,754	$513,496	$628,475	$644,519	$817,179
Water Users Tax	$0	$0	$0	$2,220	$12,110	$23,637	$38,338	$41,776	$49,917	$61,094	$62,654	$79,438
Fines, Forfeitures & Penalties	$0	$0	$0	$3,017	$16,082	$27,460	$41,080	$45,753	$55,343	$65,101	$67,004	$89,813
License, Permits, and Franchises	$0	$0	$0	$19,021	$101,402	$173,144	$259,019	$288,482	$348,949	$410,477	$422,476	$566,292
Sales Tax Allocation to Public Safety[3]	$0	$0	$65,890	$92,199	$200,250	$2,396,336	$2,882,014	$3,352,742	$3,716,080	$3,667,249	$3,697,284	$3,996,765
Subtotal	**$0**	**$0**	**$2,970,747**	**$4,494,504**	**$3,409,858**	**$20,123,695**	**$27,728,036**	**$37,342,456**	**$46,433,193**	**$54,304,663**	**$54,774,409**	**$63,746,768**
EXPENDITURES												
Elections	$0	$0	$0	$13,250	$68,961	$99,785	$131,198	$151,721	$187,263	$205,860	$213,251	$313,429
Assessor/Recorder	$0	$0	$0	$123,565	$123,565	$123,565	$123,565	$123,565	$123,565	$123,565	$123,565	$123,565
311	$0	$0	$0	$7,752	$40,346	$58,380	$76,759	$88,767	$109,561	$120,441	$124,765	$183,376
Police Services	$0	$0	$0	$328,011	$1,748,632	$2,985,794	$4,466,669	$4,974,745	$6,017,483	$7,306,836	$7,513,755	$9,993,789
Fire Protection	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
911 Emergency Response	$0	$0	$0	$34,347	$178,768	$258,674	$340,108	$393,311	$485,447	$533,655	$552,816	$812,509
San Francisco MTA												
MUNI[4]	$0	$0	$199,273	$301,998	$220,179	$1,216,097	$1,704,437	$2,331,694	$2,930,394	$3,473,727	$3,503,891	$4,098,850
Other MTA Programs	$0	$0	$0	$150,787	$822,568	$1,605,548	$2,604,108	$2,837,672	$3,390,620	$4,149,828	$4,255,766	$5,395,842
Department of Public Health[5]	$0	$0	$0	$52,168	$271,521	$392,885	$516,571	$597,377	$737,318	$810,539	$839,641	$1,234,074
DPW (Road Maintenance)[6]	$0	$0	$39,268	$39,268	$39,268	$39,268	$39,268	$225,792	$323,963	$323,963	$755,914	$814,816
Recreation and Parks[7]	$0	$0	$0	$10,858	$56,514	$81,774	$107,518	$124,336	$153,463	$168,703	$174,761	$256,857
Library	$0	$0	$0	$306,569	$306,569	$218,635	$218,635	$218,635	$218,635	$218,635	$218,635	$218,635
Subtotal	**$0**	**$0**	**$238,541**	**$1,368,573**	**$3,876,891**	**$7,080,406**	**$10,328,837**	**$12,067,616**	**$14,677,711**	**$17,435,751**	**$18,276,759**	**$23,445,743**
NET REVENUES (COSTS)	**$0**	**$0**	**$2,732,206**	**$3,125,931**	**-$467,034**	**$13,043,290**	**$17,399,199**	**$25,274,840**	**$31,755,482**	**$36,868,911**	**$36,497,650**	**$40,301,026**
Additional Revenues (Restricted, Non-Gen. Fund)[8]												
Children's Fund	$0	$0	$6,666	$15,994	$19,925	$45,914	$105,125	$205,838	$298,547	$384,490	$470,972	$557,208
Library Fund	$0	$0	$4,762	$11,425	$14,232	$32,796	$75,089	$147,027	$213,248	$274,636	$336,409	$398,005
Open Space Fund	$0	$0	$4,762	$11,425	$14,232	$32,796	$75,089	$147,027	$213,248	$274,636	$336,409	$398,005
Total Additional Revenues	**$0**	**$0**	**$16,190**	**$38,844**	**$48,388**	**$111,505**	**$255,303**	**$499,891**	**$725,044**	**$933,761**	**$1,143,789**	**$1,353,218**

[1] Includes Gross Receipts Tax, Payroll Tax, and Business Registration Tax.
[2] AB1290 property tax increment pass-throughs will conclude in the mid-2040s, after which, the City's share of property taxes generated from this Project will increase substantially.
[3] Half cent sales tax allocation to public safety is included in this analysis because it provides funding for police department costs.
[4] MUNI expenditure is the General Fund revenues required to be transferred to SFMTA per City Charter 8A.
[5] Based on estimates of hospital admissions and emergency room visits not reimbursed from other sources.
[6] Based on road mileage in 2017 CP/HPS development plan.
[7] Parks and recreation costs will be covered by special taxes and an annuity provided by the Developer.
The costs shown here are associated with recreational programming.
[8] These funds receive a share of property tax increment.

Sources: FivePoint; City and County of San Francisco; Economic & Planning Systems, Inc.

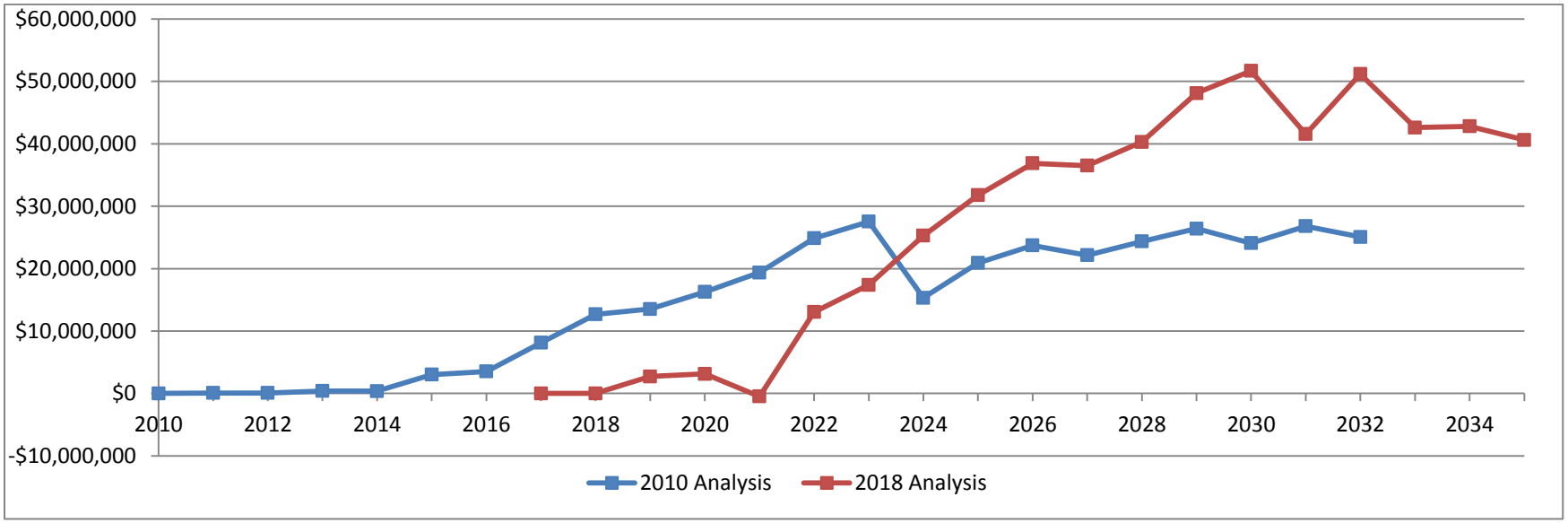
Table 5 General Fund Fiscal Impact (2017$) (continued)

	Fiscal Year						Buildout
Item	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
	13	**14**	**15**	**16**	**17**	**18**	**19**
REVENUES							
Business Taxes[1]	$9,837,377	$14,893,791	$14,893,791	$14,893,791	$14,893,791	$14,901,834	$14,901,834
Hotel Room Tax	$4,163,053	$4,163,053	$4,163,053	$4,163,053	$4,163,053	$4,163,053	$4,163,053
Parking Tax	$709,810	$1,028,866	$1,028,866	$1,028,866	$1,028,866	$1,029,074	$1,029,074
Property Tax[2]	$10,626,645	$12,688,558	$14,491,878	$16,523,037	$17,170,707	$17,409,776	$17,950,445
Property Transfer Tax	$25,022,754	$22,063,515	$19,721,159	$23,574,146	$15,780,320	$16,314,429	$12,404,662
Property Tax in Lieu of VLF	$9,129,308	$10,900,689	$12,449,914	$14,194,874	$14,751,285	$14,956,668	$15,421,155
Sales Tax	$8,757,671	$9,726,777	$9,408,363	$9,688,908	$7,985,383	$7,482,261	$7,853,629
Gas Electric Steam Users Tax	$669,344	$1,013,387	$1,013,387	$1,013,387	$1,013,387	$1,013,935	$1,013,935
Telephone Users Tax	$921,875	$1,158,782	$1,158,782	$1,158,782	$1,158,782	$1,159,024	$1,159,024
Water Users Tax	$89,615	$112,645	$112,645	$112,645	$112,645	$112,668	$112,668
Fines, Forfeitures & Penalties	$103,115	$124,550	$124,550	$124,550	$124,550	$124,566	$124,566
License, Permits, and Franchises	$650,166	$785,319	$785,319	$785,319	$785,319	$785,420	$785,420
Sales Tax Allocation to Public Safety[3]	$4,378,835	$4,863,388	$4,704,182	$4,844,454	$3,992,692	$3,741,130	$3,926,815
Subtotal	**$75,059,569**	**$83,523,321**	**$84,055,888**	**$92,105,811**	**$82,960,779**	**$83,193,838**	**$80,846,279**
EXPENDITURES							
Elections	$369,494	$419,583	$419,583	$419,583	$419,583	$419,583	$419,583
Assessor/Recorder	$123,565	$123,565	$123,565	$123,565	$123,565	$123,565	$123,565
311	$216,177	$245,482	$245,482	$245,482	$245,482	$245,482	$245,482
Police Services	$11,440,169	$13,770,811	$13,770,811	$13,770,811	$13,770,811	$13,772,563	$13,772,563
Fire Protection	$0	$0	$10,481,527	$8,139,727	$8,139,727	$8,139,727	$8,139,727
911 Emergency Response	$957,848	$1,087,694	$1,087,694	$1,087,694	$1,087,694	$1,087,694	$1,087,694
San Francisco MTA							
MUNI[4]	$4,848,698	$5,396,071	$5,443,527	$5,986,129	$5,417,211	$5,450,456	$5,276,675
Other MTA Programs	$6,087,146	$7,651,446	$7,651,446	$7,651,446	$7,651,446	$7,653,043	$7,653,043
Department of Public Health[5]	$1,454,821	$1,652,037	$1,652,037	$1,652,037	$1,652,037	$1,652,037	$1,652,037
DPW (Road Maintenance)[6]	$932,621	$932,621	$1,060,242	$1,286,035	$1,286,035	$1,286,035	$1,286,035
Recreation and Parks[7]	$302,802	$343,850	$343,850	$343,850	$343,850	$343,850	$343,850
Library	$218,635	$218,635	$218,635	$218,635	$218,635	$218,635	$218,635
Subtotal	**$26,951,975**	**$31,841,796**	**$42,498,401**	**$40,924,995**	**$40,356,077**	**$40,392,670**	**$40,218,890**
NET REVENUES (COSTS)	**$48,107,593**	**$51,681,525**	**$41,557,487**	**$51,180,816**	**$42,604,702**	**$42,801,167**	**$40,627,389**
Additional Revenues (Restricted, Non-Gen. Fund)[8]							
Children's Fund	$661,920	$790,353	$902,680	$1,029,198	$1,069,540	$1,084,432	$1,118,109
Library Fund	$472,800	$564,538	$644,771	$735,141	$763,957	$774,594	$798,649
Open Space Fund	$472,800	$564,538	$644,771	$735,141	$763,957	$774,594	$798,649
Total Additional Revenues	**$1,607,519**	**$1,919,430**	**$2,192,222**	**$2,499,481**	**$2,597,455**	**$2,633,620**	**$2,715,408**

[1] Includes Gross Receipts Tax, Payroll Tax, and Business Registration Tax.
[2] AB1290 property tax increment pass-throughs will conclude in the mid-2040s, after which, the City's share of property taxes generated from this Project will increase substantially.
[3] Half cent sales tax allocation to public safety is included in this analysis because it provides funding for police department costs.
[4] MUNI expenditure is the General Fund revenues required to be transferred to SFMTA per City Charter 8A.
[5] Based on estimates of hospital admissions and emergency room visits not reimbursed from other sources.
[6] Based on road mileage in 2017 CP/HPS development plan.
[7] Parks and recreation costs will be covered by special taxes and an annuity provided by the Developer.
The costs shown here are associated with recreational programming.
[8] These funds receive a share of property tax increment.

Sources: FivePoint; City and County of San Francisco; Economic & Planning Systems, Inc.

Figure 1 General Fund Net Impact Comparison



**Note the 2010 net impact has been inflated to 2017 constant dollar terms.*

Table 6 Impacts on Transportation (2017$)

Item	Source	Fiscal Year 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
		1	2	3	4	5	6	7	8	9	10
Transit Revenues											
FastPass	Fehr & Peers/Other	$0	$0	$0	$0	$1,243,000	$2,978,000	$2,978,000	$3,567,000	$4,485,000	$4,762,000
Farebox Recovery	Fehr & Peers/Other	$0	$0	$0	$0	$730,000	$935,000	$1,113,000	$1,113,000	$2,310,000	$2,310,000
Advertising	Fehr & Peers/Other	$0	$0	$0	$0	$277,000	$303,000	$303,000	$303,000	$675,000	$787,000
Prop K Sales Tax[1]	EPS	$0	$0	$26,356	$36,880	$80,100	$958,534	$1,152,806	$1,341,097	$1,486,432	$1,466,900
On-Street Parking	Fehr & Peers/Other	$0	$0	$7,000	$21,000	$216,000	$627,000	$719,000	$743,000	$834,000	$898,000
Parking Tax[2]	EPS	$0	$0	$0	$0	$0	$1,080,169	$1,332,633	$1,508,570	$1,695,078	$2,757,240
Parking Fees and Fines	Fehr & Peers/Other	$0	$0	$4,000	$12,000	$121,000	$351,000	$403,000	$416,000	$467,000	$503,000
State Sales Tax (AB 1107)[3]	EPS	$0	$0	$16,473	$23,050	$50,063	$599,084	$720,504	$838,186	$929,020	$916,812
TDA Sales Tax[4]	EPS	$0	$0	$32,945	$46,100	$100,125	$1,198,168	$1,441,007	$1,676,371	$1,858,040	$1,833,625
General Fund Transfer to MUNI[5]	EPS	$0	$0	$199,273	$301,998	$220,179	$1,216,097	$1,704,437	$2,331,694	$2,930,394	$3,473,727
Subtotal		**$0**	**$0**	**$286,047**	**$441,027**	**$3,037,467**	**$10,246,052**	**$11,867,387**	**$13,837,918**	**$17,669,964**	**$19,708,303**
Transit Expenditures											
Operations	Fehr & Peers/Other	$0	$0	$0	$27,432	$3,868,647	$5,271,558	$5,400,405	$5,431,439	$13,242,560	$15,850,626
Capital Costs	Fehr & Peers/Other	$0	$0	$0	$12,812	$1,240,097	$1,771,825	$1,832,004	$1,846,499	$3,679,375	$3,748,484
Facilities[6]	Fehr & Peers/Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Mitigation Costs[7]	Fehr & Peers/Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal		**$0**	**$0**	**$0**	**$40,244**	**$5,108,744**	**$7,043,383**	**$7,232,409**	**$7,277,938**	**$16,921,935**	**$19,599,110**
Net Annual Transportation Impact		**$0**	**$0**	**$286,047**	**$400,783**	**-$2,071,277**	**$3,202,668**	**$4,634,977**	**$6,559,980**	**$748,029**	**$109,194**
Cumulative		$0	$0	$286,047	$686,830	-$1,384,446	$1,818,222	$6,453,199	$13,013,179	$13,761,208	$13,870,401

[1] Assumes 40.0% of Prop. K's one-half cent sales tax is allocated to transit system maintenance and renovation.
[2] Assumes 80% of parking tax from off-street, commercial spaces is transferred from General Fund to SFMTA.
[3] State sales tax (AB 1107 or BART) is a one-half cent sales tax, which allocates 25% to MTC (75% to BART).
[4] Transportation Development Act (TDA) sales tax is a tax of one-quarter of one percent on all retail sales, which is used to finance transit.
[5] 6.68% baseline of discretionary General Fund revenues are assumed transferred to MUNI.
[6] Updated facilities cost assumes a fair share cost of $54.6 million for 39 buses. This cost has been amortized assuming an interest rate of 5 percent over 30 years.
[7] Capital costs for rolling stock includes 11 motor coaches, 2 trolley coaches, and one light rail vehicle.

Sources: FivePoint; City and County of San Francisco; SFMTA website; Fehr & Peers; Economic & Planning Systems, Inc.

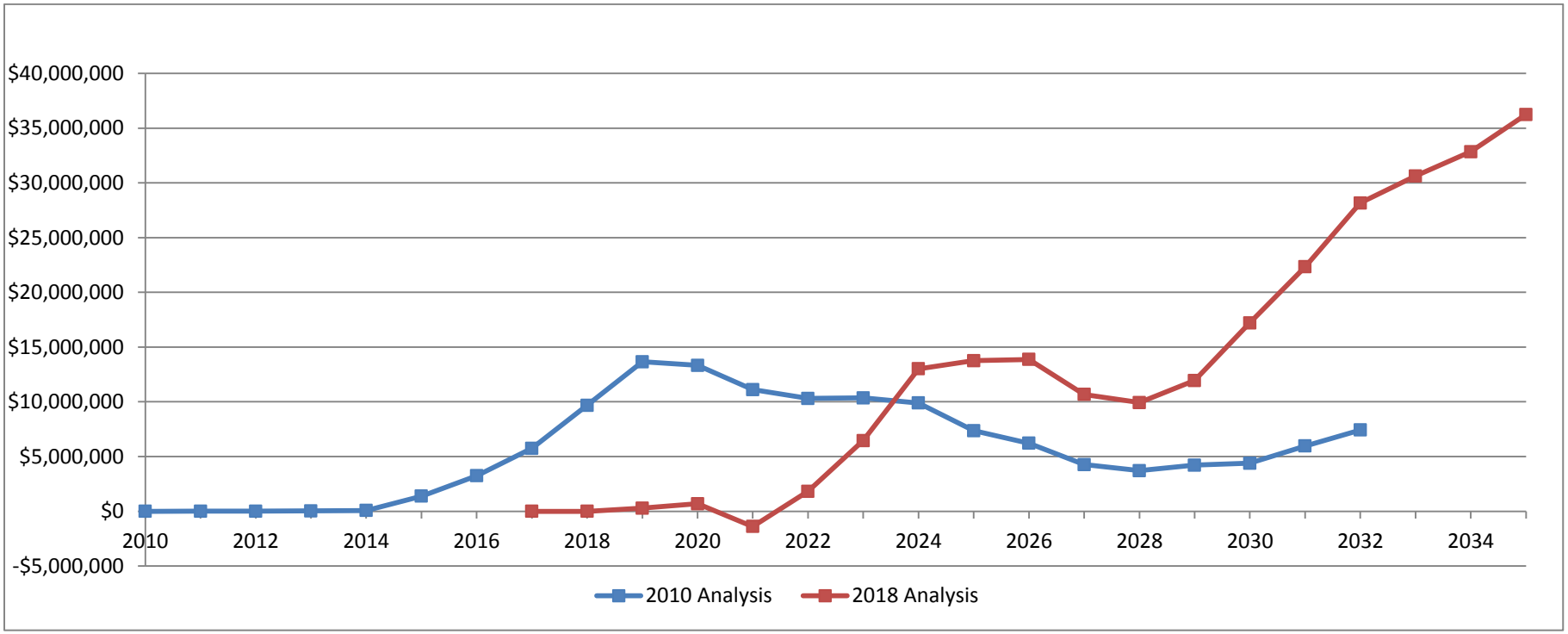
Table 6 Impacts on Transportation (2017$) (continued)

Item	Source	Fiscal Year								Buildout
		2027	2028	2029	2030	2031	2032	2033	2034	2035
		11	12	13	14	15	16	17	18	19
Transit Revenues										
FastPass	Fehr & Peers/Other	$4,974,000	$7,409,000	$9,228,000	$10,184,000	$10,184,000	$10,184,000	$10,184,000	$10,184,000	$10,184,000
Farebox Recovery	Fehr & Peers/Other	$2,310,000	$3,034,000	$3,034,000	$3,034,000	$3,034,000	$3,034,000	$3,034,000	$3,034,000	$3,034,000
Advertising	Fehr & Peers/Other	$787,000	$813,000	$813,000	$813,000	$813,000	$813,000	$813,000	$813,000	$813,000
Prop K Sales Tax[1]	EPS	$1,478,914	$1,598,706	$1,751,534	$1,945,355	$1,881,673	$1,937,782	$1,597,077	$1,496,452	$1,570,726
On-Street Parking	Fehr & Peers/Other	$916,000	$1,068,000	$1,211,000	$1,250,000	$1,250,000	$1,250,000	$1,250,000	$1,250,000	$1,250,000
Parking Tax[2]	EPS	$2,765,981	$2,765,981	$2,839,241	$4,115,464	$4,115,464	$4,115,464	$4,115,464	$4,116,296	$4,116,296
Parking Fees and Fines	Fehr & Peers/Other	$513,000	$598,000	$678,000	$700,000	$700,000	$700,000	$700,000	$700,000	$700,000
State Sales Tax (AB 1107)[3]	EPS	$924,321	$999,191	$1,094,709	$1,215,847	$1,176,045	$1,211,113	$998,173	$935,283	$981,704
TDA Sales Tax[4]	EPS	$1,848,642	$1,998,382	$2,189,418	$2,431,694	$2,352,091	$2,422,227	$1,996,346	$1,870,565	$1,963,407
General Fund Transfer to MUNI[5]	EPS	$3,503,891	$4,098,850	$4,848,698	$5,396,071	$5,443,527	$5,986,129	$5,417,211	$5,450,456	$5,276,675
Subtotal		**$20,021,749**	**$24,383,111**	**$27,687,600**	**$31,085,432**	**$30,949,800**	**$31,653,715**	**$30,105,270**	**$29,850,052**	**$29,889,808**
Transit Expenditures										
Operations	Fehr & Peers/Other	$15,896,345	$17,466,736	$17,839,423	$17,942,500	$17,942,500	$17,942,500	$17,942,500	$17,942,500	$17,942,500
Capital Costs	Fehr & Peers/Other	$3,769,838	$4,107,794	$4,281,860	$4,330,004	$4,330,004	$4,330,004	$4,330,004	$4,330,004	$3,191,888
Facilities[6]	Fehr & Peers/Other	$3,551,808	$3,551,808	$3,551,808	$3,551,808	$3,551,808	$3,551,808	$3,551,808	$3,551,808	$3,551,808
Mitigation Costs[7]	Fehr & Peers/Other	$0	$0	$0	$0	$0	$0	$1,809,743	$1,809,743	$1,809,743
Subtotal		**$23,217,992**	**$25,126,339**	**$25,673,091**	**$25,824,312**	**$25,824,312**	**$25,824,312**	**$27,634,055**	**$27,634,055**	**$26,495,939**
Net Annual Transportation Impact		**-$3,196,243**	**-$743,228**	**$2,014,509**	**$5,261,120**	**$5,125,487**	**$5,829,403**	**$2,471,215**	**$2,215,997**	**$3,393,869**
Cumulative		$10,674,158	$9,930,930	$11,945,439	$17,206,558	$22,332,046	$28,161,449	$30,632,663	$32,848,660	$36,242,529

[1] Assumes 40.0% of Prop. K's one-half cent sales tax is allocated to transit system maintenance and renovation.
[2] Assumes 80% of parking tax from off-street, commercial spaces is transferred from General Fund to SFMTA.
[3] State sales tax (AB 1107 or BART) is a one-half cent sales tax, which allocates 25% to MTC (75% to BART).
[4] Transportation Development Act (TDA) sales tax is a tax of one-quarter of one percent on all retail sales, which is used to finance transit.
[5] 6.68% baseline of discretionary General Fund revenues are assumed transferred to MUNI.
[6] Updated facilities cost assumes a fair share cost of $54.6 million for 39 buses. This cost has been amortized assuming an interest rate of 5 percent over 30 years.
[7] Capital costs for rolling stock includes 11 motor coaches, 2 trolley coaches, and one light rail vehicle.

Sources: FivePoint; City and County of San Francisco; SFMTA website; Fehr & Peers; Economic & Planning Systems, Inc.

Figure 2 Cumulative Transportation Impact Comparison



**Note the 2010 net impact has been inflated to 2017 constant dollar terms.*

Table 7 Direct Employment Estimates

Item	Development Program	Worker Density Assumptions[1]	Employment
Residential	10,672 Units	25 Units/job	427
Commercial Uses			
Film & Arts Center[2]	75,000 Gross Sq. Ft.	750 Sq. ft./job	100
Community Use	100,000 Gross Sq. Ft.	355 Sq. ft./job	282
Artists' Studios[3]	255,000 Gross Sq. Ft.	850 Sq. ft./job	300
Hotel	270,000 Gross Sq. Ft.	700 Sq. ft./job	386
Regional Retail	735,000 Gross Sq. Ft.	400 Sq. ft./job	1,838
Neighborhood Retail	351,000 Gross Sq. Ft.	400 Sq. ft./job	878
Maker Space	75,000 Gross Sq. Ft.	400 Sq. ft./job	188
Research & Development	4,415,000 Gross Sq. Ft.	400 Sq. ft./job	11,038
Institutional[4]	410,000 Gross Sq. Ft.	2,050 Sq. ft./job	200
Commercial Subotal	6,686,000 Gross Sq. Ft.		15,207
Public Parking[5]	9,889 Spaces	270 Spaces/job	37
Parks and Open Space[6]	337.70 acres	0.26 Jobs/ acre	88
Water Taxi[7]	16 Trips/day	4 Jobs/day	4
Other Subtotal			129
Total Direct Jobs			**15,763**

[1] Unless otherwise noted, employment assumptions based on industry standards and previous EPS studies for individual land use types.

[2] Because the type of performance venue has changed since 2010 from a concert hall to a center with a focus on film and performing arts, the employment estimate is founded on EPS' study of movie and theater centers and is based on a building square footage instead of number of events as was done in 2010.

[3] Based on information about number of studios and artists provided by FivePoint.

[4] Based on generalized population density at institutions such as schools.

[5] Includes all off-street parking.

[6] EPS assumption. Open space acreages based on 2018 Modified Project Variant Land Use Program.

[7] FivePoint estimate assumes capacity for 22 passengers plus captain and crew members.

Sources: FivePoint; Minnesota IMPLAN System; Economic & Planning Systems, Inc.

Table 8 Ongoing Economic Impacts

Impact Type	Employment[1]	Income[2]	Value Added	Output
Direct Effect	15,763	$1,922,730,963	$2,659,642,266	$4,326,369,383
Indirect Effect	7,724	$892,276,365	$1,400,403,104	$1,871,821,910
Induced Effect	5,295	$383,249,689	$656,115,857	$958,559,554
Total Effect	**28,783**	**$3,198,257,017**	**$4,716,161,228**	**$7,156,750,846**

[1] Reflects full- and part-time employment. See Table 4 for detailed employment assumptions.
[2] Includes employee wages and benefits and proprietor income.

Sources: Minnesota Implan Group, Inc.; Economic & Planning Systems, Inc.

Table 9 Construction Employment and Income Impacts

Impact Type	Employment[1]	Income[2]
Direct Effect[3]	8,327	$716,293,808
Indirect Effect	885	$94,120,798
Induced Effect	1,519	$109,996,588
Total Effect	**10,731**	**$920,411,194**

[1] Employment in job-years. One job-year is equal to one person working for one year.
[2] Includes employee wages and benefits and proprietor income.
[3] Direct construction employment estimate provided by TRC (March 28, 2018). Includes on-site construction, off-site roadway improvements, and shoreline improvements.

Sources: TRC; Minnesota Implan Group, Inc.; Economic & Planning Systems, Inc.

Table 10 Development Impact Fee Summary

Fee	Total
School Facilities Impact Fee	$37,618,754
Art Fee	$7,133,750
Child-Care Requirements	$4,685,000
Total Impact Fees	**$49,437,504**

Sources: 2010 Redevelopment Plan, p. 45-47 and 82-96 (Attachment E); Master Impact Fee Schedule 2017; Economic and Planning Systems, Inc.

4. PROJECT DESCRIPTION

A summary of the proposed CP/HPS development program is provided in **Table 11**, below. As shown, the Project is assumed to include 10,672 housing units. About 32 percent of the new units will be affordable at below-market rates. Over 1.3 million square feet of hotel and retail uses are planned, in addition to approximately 4.4 million square feet of research and development. The plan also includes community and institutional use, a film and arts center, artist studios, and maker space. **Table 12** provides an annual development schedule from 2019 through project buildout in 2035.

Table 11 Development Program Summary

Item	2018 Development Program Total	
Residential		
Market-Rate		
For-Sale	5,874	units
Rental	1,435	units
Market-Rate Subtotal	7,309	units
Below Market-Rate		
For-Sales	584	units
Rental	243	units
Below Market-Rate Subtotal	827	units
Workforce Units	892	units
Public Housing & Agency Units	1,644	units
Residential Total	**10,672**	units
Commercial Uses		
Hotel	270,000	Gross Sq. Ft.
Regional Retail	735,000	Gross Sq. Ft.
Neighborhood Retail	351,000	Gross Sq. Ft.
Commercial Total	**1,356,000**	Gross Sq. Ft.
Other Non-Residential Uses and Parking		
Film & Arts Center	75,000	Gross Sq. Ft.
Community Use	100,000	Gross Sq. Ft.
Research & Development	4,415,000	Gross Sq. Ft.
Artist Studio	255,000	Gross Sq. Ft.
Maker Space	75,000	Gross Sq. Ft.
Institutional	410,000	Gross Sq. Ft.
Football Stadium	N/A	
Other Non-Residential Uses Total	**5,330,000**	Gross Sq. Ft.
Public Parking	9,889	Spaces

Sources: Lennar (2010); FivePoint Construction Schedule (November 8, 2017) and FivePoint correspondence (March 27, 2018); Economic & Planning Systems, Inc.

Table 12 Development Program and Population Density Assumptions

Item	Development Program Total	Fiscal Year 2017 1	2018 2	2019 3	2020 4	2021 5	2022 6	2023 7	2024 8	2025 9	2026 10	2027 11
Residential												
Market-Rate												
For-Sale	5,874 units	0	0	0	0	1,139	0	602	256	506	221	169
Rental	1,435 units	0	0	0	0	0	633	0	0	135	0	0
Market-Rate Subtotal	7,309 units	0	0	0	0	1,139	633	602	256	641	221	169
Below Market-Rate												
For-Sales	584 units	0	0	0	0	48	0	67	29	58	25	19
Rental	243 units	0	0	0	0	0	151	0	0	15	0	0
Below Market-Rate Subtotal	827 units	0	0	0	0	48	151	67	29	73	25	19
Workforce Units	892 units	0	0	0	0	0	0	0	237	100	0	0
Public Housing & Agency Units	1,644 units	0	0	0	337	230	0	130	0	90	227	0
Residential Total	**10,672** units	**0**	**0**	**0**	**337**	**1,417**	**784**	**799**	**522**	**904**	**473**	**188**
Commercial Uses												
Hotel	270,000 Gross Sq. Ft.	0	0	0	0	0	150,000	0	0	0	0	0
Regional Retail	735,000 Gross Sq. Ft.	0	0	0	0	0	635,000	0	0	100,000	0	0
Neighborhood Retail	351,000 Gross Sq. Ft.	0	0	0	0	0	0	125,000	0	18,500	18,500	0
Commercial Total	**1,356,000** Gross Sq. Ft.	**0**	**0**	**0**	**0**	**0**	**785,000**	**125,000**	**0**	**118,500**	**18,500**	**0**
Other Non-Residential Uses and Parking												
Film & Arts Center	75,000 Gross Sq. Ft.	0	0	0	0	0	75,000	0	0	0	0	0
Community Use	100,000 Gross Sq. Ft.	0	0	0	0	0	1,000	5,000	0	0	50,000	41,000
Research & Development	4,415,000 Gross Sq. Ft.	0	0	0	0	0	150,000	1,224,977	0	0	1,083,000	0
Artist Studio	255,000 Gross Sq. Ft.	0	0	0	0	0	0	0	0	255,000	0	0
Maker Space	75,000 Gross Sq. Ft.	0	0	0	0	0	0	0	0	75,000	0	0
Institutional	410,000 Gross Sq. Ft.	0	0	0	0.0	410,000	0	0	0	0	0	0
Other Non-Residential Uses Total	**5,330,000** Gross Sq. Ft.	**0**	**0**	**0**	**0**	**410,000**	**226,000**	**1,229,977**	**0**	**330,000**	**1,133,000**	**41,000**
Public Parking[1]	9,889 Spaces	0	0	0	0	0	2,595	1,761	0	709	1,559	21
Population and Employment												
Annual New Residents[2]	24,866 residents	0	0	0	785	3,302	1,827	1,862	1,216	2,106	1,102	438
Cumulative New Residents	24,866 residents	0	0	0	785	4,087	5,914	7,775	8,991	11,098	12,200	12,638
Annual New Employees[3]	15,671 employees	0	0	0	13	257	2,321	3,428	21	823	2,919	123
Cumulative New Employees	15,671 employees	0	0	0	13	270	2,591	6,018	6,039	6,862	9,781	9,904
Annual Resident + Employee Population	40,537 resident + employees	0	0	0	799	3,558	4,147	5,289	1,237	2,929	4,021	561
Cumulative Resident + Employee Population	40,537 resident + employees	0	0	0	799	4,357	8,504	13,793	15,031	17,959	21,981	22,542
Annual Service Population[4]	32,701 service population	0	0	0	792	3,430	2,987	3,575	1,227	2,518	2,562	500
Cumulative Service Population	32,701 service population	0	0	0	792	4,222	7,209	10,784	12,011	14,529	17,090	17,590
Construction Jobs[5]	8,327 employees	501	259	529	573	540	664	1,019	949	676	587	580

[1] According to FivePoint construction schedule dated November 8, 2017 and FivePoint correspondence on March 2 and March 14, 2018.
[2] Assumes 2.33 persons per household according to the CP/HPS Phase II Development Plan Project Final EIR (2010) Vol. II, p. C-6, Table III.
[3] See Table 4 for employment by use estimates.
[4] Service population is calculated by adding total residential population and half of total employment.
[5] Average construction jobs estimate provided by TRC, (March 28, 2018). Jobs estimated for 2014 - 2016 have been added to year 2017.

Sources: FivePoint Absorption Schedule (May 16, 2017); FivePoint Construction Schedule (November 8, 2017) and FivePoint correspondence (March 27, 2018); Economic & Planning Systems, Inc.

Table 12 Development Program and Population Density Assumptions (continued)

Item	Development Program Total	Fiscal Year							Buildout
		2028 12	2029 13	2030 14	2031 15	2032 16	2033 17	2034 18	2035 19
Residential									
Market-Rate									
For-Sale	5,874 units	1,176	1,065	740	0	0	0	0	0
Rental	1,435 units	668	0	0	0	0	0	0	0
Market-Rate Subtotal	7,309 units	1,844	1,065	740	0	0	0	0	0
Below Market-Rate									
For-Sales	584 units	133	121	84	0	0	0	0	0
Rental	243 units	76	0	0	0	0	0	0	0
Below Market-Rate Subtotal	827 units	209	121	84	0	0	0	0	0
Workforce Units	892 units	105	110	340	0	0	0	0	0
Public Housing & Agency Units	1,644 units	390	130	110	0	0	0	0	0
Residential Total	**10,672** units	**2,548**	**1,426**	**1,274**	**0**	**0**	**0**	**0**	**0**
Commercial Uses									
Hotel	270,000 Gross Sq. Ft.	0	120,000	0	0	0	0	0	0
Regional Retail	735,000 Gross Sq. Ft.	0	0	0	0	0	0	0	0
Neighborhood Retail	351,000 Gross Sq. Ft.	0	44,000	145,000	0	0	0	0	0
Commercial Total	**1,356,000** Gross Sq. Ft.	**0**	**164,000**	**145,000**	**0**	**0**	**0**	**0**	**0**
Other Non-Residential Uses and Parking									
Film & Arts Center	75,000 Gross Sq. Ft.	0	0	0	0	0	0	0	0
Community Use	100,000 Gross Sq. Ft.	0	0	0	0	0	0	3,000	0
Research & Development	4,415,000 Gross Sq. Ft.	0	0	1,957,023	0	0	0	0	0
Artist Studio	255,000 Gross Sq. Ft.	0	0	0	0	0	0	0	0
Maker Space	75,000 Gross Sq. Ft.	0	0	0	0	0	0	0	0
Institutional	410,000 Gross Sq. Ft.	0	0	0	0	0	0	0	0
Other Non-Residential Uses Total	**5,330,000** Gross Sq. Ft.	**0**	**0**	**1,957,023**	**0**	**0**	**0**	**3,000**	**0**
Public Parking[1]	9,889 Spaces	0	176	3,066	0	0	0	2	0
Population and Employment									
Annual New Residents[2]	24,866 residents	5,937	3,323	2,968	0	0	0	0	0
Cumulative New Residents	24,866 residents	18,575	21,897	24,866	24,866	24,866	24,866	24,866	24,866
Annual New Employees[3]	15,671 employees	102	339	5,317	0	0	0	8	0
Cumulative New Employees	15,671 employees	10,006	10,345	15,662	15,662	15,662	15,662	15,671	15,671
Annual Resident + Employee Population	40,537 resident + employees	6,039	3,662	8,286	0	0	0	8	0
Cumulative Resident + Employee Population	40,537 resident + employees	28,581	32,242	40,528	40,528	40,528	40,528	40,537	40,537
Annual Service Population[4]	32,701 service population	5,988	3,492	5,627	0	0	0	4	0
Cumulative Service Population	32,701 service population	23,578	27,070	32,697	32,697	32,697	32,697	32,701	32,701
Construction Jobs[5]	8,327 employees	452	221	227	230	248	45	27	0

[1] According to FivePoint construction schedule dated November 8, 2017 and FivePoint correspondence on March 2 and March 14, 2018.
[2] Assumes 2.33 persons per household according to the CP/HPS Phase II Development Plan Project Final EIR (2010) Vol. II, p. C-6, Table III.
[3] See Table 4 for employment by use estimates.
[4] Service population is calculated by adding total residential population and half of total employment.
[5] Average construction jobs estimate provided by TRC, (March 28, 2018). Jobs estimated for 2014 - 2016 have been added to year 2017.

Sources: FivePoint Absorption Schedule (May 16, 2017); FivePoint Construction Schedule (November 8, 2017) and FivePoint correspondence (March 27, 2018); Economic & Planning Systems, Inc.

Table 13 summarizes the resident, employment, and service population assumptions for the City and County of San Francisco and the CP/HPS Project at buildout. The Project's service population is calculated by adding total residential population and half of total employment. It represents a measure of public service demand in which employees are given 50 percent the weight of residents because of more modest demands for public service.

Table 13 Citywide and Project Population and Employment Estimates

Item	Total	Service Population Weighting Factor[1]	Service Population
San Francisco			
Residents[2]	850,282	1.00	850,282
Jobs[3]	704,000	0.50	352,000
Total Service Population	1,554,282		**1,202,282**
CP/HPS at Buildout			
Residents[4]	24,866	1.00	24,866
Total Direct Jobs	15,763	0.50	7,882
Total Service Population	40,629		**32,747**

[1] Service population is calculated by adding total residential population and half of total employment. It represents a measure of public service demand in which employees are given 50 percent the weight of residents because of more modest demands for public service.
[2] U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates.
[3] Data on jobs and non-resident employees provided by SF Planning Department on 2/3/17.
[4] Assumes 2.33 persons per household according to the CP/HPS Phase II Development Plan Project Final EIR (2010) Vol. II, p. C-6, Table III.

Sources: United States Census Bureau; SF Planning Department; CP/HPS EIR; Economic & Planning Systems, Inc.

5. SAN FRANCISCO GENERAL FUND REVENUES

Table 14 provides an overview of the City and County of San Francisco's (CCSF) General Fund revenues in fiscal year 2016 – 2017 and the allocation method used to estimate the revenues generated by CP/HPS. These revenues will help fund public services to the Project area, as well as citywide services and facilities. Actual outcomes will vary depending on the realized levels and types of activities, as well as fiscal and economic conditions at the time the Project is completed. General Fund revenues are estimated on a pro-rata basis for revenue items that fluctuate proportionally with residential and employment populations or on a case study basis where applicable. A number of revenue items that are not expected to be affected by Project development are not estimated. Calculations displaying EPS's case study approach are shown in **Table 15** - **Table 18**.

Table 14 Summary of General Fund Revenue Estimates

Item	GF Revenue 2016-17		Allocation Method
Business Taxes[1]	$669,450,000	$951	per employee population
Hotel Room Tax	$409,250,000		*Case Study*
Parking Tax	$92,820,000		*Case Study*
Property Tax	$1,189,950,000		*Case Study*
Property Transfer Tax	$235,000,000		*Case Study*
Property Tax in Lieu of VLF	$222,050,000		*Case Study*
Sales and Use Tax	$237,545,000		*Case Study*
Gas Electric Steam Users Tax	$45,550,000	$64.70	per employee population
Telephone Users Tax	$44,440,000	$28.59	per resident and employee population
Water Users Tax	$4,320,000	$2.78	per resident and employee population
Fines, Forfeitures & Penalties	$4,579,750	$3.81	per service population[2]
License, Permits, and Franchises	$28,876,499	$24.02	per service population[2]
Other Local Taxes	$46,960,000	-	not estimated
Charges for Service	$236,101,725	-	not estimated
Expenditure Recovery	$421,085,839	-	not estimated
Stadium Admission Tax	$1,360,000	-	not estimated
Interest & Investment Income	$13,969,863	-	not estimated
Intergovernmental Transfers (Local, State, Federal)	$959,099,074	-	not estimated
General Fund Support	($640,803,508)	-	not estimated
Other Transfers In[3]	$686,132,452	-	not estimated
Other Financing Sources	$881,000	-	not estimated
Other Revenues	$61,333,621	-	not estimated
Rents and Concessions	$16,140,178	-	not estimated
Transfer Adjustments	-$15,162,070	-	not estimated
Unappropriated Fund Balance	$178,109,083	-	not estimated
Transfer Adjustments Citywide	($1,234,113,727)	-	not estimated
Total General Fund Revenues	**$3,914,924,779**		

[1] Includes Gross Receipts Tax, Payroll Tax, and Business Registration Tax.

[2] Service population is calculated by adding total residential population and half of total employment. It represents a measure of public service demand in which employees are given 50 percent the weight of residents because of more modest demands for public service.

[3] Includes Intrafund transfers in as well as operating transfers in.

Source: openbook.sfgov.org General Fund Revenues FY 2016-2017; Economic and Planning Systems, Inc.

Assessed Value

A key factor in determining the scale of fiscal revenues is the Project's assessed value. The real estate assessed value is used to estimate property taxes, real estate transfer taxes, and property tax in-lieu of VLF (motor vehicle license fees). The Project's annualized assessed value is based on FivePoint's forecasts of residential and commercial land sales, building sales, and future development value.

The assessed values through time in nominal dollars are shown in **Table 15** along with a conversion of the cumulative assessed value into constant dollars. Project assessed value increases each year as land is improved, building constructed, and existing properties turnover. The new land and building sales are assessed at their forecasted market value, while a consistent average annual increase in existing assessed value is applied each year to reflect both the limits placed by Proposition 13 on assessed value increases for property that does not turn over as well as the periodic re-assessments to market value that occur when existing properties do turn over. As shown, at buildout, the Project is estimated to have an assessed value of approximately $21.0 billion in nominal dollars and $14.7 billion in 2017 constant dollars.

Table 15 Assessed Value

Item[1]	Fiscal Year								
	2017	2018	2019	2020	2021	2022	2023	2024	2025
	1	2	3	4	5	6	7	8	9
Residential For-Sale									
Land AV	$0	$0	$91,402,880	$0	$55,596,371	$45,516,886	$30,469,012	$163,303,142	$270,122,545
Building AV	$0	$0	$0	$0	$0	$0	$88,294,875	$301,266,870	$832,066,410
Existing AV	$0	$0	$0	$93,687,952	$96,030,150	$155,417,185	$205,957,422	$332,839,342	$817,344,587
Cumulative Inflated AV	$0	$0	$91,402,880	$93,687,952	$151,626,522	$200,934,071	$324,721,309	$797,409,353	$1,919,533,542
Residential For-Rent									
Land AV	$0	$0	$0	$0	$0	$34,305,880	$10,651,520	$0	$0
Building AV	$0	$0	$0	$0	$0	$0	$0	$465,240,642	$115,483,274
Existing AV	$0	$0	$0	$0	$0	$0	$35,163,527	$46,960,423	$525,006,092
Cumulative Inflated AV	$0	$0	$0	$0	$0	$34,305,880	$45,815,047	$512,201,065	$640,489,366
Residential Cumulative Inflated AV Subtotal	$0	$0	$91,402,880	$93,687,952	$151,626,522	$235,239,950	$370,536,356	$1,309,610,418	$2,560,022,907
Commercial									
Land AV	$0	$0	$0	$130,000,000	$0	$90,377,051	$15,844,500	$59,280,000	$34,275,000
Building AV	$0	$0	$0	$0	$0	$207,195,868	$732,335,103	$533,664,171	$173,032,105
Existing AV	$0	$0	$0	$0	$132,600,000	$135,252,000	$441,481,417	$1,213,454,240	$1,842,526,379
Cumulative Inflated AV	$0	$0	$0	$130,000,000	$132,600,000	$432,824,919	$1,189,661,020	$1,806,398,411	$2,049,833,485
TOTAL CUMULATIVE INFLATED AV (NOMINAL $)	**$0**	**$0**	**$91,402,880**	**$223,687,952**	**$284,226,522**	**$668,064,869**	**$1,560,197,376**	**$3,116,008,829**	**$4,609,856,392**
TOTAL CUMULATIVE INFLATED AV (CONSTANT $)[2]	**$0**	**$0**	**$87,853,595**	**$210,786,153**	**$262,581,372**	**$605,086,935**	**$1,385,410,620**	**$2,712,673,203**	**$3,934,468,043**

[1] Assessed values provided by FivePoint. Residential property values are assumed to increase 2.5 percent annually. Commercial values increase 2 percent annually.
[2] Assumes annual inflation rate of 2 percent.

Sources: FivePoint; Economic & Planning Systems, Inc.

Table 15 Assessed Value (Continued)

Item[1]	Fiscal Year									Buildout
	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
	10	11	12	13	14	15	16	17	18	19
Residential For-Sale										
Land AV	$193,013,340	$125,442,685	$273,233,442	$438,204,438	$135,027,362	$96,504,241	$129,676,862	$30,218,034	$0	$0
Building AV	$696,334,058	$772,900,567	$599,260,046	$916,789,241	$1,264,685,940	$1,292,488,771	$1,681,841,451	$634,934,763	$205,144,632	$561,477,656
Existing AV	$1,967,521,880	$2,928,291,010	$3,922,300,118	$4,914,663,446	$6,426,398,553	$8,021,764,651	$9,646,026,605	$11,743,983,541	$12,719,364,747	$13,247,622,113
Cumulative Inflated AV	$2,856,869,278	$3,826,634,262	$4,794,793,606	$6,269,657,125	$7,826,111,855	$9,410,757,664	$11,457,544,918	$12,409,136,338	$12,924,509,378	$13,809,099,769
Residential For-Rent										
Land AV	$9,985,800	$0	$12,632,540	$20,970,180	$7,579,524	$0	$0	$0	$0	$0
Building AV	$0	$111,105,534	$0	$0	$230,981,348	$203,882,357	$88,792,484	$0	$0	$0
Existing AV	$656,501,600	$683,149,585	$814,111,496	$847,412,637	$890,092,388	$1,156,869,591	$1,394,770,747	$1,520,652,312	$1,558,668,620	$1,597,635,335
Cumulative Inflated AV	$666,487,400	$794,255,118	$826,744,036	$868,382,817	$1,128,653,259	$1,360,751,948	$1,483,563,231	$1,520,652,312	$1,558,668,620	$1,597,635,335
Residential Cumulative Inflated AV Subtotal	$3,523,356,678	$4,620,889,380	$5,621,537,642	$7,138,039,942	$8,954,765,114	$10,771,509,612	$12,941,108,149	$13,929,788,650	$14,483,177,998	$15,406,735,104
Commercial										
Land AV	$163,329,200	$93,530,000	$139,032,389	$71,356,000	$96,888,000	$0	$0	$0	$0	$0
Building AV	$278,110,043	$268,720,166	$365,799,151	$274,704,747	$418,695,200	$315,595,813	$289,859,155	$0	$0	$0
Existing AV	$2,090,830,154	$2,582,914,785	$3,004,068,250	$3,579,077,786	$4,003,641,304	$4,609,608,994	$5,023,708,903	$5,419,839,420	$5,528,236,208	$5,638,800,933
Cumulative Inflated AV	$2,532,269,397	$2,945,164,951	$3,508,899,790	$3,925,138,533	$4,519,224,504	$4,925,204,807	$5,313,568,059	$5,419,839,420	$5,528,236,208	$5,638,800,933
TOTAL CUMULATIVE INFLATED AV (NOMINAL $)	**$6,055,626,075**	**$7,566,054,331**	**$9,130,437,432**	**$11,063,178,475**	**$13,473,989,618**	**$15,696,714,419**	**$18,254,676,208**	**$19,349,628,070**	**$20,011,414,206**	**$21,045,536,037**
TOTAL CUMULATIVE INFLATED AV (CONSTANT $)[2]	**$5,067,077,006**	**$6,206,799,807**	**$7,343,273,357**	**$8,723,240,728**	**$10,415,832,217**	**$11,896,147,826**	**$13,563,493,314**	**$14,095,155,565**	**$14,291,402,848**	**$14,735,229,357**

[1] Assessed values provided by FivePoint. Residential property values are assumed to increase 2.5 percent annually. Commercial values increase 2 percent annually.
[2] Assumes annual inflation rate of 2 percent.

Sources: FivePoint; Economic & Planning Systems, Inc.

Property Tax

Property tax will account for a significant share of the annual revenue that this project will generate to San Francisco's General Fund. Property tax is based on one percent of the Project's assessed value, and will be collected from the land and improvements within the Project Area. The Project is located in the Hunters Point Shipyard and Candlestick Point Redevelopment Area. Within this Redevelopment Area, the taxes collected will be distributed to the Office of Community Investment and Infrastructure, successor agency to the San Francisco Redevelopment Agency for redevelopment purposes. As a committed obligation under the California Redevelopment Law before the dissolution of redevelopment in California, a 20 percent portion[6] of the 1.0 percent gross "tax increment" collected is required to be passed-through to taxing entities (including the City and County of San Francisco), and 20 percent is required to be allocated to affordable housing purposes. The remainder is available for redevelopment purposes, namely payment of existing debt service obligations that extend beyond the development period. After buildout, tax increment not otherwise committed to debt service or other redevelopment purposes could be available for distribution to taxing entities, including CCSF's General Fund.

As shown in **Table 16**, the Project would result in annual revenue of about $18.0 million to the City and County based on AB1290 pass-through allocations (after distributions to affordable housing set-asides and debt service purposes) at buildout. The estimates are based on the amount of property tax increment pass-through to the General Fund after accounting for adjustments to ERAF deductions[7]; the General Fund would receive 56.19 percent of the 20 percent pass-through of gross tax increment.

Property Tax In-Lieu of Vehicle License Fees

Changes in the State budget converted a significant portion of Motor Vehicle License Fee (VLF) subventions, previously distributed by the State based on a per-capita formula, into property tax distributions. These distributions increase over time based on assessed value. To the extent that development of CP/HPS results in an increase in the CCSF assessed value, these revenues are projected to increase proportionately, as shown in **Table 16**. At buildout, approximately $15.4 million in annual property tax in-lieu of vehicle license fees will be generated by the Project.

---

[6] Also referred to as 25 percent of the gross tax increment <u>after</u> affordable housing set-asides are deducted from the total tax increment.

[7] ERAF is the Education Revenue Augmentation Fund that receives a share of property tax and is used by the State to supplement education funding.

Table 16 Property Tax

Item	Estimating Factor	Fiscal Year 2017 1	2018 2	2019 3	2020 4	2021 5	2022 6	2023 7	2024 8	2025 9
Gross Tax Increment	1.0% of property value	$0	$0	$878,536	$2,107,862	$2,625,814	$6,050,869	$13,854,106	$27,126,732	$39,344,680
(Less) Low Mod Housing	20.0%	$0	$0	($175,707)	($421,572)	($525,163)	($1,210,174)	($2,770,821)	($5,425,346)	($7,868,936)
Net Tax Increment (Gross Less Low Mod and ERAF)		$0	$0	$702,829	$1,686,289	$2,100,651	$4,840,695	$11,083,285	$21,701,386	$31,475,744
(Less) County Admin Fees	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0
(Less) AB 1290 Tier 1 (2007-End)[2]	25.0%	$0	$0	($175,707)	($421,572)	($525,163)	($1,210,174)	($2,770,821)	($5,425,346)	($7,868,936)
(Less) AB 1290 Tier 2 (2017-End)[2]	2.1%			($14,759)	($35,412)	($44,114)	($101,655)	($232,749)	($455,729)	($660,991)
(Less) AB 1290 Tier 3 (2037-End)[2]	1.4%									
Total Property Tax AB 1290 Pass-Through				($190,467)	($456,984)	($569,276)	($1,311,828)	($3,003,570)	($5,881,076)	($8,529,927)
Total Property Tax General Fund Share (post ERAF)[3]	56.19% of pass-through	**$0**	**$0**	**$107,023**	**$256,780**	**$319,876**	**$737,116**	**$1,687,706**	**$3,304,576**	**$4,792,966**
Children's Fund	3.50%	$0	$0	$6,666	$15,994	$19,925	$45,914	$105,125	$205,838	$298,547
Library Preservation Fund	2.50%	$0	$0	$4,762	$11,425	$14,232	$32,796	$75,089	$147,027	$213,248
Open Space Acquisition Fund	2.50%	$0	$0	$4,762	$11,425	$14,232	$32,796	$75,089	$147,027	$213,248
Citywide Assessed Value (millions)[4]		$212,173	$212,173	$212,261	$212,384	$212,436	$212,778	$213,559	$214,886	$216,108
Growth in citywide AV due to Project		100%	100%	100%	100%	100%	100%	100%	101%	101%
Citywide Property Tax in Lieu of VLF[5]		$222,050,000	$222,050,000	$222,141,943	$222,270,598	$222,324,805	$222,683,254	$223,499,902	$224,888,948	$226,167,618
Annual Incremental Property Tax in Lieu of VLF (constant $)		**$0**	**$0**	**$91,943**	**$128,655**	**$54,206**	**$358,449**	**$816,648**	**$1,389,047**	**$1,278,669**
Cumulative Total Property Tax in Lieu of VLF (constant $)		**$0**	**$0**	**$91,943**	**$220,598**	**$274,805**	**$633,254**	**$1,449,902**	**$2,838,948**	**$4,117,618**

[1] See Table 15 for assessed value.
[2] Consistent with Five Point assumption, EPS assumes the City is eligible to receive Tier 1 through Tier 3 pass-throughs.
[3] San Francisco Controller's Office, FY 2016-17.
[4] Based on the CCSF FY2016 total taxable assessed value recorded by the Controller's office, City and County of San Francisco; includes growth in AV due to the Project only.
[5] SF Open Book, City and County of San Francisco, General Fund Revenue FY 2016-2017.

Sources: FivePoint; Economic & Planning Systems, Inc.

Table 16 Property Tax (continued)

Item	Estimating Factor	Fiscal Year									Buildout
		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
		10	11	12	13	14	15	16	17	18	19
Gross Tax Increment	1.0% of property value	$50,670,770	$62,067,998	$73,432,734	$87,232,407	$104,158,322	$118,961,478	$135,634,933	$140,951,556	$142,914,028	$147,352,294
(Less) Low Mod Housing	20.0%	($10,134,154)	($12,413,600)	($14,686,547)	($17,446,481)	($20,831,664)	($23,792,296)	($27,126,987)	($28,190,311)	($28,582,806)	($29,470,459)
Net Tax Increment (Gross Less Low Mod and ERAF)		$40,536,616	$49,654,398	$58,746,187	$69,785,926	$83,326,658	$95,169,183	$108,507,947	$112,761,245	$114,331,223	$117,881,835
(Less) County Admin Fees	0.0%	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
(Less) AB 1290 Tier 1 (2007-End)[2]	25.0%	($10,134,154)	($12,413,600)	($14,686,547)	($17,446,481)	($20,831,664)	($23,792,296)	($27,126,987)	($28,190,311)	($28,582,806)	($29,470,459)
(Less) AB 1290 Tier 2 (2017-End)[2]	2.1%	($851,269)	($1,042,742)	($1,233,670)	($1,465,504)	($1,749,860)	($1,998,553)	($2,278,667)	($2,367,986)	($2,400,956)	($2,475,519)
(Less) AB 1290 Tier 3 (2037-End)[2]	1.4%										
Total Property Tax AB 1290 Pass-Through		($10,985,423)	($13,456,342)	($15,920,217)	($18,911,986)	($22,581,524)	($25,790,848)	($29,405,654)	($30,558,297)	($30,983,761)	($31,945,977)
Total Property Tax General Fund Share (post ERAF)[3]	56.19% of pass-through	**$6,172,709**	**$7,561,119**	**$8,945,570**	**$10,626,645**	**$12,688,558**	**$14,491,878**	**$16,523,037**	**$17,170,707**	**$17,409,776**	**$17,950,445**
Children's Fund	3.50%	$384,490	$470,972	$557,208	$661,920	$790,353	$902,680	$1,029,198	$1,069,540	$1,084,432	$1,118,109
Library Preservation Fund	2.50%	$274,636	$336,409	$398,005	$472,800	$564,538	$644,771	$735,141	$763,957	$774,594	$798,649
Open Space Acquisition Fund	2.50%	$274,636	$336,409	$398,005	$472,800	$564,538	$644,771	$735,141	$763,957	$774,594	$798,649
Citywide Assessed Value (millions)[4]		$217,240	$218,380	$219,517	$220,897	$222,589	$224,069	$225,737	$226,268	$226,465	$226,909
Growth in citywide AV due to Project		101%	101%	101%	101%	101%	101%	101%	100%	100%	100%
Citywide Property Tax in Lieu of VLF[5]		$227,352,950	$228,545,727	$229,735,103	$231,179,308	$232,950,689	$234,499,914	$236,244,874	$236,801,285	$237,006,668	$237,471,155
Annual Incremental Property Tax in Lieu of VLF (constant $)		**$1,185,332**	**$1,192,777**	**$1,189,376**	**$1,444,205**	**$1,771,382**	**$1,549,224**	**$1,744,960**	**$556,411**	**$205,383**	**$464,487**
Cumulative Total Property Tax in Lieu of VLF (constant $)		**$5,302,950**	**$6,495,727**	**$7,685,103**	**$9,129,308**	**$10,900,689**	**$12,449,914**	**$14,194,874**	**$14,751,285**	**$14,956,668**	**$15,421,155**

[1] See Table 15 for assessed value.
[2] Consistent with Five Point assumption, EPS assumes the City is eligible to receive Tier 1 through Tier 3 pass-throughs.
[3] San Francisco Controller's Office, FY 2016-17.
[4] Based on the CCSF FY2016 total taxable assessed value recorded by the Controller's office, City and County of San Francisco; includes growth in AV due to the Project only.
[5] SF Open Book, City and County of San Francisco, General Fund Revenue FY 2016-2017.

Sources: FivePoint; Economic & Planning Systems, Inc.

Property Transfer Tax

CCSF collects a property transfer tax of $3.75 per $500 on transactions between $1 million and $5 million and $15 per $500 on transactions of $25 million or more. The analysis estimates the tax based on the assumed values and absorption of the development program for land sales and building sales. FivePoint determined a weighted average downward adjustment of the City rate of $15.00 per $500 to $14.65 per $500 to account for the modest number of land transactions that are less than $25 million.

This analysis estimates transfer tax from for-sale units only and conservatively excludes sales of for-rent residential properties. As indicated by FivePoint, residential home sales are all assumed to be between $1 million and $5 million, so EPS applied the City rate of $3.75 per $500 of value. Fourteen percent of residential for-sale units are assumed to sell every year after the initial sale of new units; this rate represents an average, and will vary year-to-year depending on economic conditions and average length of ownership by the occupants.

As indicated by FivePoint, virtually all commercial building sales are assumed to exceed $25 million, so the rate of $15 per $500 was applied. Of the newly developed commercial property, 20 percent on average is assumed to be sold upon construction, and the balance of the commercial property is assumed to be "built-to-suit" and owner occupied; to the extent that more taxable transactions occur, transfer tax revenues will be greater than estimated. Commercial property resales are difficult to predict, but for purposes of this analysis commercial properties are assumed to sell an average of at least once every forty years, which is to say that 2.5 percent of the properties sell, on average, every year following initial occupancy. This represents a conservatively low turnover estimate. As noted above, this rate will vary depending on economic cycles, age of the property, and other economic and investment factors. Annual revenue from property transfer tax is estimated in **Table 17**, showing a total of $12.4 million in annual property transfer taxes at buildout (in constant dollars). Note that new residential building sales that are expected to be completed in 2035 have been moved to 2034 to allow property transfer tax revenues in buildout year 2035 to better represent revenues at project stabilization.

Table 17 Property Transfer Tax

Item	Estimating Factor		Fiscal Year								
			2017	2018	2019	2020	2021	2022	2023	2024	2025
			1	2	3	4	5	6	7	8	9
Transfer Tax from Land Sales[1]											
Transfer Tax from Residential Land Sale[2]	$14.65	per $500 value	$0	$0	$2,678,104	$0	$1,628,974	$2,338,807	$1,204,832	$4,784,782	$7,914,591
Transfer Tax from Commercial Land Sales[2]	$14.65	per $500 value	$0	$0	$0	$3,809,000	$0	$2,648,048	$464,244	$1,736,904	$1,004,258
Transfer Tax from Land Sales			$0	$0	$2,678,104	$3,809,000	$1,628,974	$4,986,855	$1,669,075	$6,521,686	$8,918,848
Transfer Tax from Building Sales[1]											
Transfer Tax from Sale of New Residential Buildings[3]	$3.75	per $500 value	$0	$0	$0	$0	$0	$0	$662,212	$2,259,502	$6,240,498
Transfer Tax from Re-sale of Existing Residential Buildings[4]	14.0%	annual turnover	$0	$0	$0	$95,973	$98,372	$159,208	$210,981	$340,957	$837,280
Transfer Tax from Sale of New Commercial Buildings[5]	$15.00	per $500 value	$0	$0	$0	$0	$0	$1,243,175	$4,394,011	$3,201,985	$1,038,193
Transfer Tax from Re-sale of Existing Commercial Buildings[6]	2.5%	annual turnover	$0	$0	$0	$0	$97,500	$99,450	$324,619	$892,246	$1,354,799
Transfer Tax from Building Sales			$0	$0	$0	$95,973	$195,872	$1,501,833	$5,591,822	$6,694,690	$9,470,769
Total Property Transfer Tax to General Fund (nominal $)			**$0**	**$0**	**$2,678,104**	**$3,904,973**	**$1,824,846**	**$6,488,688**	**$7,260,897**	**$13,216,376**	**$18,389,617**
Total Property Transfer Tax to General Fund (constant $)[7]			**$0**	**$0**	**$2,574,110**	**$3,679,743**	**$1,685,876**	**$5,877,004**	**$6,447,469**	**$11,505,650**	**$15,695,361**

[1] See Table 15 for assessed values.
[2] The City transfer tax rate is $15 per $500 of value for transactions larger than $25 million. FivePoint adjusted the rate downward to $14.65 to account for the modest number of land values that are less than $25 million.
[3] City rate of $3.75 per $500 in value applies to transactions between $1 million and $5 million. Assumes all for-sale transactions fall into this range. Analysis excludes for-rent units.
[4] FivePoint assumption of 14 percent turnover of cumulative inflated residential building value at the end of the prior fiscal year.
[5] City rate of $15 per $500 of value for transactions larger than $25 million. It is assumed that 20 percent of new commercial space turns over upon completion while the remainder is built-to-suit space that will not change ownership.
[6] EPS assumption of 2.5 percent turnover of cumulative inflated commercial building value at the end of the prior fiscal year.
[7] The 2034 new residential development transfer tax reflects 2034 and 2035 development so that property transfer tax at buildout better reflects project revenue at stabilization.

Sources: FivePoint; CCSF Office of Assessor-Recorder Transfer Tax schedule; Economic and Planning Systems, Inc.

Table 17 Property Transfer Tax (continued)

Item	Estimating Factor		Fiscal Year									Buildout
			2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
			10	11	12	13	14	15	16	17	18	19
Transfer Tax from Land Sales[1]												
Transfer Tax from Residential Land Sale[2]	$14.65	per $500 value	$5,947,875	$3,675,471	$8,375,873	$13,453,816	$4,178,382	$2,827,574	$3,799,532	$885,388	$0	$0
Transfer Tax from Commercial Land Sales[2]	$14.65	per $500 value	$4,785,546	$2,740,429	$4,073,649	$2,090,731	$2,838,818	$0	$0	$0	$0	$0
Transfer Tax from Land Sales			$10,733,420	$6,415,900	$12,449,522	$15,544,547	$7,017,200	$2,827,574	$3,799,532	$885,388	$0	$0
Transfer Tax from Building Sales[1]												
Transfer Tax from Sale of New Residential Buildings[3]	$3.75	per $500 value	$5,222,505	$5,796,754	$4,494,450	$6,875,919	$9,485,145	$9,693,666	$12,613,811	$4,762,011	$5,749,667	$0
Transfer Tax from Re-sale of Existing Residential Buildings[4]	14.0%	annual turnover	$2,015,510	$2,999,713	$4,017,966	$5,034,533	$6,583,140	$8,217,417	$9,881,296	$12,030,422	$13,029,593	$13,570,735
Transfer Tax from Sale of New Commercial Buildings[5]	$15.00	per $500 value	$1,668,660	$1,612,321	$2,194,795	$1,648,228	$2,512,171	$1,893,575	$1,739,155	$0	$0	$0
Transfer Tax from Re-sale of Existing Commercial Buildings[6]	2.5%	annual turnover	$1,537,375	$1,899,202	$2,208,874	$2,631,675	$2,943,854	$3,389,418	$3,693,904	$3,985,176	$4,064,880	$4,146,177
Transfer Tax from Building Sales			$10,444,051	$12,307,990	$12,916,085	$16,190,356	$21,524,310	$23,194,076	$27,928,165	$20,777,609	$22,844,140	$17,716,912
Total Property Transfer Tax to General Fund (nominal $)			**$21,177,471**	**$18,723,890**	**$25,365,607**	**$31,734,903**	**$28,541,510**	**$26,021,651**	**$31,727,697**	**$21,662,997**	**$22,844,140**	**$17,716,912**
Total Property Transfer Tax to General Fund (constant $)[7]			**$17,720,361**	**$15,360,111**	**$20,400,620**	**$25,022,754**	**$22,063,515**	**$19,721,159**	**$23,574,146**	**$15,780,320**	**$16,314,429**	**$12,404,662**

[1] See Table 15 for assessed values.
[2] The City transfer tax rate is $15 per $500 of value for transactions larger than $25 million. FivePoint adjusted the rate downward to $14.65 to account for the modest number of land values that are less than $25 million.
[3] City rate of $3.75 per $500 in value applies to transactions between $1 million and $5 million. Assumes all for-sale transactions fall into this range. Analysis excludes for-rent units.
[4] FivePoint assumption of 14 percent turnover of cumulative inflated residential building value at the end of the prior fiscal year.
[5] City rate of $15 per $500 of value for transactions larger than $25 million. It is assumed that 20 percent of new commercial space turns over upon completion while the remainder is built-to-suit space that will not change ownership.
[6] EPS assumption of 2.5 percent turnover of cumulative inflated commercial building value at the end of the prior fiscal year.
[7] The 2034 new residential development transfer tax reflects 2034 and 2035 development so that property transfer tax at buildout better reflects project revenue at stabilization.

Sources: FivePoint; CCSF Office of Assessor-Recorder Transfer Tax schedule; Economic and Planning Systems, Inc.

Sales Taxes

Sales tax revenue will be generated by the Project's retail stores and restaurants patronized by residents, employees, and visitors. Regional retail sales, which include an outlet shopping mall, are expected to exceed neighborhood sales on a per-square-foot basis. Regional retail sales are discounted by 10 percent under the assumption that some sales may be shifted from existing retail. Neighborhood retail is expected to primarily cater to the Project's residents, and thus, have been discounted by 50 percent to avoid double counting resident spending to account for neighborhood retailers that are not subject to sales tax. The new maker space and community facilities space[8] are also expected to include some retailers and result in the generation of some taxable sales. Recognizing that there will be a range of uses in these spaces, the taxable sales generation per square foot is assumed to be half of that of the neighborhood retail spaces and is further discounted by 50 percent to recognize that some existing local businesses might choose to re-locate to these new spaces. Expenditures by CP/HPS residents spent elsewhere in San Francisco will also produce sales tax to the City.

Although employee expenditures associated with commercial uses can produce taxable sales, no employee impact on taxable sales taxes is assumed. Taxable sales by other commercial businesses occupying R&D space is also not estimated; these amounts can vary significantly depending on whether the businesses conduct taxable transactions that are reported at their San Francisco location. The sales tax revenue generated by residents is based on estimated household incomes. Sales tax driven by residents is reduced to reflect that a portion of resident expenditures will occur outside of the City. A summary of the Project's sales tax revenue is provided in **Table 18**. At buildout, the Project will generate approximately $7.9 million in sales tax revenue, including $670,000 from one-time construction sales.

[8] The Project will include 75,000 square feet of Community Facilities Space, offered to tenants at a subsidized lease rate. It is expected that a portion of this space will include retail tenants.

Table 18 Sales Tax

Item	Estimating Factor		Fiscal Year 2017 1	2018 2	2019 3	2020 4	2021 5
Sales Tax from Market-Rate For-Sale Unit Households							
Average for-sale unit selling price[1]		$1,160,900					
Average Amount Mortgaged[2]	80% Mortgaged	$928,720					
Average Annual Housing Payment[3]		$57,016					
Average Annual HH Income[4]	30%	$190,052					
Average HH Taxable Retail Expenditure[5]	24%	$44,852					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$27,808	$27,808	$27,808	$27,808	$27,808
For-Sale Units			0	0	0	0	1,139
New Retail Sales Captured by San Francisco			$0	$0	$0	$0	$31,673,743
New Sales from Market-Rate For-Sale Units	1.0% of taxable sales		$0	$0	$0	$0	$316,737
Sales Tax from BMR For-Sale Unit Households							
Average for-sale unit selling price[1]		$388,156					
Average Amount Mortgaged[2]	80% Mortgaged	$310,525					
Average Annual Housing Payment[3]		$19,064					
Average Annual HH Income[4]	30%	$63,545					
Average HH Taxable Retail Expenditure[5]	32%	$20,398					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$12,647	$12,647	$12,647	$12,647	$12,647
For-Sale Units			0	0	0	0	48
New Retail Sales Captured by San Francisco			$0	$0	$0	$0	$607,046
New Sales from BMR For-Sale Units	1.0% of taxable sales		$0	$0	$0	$0	$6,070
Sales Tax from Market-Rate Rental Unit Households							
Average Annual Rent		$55,229					
Average Annual HH Income[4]	30%	$184,096					
Average HH Taxable Retail Expenditure[5]	30%	$54,492					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$33,785.30	$33,785	$33,785	$33,785	$33,785
Rental Units			0	0	0	0	0
New Retail Sales Captured by San Francisco			$0	$0	$0	$0	$0
New Sales from Market-Rate Units	1.0% of taxable sales		$0	$0	$0	$0	$0
Sales Tax from BMR Rental Unit Households							
Average Annual HH Income[4]	30%	$110,822					
Average HH Taxable Retail Expenditure[5]	27%	29,368					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$18,208	$18,208	$18,208	$18,208	$18,208
BMR Rental Units			0	0	0	0	0
New Retail Sales Captured by San Francisco			$0	$0	$0	$0	$0
New Sales from Market-Rate Units	1.0% of taxable sales		$0	$0	$0	$0	$0
Sales Tax from Workforce Unit Households							
Average for-sale unit selling price		$648,700					
Average Amount Mortgaged[2]	80% Mortgaged	$518,960					
Average Annual Housing Payment[3]		$31,860					
Average Annual HH Income[4]	30%	$106,199					
Average HH Taxable Retail Expenditure[5]	30%	$31,435					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$19,490	$19,490	$19,490	$19,490	$19,490
Workforce Units			0	0	0	0	0
New Retail Sales Captured by San Francisco			$0	$0	$0	$0	$0
New Sales from Market-Rate Units	1.0% of taxable sales		$0	$0	$0	$0	$0
Total New Retail Sales Tax from Households			**$0**	**$0**	**$0**	**$0**	**$322,808**
Sales Tax Generated from New Retail							
New Regional Retail Space (Sq. Ft.)			0	0	0	0	0
Total Taxable Sales[7]	$650 per sq. ft.		$0	$0	$0	$0	$0
Net New Taxable Sales[8]	90% of total taxable sales		$0	$0	$0	$0	$0
Sales Tax Generated from New Regional Retail	1.0% of taxable sales		$0	$0	$0	$0	$0
New Neighborhood Retail Space (Sq. Ft.)			0	0	0	0	0
Total Taxable Sales[9]	$300 per sq. ft.		$0	$0	$0	$0	$0
Net New Taxable Sales[10]	50% of total taxable sales		$0	$0	$0	$0	$0
Sales Tax Generated from New Neighborhood Retail	1.0% of taxable sales		$0	$0	$0	$0	$0
New Makerspace and Community Facility Space (Sq. Ft.)			0	0	0	0	0
Total Taxable Sales[11]	$150 per sq. ft.		$0	$0	$0	$0	$0
Net New Taxable Sales[12]	50% of total taxable sales		$0	$0	$0	$0	$0
Sales Tax Generated from New Makerspace/Community Facilities	1.0% of taxable sales		$0	$0	$0	$0	$0
Total New Retail Sales Tax from New Retail			**$0**	**$0**	**$0**	**$0**	**$0**
Construction-related Sales Tax							
Total Development Value			$0	$0	$87,853,595	$122,932,558	$51,795,219
Supply/Materials Portion of Construction Cost	30%		$0	$0	$26,356,078	$36,879,768	$15,538,566
San Francisco Capture of Taxable Sales	50% of total taxable sales		$0	$0	$13,178,039	$18,439,884	$7,769,283
New One-Time Retail Sales Tax from Construction	1.0% of taxable sales		**$0**	**$0**	**$131,780**	**$184,399**	**$77,693**
Total Sales Tax Revenue to General Fund			**$0**	**$0**	**$131,780**	**$184,399**	**$400,501**

[1] Weighted average adjusted, uninflated sales price for Candlestick and Hunter's Point Shipyard market-rate units.
[2] Assumes a 20 percent down payment.
[3] Assumes a 4.5 percent interest rate and a 30-year mortgage period.
[4] Assumes average household spends 30 percent of income on housing.
[5] Based on 2015 Consumer Expenditure Survey.
[6] IMPLAN data for SF County suggests a citywide capture rate of 62.2% based on distribution of spending by retail category for households with the Project's average annual household incomes.
[7] Regional retail sales provided by FivePoint (November 21, 2017) based on Macerich retail study.
[8] Assumes 10 percent of sales a relocation of existing citywide retail sales to the site.
[9] Actual retail sales after accounting for neighborhood retailers not subject to sales tax. EPS assumption.
[10] Assumes neighborhood retail largely caters to Project residents. Discounted 50 percent to avoid double counting resident spending.
[11] Lower sales due to assumption that a portion of makerspace/ community facilities space will not generate retail sales.
[12] Discounted 50 percent to account for the relocation of existing retail to the site.

Sources: FivePoint; Economic & Planning Systems, Inc.

Table 18 Sales Tax (continued)

Item	Estimating Factor		Fiscal Year								
			2022	2023	2024	2025	2026	2027	2028	2029	2030
			6	7	8	9	10	11	12	13	14
Sales Tax from Market-Rate For-Sale Unit Households											
Average for-sale unit selling price[1]		$1,160,900									
Average Amount Mortgaged[2]	80% Mortgaged	$928,720									
Average Annual Housing Payment[3]		$57,016									
Average Annual HH Income[4]	30%	$190,052									
Average HH Taxable Retail Expenditure[5]	24%	$44,852									
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$27,808	$27,808	$27,808	$27,808	$27,808	$27,808	$27,808	$27,808	$27,808
For-Sale Units			1,139	1,741	1,997	2,503	2,724	2,893	4,069	5,134	5,874
New Retail Sales Captured by San Francisco			$31,673,743	$48,414,387	$55,533,332	$69,604,372	$75,750,023	$80,449,639	$113,152,292	$142,768,215	$163,346,416
New Sales from Market-Rate For-Sale Units	1.0% of taxable sales		$316,737	$484,144	$555,333	$696,044	$757,500	$804,496	$1,131,523	$1,427,682	$1,633,464
Sales Tax from BMR For-Sale Unit Households											
Average for-sale unit selling price[1]		$388,156									
Average Amount Mortgaged[2]	80% Mortgaged	$310,525									
Average Annual Housing Payment[3]		$19,064									
Average Annual HH Income[4]	30%	$63,545									
Average HH Taxable Retail Expenditure[5]	32%	$20,398									
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$12,647	$12,647	$12,647	$12,647	$12,647	$12,647	$12,647	$12,647	$12,647
For-Sale Units			48	115	144	202	227	246	379	500	584
New Retail Sales Captured by San Francisco			$607,046	$1,454,381	$1,821,138	$2,554,652	$2,870,821	$3,111,110	$4,793,133	$6,323,395	$7,385,725
New Sales from BMR For-Sale Units	1.0% of taxable sales		$6,070	$14,544	$18,211	$25,547	$28,708	$31,111	$47,931	$63,234	$73,857
Sales Tax from Market-Rate Rental Unit Households											
Average Annual Rent		$55,229									
Average Annual HH Income[4]	30%	$184,096									
Average HH Taxable Retail Expenditure[5]	30%	$54,492									
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$33,785	$33,785	$33,785	$33,785	$33,785	$33,785	$33,785	$33,785	$33,785
Rental Units			633	633	633	768	768	768	1,436	1,436	1,436
New Retail Sales Captured by San Francisco			$21,386,094	$21,386,094	$21,386,094	$25,947,109	$25,947,109	$25,947,109	$48,515,688	$48,515,688	$48,515,688
New Sales from Market-Rate Units	1.0% of taxable sales		$213,861	$213,861	$213,861	$259,471	$259,471	$259,471	$485,157	$485,157	$485,157
Sales Tax from BMR Rental Unit Households											
Average Annual HH Income[4]	30%	$110,822									
Average HH Taxable Retail Expenditure[5]	27%	29,368									
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$18,208	$18,208	$18,208	$18,208	$18,208	$18,208	$18,208	$18,208	$18,208
BMR Rental Units			151	151	151	166	166	166	242	242	242
New Retail Sales Captured by San Francisco			$2,749,416	$2,749,416	$2,749,416	$3,022,537	$3,022,537	$3,022,537	$4,406,349	$4,406,349	$4,406,349
New Sales from Market-Rate Units	1.0% of taxable sales		$27,494	$27,494	$27,494	$30,225	$30,225	$30,225	$44,063	$44,063	$44,063
Sales Tax from Workforce Unit Households											
Average for-sale unit selling price		$648,700									
Average Amount Mortgaged[2]	80% Mortgaged	$518,960									
Average Annual Housing Payment[3]		$31,860									
Average Annual HH Income[4]	30%	$106,199									
Average HH Taxable Retail Expenditure[5]	30%	$31,435									
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$19,490	$19,490	$19,490	$19,490	$19,490	$19,490	$19,490	$19,490	$19,490
Workforce Units			0	0	237	337	337	337	442	552	892
New Retail Sales Captured by San Francisco			$0	$0	$4,619,053	$6,568,020	$6,568,020	$6,568,020	$8,614,436	$10,758,300	$17,384,789
New Sales from Market-Rate Units	1.0% of taxable sales		$0	$0	$46,191	$65,680	$65,680	$65,680	$86,144	$107,583	$173,848
Total New Retail Sales Tax from Households			**$564,163**	**$740,043**	**$861,090**	**$1,076,967**	**$1,141,585**	**$1,190,984**	**$1,794,819**	**$2,127,719**	**$2,410,390**
Sales Tax Generated from New Retail											
New Regional Retail Space (Sq. Ft.)			635,000	635,000	635,000	735,000	735,000	735,000	735,000	735,000	735,000
Total Taxable Sales[7]	$650 per sq. ft.		$412,750,000	$412,750,000	$412,750,000	$477,750,000	$477,750,000	$477,750,000	$477,750,000	$477,750,000	$477,750,000
Net New Taxable Sales[8]	90% of total taxable sales		$371,475,000	$371,475,000	$371,475,000	$429,975,000	$429,975,000	$429,975,000	$429,975,000	$429,975,000	$429,975,000
Sales Tax Generated from New Regional Retail	1.0% of taxable sales		$3,714,750	$3,714,750	$3,714,750	$4,299,750	$4,299,750	$4,299,750	$4,299,750	$4,299,750	$4,299,750
New Neighborhood Retail Space (Sq. Ft.)			0	60,000	60,000	78,500	97,000	97,000	97,000	141,000	286,000
Total Taxable Sales[9]	$300 per sq. ft.		$0	$18,000,000	$18,000,000	$23,550,000	$29,100,000	$29,100,000	$29,100,000	$42,300,000	$85,800,000
Net New Taxable Sales[10]	50% of total taxable sales		$0	$9,000,000	$9,000,000	$11,775,000	$14,550,000	$14,550,000	$14,550,000	$21,150,000	$42,900,000
Sales Tax Generated from New Neighborhood Retail	1.0% of taxable sales		$0	$90,000	$90,000	$117,750	$145,500	$145,500	$145,500	$211,500	$429,000
New Makerspace and Community Facility Space (Sq. Ft.)			0	65,000	65,000	140,000	65,000	65,000	65,000	65,000	65,000
Total Taxable Sales[11]	$150 per sq. ft.		$0	$9,750,000	$9,750,000	$21,000,000	$9,750,000	$9,750,000	$9,750,000	$9,750,000	$9,750,000
Net New Taxable Sales[12]	50% of total taxable sales		$0	$4,875,000	$4,875,000	$10,500,000	$4,875,000	$4,875,000	$4,875,000	$4,875,000	$4,875,000
Sales Tax Generated from New Makerspace/Community Facilities	1.0% of taxable sales		$0	$48,750	$48,750	$105,000	$48,750	$48,750	$48,750	$48,750	$48,750
Total New Retail Sales Tax from New Retail			**$3,714,750**	**$3,853,500**	**$3,853,500**	**$4,522,500**	**$4,494,000**	**$4,494,000**	**$4,494,000**	**$4,560,000**	**$4,777,500**
Construction-related Sales Tax											
Total Development Value			$342,505,563	$780,323,686	$1,327,262,582	$1,221,794,840	$1,132,608,963	$1,139,722,801	$1,136,473,550	$1,379,967,370	$1,692,591,490
Supply/Materials Portion of Construction Cost	30%		$102,751,669	$234,097,106	$398,178,775	$366,538,452	$339,782,689	$341,916,840	$340,942,065	$413,990,211	$507,777,447
San Francisco Capture of Taxable Sales	50% of total taxable sales		$51,375,834	$117,048,553	$199,089,387	$183,269,226	$169,891,344	$170,958,420	$170,471,033	$206,995,106	$253,888,723
New One-Time Retail Sales Tax from Construction	1.0% of taxable sales		**$513,758**	**$1,170,486**	**$1,990,894**	**$1,832,692**	**$1,698,913**	**$1,709,584**	**$1,704,710**	**$2,069,951**	**$2,538,887**
Total Sales Tax Revenue to General Fund			**$4,792,671**	**$5,764,028**	**$6,705,484**	**$7,432,159**	**$7,334,499**	**$7,394,568**	**$7,993,529**	**$8,757,671**	**$9,726,777**

[1] Weighted average adjusted, uninflated sales price for Candlestick and Hunter's Point Shipyard market-rate units.
[2] Assumes a 20 percent down payment.
[3] Assumes a 4.5 percent interest rate and a 30-year mortgage period.
[4] Assumes average household spends 30 percent of income on housing.
[5] Based on 2015 Consumer Expenditure Survey.
[6] IMPLAN data for SF County suggests a citywide capture rate of 62.2% based on distribution of spending by retail category for households with the Project's average annual household incomes.
[7] Regional retail sales provided by FivePoint (November 21, 2017) based on Macerich retail study.
[8] Assumes 10 percent of sales a relocation of existing citywide retail sales to the site.
[9] Actual retail sales after accounting for neighborhood retailers not subject to sales tax. EPS assumption.
[10] Assumes neighborhood retail largely caters to Project residents. Discounted 50 percent to avoid double counting resident spending.
[11] Lower sales due to assumption that a portion of makerspace/ community facilities space will not generate retail sales.
[12] Discounted 50 percent to account for the relocation of existing retail to the site.

Sources: FivePoint; Economic & Planning Systems, Inc.

Table 18 Sales Tax (continued)

Item	Estimating Factor		Fiscal Year				Buildout
			2031	2032	2033	2034	2035
			15	16	17	18	19
Sales Tax from Market-Rate For-Sale Unit Households							
Average for-sale unit selling price[1]		$1,160,900					
Average Amount Mortgaged[2]	80% Mortgaged	$928,720					
Average Annual Housing Payment[3]		$57,016					
Average Annual HH Income[4]	30%	$190,052					
Average HH Taxable Retail Expenditure[5]	24%	$44,852					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$27,808	$27,808	$27,808	$27,808	$27,808
For-Sale Units			5,874	5,874	5,874	5,874	5,874
New Retail Sales Captured by San Francisco			$163,346,416	$163,346,416	$163,346,416	$163,346,416	$163,346,416
New Sales from Market-Rate For-Sale Units	1.0% of taxable sales		$1,633,464	$1,633,464	$1,633,464	$1,633,464	$1,633,464
Sales Tax from BMR For-Sale Unit Households							
Average for-sale unit selling price[1]		$388,156					
Average Amount Mortgaged[2]	80% Mortgaged	$310,525					
Average Annual Housing Payment[3]		$19,064					
Average Annual HH Income[4]	30%	$63,545					
Average HH Taxable Retail Expenditure[5]	32%	$20,398					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$12,647	$12,647	$12,647	$12,647	$12,647
For-Sale Units			584	584	584	584	584
New Retail Sales Captured by San Francisco			$7,385,725	$7,385,725	$7,385,725	$7,385,725	$7,385,725
New Sales from BMR For-Sale Units	1.0% of taxable sales		$73,857	$73,857	$73,857	$73,857	$73,857
Sales Tax from Market-Rate Rental Unit Households							
Average Annual Rent		$55,229					
Average Annual HH Income[4]	30%	$184,096					
Average HH Taxable Retail Expenditure[5]	30%	$54,492					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$33,785	$33,785	$33,785	$33,785	$33,785
Rental Units			1,436	1,436	1,436	1,436	1,436
New Retail Sales Captured by San Francisco			$48,515,688	$48,515,688	$48,515,688	$48,515,688	$48,515,688
New Sales from Market-Rate Units	1.0% of taxable sales		$485,157	$485,157	$485,157	$485,157	$485,157
Sales Tax from BMR Rental Unit Households							
Average Annual HH Income[4]	30%	$110,822					
Average HH Taxable Retail Expenditure[5]	27%	29,368					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$18,208	$18,208	$18,208	$18,208	$18,208
BMR Rental Units			242	242	242	242	242
New Retail Sales Captured by San Francisco			$4,406,349	$4,406,349	$4,406,349	$4,406,349	$4,406,349
New Sales from Market-Rate Units	1.0% of taxable sales		$44,063	$44,063	$44,063	$44,063	$44,063
Sales Tax from Workforce Unit Households							
Average for-sale unit selling price		$648,700					
Average Amount Mortgaged[2]	80% Mortgaged	$518,960					
Average Annual Housing Payment[3]		$31,860					
Average Annual HH Income[4]	30%	$106,199					
Average HH Taxable Retail Expenditure[5]	30%	$31,435					
Expenditures per New Household Captured by San Francisco[6]	62% of taxable expenditures		$19,490	$19,490	$19,490	$19,490	$19,490
Workforce Units			892	892	892	892	892
New Retail Sales Captured by San Francisco			$17,384,789	$17,384,789	$17,384,789	$17,384,789	$17,384,789
New Sales from Market-Rate Units	1.0% of taxable sales		$173,848	$173,848	$173,848	$173,848	$173,848
Total New Retail Sales Tax from Households			**$2,410,390**	**$2,410,390**	**$2,410,390**	**$2,410,390**	**$2,410,390**
Sales Tax Generated from New Retail							
New Regional Retail Space (Sq. Ft.)			735,000	735,000	735,000	735,000	735,000
Total Taxable Sales[7]	$650 per sq. ft.		$477,750,000	$477,750,000	$477,750,000	$477,750,000	$477,750,000
Net New Taxable Sales[8]	90% of total taxable sales		$429,975,000	$429,975,000	$429,975,000	$429,975,000	$429,975,000
Sales Tax Generated from New Regional Retail	1.0% of taxable sales		$4,299,750	$4,299,750	$4,299,750	$4,299,750	$4,299,750
New Neighborhood Retail Space (Sq. Ft.)			286,000	286,000	286,000	286,000	286,000
Total Taxable Sales[9]	$300 per sq. ft.		$85,800,000	$85,800,000	$85,800,000	$85,800,000	$85,800,000
Net New Taxable Sales[10]	50% of total taxable sales		$42,900,000	$42,900,000	$42,900,000	$42,900,000	$42,900,000
Sales Tax Generated from New Neighborhood Retail	1.0% of taxable sales		$429,000	$429,000	$429,000	$429,000	$429,000
New Makerspace and Community Facility Space (Sq. Ft.)			65,000	65,000	65,000	65,000	65,000
Total Taxable Sales[11]	$150 per sq. ft.		$9,750,000	$9,750,000	$9,750,000	$9,750,000	$9,750,000
Net New Taxable Sales[12]	50% of total taxable sales		$4,875,000	$4,875,000	$4,875,000	$4,875,000	$4,875,000
Sales Tax Generated from New Makerspace/Community Facilities	1.0% of taxable sales		$48,750	$48,750	$48,750	$48,750	$48,750
Total New Retail Sales Tax from New Retail			**$4,777,500**	**$4,777,500**	**$4,777,500**	**$4,777,500**	**$4,777,500**
Construction-related Sales Tax							
Total Development Value			$1,480,315,609	$1,667,345,487	$531,662,251	$196,247,283	$443,826,510
Supply/Materials Portion of Construction Cost	30%		$444,094,683	$500,203,646	$159,498,675	$58,874,185	$133,147,953
San Francisco Capture of Taxable Sales	50% of total taxable sales		$222,047,341	$250,101,823	$79,749,338	$29,437,093	$66,573,976
New One-Time Retail Sales Tax from Construction	1.0% of taxable sales		**$2,220,473**	**$2,501,018**	**$797,493**	**$294,371**	**$665,740**
Total Sales Tax Revenue to General Fund			**$9,408,363**	**$9,688,908**	**$7,985,383**	**$7,482,261**	**$7,853,629**

[1] Weighted average adjusted, uninflated sales price for Candlestick and Hunter's Point Shipyard market-rate units.
[2] Assumes a 20 percent down payment.
[3] Assumes a 4.5 percent interest rate and a 30-year mortgage period.
[4] Assumes average household spends 30 percent of income on housing.
[5] Based on 2015 Consumer Expenditure Survey.
[6] IMPLAN data for SF County suggests a citywide capture rate of 62.2% based on distribution of spending by retail category for households with the Project's average annual household incomes.
[7] Regional retail sales provided by FivePoint (November 21, 2017) based on Macerich retail study.
[8] Assumes 10 percent of sales a relocation of existing citywide retail sales to the site.
[9] Actual retail sales after accounting for neighborhood retailers not subject to sales tax. EPS assumption.
[10] Assumes neighborhood retail largely caters to Project residents. Discounted 50 percent to avoid double counting resident spending.
[11] Lower sales due to assumption that a portion of makerspace/ community facilities space will not generate retail sales.
[12] Discounted 50 percent to account for the relocation of existing retail to the site.

Sources: FivePoint; Economic & Planning Systems, Inc.

Hotel Tax

Hotel Room Tax (also known as Transient Occupancy Tax) will be generated by the proposed hotels in the Project. The City and County of San Francisco currently receives 14 percent of room charges and 100 percent of Hotel Room Tax proceeds are allocated to the General Fund. For this analysis an average daily room rate of $275 was applied to the total number of rooms (220). A vacancy rate of 25 percent was subtracted and the 14 percent tax rate was applied. Total hotel revenue allocated to the General Fund at Project buildout is estimated to be just over $4 million (see **Table 19**).

Table 19 Hotel Tax

Item	Estimating Factor	Fiscal Year 2017 1	2018 2	2019 3	2020 4	2021 5	2022 6	2023 7	2024 8	2025 9
Hotel rooms[1]		0	0	0	0	0	220	220	220	220
Gross Daily Hotel Room Revenue[1]	$275 per room- night	$0	$0	$0	$0	$0	$60,500	$60,500	$60,500	$60,500
Gross Annual Hotel Room Revenue	365 nights per year	$0	$0	$0	$0	$0	$22,082,500	$22,082,500	$22,082,500	$22,082,500
(minus) Vacancy	25%	$0	$0	$0	$0	$0	($5,520,625)	($5,520,625)	($5,520,625)	($5,520,625)
Total Hotel Room Proceeds		$0	$0	$0	$0	$0	$16,561,875	$16,561,875	$16,561,875	$16,561,875
Total Hotel Tax Revenue to General Fund[2]	14% of room rent revenue	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,318,663**	**$2,318,663**	**$2,318,663**	**$2,318,663**

[1] According to email from FivePoint, July 5, 2017. Average daily rate of $275. 220 rooms in Candlestick Point and 175 rooms in Hunters Point Shipyard.
[2] Assumes that 100 percent of the 14 percent hotel tax revenues were allocated to the General Fund.

Sources: FivePoint; Economic & Planning Systems, Inc.

Table 19 Hotel Tax (continued)

Item	Estimating Factor	Fiscal Year 2026 10	2027 11	2028 12	2029 13	2030 14	2031 15	2032 16	2033 17	2034 18	Buildout 2035 19
Hotel rooms[1]		220	220	220	395	395	395	395	395	395	395
Gross Daily Hotel Room Revenue[1]	$275 per room- night	$60,500	$60,500	$60,500	$108,625	$108,625	$108,625	$108,625	$108,625	$108,625	$108,625
Gross Annual Hotel Room Revenue	365 nights per year	$22,082,500	$22,082,500	$22,082,500	$39,648,125	$39,648,125	$39,648,125	$39,648,125	$39,648,125	$39,648,125	$39,648,125
(minus) Vacancy	25%	($5,520,625)	($5,520,625)	($5,520,625)	($9,912,031)	($9,912,031)	($9,912,031)	($9,912,031)	($9,912,031)	($9,912,031)	($9,912,031)
Total Hotel Room Proceeds		$16,561,875	$16,561,875	$16,561,875	$29,736,094	$29,736,094	$29,736,094	$29,736,094	$29,736,094	$29,736,094	$29,736,094
Total Hotel Tax Revenue to General Fund[2]	14% of room rent revenue	**$2,318,663**	**$2,318,663**	**$2,318,663**	**$4,163,053**	**$4,163,053**	**$4,163,053**	**$4,163,053**	**$4,163,053**	**$4,163,053**	**$4,163,053**

[1] According to email from FivePoint, July 5, 2017. Average daily rate of $275. 220 rooms in Candlestick Point and 175 rooms in Hunters Point Shipyard.
[2] Assumes that 100 percent of the 14 percent hotel tax revenues were allocated to the General Fund.

Sources: FivePoint; Economic & Planning Systems, Inc.

Parking Tax

The City collects a 25 percent parking tax from commercial off-street parking charges. The Project is estimated to result in approximately 9,889 net new off-street and structured parking spaces. The Project's parking spaces are assumed to be subject to the parking tax based on potential public parking revenues. Approximately 20 percent of the parking tax proceeds are allocated to the General Fund, while the remaining 80 percent are allocated to the San Francisco Municipal Transportation Agency (SFMTA). This analysis assumes a parking vacancy rate of 7.5 percent. The revenues per retail space are set at $250 per parking space in constant 2017 dollars (with adjustments for inflation), while revenues per R&D space start at a lower rate of $50 and then increase incrementally until they match the per space revenue from the retail spaces from 2026 onwards. By 2026, all off-street commercial spaces are assumed to have an average monthly rate of $250 in constant dollar terms. A blended revenue per space rate is used prior to 2026 to account for the balance between retail and R&D parking space revenues and the lower R&D per space rates in these early years. At buildout the Project is estimated to generate approximately $5.1 million in parking tax, of which $1.0 million will be allocated to the General Fund and $4.1 million to the Municipal Transportation Fund (see **Table 20**).

Table 20 Parking Tax

Item	Estimating Factor		Fiscal Year								
			2017	2018	2019	2020	2021	2022	2023	2024	2025
			1	2	3	4	5	6	7	8	9
Commercial Off-Street Parking at Buildout[1]	9,889	spaces	0	0	0	0	0	2,595	4,356	4,356	5,065
(less) Vacancy	7.5%		0	0	0	0	0	(195)	(327)	(327)	(380)
Occupied Commercial Off-Street Parking	9,147	spaces	0	0	0	0	0	2,400	4,029	4,029	4,685
Monthly Revenue Rates[2]											
Year 2023	$184	per space per month	-	-	-	-	-	-	$740,352	-	-
Year 2024	$208	per space per month	-	-	-	-	-	-	-	$838,094	-
Year 2025	$201	per space per month	-	-	-	-	-	-	-	-	$941,710
Years 2026 - 2035	$250	per space per month	-	-	-	-	-	$600,094	-	-	-
Subtotal			$0	$0	$0	$0	$0	$600,094	$740,352	$838,094	$941,710
Gross Annual Parking Revenue	12	months per year	$0	$0	$0	$0	$0	$7,201,125	$8,884,222	$10,057,133	$11,300,522
(minus) Vacancy	25%		$0	$0	$0	$0	$0	($1,800,281)	($2,221,056)	($2,514,283)	($2,825,130)
Total Parking Tax Proceeds			$0	$0	$0	$0	$0	$5,400,844	$6,663,167	$7,542,850	$8,475,391
San Francisco Parking Tax	25%	of annual revenue	$0	$0	$0	$0	$0	$1,350,211	$1,665,792	$1,885,712	$2,118,848
Total Parking Tax Revenue to General Fund	20%	of tax proceeds	$0	$0	$0	$0	$0	$270,042	$333,158	$377,142	$423,770
Municipal Transportation Fund Allocation	80%	of GF allocation	$0	$0	$0	$0	$0	$1,080,169	$1,332,633	$1,508,570	$1,695,078

[1] According to FivePoint March 27, 2018. Excludes residential parking, on-street parking, and parking for community, artist, or recreational uses not subject to the City's parking tax.
[2] Retail spaces are estimated to have a monthly rate of $250 in years 2021-2035, while other commercial spaces have a growing rate that eventually reaches $250 in 2026.
Based on the ratio of retail to other commercial spaces, EPS calculated a blended rate for years 2023 - 2025.

Sources: FivePoint; Economic & Planning Systems, Inc.

Table 20 Parking Tax (continued)

Item	Estimating Factor	Fiscal Year									Buildout
		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
		10	11	12	13	14	15	16	17	18	19
Commercial Off-Street Parking at Buildout[1]	9,889 spaces	6,624	6,645	6,645	6,821	9,887	9,887	9,887	9,887	9,889	9,889
(less) Vacancy	7.5%	(497)	(498)	(498)	(512)	(742)	(742)	(742)	(742)	(742)	(742)
Occupied Commercial Off-Street Parking	9,147 spaces	6,127	6,147	6,147	6,309	9,145	9,145	9,145	9,145	9,147	9,147
Monthly Revenue Rates[2]											
Year 2023	$184 per space per month	-	-	-	-	-	-	-	-	-	-
Year 2024	$208 per space per month	-	-	-	-	-	-	-	-	-	-
Year 2025	$201 per space per month	-	-	-	-	-	-	-	-	-	-
Years 2026 - 2035	$250 per space per month	$1,531,800	$1,536,656	$1,536,656	$1,577,356	$2,286,369	$2,286,369	$2,286,369	$2,286,369	$2,286,831	$2,286,831
Subtotal		$1,531,800	$1,536,656	$1,536,656	$1,577,356	$2,286,369	$2,286,369	$2,286,369	$2,286,369	$2,286,831	$2,286,831
Gross Annual Parking Revenue	12 months per year	$18,381,600	$18,439,875	$18,439,875	$18,928,275	$27,436,425	$27,436,425	$27,436,425	$27,436,425	$27,441,975	$27,441,975
(minus) Vacancy	25%	($4,595,400)	($4,609,969)	($4,609,969)	($4,732,069)	($6,859,106)	($6,859,106)	($6,859,106)	($6,859,106)	($6,860,494)	($6,860,494)
Total Parking Tax Proceeds		$13,786,200	$13,829,906	$13,829,906	$14,196,206	$20,577,319	$20,577,319	$20,577,319	$20,577,319	$20,581,481	$20,581,481
San Francisco Parking Tax	25% of annual revenue	$3,446,550	$3,457,477	$3,457,477	$3,549,052	$5,144,330	$5,144,330	$5,144,330	$5,144,330	$5,145,370	$5,145,370
Total Parking Tax Revenue to General Fund	20% of tax proceeds	$689,310	$691,495	$691,495	$709,810	$1,028,866	$1,028,866	$1,028,866	$1,028,866	$1,029,074	$1,029,074
Municipal Transportation Fund Allocation	80% of GF allocation	$2,757,240	$2,765,981	$2,765,981	$2,839,241	$4,115,464	$4,115,464	$4,115,464	$4,115,464	$4,116,296	$4,116,296

[1] According to FivePoint March 27, 2018. Excludes residential parking, on-street parking, and parking for community, artist, or recreational uses not subject to the City's parking tax.
[2] Retail spaces are estimated to have a monthly rate of $250 in years 2021-2035, while other commercial spaces have a growing rate that eventually reaches $250 in 2026.
Based on the ratio of retail to other commercial spaces, EPS calculated a blended rate for years 2023 - 2025.

Sources: FivePoint; Economic & Planning Systems, Inc.

6. SAN FRANCISCO GENERAL FUND EXPENDITURES

This section summarizes key public costs for services that will be required as redevelopment occurs. This analysis is based on Project-specific estimates for on-site services, for example police and fire, as well as a "per-capita" approach for certain other citywide services. Actual costs will vary by department, and will depend on future service demands, fiscal and economic conditions, and policy decisions to be made by the Board of Supervisors related to staffing and service levels. **Table 21** summarizes General Fund expenditures in fiscal year 2016 - 2017 and the method of allocation used for this analysis. Calculations displaying EPS's case study approach for expenditures are shown in **Table 22-Table 29**.

Table 21 General Fund Expenditures

Item	GF Expenditure 2016-2017	Allocation Method		
General Fund				
General Administration and Finance	$318,494,000			
Elections[1]	-	$419,583	at buildout	*Case Study*
Assessor/Recorder[2]	-	$123,565	per year	
311 [3]	-	$245,482	at buildout	*Case Study*
Other	-	-	not estimated	
Public Protection				
Police Services[4]	$499,386,000			*Case Study*
Fire Protection[5]	$337,682,000			*Case Study*
911 Emergency Response[6]	-	$1,087,694	at buildout	*Case Study*
Other Public Protection	$416,330,000	-	not estimated	
Community Health[7]	$657,630,000	$66	per capita	*Case Study*
Public Works, Transportation, and Commerce[8]	$58,361,000			*Case Study*
Culture and Recreation	$120,543,000			
Recreation and Parks[9]	-			*Case Study*
Library[10]	-			*Case Study*
Other Culture and Recreation	-	-	not estimated	
Human Welfare and Neighborhood Development	$966,146,000	-	not estimated	
General City Responsibility	$907,285,000	-	not estimated	
Transfers Out	($935,472,000)	-	not estimated	
Total Expenditures	**$3,346,385,000**			

[1] Estimated cost growth is assumed in proportion to population growth. The Project cost is based on the City's estimates in 2010 and the Wells Lawson and Erin McGrath 12.04.2008 memo, and has been inflated using the CPI index to 2017 dollars.

[2] Assumes additional staff would be added to facilitate the assessment and recording process. Cost is based on the City's estimates in 2010 and the Wells Lawson and Erin McGrath 12.04.2008 memo, and has been inflated using the CPI index to 2017 dollars.

[3] Based on estimated calls and required staffing cost. Staff salary assumptions inflated to 2017 dollars.

[4] Additional officers are added to achieve 1.9 officers per 1,000 service population (Citywide average). Also includes cost for space expansion.

[5] Citywide operating costs per station and facility costs for a new station inflated to 2017 dollars.

[6] Based on estimated calls and required staffing cost. Staff salary assumptions inflated to 2017 dollars.

[7] Department of Public Health costs based on estimates of hospital admissions and emergency room visits not reimbursed from other sources (W. Lawson, 8/2008). Cost and staffing estimates have been inflated to 2017 dollars. Affordable units updated to 2018 plan.

[8] Transportation impacts are addressed separately. Cost of road maintenance based on mileage in 2017 plan.

[9] Parks and recreation costs will be covered by special taxes and an annuity provided by the Developer. The costs shown here are associated with recreational programming.

[10] Includes 2-3 staff, and costs for furnishings, fixtures, and equipment. Cost estimates inflated to 2017 dollars.

Sources: Wells Lawson and Erin McGrath; openbook.sfgov.org General Fund Revenues FY 2016-2017; Economic and Planning Systems, Inc.

Elections

The community will require equipment and staffing for elections. Costs are based on 2010 estimated costs required annually to serve the projected population and have been inflated to 2017 dollars. The estimates are based on estimates of new residents in the 2018 plan, the percentage eligible to vote, number of required polling places, and costs including voting materials, signage, and equipment. The cost is estimated to be approximately $420,000 (see **Table 22**) multiplied by the annual number of new residents at the Project through buildout.

Table 22 Elections

Item	Assumptions	Total
New Residents		24,866
New Residents Eligible to Register[1]	72% of total residents	17,903
Registered Voters[1]	80% of eligible residents	14,323
Polling places needed[1]	1 per 800 residents	18
Total Annual Cost[2]	$23,436 per polling place	**$419,583**

[1] 2010 analysis assumptions.
[2] Using the CPI index, EPS inflated the 2010 cost per polling place to 2017 dollars.

Sources: City and County of San Francisco; W. Lawson, E. McGrath (December 4, 2008); Economic & Planning Systems, Inc.

Assessor

Assessment services will be required to assure that developing properties are added to the tax rolls in a timely manner. This will also help to assure that property taxes and tax increment financing are available as projected. The estimated costs assume that an approximately one Full-Time Equivalent (FTE) position will be required. The services may actually include portions of an FTE from an appraiser, principal appraiser, and mapping engineer. The 2010 estimate of one FTE position has been inflated to 2017 dollars using the Consumer Price Index, resulting in an annual cost of approximately $124,000.

311

The City's "311" service provides residents with assistance over the phone with non-emergency City and County of San Francisco government matters. The potential impacts on "311" services have been estimated based on average calls per resident in 2018, and the staff required to respond to those calls. The costs have been spread over time as population of CP/HPS grows. Actual costs and staff will depend on timing of buildout, demand for "311," and capacity of the service at future points in time (see **Table 23**).

Table 23 311 Cost

Item	Total			
City Population	850,282			
Annual Calls to 311[1]	452,019			
Call per Resident	0.53			
New Residents at CP/HPS	24,866			
Annual Call Increase	13,219			
Current Staffed CSR[2]	74			
Annual Calls per CSR	6,108			
Increase in CSR	2.16			
Increase in CSR Supervisor[2]	0.22			
	Step 5	Fringe[3]	Total	Increase
1324 Customer Service Agent[4]	$76,322	$25,568	$101,889	$220,495
1326 Customer Service Agent Supervisor[3]	$86,490	$28,974	$115,464	$24,987
Total 311 Cost				**$245,482**

[1] Number of calls in 2016 according to DataSF.org.
[2] Organization chart on sf311.org website (2017).
[3] Fringe rate is percent of total salaries.
[4] Using the CPI index, EPS inflated the 2010 salaries to 2017 dollars.

Sources: W. Lawson, E. McGrath (December 4, 2008); Economic & Planning Systems, Inc.

Police Services

The current level of staffing may provide some capacity to handle increased calls and could be augmented as demands exceed that capacity and/or the types of calls require a greater level of backup. Based on a current San Francisco average officers per service population,[9] approximately 63 officers would be required to serve the project 24/7 at buildout (compared to the 53 officers required during the time of the 2010 analysis). Since 2010, the citywide officer per service population ratio has increased from 1.6 officers to 1.9 officers per service population. Staffing and related costs are phased as development occurs, although actual staff and service area configurations will need to be developed based on future demands and service configurations in neighboring areas. The level and cost of future police protection will vary depending on the type and extent of future calls for service.

Expansion of service is likely to require additional equipment and facilities on approximately 6,000 square feet of land. The land will either be existing land owned and provided by the SFPD or by the Developer for community facilities. A new or expanded facility is not expected to be needed until year 10. The cost assumes development costs for newly constructed/expanded

[9] Service population is calculated by adding total residential population and half of total employment. It represents a measure of public service demand in which employees are given 50 percent the weight of residents because of more modest demands for public service.

SFPD space; to the extent that a new facility locates within a commercial building built onsite by the Developer, estimated costs could be lower than shown. The 2010 facility costs have been inflated to 2017 dollars. Annual police service costs are estimated in **Table 24**, with a cost of $13.8 million at buildout.

Table 24 Police Services

Item	Estimating Factor		Fiscal Year								
			2017	2018	2019	2020	2021	2022	2023	2024	2025
			1	2	3	4	5	6	7	8	9
Sworn Police Officers[1]	2,292										
Officers per 1,000 Service Population	1.9										
Cumulative New Service Population	32,701	service population	0	0	0	792	4,222	7,209	10,784	12,011	14,529
Officers Required	62	officers	0	0	0	2	8	14	21	23	28
Officer Cost[2]	$217,261	per officer	$0	$0	$0	$328,011	$1,748,632	$2,985,794	$4,466,669	$4,974,745	$6,017,483
Facilities Cost[3]	$585	per square foot									
Total Police Cost			**$0**	**$0**	**$0**	**$328,011**	**$1,748,632**	**$2,985,794**	**$4,466,669**	**$4,974,745**	**$6,017,483**

[1] San Francisco Police Department Statistics Report, March 1, 2017.
[2] Based on CCSF 2016-2017 budget; includes costs of salaries, fringe benefits, materials, and supplies.
[3] Consistent with 2010 analysis, assumes 6,000 square feet of facilities by tenth year of occupancy. Cost estimate assumes $585 per square foot, amortized over 30 years at 5 percent.
Per square foot cost has been inflated to 2017 dollars.

Sources: City and County of San Francisco; Economic & Planning Systems, Inc.

Table 24 Police Services (continued)

Item	Estimating Factor		Fiscal Year									Buildout
			2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
			10	11	12	13	14	15	16	17	18	19
Sworn Police Officers[1]	2,292											
Officers per 1,000 Service Population	1.9											
Cumulative New Service Population	32,701	service population	17,090	17,590	23,578	27,070	32,697	32,697	32,697	32,697	32,701	32,701
Officers Required	62	officers	33	34	45	52	62	62	62	62	62	62
Officer Cost[2]	$217,261	per officer	$7,078,505	$7,285,424	$9,765,459	$11,211,838	$13,542,480	$13,542,480	$13,542,480	$13,542,480	$13,544,232	$13,544,232
Facilities Cost[3]	$585	per square foot	$228,331	$228,331	$228,331	$228,331	$228,331	$228,331	$228,331	$228,331	$228,331	$228,331
Total Police Cost			**$7,306,836**	**$7,513,755**	**$9,993,789**	**$11,440,169**	**$13,770,811**	**$13,770,811**	**$13,770,811**	**$13,770,811**	**$13,772,563**	**$13,772,563**

[1] San Francisco Police Department Statistics Report, March 1, 2017.
[2] Based on CCSF 2016-2017 budget; includes costs of salaries, fringe benefits, materials, and supplies.
[3] Consistent with 2010 analysis, assumes 6,000 square feet of facilities by tenth year of occupancy. Cost estimate assumes $585 per square foot, amortized over 30 years at 5 percent.
Per square foot cost has been inflated to 2017 dollars.

Sources: City and County of San Francisco; Economic & Planning Systems, Inc.

Fire Protection

Fire protection service costs provided to CP/HPS assume development of a new station on the site to serve areas of CP/HPS. The services are likely to include an engine company, truck company, and ambulance.[10] The fiscal analysis utilizes the 2010 average cost per station (inflated to 2017 dollars) to estimate the operating costs based on existing citywide averages. Depending on the magnitude and type of future service demands, and possible re-configuration of other existing or new stations in the City, it may be necessary to modify staff and/or facilities and equipment relative to typical City stations.

The new station is assumed to be required by about year 15. This analysis assumes that a new station will cost approximately $14 million for construction. Additional costs are included for vehicles and equipment and estimated to cost a total of $2 million; these costs are amortized over multiple years. **Table 25** provides an estimate of the operating and capital costs for a new fire station. Note that only Years 15-19 are shown, as costs do not occur until Year 15. At buildout, total fire costs are approximately $8 million.

Table 25 Fire Protection

Item	Estimating Factor	Fiscal Year				Buildout
		2031 15	2032 16	2033 17	2034 18	2035 19
Operations Cost[1]	$7,225,702 per station	$7,225,702	$7,225,702	$7,225,702	$7,225,702	$7,225,702
Facilities Cost[2]	$14,050,800 per facility	$914,025	$914,025	$914,025	$914,025	$914,025
Equipment and vehicles cost[2]	$2,341,800	$2,341,800	$0	$0	$0	$0
Total Fire Cost		**$10,481,527**	**$8,139,727**	**$8,139,727**	**$8,139,727**	**$8,139,727**

[1] Cost per station is based on FY16 Adopted Budget, total fire budget (including GF and Departmental revenue-funded costs) per 47 stations (2016 CAFR statistical data). Cost assumed to be incurred in Year 15, as was assumed in 2010 following buildout of parcel D2.

[2] Assumes $14,050,800 facility cost amortized over 30 years at 5 percent. Equipment and vehicles assumed at $2,341,800. EPS has inflated the 2010 cost estimates to 2017 dollars.

Sources: City and County of San Francisco; Project EIR (p. III.0-12); 2016 CCSF CAFR Report; Economic & Planning Systems, Inc.

911

Other Public Protection services may be affected by new development. Costs for the City's "911" service have been estimated based on potential call volume and additional staff required to handle the calls. The costs have been spread over time as population of CP/HPS grows. Actual costs and staff will depend on timing of buildout, demand for "911," and capacity of the service at future points in time. **Table 26** summarizes the estimated cost for additional 911 demand.

[10] Draft EIR (III.0-20).

Table 26 911 Calls

Item	Total				
City Population	850,282				
Annual Calls to 911[1]	1,240,257				
Calls per Resident	1.46				
New Residents at CP/HPS	24,866				
Annual Call Increase	36,270				
Current Staffed PSD[1]	261				
Annual Calls per PSD	4,752				
Increase in PSD	7.63				
Increase in PSD Supervisor[2]	1.27				
		Step 5	Fringe[3]	Total	Increase
8238 Public Safety Dispatcher		$89,899	$30,116	$120,016	$916,046
8239 Public Safety Supervising Dispatcher		$101,072	$33,859	$134,931	$171,649
Total 911 Costs					**$1,087,694**

[1] San Francisco Department of Emergency Management Annual Report (2016).
[2] 2010 assumption.
[3] Fringe rate is percent of total salaries.

Sources: City and County of San Francisco; W. Lawson, E. McGrath (December 4, 2008); Economic & Planning Systems, Inc.

Public Health

Public health expenditures reflect costs related to emergency room visits and hospital stays, which are partially funded by the General Fund. The costs were estimated by the Department of Public Health (DPH) in 2010 based on the number of affordable units, average number of visits and admissions, and average cost per visit after accounting for reimbursements. This analysis has updated the number of affordable units and inflated the average cost per visit to 2017 dollars (see **Table 27**).

Table 27 Public Health

Item	Total
Total number of Units	10,672
Affordable Units[1]	3,363
Person per Unit[2]	2.33
Population seeking DPH services[3]	7,836
Children Population at Buildout[4]	2,166
DPH	
Expected number of ER visits annually[5]	2,351
Percent increase in people to ER[6]	3.9%
Inpatient cost per visit[7]	$662
Annual cost of ER visits	$1,555,150
Number of patients admitted annually[8]	329
Cost per day of inpatient[9]	$3,513
Average length of stay (days)[10]	5.8
Annual admission cost	$6,705,036
Total cost ER + Inpatient Admissions	$8,260,186
Non-GF Reimbursements[11]	$6,608,149
Remaining General Fund Cost	**$1,652,037**

[1] Units sold or rented to individuals with less than the area median income (AMI).
[2] Derived from housing units and US Census data for people per household in San Francisco County.
[3] Conservative assumption that residents with less than AMI are more likely to be uninsured.
[4] Ratio of children to total number of units assumed to be consistent with 2010 analysis.
[5] Estimate from 2010 analysis.
[6] Estimate of 60,000 according to the Department of Public Health (DPH) in 2010.
[7] EPS inflated the 2010 cost to 2017 dollars.
[8] 0.3 visits per person according to the California Health Care Foundation (CHF) in 2010.
[9] EPS inflated the 2010 cost to 2017 dollars.
[10] According to OSHPD (state regulatory agency for acute care hospitals) in 2010.
[11] In 2010, on average, SFGH generated $4 in reimbursements for every $5 spent per patient visit.

Sources: City and County of San Francisco; California Health Care Foundation; OSHPD; Economic & Planning Systems, Inc.

Public Works

Maintenance of roadways will include street sweeping, routine maintenance (pothole repair and patching), sidewalks, striping and signage, as well as resurfacing and reconstruction that will be necessary as roads age. Costs have been estimated for periodic resurfacing and reconstruction to City standards on an optimal schedule to maintain a high level of street condition. The costs

have been converted to an average annual cost equivalent. The 2010 average annual cost has been inflated to 2017 dollars.

Maintenance costs are phased proportionate to the schedule of new road construction, which was provided by BKF Engineers in August 2017. The costs are assumed to be incurred annually beginning no earlier than about three years after road construction is initiated. This phasing allows for completion of new development sites, absorption of new units, then conveyance of streets for public use and maintenance. During construction, the developer is assumed to be responsible for maintenance of streets to address wear because of construction activity. Street sweeping will be required and is included in the cost estimates shown in **Table 28**. At buildout, road costs are approximately $1.3 million.

Table 28 Public Works

Item	Estimating Factor	Fiscal Year								
		2017	2018	2019	2020	2021	2022	2023	2024	2025
		1	2	3	4	5	6	7	8	9
Mileage[1]										
CP	7 miles									
HPS	6.1 miles									
Subtotal	13.1 miles									
Cumulative Road Total[1]		0.4	0.4	0.4	0.4	0.4	2.3	3.3	3.3	7.7
City Road Maintenance Responsibility[3]		0	0	0.4	0.4	0.4	0.4	0.4	2.3	3.3
Total Roads Service Costs[4]	$98,171 per mile	**$0**	**$0**	**$39,268**	**$39,268**	**$39,268**	**$39,268**	**$39,268**	**$225,792**	**$323,963**

[1] Mileage schedule according to BKF Engineers, August 29, 2017.
[2] Annual road construction percentages consistent with the proposed road phasing in 2010.
[3] City responsibility assumed to begin 3 years after the start of road construction, by year.
[4] Includes periodic partial and full reconstruction, and pothole repair/patching during interim years. Per mile cost includes cost of maintenance and street sweeping, less Prop. K sales tax revenue and a portion of gas tax revenue. Per mile cost at stabilization in 2010 inflated to 2017 dollars.

Sources: City and County of San Francisco; BKF Engineers Construction Schedule; Economic & Planning Systems, Inc.

Table 28 Public Works (continued)

Item	Estimating Factor	Fiscal Year									Buildout
		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
		10	11	12	13	14	15	16	17	18	19
Mileage[1]											
CP	7 miles										
HPS	6.1 miles										
Subtotal	13.1 miles										
Cumulative Road Total[1]		8.3	9.5	9.5	10.8	13.1	13.1	13.1	13.1	13.1	13.1
City Road Maintenance Responsibility[3]		3.3	7.7	8.3	9.5	9.5	10.8	13.1	13.1	13.1	13.1
Total Roads Service Costs[4]	$98,171 per mile	**$323,963**	**$755,914**	**$814,816**	**$932,621**	**$932,621**	**$1,060,242**	**$1,286,035**	**$1,286,035**	**$1,286,035**	**$1,286,035**

[1] Mileage schedule according to BKF Engineers, August 29, 2017.
[2] Annual road construction percentages consistent with the proposed road phasing in 2010.
[3] City responsibility assumed to begin 3 years after the start of road construction, by year.
[4] Includes periodic partial and full reconstruction, and pothole repair/patching during interim years. Per mile cost includes cost of maintenance and street sweeping, less Prop. K sales tax revenue and a portion of gas tax revenue. Per mile cost at stabilization in 2010 inflated to 2017 dollars.

Sources: City and County of San Francisco; BKF Engineers Construction Schedule; Economic & Planning Systems, Inc.

Recreation

The CP/HPS plan will include new public parks, trails, and sports fields and urban recreation areas, which will require maintenance and operation. The Project will also likely to result in a need for new recreational programs once the recreational facilities are built. The potential costs of new recreational programs are estimated on per capita basis based on the 2017 budget for children recreation programing at an approximate cost of $13.83 per person.

Library

The community facilities include a reading room operated by the San Francisco Public Library (SFPL) system. It would be staffed by two to three librarians, and would include programming space as well as collections and computers with internet connections. In addition, the Project envisions the incorporation of automated book pick-up and drop-off kiosks ("bookautomatons") to be operated by the SFPL. The operating and capital costs for a new library facility have been inflated from 2010 to 2017 dollars in **Table 29**.

Table 29 Library

Item	Total
Annual Operating Costs[1]	
Personnel	$207,789
Telephone Costs	$241
Internet Costs	$828
Utilities[2]	$9,777
Total Annual Costs	$218,635
Capital Costs[1]	
Programming Space[3]	$100,110
Collections	$96,592
Technology[4]	$158,526
FF&E Contingency	$25,481
Total Capital Costs	$380,708

[1] Costs inflated to 2017 dollars.

[2] Includes light, heat, power, water, sewer, and trash.

[3] Includes tables, chairs, white board, curtains, book trucks, and miscellaneous supplies and tax.

[4] Includes Phone, WiFi, copier, data projector, retractable screen, audio visual, laptops, printer, and a keycard system.

Sources: City and County of San Francisco; Economic & Planning Systems, Inc.

7. TRANSPORTATION

The results of the transit fiscal impact analysis are presented earlier in this report in **Chapters 2** and **3**. **Table 3** shows a comparison between annual transit revenues and cost under the 2010 and 2018 analyses at Project buildout. **Tables 6** and **Figure 2** show the annual forecasted Projected-related transit revenue and expenditure forecasts.

Fehr & Peers estimated all the transit expenditures as well as a number of transit revenues as documented in their Memorandum entitled, "Candlestick Point Hunters Point Shipyard Fiscal and Economic Impact Report: Transportation Components", February 27, 2018. Transit revenues estimated by Fehr & Peers included revenues from FastPasses, Farebox recovery, advertising, on-street parking, and parking fees and fines.

EPS estimated the Project-related transit revenues associated with the taxable sales and parking revenues discussed in **Chapter 5** as well as the City Charter's appropriation of a portion of General Fund revenues to SFMTA. These revenue items are addressed briefly below. It is important to note that while, historically, Muni's capital costs have been funded through federal and state sources in addition to local, this analysis makes the conservative assumption that no State and federal revenues will be available.

EPS estimated the following revenue sources assumed for transportation:

- Sales Tax (Prop K) – The City of San Francisco has enacted a 1/2-cent sales tax for purposes of funding transportation projects, 36.8 percent of which is allocated to transit system maintenance and renovation.
- Parking Tax – Approximately $1 million of parking tax revenue is dedicated to the City's General Fund and over $4 million is dedicated to SFMTA.
- State sales tax (AB 1107 or BART) is a one-half cent sales tax, which allocates 25 percent to SFMTA and AC Transit and 75 percent to BART.
- TDA Sales Tax – SFMTA receives an amount equal to ¼ cent sales tax. The analysis estimates sales tax revenues based on new commercial space at the Project and resident expenditures.

The transportation services provided by the SFMTA are an integral component of the success of the new neighborhood, and therefore, its ability to generate the additional General Fund revenues. Section 8A.105 of the City's Charter directs the Controller to adjust the Base Amount of annual General Fund appropriations to the SFMTA for any increases in service not provided in the Base Year. This mechanism will allow Muni to direct additional surplus General Fund revenue generated by the Project to Muni for operations and maintenance expenses, as well as financing for capital and facilities expenses through mechanisms such as certificates of participation, revenue bonds, or leases. In 2018, 6.68 percent of discretionary General Fund revenues will be transferred to SFMTA. For the purposes of this analysis, this appropriation is assumed to remain constant, though it might increase over time as transit demand increases.

8. DEVELOPMENT IMPACT FEES

San Francisco levies one-time development impact fees on all net new development within the City. These fees are in place to help mitigate the direct impact new development has on City infrastructure and quality of life. FivePoint will pay the following applicable development impact fees relating to development of this Project consistent with the 2010 Redevelopment Plan:

- School Facilities Impact Fee
- Art Contribution
- Child Care

Table 30 shows that total impact fees are estimated to be $49 million.

Table 30 Development Impact Fee Revenue

Fee Type		Gross Square Feet	Fee per Gross Square Foot	Total	
School Facilities Impact Fee					
		9,993,996 Residential[1]	$3.48	$34,779,106	Fee
		270,000 Hotel	$0.19	$51,840	Fee
		4,415,000 R&D	$0.54	$2,366,440	Fee
		1,086,000 Retail	$0.39	$421,368	Fee
Total School Fee				$37,618,754	Fee
Art Fee[2]		4,390,000 R&D > 25,000 Sq. Ft.	$1.63	$7,133,750	Fee
Child-Care Requirements		4,685,000 Hotel and R&D	$1.00	$4,685,000	In-lieu Fee
	or	4,685,000 Hotel and R&D	0.01	46,850	Sq. Ft. Child-Care Facility
Total				**$49,437,504**	**In-lieu fee**

[1] Average gross square feet per market-rate, inclusionary, and workforce unit of 1,107 square feet provided by FivePoint.

[2] Fee equals .5 percent of hard costs of new R&D construction in excess of 25,000 square feet. Hard cost estimate of $325 per square foot provided by FivePoint.

[3] Child-care fee according to 2010 Redevelopment Plan (Attachment E).

Sources: 2010 Redevelopment Plan, p. 45-47 and 82-96 (Attachment E); CCSF Master Impact Fee Schedule 2017; Economic and Planning Systems, Inc.

office of
COMMUNITY INVESTMENT
and INFRASTRUCTURE

Addendum 5 to the CP-HPS2 2010 FEIR

Addendum Date:	**April 9, 2018**
Case No.:	2007.0946E
Project Title:	Candlestick Point–Hunters Point Shipyard Phase II
EIR:	2007.0946E, certified June 3, 2010
Project Sponsor:	CP Development Co., LLC
Lead Agency:	Office of Community Investment & Infrastructure
OCII Staff Contact:	José Campos – 415.749.2554 jose.campos@sfgov.org
City Staff Contact:	Joy Navarrete – 415.575.9040 joy.navarrete@sfgov.org

Mark Farrell
MAYOR

Nadia Sesay
EXECUTIVE DIRECTOR

Marily Mondejar
CHAIR

Miguel Bustos
Mara Rosales
Darshan Singh
COMMISSIONERS

One S. Van Ness Ave.
5th Floor
San Francisco, CA
94103

415.749.2400

www.sfocii.org

office of
COMMUNITY INVESTMENT
and INFRASTRUCTURE

Addendum 5 to the CP-HPS2 2010 FEIR

Addendum Date:	**April 9, 2018**
Case No.:	2007.0946E
Project Title:	Candlestick Point–Hunters Point Shipyard Phase II
EIR:	2007.0946E, certified June 3, 2010
Project Sponsor:	CP Development Co., LLC
Lead Agency:	Office of Community Investment & Infrastructure
OCII Staff Contact:	José Campos – 415.749.2554 jose.campos@sfgov.org
City Staff Contact:	Joy Navarrete – 415.575.9040 joy.navarrete@sfgov.org

CONTENTS

I. Project Description 1
- I.A Introduction 1
- I.B Project Overview 2
  - I.B.1 Project Location 2
  - I.B.2 Previous Approvals and Development Status 4
  - I.B.3 Summary of 2018 Modified Project Variant 6
  - I.B.4 Overview of 2018 Modified Project Variant 7
- I.C 2018 Modified Project Variant 12
  - I.C.1 HPS2 Proposed Modifications 15
  - I.C.2 CP Proposed Modifications 52
- I.D HPS2 Construction Activities 54
  - I.D.1 Abatement and Demolition 54
  - I.D.2 Site Preparation and Earthwork/Grading 54
  - I.D.3 Construction Methods and Equipment 57
- I.E CP and HPS2 Construction Phasing Plan 62
  - I.E.1 Amendments to Construction and Phasing Plan 62
- I.F Project Approvals 64
- I.G Future Approvals 65

II. Environmental Analysis 67
- II.A Approach to the Analysis 67
  - II.A.1 Authority for Use of an Addendum 67
  - II.A.2 Analytic Method 68
  - II.A.3 Format of Analysis 71

Mark Farrell
MAYOR

Nadia Sesay
EXECUTIVE DIRECTOR

Marily Mondejar
CHAIR

Miguel Bustos
Mara Rosales
Darshan Singh
COMMISSIONERS

One S. Van Ness Ave.
5th Floor
San Francisco, CA
94103

415.749.2400

www.sfocii.org

II.B Analysis of Environmental Effects....74
II.B.1 Land Use and Plans....75
II.B.2 Population, Housing, and Employment....83
II.B.3 Transportation and Circulation....94
II.B.4 Aesthetics....136
II.B.5 Shadows....165
II.B.6 Wind....169
II.B.7 Air Quality....171
II.B.8 Noise and Vibration....186
II.B.9 Cultural Resources and Paleontological Resources....207
II.B.10 Hazards and Hazardous Materials....222
II.B.11 Geology and Soils....248
II.B.12 Hydrology and Water Quality....261
II.B.13 Biological Resources....281
II.B.14 Public Services....306
II.B.15 Recreation....315
II.B.16 Utilities....319
II.B.17 Energy....336
II.B.18 Greenhouse Gas Emissions....350

III. Conclusion....355

IV. References....357

Appendices

Appendix A Comparison of CP-HPS2 Project Changes Since 2010
Appendix B Mitigation Monitoring and Reporting Program
Appendix C Impacts Evaluated in Addendum 5
Appendix D Analysis of Transportation Effects
Appendix E Public Trust View Corridors Visual Simulations
Appendix F1 Air Quality Construction Methods Memorandum
Appendix F2 Air Quality Operational Emissions Data
Appendix F3 Recycled Water Facility Location and Odor Control
Appendix F4 Recycled Water Facility Odor Control Measures
Appendix G Noise Data
Appendix H Historic Resources Memorandum
Appendix I Transportation, Air Quality/Greenhouse Gas Emissions, and Noise Analyses of the Transfer of Nonresidential Uses from HPS2 to CP

Figures

Figure 1 Project Location ... 3
Figure 2 CP-HPS2 Land Use Districts ... 8
Figure 3 HPS2 Redevelopment Plan Land Use Districts ... 10
Figure 4 BVHP Redevelopment Plan Land Use Districts ... 11
Figure 5 CP-HPS2 2010 Project Land Use Plan ... 16
Figure 6 CP-HPS2 2018 Modified Project Variant Land Use Plan ... 17
Figure 7 Tower Locations: Towers A and B ... 19
Figure 8 Building Heights ... 21
Figure 9 HPS2 Parks and Open Space ... 25
Figure 10 HPS2 Transit Improvements ... 30
Figure 11 HPS2 Transit Layover Detail ... 31
Figure 12 Bridge Locations ... 33
Figure 13 Water Taxi Dock at HPS2 Dry Dock 4 ... 35
Figure 14 Central Energy Plant Equipment Layout ... 41
Figure 15 Geothermal Heating and Cooling System: Schematic ... 42
Figure 16 Geothermal Borehole Details ... 44
Figure 17 Distributed Water Reuse System Schematic ... 46
Figure 18 Location of Recycled Water Facility ... 48
Figure 19 Potential Areas of Solar Installation ... 51
Figure 20 CP-05 Boundary and Phasing Modifications ... 53
Figure 21 Donahue Street Extension—Conceptual Grading Plan [1 of 2] ... 60
Figure 22 Donahue Street Extension—Conceptual Grading Plan [2 of 2] ... 61
Figure 23 Construction Schedule ... 63
Figure 24 Transit Service Comparison ... 120
Figure 25 2010 Project Bicycle Network Plan ... 128
Figure 26 2018 Modified Project Variant Bicycle Network Plan ... 129
Figure 27 Viewpoint Locations ... 141
Figure 28 Existing and Proposed Views from View 14: Southeast from CPSRA ... 143
Figure 29 Existing and Proposed Views from View 15: Southeast from Palou Avenue ... 145
Figure 30 Existing and Proposed Views from View 18: South from Hilltop Open Space ... 149
Figure 31 Locations and Viewsheds of View 18 and View 18 Alternatives A and B ... 151
Figure 32 Existing and Proposed Alternative A Views from View 18: South from Hilltop Open Space ... 153
Figure 33 Existing and Proposed Alternative B Views from View 18: South from Hilltop Open Space ... 155
Figure 34 Existing and Proposed Views from View 19: East from Hunters Point Hill Open Space ... 157
Figure 35 Existing and Proposed Views from View 20: Southeast from Heron's Head Park ... 161
Figure 36 Height Changes: 2018 Modified Project Variant vs. 2010 Project ... 167
Figure 37 Locations of Noise-Sensitive Receptors at HSP2 ... 189
Figure 38 Locations of Noise-Sensitive Receptors at CP ... 190

Tables

Table 1 2018 Modified Project Variant Site Areas 2
Table 2 2018 Modified Project Variant Land Use Program 13
Table 3 Land Use Comparison 14
Table 4 2018 Modified Project Variant Parks and Open Space Acreages 23
Table 5 Comparison of 2018 Modified Project Variant to 2010 Project, R&D Variant (Variant 1), and Housing/R&D Variant (Variant 2A) (Parks and Open Space) 27
Table 6 Maximum Allowed Parking Supply 32
Table 7 Employment by Land Use 85
Table 8 Construction Employment 86
Table 9 Housing Demand 92
Table 10 2018 Modified Project Variant Street Segment Improvements—Candlestick Point 102
Table 11 2018 Modified Project Variant Street Segment Improvements—Hunters Point Shipyard 106
Table 12 Transit Phasing 119
Table 13 Emissions Comparison 176
Table 14 CO Concentration Comparison—Future Project 177
Table 15 Odor Control Technologies Used for Waste-Related Odors 182
Table 16 Construction Equipment Noise Emission Levels 188
Table 17 Deep Dynamic Compaction Vibration Impact Distance Thresholds 195
Table 18 Modeled Traffic Noise Levels Compared with the 2010 FEIR 204
Table 19 Modeled Traffic Noise Levels Compared with the 2010 FEIR, Cumulative 205
Table 20 Identified Historical Resources 209
Table 21 Dry Dock 4 Preservation Guidelines 212
Table 22 Estimated Stormwater Peak Flow Rates and Runoff Volumes without BMPs 274
Table 23 Water Demand 321
Table 24 Wastewater Generation 322
Table 25 Solid Waste Generation 324
Table 26 Electricity Demand from Plug-In Appliances 338
Table 27 Electricity Demand from Building Envelopes 339
Table 28 Natural Gas Demand, Baseline 341
Table 29 2010 FEIR Petroleum Demand 342
Table 30 Electricity Consumption in San Francisco, by Land Use, 2016 345
Table 31 Natural Gas Consumption in San Francisco, by Land Use, 2016 347

I. PROJECT DESCRIPTION

I.A Introduction

This addendum (Addendum 5) describes and analyzes proposed modifications to the 2010 Candlestick Point–Hunters Point Shipyard Phase II Project (CP-HPS2, or 2010 Project[1]).

The modifications discussed in Addendum 5 relate primarily to Hunters Point Shipyard Phase II (HPS2) and are now being pursued in anticipation of the future transfer of certain parcels from the Navy to the Office of Community Investment & Infrastructure (OCII); in addition, there are minor changes proposed at Candlestick Point (CP). The modifications at HPS2 and CP are collectively referred to as the 2018 Modified Project Variant, which is proposed by the Project Sponsor as a new variant as a means to clearly compare the environmental impacts of the new proposal to the 2010 Final EIR (2010 FEIR) environmental analysis. The 2018 Modified Project Variant includes all Project revisions evaluated in previous addenda, to the extent they remain applicable as part of the Project Sponsor's current proposal. In this document, the 2018 Modified Project Variant may also be referred to as the "proposed modifications," either in reference to CP or HPS2.

At HPS2, the 2018 Modified Project Variant generally includes revisions to the existing land uses and height/bulk limits; modified standards for location of two high-rise towers; reconfiguration of the design and sizes of parks and open space areas; revisions to the number of housing units proposed by the Project Sponsor; revisions to the street network and roadway cross-section dimensions and alignments, the provision of water taxi infrastructure and two bridges; revisions to the proposed utility network and systems; and changes to the phasing plan. The two bridges are located over Dry Dock 4 at HPS2. The Water Room Bridge would be a pedestrian and bicycle bridge and the Eastern Bridge would be a pedestrian bridge. Addendum 5 Section I.C.1 (HPS2 Proposed Modifications) discusses the changes at HPS2 under the 2018 Modified Project Variant in detail.

Modifications are also being sought in relation to Candlestick Point (CP) to reorder CP Major Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction; to remove a parcel from the CP boundary (the Jamestown Parcel, in CP-02) and shift this parcel from Zone 1 and include it in Zone 2 of the BVHP Redevelopment Plan; and to modify the boundary of CP-05. In addition, other modifications include revisions to the number of housing units proposed by the Project Sponsor. Addendum 5 Section I.C.2 (CP Proposed Modifications) discusses the changes at CP under the 2018 Modified Project Variant in detail.

The 2018 Modified Project Variant includes conforming modifications to the Hunters Point Shipyard and Bayview Hunters Point Redevelopment Plans and additional modifications to the plans allowing for limited conversion of approved uses within the plan areas and a limited transfer of commercial uses between the plan areas, Disposition and Development Agreements for HPS Phase 1

[1] The 2010 Project is the "main project" analyzed in the CP-HPS2 FEIR, which is alternatively referred to as the "stadium project."

(HPS1), CP-HPS2 and attachments thereto (including but not limited to the Infrastructure; Transportation; Parks, Open Space, and Habitat Concept; and Housing Plans), and the HPS Design for Development (2018 HPS D4D). The approvals required to implement the 2018 Modified Project Variant are listed in greater detail in Section I.F (Project Approvals).

I.B Project Overview

I.B.1 Project Location

The CP-HPS2 Project covers approximately 702 acres along the southeastern waterfront of San Francisco, bordered by India Basin on the north; the Executive Park area and San Mateo County line on the south; Bayview Hill, the Bayview-Hunters Point (BVHP) neighborhood, Yosemite Slough, and Hunters Point Hill on the west; and San Francisco Bay on the north and the east. Figure 1 (Project Location) illustrates the Project boundaries. Table 1 (2018 Modified Project Variant Site Areas) presents the acreage of the Project site.

The 2018 Modified Project Variant would primarily occur within HPS2 but would also include minor modifications at CP. The location of HPS2 and CP is provided by Figure 1. The HPS2 site is approximately 421 acres in area and is located to the southeast of the BVHP neighborhood. The CP site is approximately 281 acres in area and is located east of Bayview Hill and southeast of the Bayview Neighborhood.

TABLE 1 2018 MODIFIED PROJECT VARIANT SITE AREAS

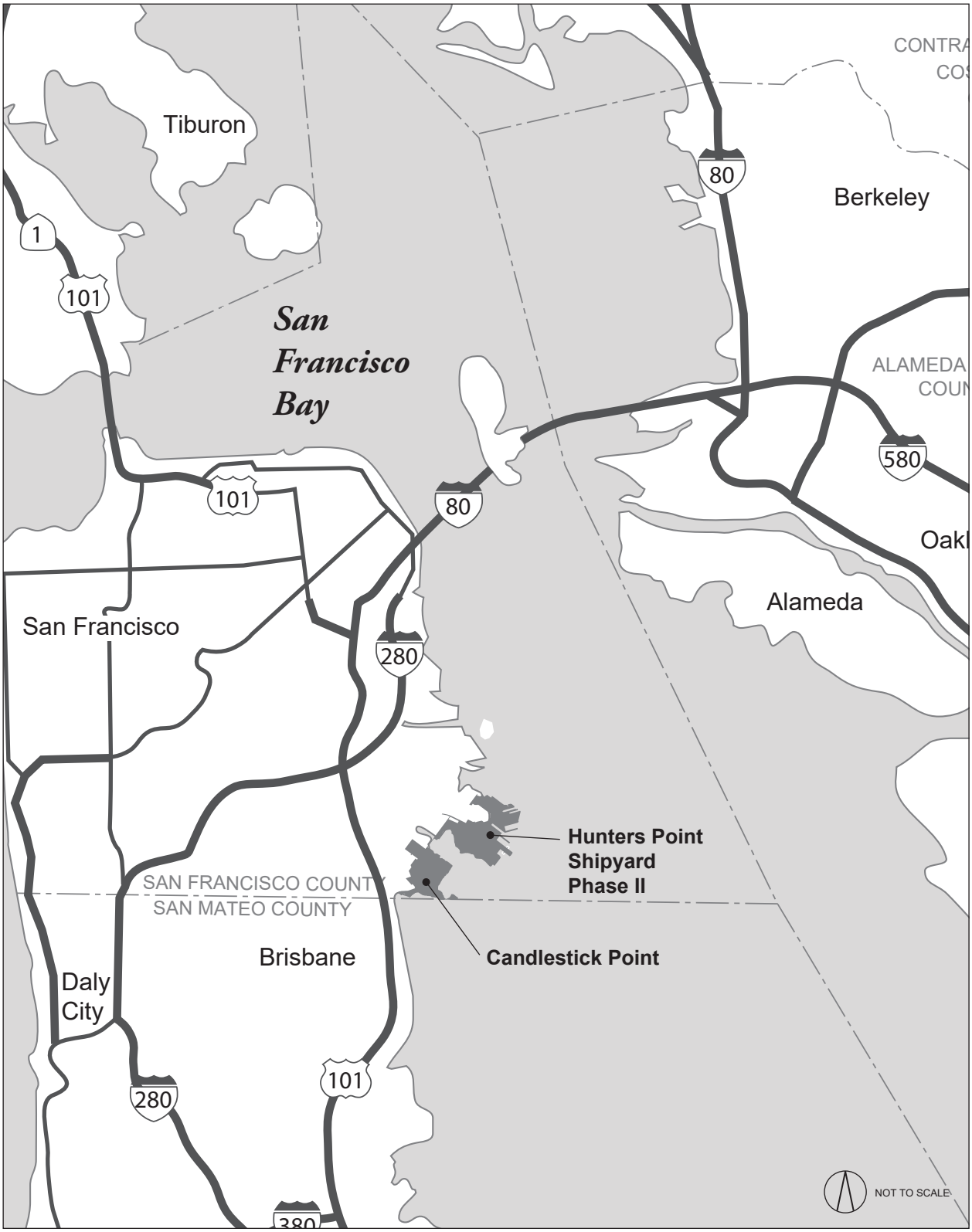
Development Area	*Acres*
Candlestick Point	281[a]
Hunters Point Shipyard Phase II	421
Total	***702***

SOURCE: Lennar Urban, 2009.

Candlestick Point includes the approximately 120.2-acre Candlestick Point State Recreation Area.

a. The 2010 FEIR reflected 281 acres for CP; however, if the BVHP Redevelopment Plan amendment is adopted, the Jamestown parcel would be removed, which would reduce the size of CP by approximately 9.4 acres.

Changes at CP as a result of the 2018 Modified Project Variant would occur within the area labeled as “Candlestick Point” in Figure 1. The Candlestick Point portion of the Project site comprises approximately 281 acres, of which 120.2 acres are part of the Candlestick Point State Recreation Area (CPSRA), which is east of Bayview Hill Park. A recreational vehicle park occupies a portion of the site on Gilman Avenue, and the CP State Recreation Area occupies the area of land along the CP shoreline.



SOURCE: Clement Designs, 2008; ESA 2018.

FIGURE 1 Addendum 5 to the CP-HPS2 2010 FEIR

PROJECT LOCATION

I.B.2 Previous Approvals and Development Status

On June 3, 2010, the San Francisco Planning Commission and the San Francisco Redevelopment Agency (SFRA) Commission certified the Final Environmental Impact Report (FEIR) for the CP-HPS2 Project, San Francisco Planning Department File Number 2007.0946E and SFRA File Number ER6.05.07. On July 14, 2010, the San Francisco Board of Supervisors affirmed the Planning Commission's certification of the 2010 FEIR (Motion No. M10-110).

Between June 3, 2010, and August 3, 2010, the Planning Commission, SFRA, Board of Supervisors, and other City Boards and Commissions adopted findings of fact, evaluation of mitigation measures and alternatives, a statement of overriding considerations (File No. 100572), and a mitigation monitoring and reporting program (MMRP) in fulfillment of the requirements of the California Environmental Quality Act (CEQA). These entities then adopted various resolutions, motions and ordinances related to Project approval and implementation, including, but not limited to (1) General Plan amendments; (2) Planning Code amendments; (3) Zoning Map amendments; (4) BVHP Redevelopment Plan amendments; (5) HPS Redevelopment Plan amendments; (6) Interagency Cooperation Agreements; (7) Design for Development documents; (8) Health Code, Public Works Code, Building Code, and Subdivision Code amendments; (9) Disposition and Development Agreement (DDA), which included as attachments a Phasing Plan and Schedule of Performance, a Transportation Plan, an Open Space Plan and an Infrastructure Plan, among other items; (10) Real Property Transfer Agreement; (11) Public Trust Exchange Agreement; (12) Park Reconfiguration Agreement; and (13) Tax Increment Allocation Pledge Agreement.

The 2010 FEIR evaluated several variants[2] of the CP-HPS2 Project. In 2010, it was not known whether the 49ers football team would require a new stadium as part of the Project. As a result, the 2010 FEIR included, and the City approved, several potential land use and development options for the Project, specifically:

1. The Project with a stadium, as described in Chapter II of the 2010 FEIR, with Candlestick Tower Variant (Variant 3D), Utilities Variant (Variant 4), and Shared Stadium Variant (Variant 5);
2. The Project without the stadium, with Non-Stadium R&D Variant (Variant 1), Candlestick Tower Variant (Variant 3D), and Utilities Variant (Variant 4);

[2] Variants proposed and analyzed in the 2010 FEIR: (1) R&D Variant (Variant 1): this variant would not include a stadium, but would increase R&D space at the previously proposed stadium location; (2) Housing Variant (Variant 2): this variant would not include a stadium, but would relocate 1,350 residential units from CP to the previously proposed stadium location; (3) Housing/R&D Variant (Variant 2A): this variant would not include a stadium, but would relocate 1,650 residential units from CP to the previously proposed stadium location, and would include an additional 500,000 sf of R&D when compared to the Project; (4) Tower Variants A, B, C, and D (Variant 3): these variants would have the same land use program and overall description as with the Project, but would have different locations and heights for residential towers at CP; (5) Utilities Variant (Variant 4): this variant would include an automated solid waste collection system, decentralized wastewater treatment, and district energy; and (6) Shared Stadium Variant (Variant 5): this variant would include a shared stadium where both the San Francisco 49ers and the Oakland Raiders would play at the stadium at HPS2.

3. The Project without the stadium, with Non-Stadium Housing Variant (Variant 2), Non-Stadium Housing/R&D Variant (Variant 2A),[3] Candlestick Tower Variant (Variant 3D), and Utilities Variant (Variant 4); and
4. Sub-alternative 4A, which provides for the preservation of four historic structures in HPS2; Sub-alternative 4A could be implemented with either the stadium variant or non-stadium variants (see Board of Supervisors CEQA Findings pp. 2–4).

Following the 49ers relocation to Santa Clara, the Project Sponsor elected to implement Option 3 above, the Housing/R&D Variant (Variant 2A), including Candlestick Tower Variant (Variant 3D) and Utilities Variant (Variant 4) (collectively called the "Housing/R&D Variant [Variant 2]"). In 2014 and 2016, the Project Sponsor obtained certain approvals allowing development to commence at CP.[4] Development at CP includes construction associated with Sub-phase CP-01 (Alice Griffith) in the northern area of the site, which is nearing completion. In the southern area of the site, the stadium was demolished in 2015 and civil works associated with CP Center are underway generally north of Harney Way, west of Ingerson Avenue, and east of Jamestown Avenue.

Since certification of the 2010 FEIR, four addenda have been prepared to address proposed modifications to the 2010 Project, although only two of the Projects described in those addenda were pursued by the Project Sponsor (Addenda 1 and 4).[5]

Addenda 1 and 4 are summarized as follows:

- **Addendum 1 (published on January 7, 2014): The** Project Sponsor received approval for changes to the Phasing Plan and Schedule of Performance, the schedules for implementation of the Transportation Plan (including the Transit Operating Plan of the Infrastructure Plan), and other public benefits. In addition, approvals to the Master Streetscape Plan and Signage Plan were received and mitigation measure MM TR-16 was amended.
- **Addendum 4 (published on March 3, 2016):** The Project Sponsor received approval for modifications of the approved Project Candlestick Point Design for Development (2016 CP D4D), and proposed transportation system changes that require modification of the Major Phase 1 CP Approval, including the Schedule of Performance, the Candlestick Point Infrastructure Plan, the Candlestick Point Hunters Point Shipyard Phase II Transportation Plan. In addition, mitigation measures MM TR-16 and MM TR-23.1 were also amended.

---

[3] Housing/R&D Variant (Variant 2A) was evaluated in the Responses to Comments to the 2010 Draft EIR, and is included and analyzed as part of the 2010 FEIR.

[4] Modifications to the Phasing Plan and Schedule of Performance and the schedules for implementation of the Transportation Plan and other public benefits were analyzed in Addendum 1, published on December 11, 2013, and approved by various City agencies and OCII in 2014. Addendum 4, published on February 22, 2016, analyzed modifications to the CP Design for Development and certain transportation system changes that required modification of several CP-HPS2 Project plan documents. These modifications were approved in 2016.

[5] OCII has also prepared two other addenda to the 2010 FEIR. Addendum 2 to the 2010 FEIR, published on May 2, 2014, evaluated the potential environmental impacts of the Automatic Waste Collection System described in the 2010 FEIR as part of Utility Variant 4 (in more detail). The Project Sponsor did not pursue this option. Addendum 3 to the 2010 FEIR, published on September 19, 2014, evaluated the potential environmental impacts of a proposal to demolish Candlestick Park stadium with explosives rather than conventional and/or mechanical demolition. This proposal was not pursued by the Project Sponsor, and the stadium was demolished using conventional and mechanical means.

Table A-1 (Comparison of CP-HPS2 Project Changes Since 2010) of Addendum 5 Appendix A (Comparison of CP-HPS2 Project Changes Since 2010) provides a summary of the CP-HPS2 Project changes that have occurred since 2010 as evaluated in Addenda 1 and 4. The changes are provided by primary project component (e.g., land use plan, phasing, utility systems, transportation and transit system, and mitigation measures).

Three parcels of land (D-2, UC-1, and UC-2) have been transferred from the Navy to the Office of Community Investment and Infrastructure ("OCII," the successor agency to the SFRA). Vertical development to date at HPS2 is limited to these parcels and includes the demolition of the "commercial kitchen" building, which was located along Robinson Street, north of Fisher Street, and construction of a new commercial kitchen, which is now located along Fisher Street near the intersection of Spear Avenue. The new commercial kitchen was considered in the 2010 FEIR as a use within the artist building; however, it is now provided in an adjacent building, along Robinson Street.

Other construction activities include excavation of the artist building/plaza, with soil being stockpiled behind Buildings 808/813. Water and storm drain utilities are currently being installed in the roadway on Galvez/Horne/Robinson (in the winter of 2017), and subsequent grading and paving of these roadways is anticipated in the early part of 2018. Ongoing remediation activities by the Navy are also occurring at Navy-owned parcels within HPS2.

Future transfer parcels to the Project Sponsor would occur in accordance with the terms of the DDA and other CP-HPS2 Project documents.

I.B.3 Summary of 2018 Modified Project Variant

The 2018 Modified Project Variant would retain the same land use categories as analyzed in the 2010 FEIR (with the exception of the stadium). These uses generally include residential, commercial/retail, research and development, artist space, community uses, parks and open space, a marina, and parking; however, certain new uses (i.e., hotel, institutional, bridges, and a water taxi) would also be provided.

The distribution of the allowed residential units between HPS2 and CP would change, providing more units at HPS2 and fewer units at CP. The square footage of certain commercial uses at HPS2 would also change to allow new uses and to accommodate other revisions to the land use program Additionally, the location of certain parks and open space at HPS2 would change and overall acreage would increase. Transportation networks and utility systems would also change. The Phasing Plan and Schedule of Performance would be modified, resulting in construction beginning later (in 2014, rather than 2011, as envisioned in the 2010 FEIR) and concluding later (in 2034, rather than 2031, as envisioned in the 2010 FEIR). Construction would still occur over a 21-year period.[6]

[6] The Schedule of Performance and the construction schedule used in the environmental analysis differ. The Schedule of Performance shows "outside dates" required to fulfill the contractual obligations related to the transfer of parcels. The construction schedule used in the environmental analysis shows a more aggressive schedule to provide a conservative environmental analysis in the event that the transfer of parcels occurs more quickly than required.

The modifications evaluated in Addendum 5 are described in detail in Section I.B.4 (Overview of 2018 Modified Project Variant) and Section I.C (2018 Modified Project Variant).

The 2018 Modified Project Variant incorporates 2010 FEIR Candlestick Tower Variant 3D and certain components of the Utilities Variant 4, which proposed an alternative utility system. The 2018 Modified Project Variant would include the following alternative utilities systems: a solar electricity distribution and storage system (through a building-scale photovoltaic (PV) system and building- and utility-scale battery storage systems), a recycled water treatment and distribution system, and district heating and cooling plants (including a geothermal heating and cooling system as a component of the district heating and cooling plants). If approved, the 2018 Modified Project Variant would be implemented instead of the 2010 Project, R&D Variant (Variant 1), or R&D/Housing Variant (Variant 2A), all of which were described and analyzed in the 2010 FEIR. Necessary infrastructure, including utilities, transportation improvements, and parks and open space improvements, would be included as part of the development within each sub-phase of the 2018 Modified Project Variant.

The 2018 Modified Project Variant includes 172 dwelling units and 71,000 square feet (sf) of retail uses that were approved for HPS1, but have not and will not be constructed at HPS1. Instead, these dwelling units and retail square footage would be incorporated into HPS2 and constructed on the HPS2 site. While these units and square footage were accounted for in the 2010 FEIR as part of the cumulative analysis, in Addendum 5, they are analyzed as part of the HPS2 project under the 2018 Modified Project Variant.

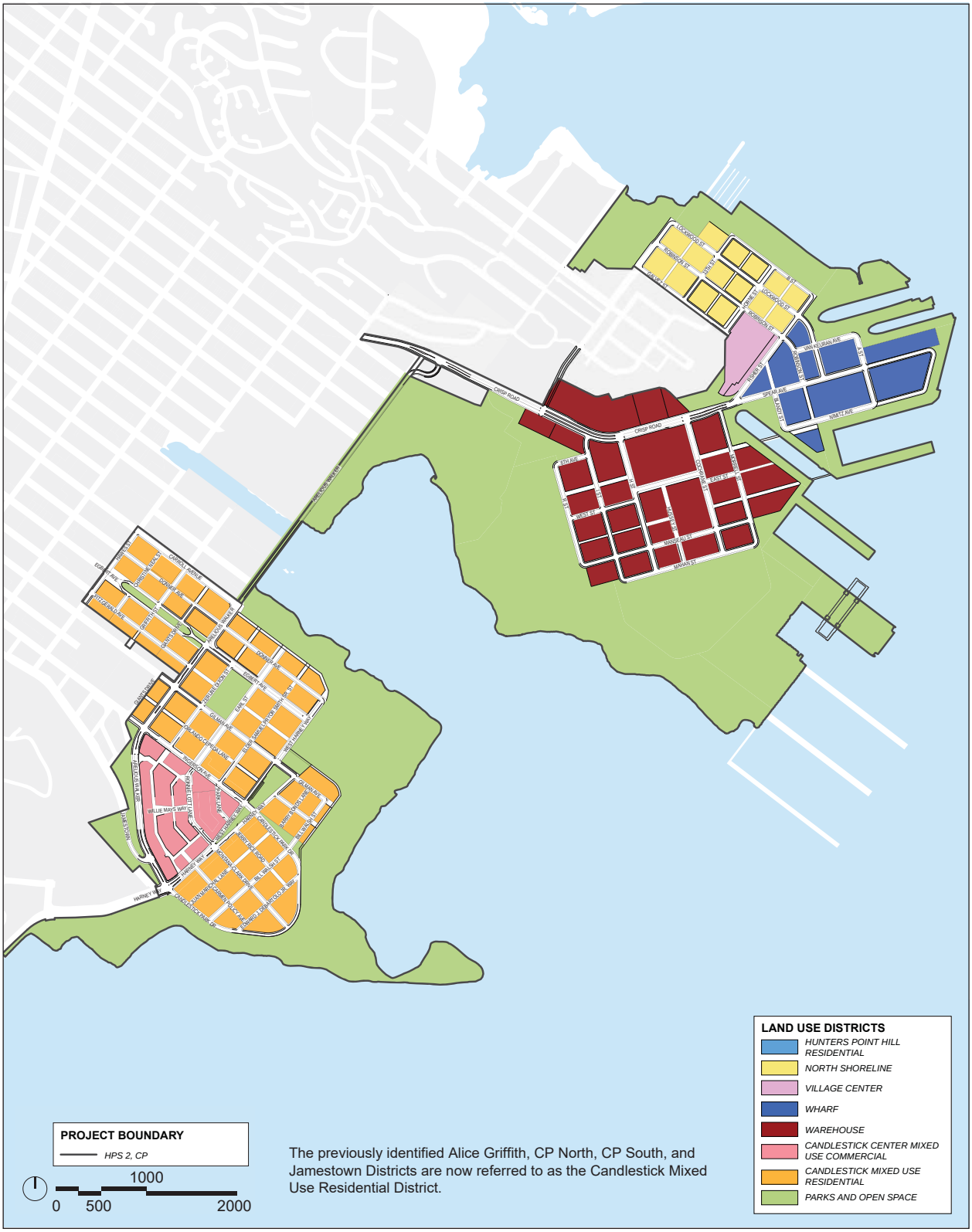
In Addendum 5, the 2018 Modified Project Variant is primarily described and assessed in relation to the Project described in 2010 FEIR Chapter II (Project Description). However, certain impacts are assessed in comparison to the 2010 FEIR R&D Variant (Variant 1) and Utilities Variant (Variant 4), where impacts are most comparable to those variants instead of the 2010 Project. A more-detailed description of the analysis methodology is provided in Section II.A (Approach to the Analysis).

I.B.4 Overview of 2018 Modified Project Variant

Land Use Districts

The Bayview Hunters Point (BVHP) and Hunters Point Shipyard (HPS) Redevelopment Plans define the land use districts for CP and HPS2, respectively. Figure 2 (CP-HPS2 Land Use Districts) illustrates the CP-HPS2 land use districts. The HPS2 site is divided into five land use districts: North Shoreline District, Village Center District, Wharf District, Warehouse District, and Parks and Open Space District.[7] The CP site is divided into three districts: Candlestick Center Mixed Use Commercial

[7] The district names have changed relative to the 2010 FEIR and the 2010 HPS Redevelopment Plan. The Shipyard North Residential District is now the North Shoreline District; the Shipyard Village Center Cultural District is now the Village Center District; the Shipyard Research and Development District is now the Wharf District; the Shipyard South Multi-Use District is now the Warehouse District; and the Shipyard Shoreline Open Space District is now the Parks and Open Space District.



SOURCE: FivePoint, 2018.

FIGURE 2

Addendum 5 to the CP-HPS2 2010 FEIR

CP-HPS2 LAND USE DISTRICTS

District, Candlestick Mixed Use Residential District,[8] and Parks and Open Space District. For comparative purposes, Figure 3 (HPS2 Redevelopment Plan Land Use Districts) illustrates the land use districts in the 2010 HPS Redevelopment Plan as compared to the 2018 HPS Redevelopment Plan, and Figure 4 (BVHP Redevelopment Plan Land Use Districts) illustrates the land use districts in the 2010 BVHP Redevelopment Plan as compared to the 2018 BVHP Redevelopment Plan. Figure 4 shows that the Jamestown parcel would be removed from the limits of Zone 1 of the 2018 BVHP Redevelopment Plan area and the CP site; it would, instead, be included within Zone 2 of the BVHP Redevelopment Plan, which is outside of the CP Project boundary and is not depicted on Figure 4.

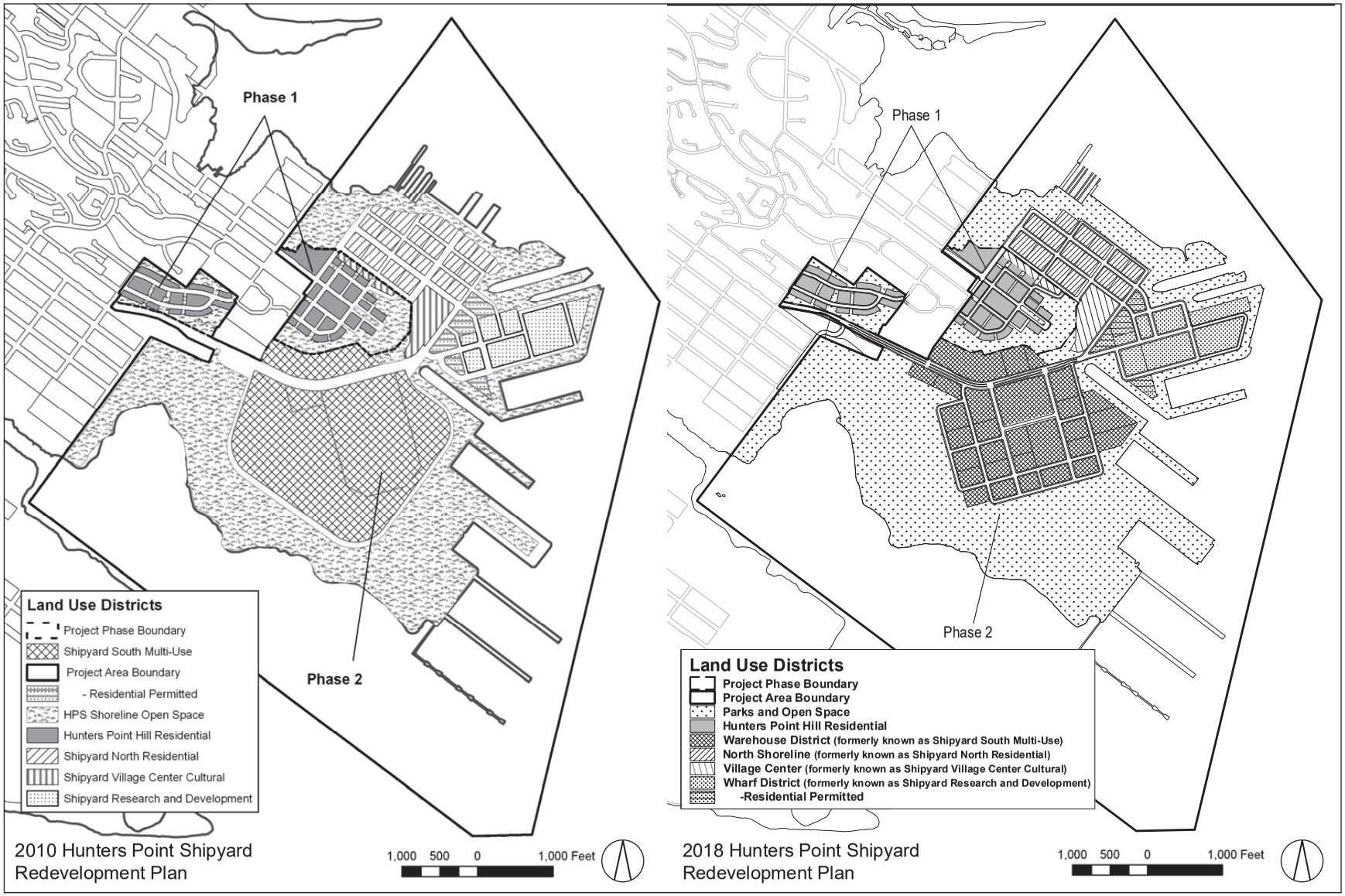
Proposed Modifications and Key Redevelopment Plan Provisions

The 2018 Modified Project Variant at HPS2 generally includes the following modifications at HPS2, with additional detail provided in Addendum 5 Section I.C.1 [HPS2 Proposed Modifications] and Section I.D [HPS2 Construction Activities]:

1. Increase residential units in HPS2 by 804 units, as compared to the 2010 Project, resulting in 3,454 residential units at HPS2 (including 172 units previously approved for HPS1)
2. Provide for new land uses, including a school and hotel;
3. Adjust the location and acreage of parks and open space, providing for an increase of approximately 1.3 acres of new parks and other parks as compared to the 2010 Project;
4. Revise standards for the location of two of the approved towers;
5. Increase and decrease height and bulk limitations in various locations, as further discussed in Section I.C.1 and II.B.4 (Aesthetics);
6. Change the street layout (including the extension of Donahue Street from LaSalle Avenue/ Kirkwood Avenue to Crisp Road), street geometrics, bicycles route locations, and transit network;
7. Add two bridges over Dry Dock 4;
8. Revise the number of parking spaces for residential and commercial garages and on-street parking based on approved parking ratios[9] and revised street layouts, respectively. The number of spaces analyzed in Addendum 5 corresponds to the number of residential units and the square footage of nonresidential uses identified as part of the 2018 Modified Project Variant and would result in an increase of approximately 3,686 structured parking spaces and 804 on-street parking spaces;
9. Provide a new water taxi service from Dry Dock 4;

[8] The previously identified Alice Griffith, CP North, CP South, and Jamestown Districts, which is proposed for removal from CP under the 2018 Modified Project Variant, are referred to as the Candlestick Mixed Use Residential District.

[9] Each land use has a parking ratio identified in the 2010 FEIR, which would be maintained for the 2018 Modified Project Variant. Therefore, while the land use program has been modified, which has increased the number of parking spaces required, the 2018 Modified Project Variant meets the same parking standards as provided in 2010 FEIR. Further, if any land uses change in the future, the number of parking spaces would be provided according to the established parking ratios identified in the 2010 FEIR and Addendum 5, unless different ratios are agreed upon between the Project Sponsor, EP, OCII, and any other involved parties.

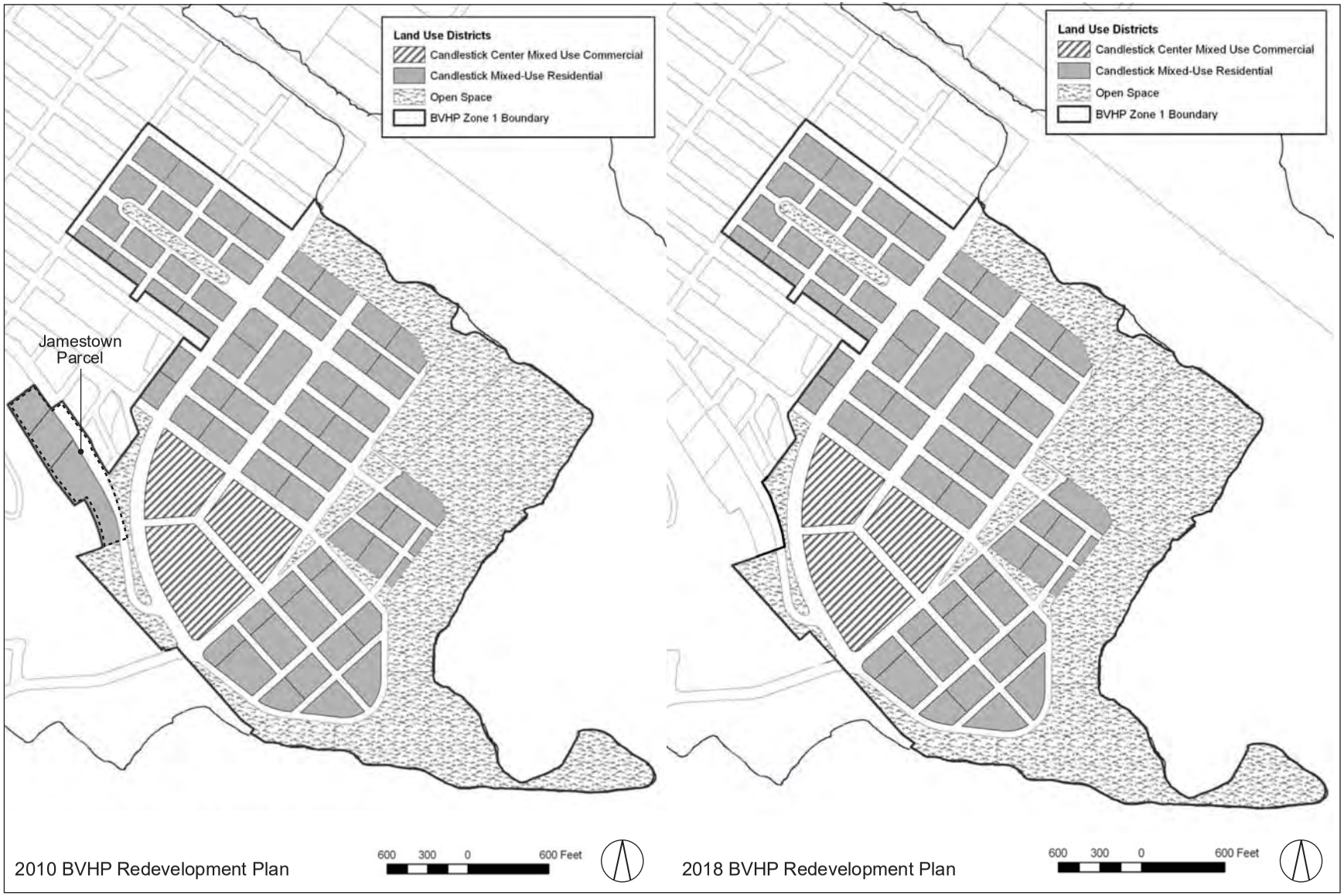


SOURCE: OCII Office of Community Investment and Infrastructure, 2010 and 2018

FIGURE 3

Addendum 5 to the CP-HPS2 2010 FEIR

HPS REDEVELOPMENT PLAN LAND USE DISTRICTS: 2010 AND 2018



SOURCE: OCII Office of Community Investment and Infrastructure, 2010 and 2018

FIGURE 4

Addendum 5 to the CP-HPS2 2010 FEIR

BVHP REDEVELOPMENT PLAN LAND USE DISTRICTS: 2010 AND 2018

10. Provide details for previously identified alternative utility systems[10] (as generally described under 2010 FEIR Alternative 4, including a solar electricity generation system, a recycled water treatment and distribution system, and district heating and cooling plants) and provide for new alternative utility systems (including a geothermal heating and cooling system as a component of the district heating and cooling plants and solar electricity distribution and storage [through a building-scale photovoltaic (PV) system and building-scale and utility-scale battery storage systems]);
11. Update the Phasing Plan and Schedule of Performance; and
12. Update construction information, including construction methods.

The 2018 Modified Project Variant at CP generally includes the following modifications, with additional detail provided in Addendum 5 Section I.C.2 [CP Proposed Modifications]:

1. Provide for 7,218 housing units at CP, which would be a decrease of 632 units as compared to the 2010 Project;
2. Include an updated phasing plan, which would re-order CP Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction; and
3. Remove a parcel from the CP boundary (the Jamestown Parcel, in CP-02) and modify the boundary of CP-05.

Overall, the number of residential units would increase from 10,500 units to 10,672 units, which includes the 172 units previously approved HPS1 but not constructed. The overall development plan would consist of the 2010 development program for CP (less 632 housing units) and the 2018 development program for HPS2. The combination of these two development programs is evaluated in Addendum 5.

In addition to the specific modifications described above for the 2018 Modified Project Variant, the BVHP and HPS Redevelopment Plans would be amended to allow the transfer of up to 118,500 sf of nonresidential uses from HPS2 to CP, which represents approximately 10 percent of the total nonresidential land use program at CP, which is 1,185,000 sf, and the internal conversion of uses within HPS2 and CP. The manner in which these project elements are evaluated in Addendum 5 is described in Section II.A, Approach to the Analysis.

I.C 2018 Modified Project Variant

Table 2 (2018 Modified Project Variant Land Use Program) provides the land uses proposed under the 2018 Modified Project Variant for both CP and HPS2. Table 3 (Land Use Comparison) provides the land uses proposed under the 2018 Modified Project Variant as compared to the projects approved in the 2010 FEIR Findings, which included the 2010 Project, Variant 1, and Variant 2A, each of which assumed either the presence or absence of a stadium, as well as the inclusion of the tower variant and the utility variant.

[10] The use of the term "alternative utility system" does not mean that these alternative systems would entirely supplant the use of traditional utility systems at CP and/or HPS2; instead, the alternative utility systems would be supplementary to traditional utility systems.

TABLE 2 2018 MODIFIED PROJECT VARIANT LAND USE PROGRAM

Use	2018 Modified Project Variant: Candlestick		Hunters Point Phase 2		Total	
Nonresidential Land Use[a]						
Artist Studio	0	sf	255,000	sf	**255,000**	**sf**
Community Use	50,000	sf	50,000	sf	**100,000**	**sf**
Arena	75,000	sf	0	sf	**75,000**	**sf**
	10,000	seats	0	seats	**10,000**	**seats**
Hotel (New Proposed HPS2 Use)	150,000	sf	120,000	sf	**270,000**	**sf**
	220	rooms	175	rooms	**395**	**rooms**
Institution (New Proposed HPS2 Use):[b]	0	sf	410,000	sf	**410,000**	**sf**
Elementary School/Junior High School	*0*	*sf*	*345,000*	*sf*	***345,000***	***sf***
	0	*students*	*±1,000*	*students*	***±1,000***	***students[c]***
High School/Post-Secondary	*0*	*sf*	*65,000*	*sf*	***65,000***	***sf***
	0	*students*	*±1,000*	*students*	***±1,000***	***students[d]***
Stadium	0	sf	0	sf	**0**	**sf**
	0	seats	0	seats	**0**	**seats**
R&D/Office	150,000	sf	4,265,000	sf	**4,415,000**	**sf[e,f]**
Regional Retail	635,000	sf	100,000	sf	**735,000**	**sf**
Neighborhood Retail	125,000	sf	226,000	sf	**351,000**	**sf[g]**
Maker Space	0	sf	75,000	sf	**75,000**	**sf**
Gross-Square-Foot Total	**1,185,000**	**sf**	**5,501,000**	**sf**	**6,686,000**	**sf**
Residential	7,218	units	3,454	units	**10,672**	**units[h]**
Car Parking						
Residential (Structured) Parking	7,218	spaces	3,454	spaces	**10,672**	**spaces**
Commercial (Structured) Parking	2,736	spaces	7,152	spaces	**9,888**	**spaces**
Parking Total	**9,954**	**spaces**	**10,606**	**spaces**	**20,560**	**spaces**
± On-Street Parking	*1,360*	*spaces*	*1,487*	*spaces*	***2,847***	***spaces[i]***
Marina	0	slips	300	slips	**300**	**slips**
Water Taxi	No		Yes		**Yes**	
Parks and Open Space						
New Parks	9.0	acres	173.9	acres	**182.9**	**acres**
New Sports Fields and Active Urban Recreation	0.0	acres	58.1	acres	**58.1**	**acres**
New State Recreation Area	5.8	acres	0.0	acres	**5.8**	**acres**
Existing State Recreation Area	90.9	acres	0.0	acres	**90.9**	**acres**
Parks and Open Space Total	**105.7**	**acres**	**232.0**	**Acres**	**337.7**	**acres**
Other Parks	7.1	acres	17.3	acres	**24.4**	**acres[j]**

NOTES:

a. All infrastructure is excluded from the development program's square footage, with the exception of any associated office space, which is included in the R&D/Office category.

b. Although schools were allowed as institutional uses in the 2010 HPS Redevelopment Plan, specific school uses were not analyzed in the 2010 FEIR and are considered new uses for purposes of Addendum 5.

b. Includes 400 students living on campus.

c. Includes 600 high school students and 400 college students. Half the high school students would be on site at any one time. One-third of the college students would be on site at any one time.

d. Consistent with the 2010 FEIR, R&D uses are defined to include research and development, office, and light-industrial uses.

e. Converts R&D/Office gsf to Institution gsf at HPS2.

f. Includes 71,000 sf of approved (but not constructed) commercial space from HPS1.

g. Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CP-HPS2 from 10,500 to 10,672.

h. On-street parking is in addition to structured parking.

i. Other Parks, which are detailed in Table A-5 of Addendum 5 Appendix A, and occur in both CP and HPS2, are included for informational purposes only; they are not included in the final calculation of useable parks and open space.

TABLE 3 LAND USE COMPARISON

Land Use Plan Components	*2010 Project (Project with Stadium, Candlestick Tower Variant D, Utility Variant, 49ers/Raiders Shared Stadium Variant)*		*Variant 1 (Project without Stadium, with Candlestick Tower Variant D, Utility Variant, R&D Variant [Variant 1])*		*Variant 2A (Project without stadium, with Candlestick Tower Variant D, Utility Variant, Housing/R&D Variant [Variant 2A])*		*2018 Modified Project Variant*	
	CP	*HPS*	*CP*	*HPS*	*CP*	*HPS*	*CP*	*HPS*
Residential Units	7,850	2,650	7,850	2,650	6,225	4,275	7,218	3,454
Office (gsf)	150,000	0	150,000	0	150,000	0	150,000	0
Hotel (gsf)	150,000	0	150,000	0	150,000	0	150,000	120,000
Research & Development/Office (gsf)	150,000	2,500,000	150,000	5,000,000	150,000	3,000,000	150,000	4,265,000
Regional Retail (gsf)	635,000	0	635,000	0	635,000	0	635,000	100,000
Neighborhood Retail (gsf)	125,000	125,000	125,000	125,000	125,000	125,000	125,000	226,000
Artists' Studios/Art Center (gsf)	N/A	255,000	N/A	255,000	N/A	255,000	N/A	255,000
Community Services (gsf)	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Football Stadium (seats)	0	69,000[a]	0	0	0	0	0	0
Arena (seats)	10,000	0	10,000	0	10,000	0	10,000	0
Marina (slips)	N/A	300	N/A	300	N/A	300	0	300
Yosemite Slough Bridge	Auto/BRT/Ped		BRT/Ped		BRT/Ped		BRT/Ped	
Parking (spaces):								
• Residential	7,850	2,650	7,850	2,650	6,225	4,275	7,218	3,454
• Commercial	2,346	4,028	2,346	7,028	2,346	4,428	2,736	7,152
• General and Commercial (on-street)	1,360	683	1,360	1,678	1,360	1,428	1,360	1,487
Total Parking (Spaces)	*18,917*		*22,912*		*20,062*		*23,407*	
Total Park and Rec Space (acres):								
• New Parks	8.1	140	8.1	152.4	8.1	150.9	9.0	173.9
• Active Recreation	N/A	91.6	N/A	69.8	N/A	70.9	0.0	58.1
• State Parkland	96.7	N/A	96.7	N/A	96.7	N/A	96.7	0.0
Subtotal Park and Rec Space	*104.8*	*231.6*	*104.8*	*222.2*	*104.8*	*221.8*	*105.7*	*232.0*

SOURCE: San Francisco Planning Department, *Candlestick Point–Hunters Point Shipyard Phase II Project California Environmental Quality Act Findings: Findings of Fact, Evaluation of Mitigation Measures and Alternatives, and Statement of Overriding Considerations*, 2010, Table A (Comparison of Land Use Development Scenarios [Stadium and Non-Stadium Options]); FivePoint, 2018.

NOTE:

a. While the Findings associated with the 2010 FEIR reflected 70,000 seats for the stadium, the 2010 FEIR and the traffic analysis associated with the 2010 FEIR assumed 69,000 seats; therefore, Addendum 5 reflects 69,000 seats.

Appendix A Tables A-2 through A-4 (Table A-2 [Comparison of 2018 Modified Project Variant to 2010 Project], Table A-3 [Comparison of 2018 Modified Project Variant to 2010 R&D Variant (Variant 1)], and Table A-4 [Comparison of 2018 Modified Project Variant to 2010 R&D/Housing Variant (Variant 2A)] also provide a comparison of the 2018 Modified Project Variant to the 2010 Project, Variant 1, and Variant 2A; however, these tables further show net changes by land use, which is not provided in Table 3.

Figure 5 (CP-HPS2 2010 Project Land Use Plan) illustrates the arrangement of land uses under the 2010 Project, and Figure 6 (CP-HPS2 2018 Modified Project Variant Land Use Plan) illustrates the arrangement of land uses under the 2018 Modified Project Variant.

Table A-1 (Comparison of CP-HPS2 Project Changes Since 2010) of Addendum 5 Appendix A provides a summary of the CP-HPS2 Project changes that have occurred since 2010. The changes are provided by primary project component (e.g., land use plan, phasing, utility systems, transportation and transit system, and mitigation measures).

I.C.1 HPS2 Proposed Modifications

At HPS2, the 2018 Modified Project Variant generally includes revisions to the proposed land uses and height limits; adjusted locations for two high-rise towers; reconfiguration of the design and sizes of parks and open space areas; revisions to the number of housing units proposed by the Project Sponsor; revisions to the street network and roadway cross-section dimensions and alignments, the provision of water taxi infrastructure and two bridges; revisions to the proposed utility network and systems; and changes to the phasing plan.

Land Use Plan

The 2018 Modified Project Variant would result in changes to the distribution and amount of square footage associated with nonresidential land uses at HPS2. The proposed square footage for new and existing uses within HPS2 (5,501,000 gsf) was determined by identifying the maximum amount of R&D square footage allowed under the HPS Redevelopment Plan and analyzed in the 2010 FEIR (5,000,000 gsf, as analyzed in Variant 1), and converting a portion of that space to other uses based on vehicle trip generation. The commensurate reduction in R&D floor space would accommodate an increase in square footage for retail/maker space, school/institutional uses, and a hotel.

HPS2 Residential Land Uses

The 2018 Modified Project Variant would result in a total of 3,454 residential units at HPS2, which represents an increase of 804 units as compared to the 2010 Project of 2,650 units.

HPS2 Commercial and Institutional Land Uses

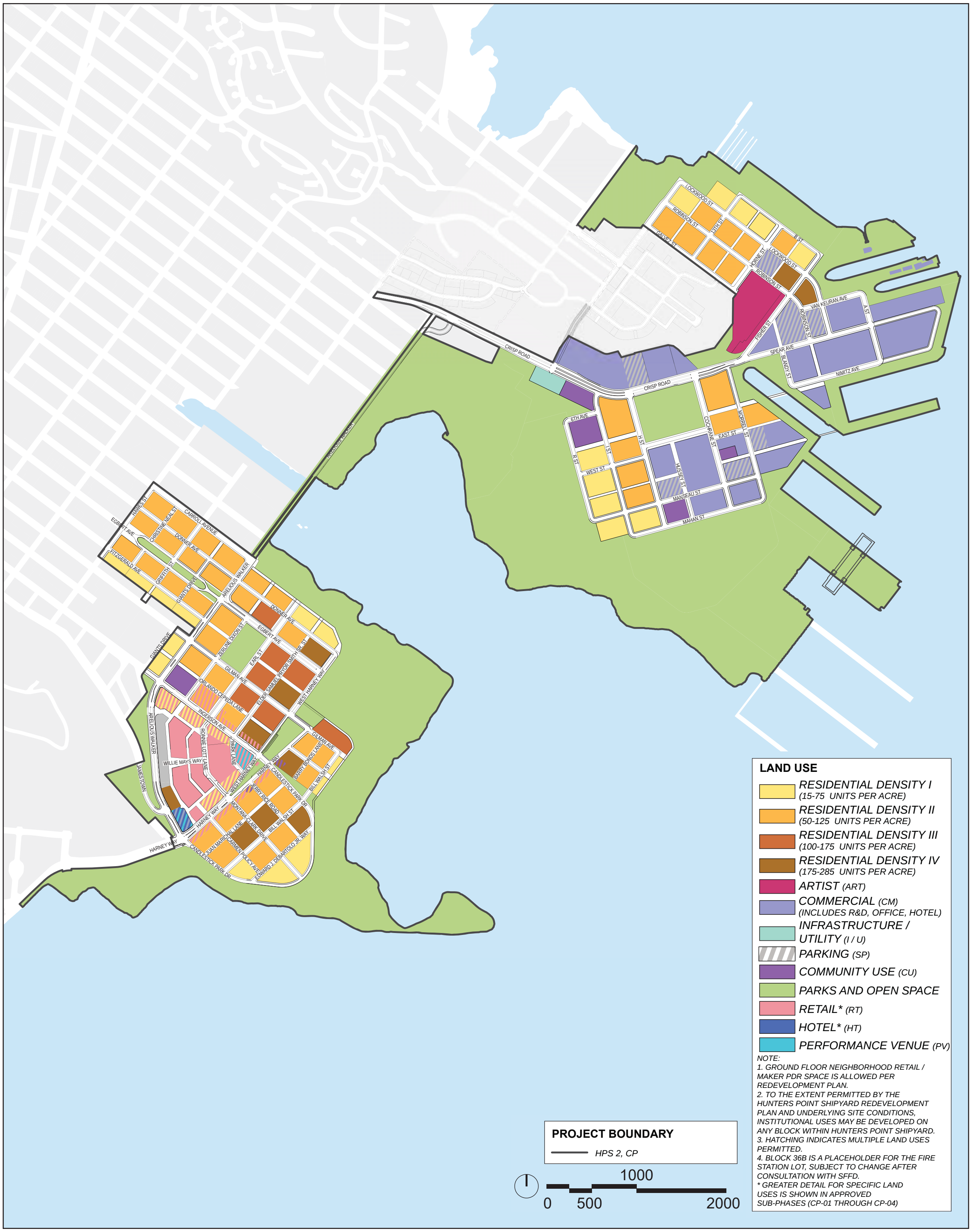
The commercial and institutional and use modifications under the 2018 Modified Project Variant are described below and shown on the Proposed HPS2 Land Use Plan (Figure 6).

SOURCE: Lennar Urban, 2009

FIGURE 5

Addendum 5 to the CP-HPS2 2010 FEIR

CP-HPS2 2010 PROJECT LAND USE PLAN



SOURCE: FivePoint, 2018

FIGURE 6

Addendum 5 to the CP-HPS2 2010 FEIR

CP-HPS2 2018 MODIFIED PROJECT VARIANT LAND USE PLAN

Retail

As shown in Table 2, the 2018 Modified Project Variant would result in approximately 400,000 sf of retail uses, which would include regional retail (up to 100,000 sf), neighborhood retail and maker space, which is approximately 276,000 sf more than assumed under the 2010 Project for retail uses; further, no regional retail or maker space was assumed in the 2010 Project.

Maker space would be used for contemporary forms of small-scale manufacturing activities in urban areas, as further described in the Hunters Point Shipyard Redevelopment Plan.[11] At HPS2, maker spaces would specifically involve small-scale manufacturing and post-manufacturing activities, such as (but not limited to) craft, industrial arts and design, robotics, woodwork, digital technologies and electronics, jewelry, clothing and apparel, 3D printing, food and beverage (production, tasting, and sales), and bicycle repairs, among many others. Maker spaces typically have a small retail storefront.

Hotel

The 2018 Modified Project Variant would include a new proposed hotel use with approximately 175 rooms and 120,000 sf.

Schools

The 2018 Modified Project Variant would provide for one or more public or private schools as new proposed uses. A high school and postsecondary school would be expected to accommodate up to 1,000 students in 65,000 sf of space; however, school schedules would be staggered, resulting in fewer students present on site at any time. An elementary and junior high school would accommodate approximately 1,000 students in 335,000 sf of space, with up to 400 students residing on campus.

Other Uses

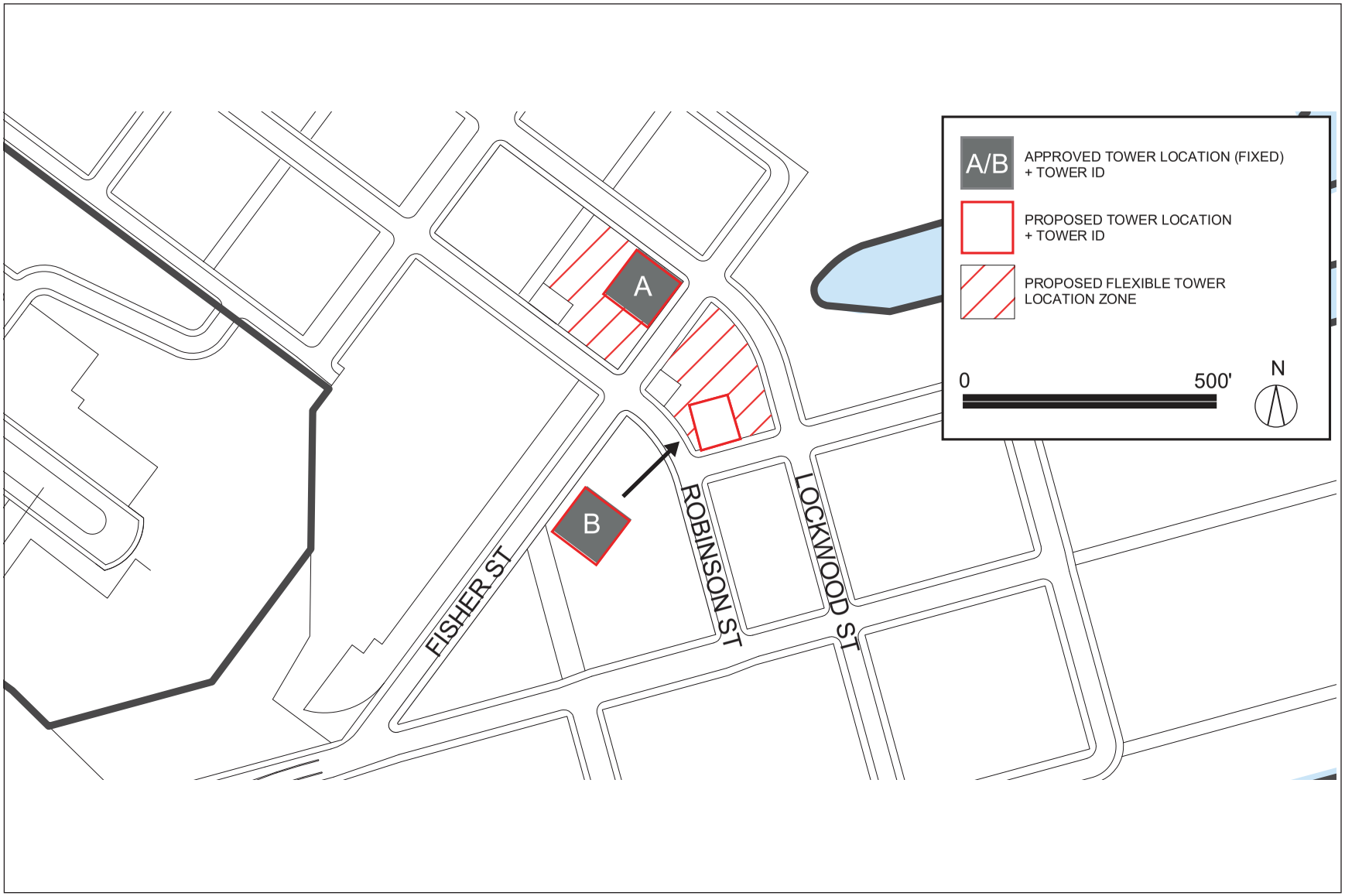
As shown in Table 2, community uses, artist uses, the arena, and the marina remain unchanged as compared to the 2010 Project. Parks and open space are discussed in “Parks and Open Space Plan,” p. 22, and the water taxi and parking are discussed in “Transportation Plan,” p. 27.

Tower Locations and Building Heights

Tower Location

The 2018 Modified Project Variant would modify the location of Towers A and B, as illustrated in Figure 7 (Tower Locations: Towers A and B).

[11] All land uses are described and defined in either the Bayview Hunters Point Redevelopment Plan or the Hunters Point Shipyard Redevelopment Plan.



SOURCE: FivePoint, 2018.

FIGURE 7

Addendum 6 to the CP-HPS2 2010 FEIR

TOWER LOCATIONS: TOWERS A AND B

Tower A would be located in the same location and on the same block as shown in the 2010 FEIR; however, a flexible tower zone would be added to the remainder of the block. Tower B would be located one block north of its previously approved location, and a flexible tower location zone would also be created for the balance of this block. The establishment of a flexible tower location zone would provide flexibility in the geographic placement of Tower A and Tower B. If the zone is established, both Towers A and B could be located in any part of the flexible tower location zone subject to 2018 HPS D4D requirements. However, for purposes of environmental analysis, the towers are proposed at the locations depicted in Figure 7. While the heights of both towers would not change, the 2018 HPS D4D would allow screened mechanical equipment to be up to 10 percent of the total height of the building (within an area that represents 85 percent of the building floorplate).

Maximum Building Heights

The 2018 Modified Project Variant would change maximum building heights and/or bulk for HPS2 as compared to the 2010 Project (that included a stadium). This would both increase and decrease heights in various locations. Maximum building heights under the 2018 Modified Project Variant are shown in Figure 8 (Building Heights) and described below. Further, Figure 36 (Height Changes: 2018 Modified Project Variant vs. 2010 Project), p. 167, illustrates the change in maximum building heights throughout HPS2 when comparing the 2018 Modified Project Variant to the 2010 Project.

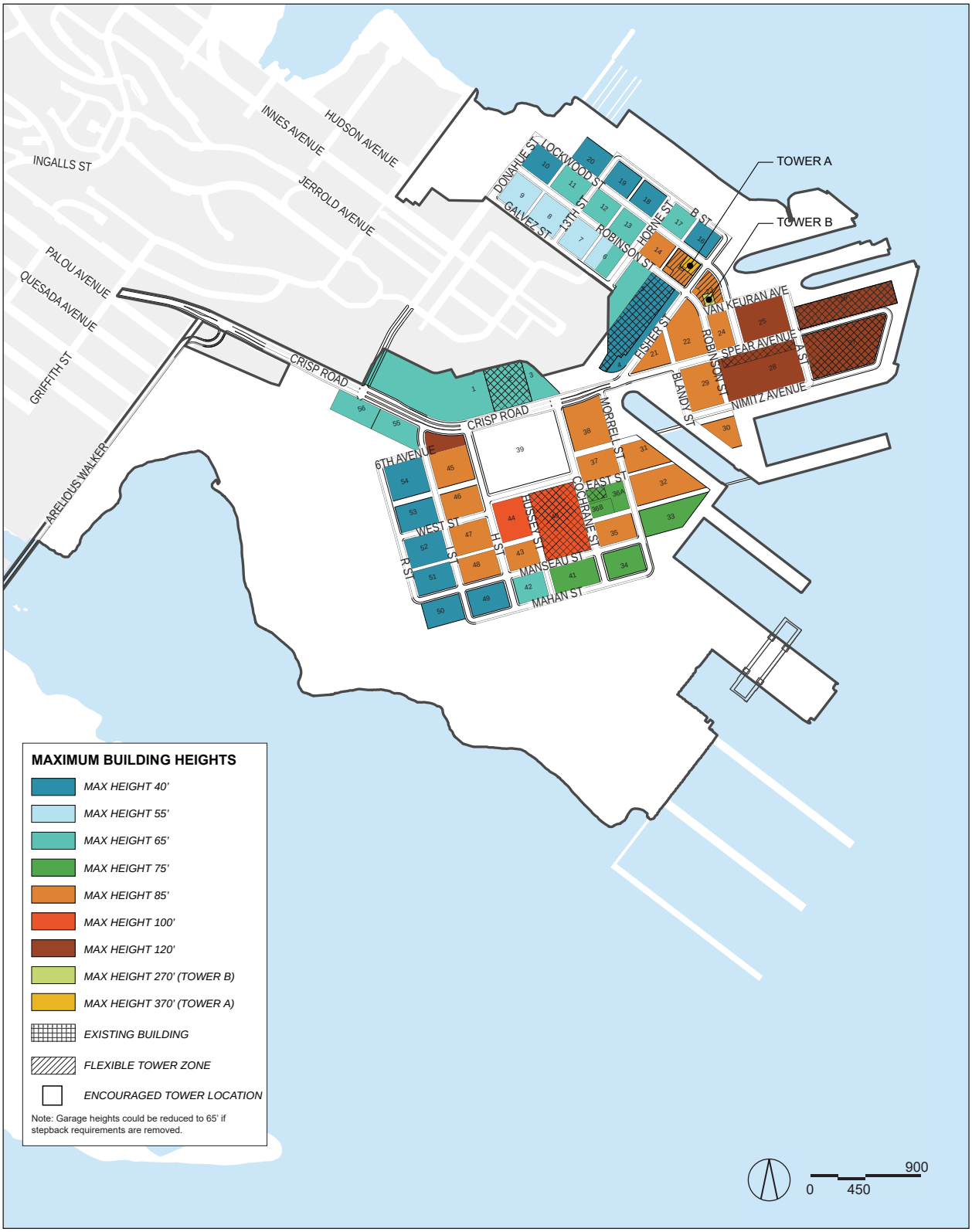
North Shoreline District

Under the 2018 Modified Project Variant, the maximum building heights in the North Shoreline District would be modified as illustrated by Figure 8 and generally described below:

- The maximum height of waterfront buildings in 2010 was 65 feet, and would generally be reduced to 40 feet, with the exception of one Agency Lot, which would remain at 65 feet.
- The maximum height of buildings along Galvez and Robinson Streets in 2010 was 65 feet for all blocks except two (on either side of Robinson/Horne intersection) which had a maximum height of 85 feet. Building heights along Galvez and Robinson Streets would generally remain at 65 feet or below, with the exception of Lots 14 and 15, which would have a maximum height of 85 feet. In 2010, Lot 14 had a maximum height of 85 feet, and as such, no height variance would occur.
- The location of Tower A, with a maximum (and unchanged) height of 370 feet, would be modified as described above.

Village Center District

Under the 2018 Modified Project Variant, building heights in the Village Center District are not proposed to change. Maximum building heights in this district would remain at 65 feet as illustrated by Figure 8.



SOURCE: FivePoint, 2018.

FIGURE 8

Addendum 5 to the CP-HPS2 2010 FEIR

BUILDING HEIGHTS

Wharf District

Under the 2018 Modified Project Variant, building heights in the Wharf District would be modified as illustrated by Figure 8 and generally described as follows:

- The location of Tower B, with a maximum (and unchanged) height of 270 feet, would be modified as described above.
- The remaining blocks (or portions thereof) within this district would generally increase in height. Height increases would be from a previous maximum height of 65 feet to 85 and 120 feet in height, and from 85 and 105 feet to 120 feet in height. A number of blocks would remain at 85 feet. Existing buildings would remain at 120 feet.

Warehouse District

Under the 2018 Modified Project Variant, building heights in the Warehouse District would be modified as illustrated by Figure 8 and generally described as follows:

- Under the 2010 Project, the area now known as the Warehouse District was proposed to only contain a Stadium with a maximum height of 156 feet. North of Crisp Road, the maximum building height was proposed to be 85 feet with small portions of land with a maximum building height of 65 feet. South of Crisp Road, but north of the Stadium, the maximum building height was proposed to be 65 feet at two portions of land directly abutting Crisp Road.
- Generally, the maximum height of the community use and residential blocks along the waterfront, west of H Street, would be 40 feet on some blocks and would be 85 feet on some blocks;
- Generally, the maximum height of the commercial blocks (which include R&D) and some residential blocks would be 75, 85, 100, or 120 feet; and
- For Lots 1, 2, 3, 55, and 56, which abut Crisp Road, maximum building heights would be 65 feet, with an interspersed existing building within this height parameter.

The arrangement of building heights throughout the Warehouse District would be adjusted to accommodate the revised street layout. The additional height would allow for a taller floor-to-floor height at ground level, provide flexibility for different commercial uses, amenities and a distinctive built form throughout the neighborhood. The reduction in height at the western perimeter reflects the programming for townhomes, and facilitates the "step down" of built form at the waterfront and park.

Parks and Open Space Plan

The 2018 Modified Project Variant would replace previously planned parks with new parks and reconfigure the design and sizes of parks and open space areas at HPS2. Table 4 (2018 Modified Project Variant Parks and Open Space Acreages) summarizes the acreage of parks and open space that would result from the 2018 Modified Project Variant. The difference in parks and open space acreage between the 2018 Modified Project Variant and the 2010 Project, 2010 R&D Variant

(Variant 1), and 2010 R&D/Housing Variant (Variant 2A) are provided in Table A-5 of Appendix A.[12] Further, Figure 9 (HPS2 Parks and Open Space) shows parks and open space at HPS2 for the 2018 Modified Project Variant and the 2010 Project. Overall, the 2018 Modified Project Variant would result in an increase of approximately 1.3 acres of new parks as compared to the 2010 Project. The increase in parks and open space is primarily attributed to the Grassland Ecology Park, Water Room/Dry Dock 4, and the Green Room. While there is an overall net increase in parks and open space acreage, there is a decrease of approximately 33.5 acres associated with sports fields and active urban recreational areas at HPS2 when comparing the 2018 Modified Project Variant to the 2010 Project; however, even with the reduction in acreage of sports fields and active urban recreational areas, the 2018 Modified Project Variant would accommodate the same number of sports fields as compared to the 2010 Project.

TABLE 4 2018 MODIFIED PROJECT VARIANT PARKS AND OPEN SPACE ACREAGES

	2018 Modified Project Variant
HPS2	
New Parks	
Grassland Ecology Park	106.8
Heritage Park	15.5
Hunters Point Mini Park	0
Hunters Point Neighborhood Park	0
Hunters Point Park Blocks	0
Hunters Point South Park	0
Hunters Point Wedge Park	0
Northside Park	12.8
R&D Plaza	0
Shipyard Hillside Open Space[a]	2.4
Water Room/Dry Dock 4	7.3
Waterfront Promenade	29.1
New Parks Subtotal	*173.9*
New Sports Fields and Active Urban Recreation	
Maintenance Yard	5.5
Multi-Use Lawn/Fields	20.5
Sports Field Complex	28.7
Waterfront Recreation and Event Pier	3.4
New Sports Fields and Active Urban Recreation Subtotal	*58.1*
HPS2 POSH Total	***232.0***

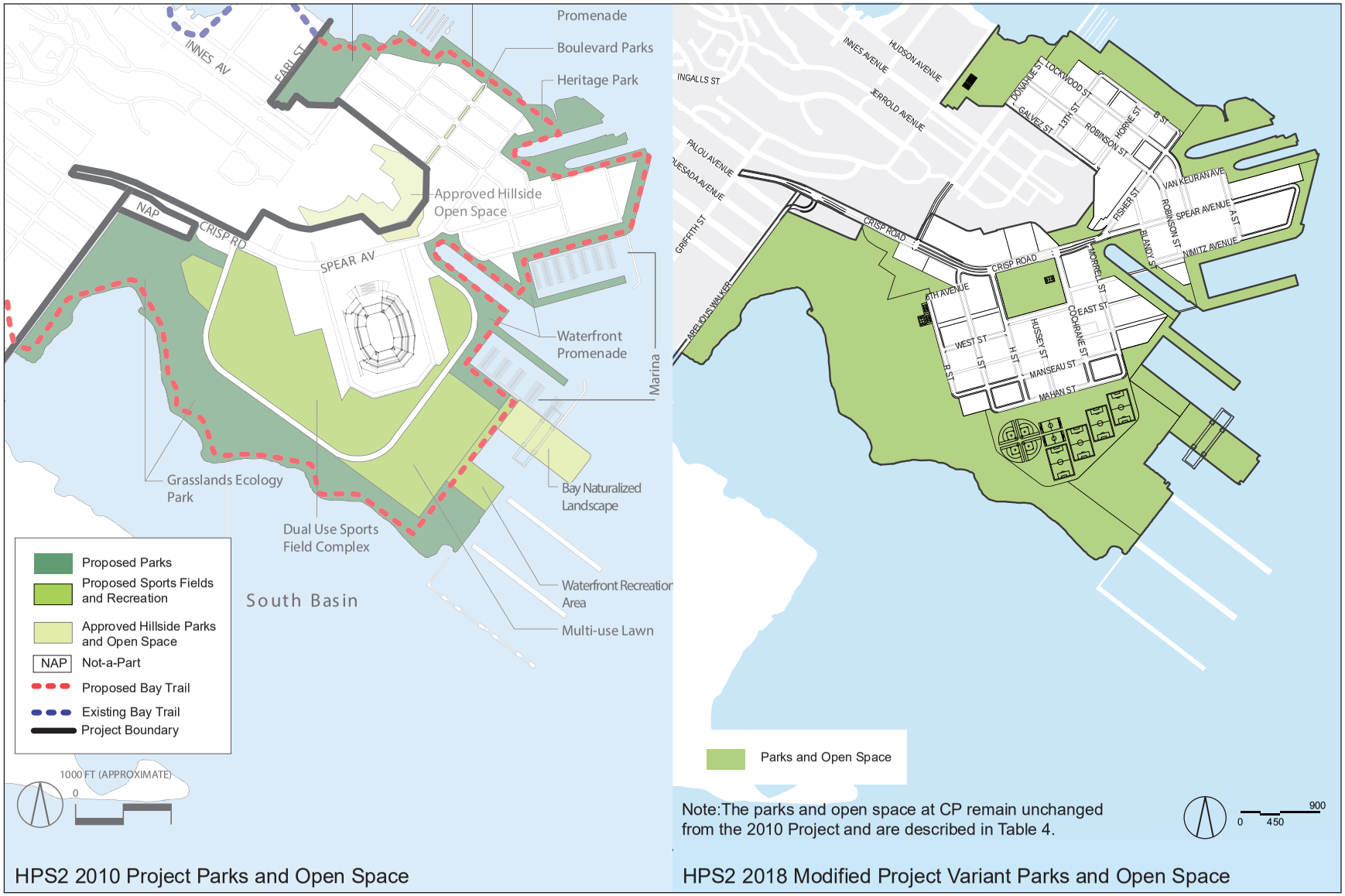
[12] The Shipyard Hillside Open Space, Horne Boulevard Park, and the Bay Naturalized Habitats below the Regunning Crane, were excluded from the total parks calculation in the 2010 FEIR because they were not considered to serve a functional active or passive recreation purpose due to topography and terrain. OCII has re-evaluated the Shipyard Hillside Open Space and determined that it does function as a park; accordingly, this acreage is included in the total parks calculations for the 2018 Modified Project Variant. Horne Boulevard Park was not included in the total acreage for either the 2010 FEIR or the 2018 Modified Project Variant because it was considered as part of the streetscape, rather than a separate park. In the 2018 Modified Project Variant, the new open space designated as the Green Room is also not included in the total acreage of new parks because it would be privately owned, although it would be publicly accessible.

TABLE 4 2018 MODIFIED PROJECT VARIANT PARKS AND OPEN SPACE ACREAGES

	2018 Modified Project Variant
Other Parks[b]	
Green Room (New)	8.1
Gunning Crane Pier Habitats	9.2
Shipyard Hillside Open Space	Provided under New Parks
Horne Boulevard Park	0.0
Other Parks Subtotal	*17.3*
HPS2 TOTAL	***249.3***
CANDLESTICK POINT	
New Parks	
Alice Griffith Neighborhood Park	1.4
Bayview Gardens/Wedge Park	3.7
Candlestick Point Neighborhood Park	3.1
Mini Wedge Park	0.8
New Parks Subtotal	*9.0*
State Park Land	
Bayview Gardens North	9.5
Grasslands South	10.3
The Heart of the Park (includes new State Park)	15.4
The Last Port (includes new State Park)	14.6
The Last Rubble	24.5
The Neck (includes new State Park)	4.9
The Point	6.1
Wind Meadow	11.4
State Park Land Subtotal	*96.7*
CP POSH Total	***105.7***
Other Parks[a]	
Bayview Hillside Open Space	3.5
Earl Boulevard Park	0.0
Jamestown Walker Slope	3.6
Other Parks Total	***7.1***
CP Total	**112.8**
CP-HPS2 TOTAL	***362.1***
Total Parks and Open Space (Excluding "Other Parks")	
New Parks	182.9
New Sports Fields and Active Urban Recreation	58.1
State Park Land	96.7
Total Parks and Open Space (Excluding "Other Parks") Total	***337.7***
Other Parks Total	**24.4**

a. The Shipyard Hillside Open Space was listed in “Other Parks” in the 2010 FEIR because OCII did not consider it as creditable parkland; however, OCII now considers the Shipyard Hillside Open Space as creditable park land, and, accordingly, it is now listed under “new parks.”

b. Other Parks are included for informational purposes only; they are not included in the final calculation of parks and open space.



SOURCE: Lennar Urban, RHAA, 2009; PBS&J, 2010 and FivePoint, 2018.

FIGURE 9

Addendum 5 to the CP-HPS2 2010 FEIR

HPS2 PARKS AND OPEN SPACE

Green Room (Warehouse District)

As a result of retaining the existing street grid to reflect the historic shipyard configuration, the 2018 Modified Project Variant would remove three individual parks (Hunters Point Park Blocks, Hunters Point Wedge Park, and R&D Plaza) included in the 2010 Project and provide a new, consolidated 8.1-acre publicly accessible private open space (POPOS) on Crisp Road, known as the Green Room. The Green Room would be a key public space at HPS2 and would be privately maintained and programmed to provide amenities that serve both local and regional functions. Two existing buildings (#411 and #813) would continue to be located on the southern and northern edges of the park, respectively.

Waterfront Promenade North and Water Room

The Waterfront Promenade, which includes the Water Room/Dry Dock 4 area, would be modified under the 2018 Modified Project Variant to increase the acreage of the park by 6.9 acres, as compared to the 2010 Project. This increase in acreage is the result of the removal of a row of development blocks on the northern edge of the North Shoreline District, thereby increasing the setback of the development to the shoreline, as well as increasing in the open space area at the end of Dry Dock 4. A new civic square would be created in the Wharf District at the end of Dry Dock 4 near Fisher Street and Spear Avenue, known as the Water Room. The Water Room would wrap around Dry Dock 4 and be programmed to establish a central community gathering point. Dry Dock 4 would have two new bridges and new seating constructed for the full extent of the dock.

The design plans for the Water Room would be required by the proposed amendments to the DDA to comply with the Standards for Preservation outlined in the SOI's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*,[13] and the preliminary Preservation Guidelines that have been developed to guide the design of the improvements associated with Dry Dock 4. The preliminary preservation guidelines are included in Appendix H (Historic Resources Memorandum) Table 2 (Dry Dock 4 Preservation Guidelines).

Grasslands Ecology Park

The Grasslands Ecology Park would be reconfigured to respond to the revised location of the sports field complex and the condensed street layout in the Warehouse District, and would increase in size by approximately 24.7 acres (from 82.1 acres under the 2010 Project to 106.8 acres).

Shipyard Hillside Open Space

The Shipyard Hillside Open Space would provide a pedestrian connection between Hilltop Park (HPS1) and the Water Room (HPS2), as envisioned in the 2010 Project. Also consistent with the 2010 Project, a pedestrian plaza would be created at the base of the hillside between Fisher Street and Building 101.

[13] U.S. Department of the Interior, 2017.

The Shipyard Hillside Open Space was listed in "Other Parks" in the 2010 FEIR because OCII did not consider it as creditable park land; however, proposed amendments to the Parks, Open Space, and Habitat Concept Plan considers the Shipyard Hillside Open Space as creditable park land since the stairway connecting the Hilltop Park and the Water Room provides an active recreational experience, and, accordingly, it is now listed under "new parks."

Sports Fields and Active Urban Recreational Areas

The sports field complex program would be accommodated in a more efficient layout than the 2010 Project because it co-locates the sports fields, rather than providing them in two different locations. The relocation of the sports fields would create greater connectivity of the parks and open space network along the waterfront; however, the size of this complex would be reduced by approximately 33.5 acres (from 91.6 acres in the 2010 Project to 58.1 acres), as shown in Table 5 (Comparison of 2018 Modified Project Variant to 2010 Project, R&D Variant (Variant 1), and Housing/R&D Variant (Variant 2A) (Parks and Open Space)).

Maintenance Yard

The maintenance yard, which would be 5.5 acres in size and would now provide services essential to the maintenance of all parks that were not considered under the 2010 Project (and hence, is considered additional parks and open space acreage under the 2018 Modified Project Variant). Crisp Road would provide access to the maintenance yard, allowing the facility to service the parks on both CP and HPS2.

TABLE 5 COMPARISON OF 2018 MODIFIED PROJECT VARIANT TO 2010 PROJECT, R&D VARIANT (VARIANT 1), AND HOUSING/R&D VARIANT (VARIANT 2A) (PARKS AND OPEN SPACE)

	2010 Project	*2010 R&D Variant (Variant 1)*	*2010 Housing/ R&D Variant (Variant 2A)*	*2018 Modified Project Variant*	*Net Change from 2010 Project to 2018 Modified Project Variant*
New Parks	148.1	160.5	159.0	182.9	34.8
New Sports Fields and Active Urban Recreation	91.6	69.8	70.9	58.1	(33.5)
State Park Land	96.7	96.7	96.7	96.7	0.0
Subtotal	*336.4*	*327.0*	*326.6*	*337.7*	*1.3*
Other Parks	19.8	19.8	19.8	24.4	4.6

Transportation Plan

The 2018 Modified Project Variant would incorporate changes to the approved 2014 Transportation Plan related to roadway location, function, configuration phasing, and cross-section at HPS2. These changes to roadway cross sections would encourage slow-speed auto traffic and better accommodate transit, bicyclists, and on-street parking based on recent San Francisco Municipal Transportation Agency (SFMTA) design guidance for travel lane widths.

The extension of existing transit lines and the proposed new transit lines remain consistent with the 2010 Project described in the 2010 FEIR and the 2014 Transportation Plan. However, the Transit Center, consisting of on-street bus layovers and other facilities, would be moved two blocks to the northeast and a modified bicycle network is proposed; both of these changes occurred in consultation with SFMTA staff. The proposed changes to the bicycle network are shown in Figure 26 (2018 Modified Project Variant Bicycle Network Plan).

Reconfiguration of Street Network in Warehouse District

Streets in the Warehouse District would be reconfigured to a pattern that is more consistent with the existing Navy street network and Navy parcel boundaries. The reconfigured street network would facilitate a more logical sequence of development and construction phasing consistent with the progressive transfer of land parcels from the Navy and would allow for additional existing buildings to be retained, including Building 351 and Building 411. Refer to Figure 6 (CP-HPS2 2018 Modified Project Variant Land Use Plan) for a depiction of the reconfigured street network under the 2018 Modified Project Variant.

Donahue Street Extension

The 2018 Modified Project Variant would extend Donohue Street from La Salle Avenue/Kirkwood Avenue southwards to Crisp Road, pending dedication of land from Mariners Village to the City. The extension would provide a new vehicular and pedestrian connection to HPS1 from the south, connect existing communities with future recreation areas and services in HPS2, and redirect bypass traffic.

The length of the extension would be approximately 750 feet. The width of the right-of-way would be 60 feet, made up of two 12-foot-wide travel lanes, two 6-foot-wide sidewalks and two 12-foot-wide grades accommodating the cut into the hillside.

Street Cross-Section Revisions

The 2018 Modified Project Variant reflects input from SFMTA staff, the San Francisco Planning Department, OCII, San Francisco Department of Public Works, and the San Francisco Fire Department regarding cross-section dimensions for various street components, such as width of parking lanes, width of travel lanes, and width of bicycle lanes. Additionally, Spear Avenue, Lockwood Street, and Donahue Street have been revised to include transit-only lanes to ensure efficient transit operation within the HPS2 site. While some refinements are proposed to specific lane dimensions, all auto and transit travel lanes would continue to be within a range of 10 to 12 feet, consistent with the range of widths analyzed in the 2010 FEIR. Parking lanes would be 8 feet wide, increasing to 9 feet wide when adjacent to Class II bicycle lanes. Class I, Cycletrack, and Class II bicycle lanes would generally be 6 to 7 feet wide, except when adjacent to (9-foot-wide) on-street parking or buffered from adjacent traffic, in which case they could be 5 feet wide. With the exception of the extension of Donahue Street, as noted above, sidewalk widths would range

primarily from 12 to 15 feet wide, throughout the HPS2 site, consistent with the range of sidewalk widths described in the 2010 FEIR (p. III.D-118).

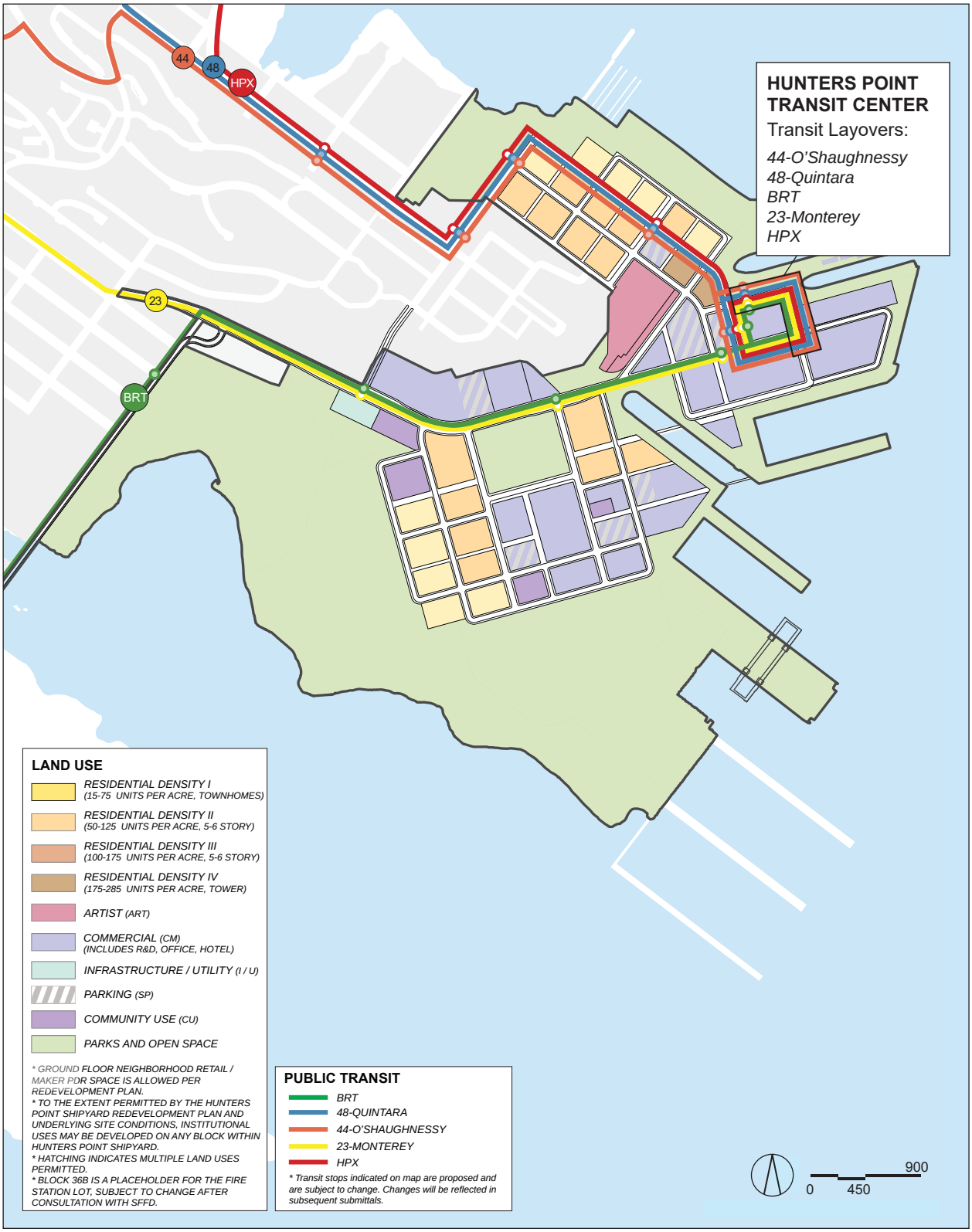
Transit Network Modifications

In the approved transit network, the Hunters Point Transit Center was located on the south side of Spear Avenue near the intersection of Lockwood Street. Under the 2018 Modified Project Variant, the Hunters Point Transit Center would be located on the north side of Spear Avenue, near Dry Dock 2, as indicated on Figure 10 (HPS2 Transit Improvements). The transit center would serve all transit lines serving HPS2 and would provide 14 bus bays (an increase of four bus bays over the 2014 Transportation Plan).

As shown on Figure 10 and Figure 11 (HPS2 Transit Layover Detail), in the 2018 Modified Project Variant, four existing MUNI-bus lines servicing the Shipyard (Route 44-O'Shaughnessy, Route 48-Quintara, Route 28R-19th, and Route 23-Monterey) would be extended to terminate and re-start at the Transit Center, and the proposed Hunters Point Express (HPX) bus service to Downtown San Francisco would also connect to the Transit Center.

Bicycle Network Modifications

The primary change to the bicycle network in the 2018 Modified Project Variant as compared to the changes evaluated in Addendum 1 and approved in the 2014 modifications to the CP-HPS2 Transportation Plan (in Attachment 6-N to the 2014 Transportation Plan) would be the re-alignment of the cycletrack facility in the Warehouse District. The 2018 Modified Project Variant proposes an institutional/educational use and some R&D uses on the northern side of Crisp Avenue, which may require driveways or other curb cuts that could disrupt the cycletrack. Therefore, the 2018 Modified Project Variant proposes to align the cycletrack through the open space and park area south of Crisp Avenue and along one of the midblock breaks in the Warehouse District. From there, it would extend across the new pedestrian/bicycle bridge across Dry Dock 4, where it would connect to the planned portion of the Bay Trail traversing the perimeter of HPS and with proposed facilities on Robinson Street. The facility on Robinson Street would be constructed as a Class IV separated facility providing an additional buffer between cyclists and adjacent traffic. These changes would ensure a more direct route between HPS and CP and would ensure a complete connection within HPS and to proposed cycletrack facilities west of HPS within the proposed India Basin Mixed-Use Development Project. As a result, the 2018 Modified Project Variant would provide a more complete and connected network of routes and facilities and would penetrate through the center of the Warehouse District, instead of along its northern edge as had previously been contemplated. Other minor refinements would continue to improve the overall bicycle network in CP and HPS2.

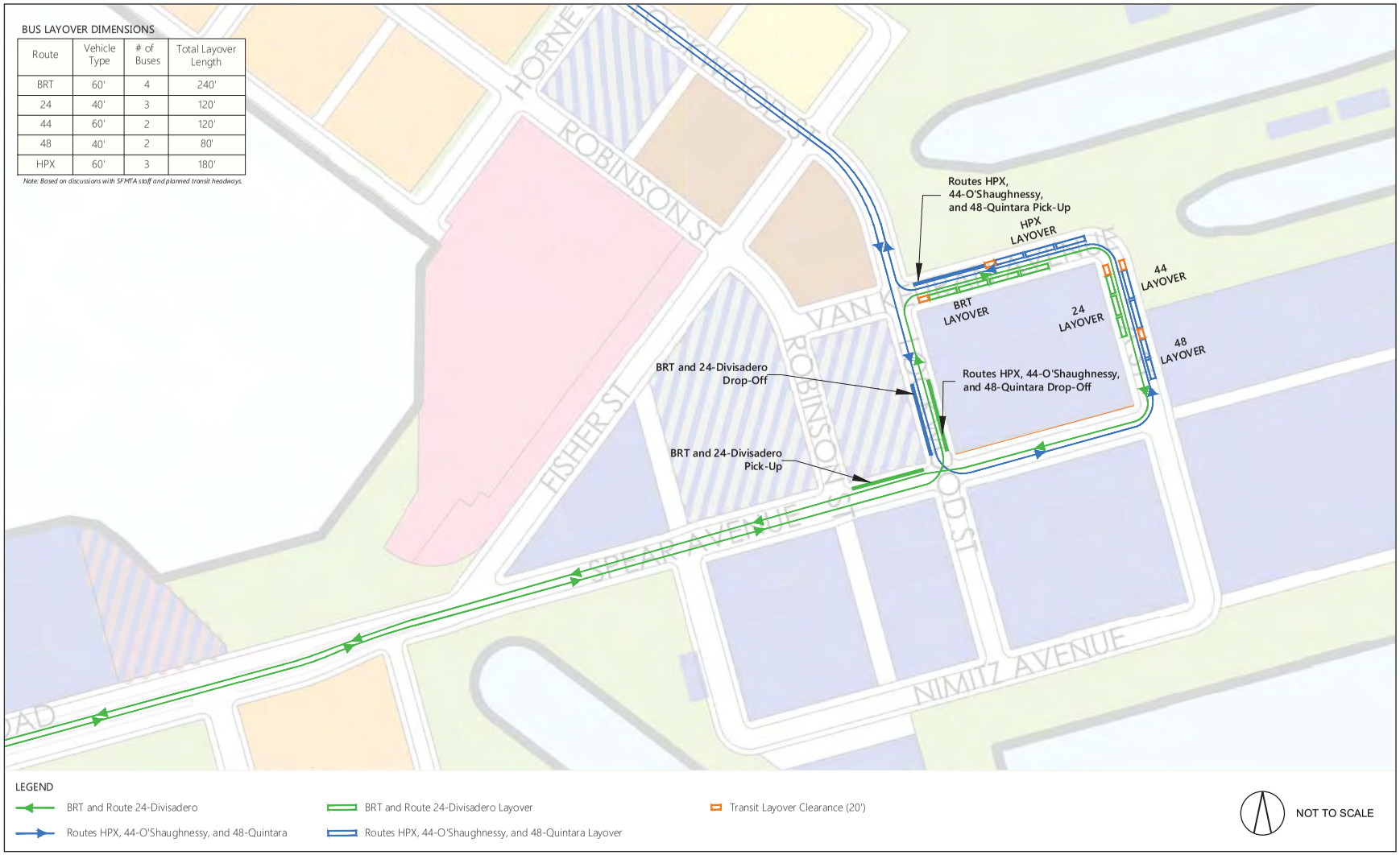


SOURCE: FivePoint, 2018.

FIGURE 10

Addendum 5 to the CP-HPS2 2010 FEIR

HPS2 TRANSIT IMPROVEMENTS



SOURCE: Fehr & Peers, 2018.

FIGURE 11

Addendum 5 to the CP-HPS2 2010 FEIR

HPS2 TRANSIT LAYOVER DETAIL

Bridges Over Dry Dock 4

As previously mentioned, the 2018 Modified Project Variant would include construction of two bridges over Dry Dock 4, as depicted in Figure 12 (Bridge Locations). The first, the Water Room Bridge, would be a pedestrian and bicycle bridge located in the western portion of Dry Dock 4 near the Water Room. The second, the Eastern Bridge, would be a pedestrian bridge located in the eastern portion of Dry Dock 4, near the entry point to the San Francisco Bay. Only the Water Room Bridge would serve both bicycles and pedestrians. The Eastern Bridge would allow small vessels to pass underneath the bridge, and the clearance required for these vessels would render it unsafe for bicyclists.

The design plans for the bridges would be required by the proposed amendments to the DDA to comply with the Standards for Preservation outlined in the SOI's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*,[14] and the preliminary Preservation Guidelines that have been developed to guide the design of the improvements associated with Dry Dock 4. The preliminary Preservation Guidelines are outlined in Table 21 (Dry Dock 4 Preservation Guidelines) of Section II.B.9 (Cultural Resources) and Table 2 (Dry Dock 4 Preservation Guidelines) of Appendix H.

Parking

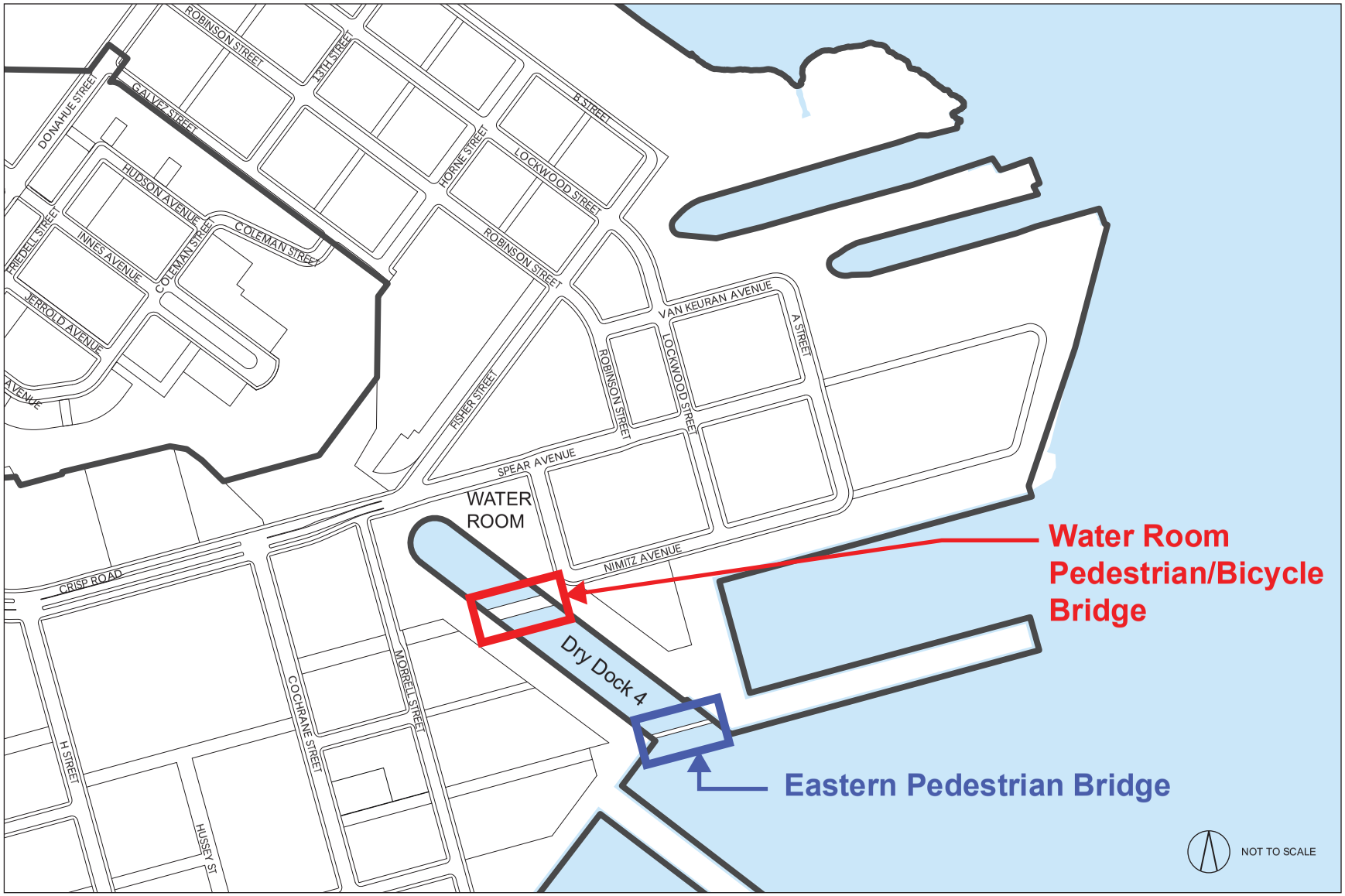
The total on- and off-street parking supply would be modified corresponding to changes in land use in the 2018 Modified Project Variant compared to the 2010 R&D Variant (Variant 1), which is most comparable to the 2018 Modified Project Variant because it does not include a stadium use. Specifically, there would be an overall increase in the maximum spaces allowed at Hunters Point Shipyard of 737 spaces and a corresponding decrease in the maximum amount of parking allowed at CP of 242 spaces. As shown in Table 6 (Maximum Allowed Parking Supply), the resulting maximum total of parking allowed within the 2018 Modified Project Variant would be 495 spaces more than allowed under 2010 FEIR Variant 1 (R&D).

TABLE 6 MAXIMUM ALLOWED PARKING SUPPLY

	2010 Project			*2010 R&D Variant (Variant 1)*			*2010 Housing/R&D Variant (Variant 2A)*			*2018 Modified Project Variant*		
	CP	*HP*	*Total*	*CP*	*HP*	*Total*	*CP*	*HP*	*Total*	*CP*	*HP*	*Total*
On-Street	1,360	683	***2,043***	1,360	1,678	***3,038***	1,360	1,428	***2,788***	1,360	1,487	***2,847***
Off-Street	10,196	6,678	***16,874***	10,196	9,678	***19,874***	8,571	8,703	***17,274***	9,954	10,606	***20,560***
Total	***11,556***	***7,361***	***18,917***	***11,556***	***11,356***	***22,912***	***9,931***	***10,131***	***20,062***	***11,314***	***12,093***	***23,407***

SOURCE: Candlestick Point–Hunters Point Shipyard Phase II Development Plan EIR, 2010; and FivePoint, 2018.

[14] U.S. Department of the Interior, 2017.



SOURCE: FivePoint, 2018.

FIGURE 12

Addendum 5 to the CP-HPS2 2010 FEIR

HPS2 BRIDGE LOCATIONS

Commercial and Residential Structured Parking

The 2018 Modified Project Variant does not change the commercial or residential parking ratios required by the Transportation Plan and analyzed in the 2010 FEIR. The parking ratio for the new schools would be consistent with Planning Code provisions, and the parking ratio for regional retail uses would be consistent with those in the 2016 CP D4D. As shown in Table 2 (2018 Modified Project Variant Land Use Program) and Table 6 (Maximum Allowed Parking Supply), a total of 9,954 structured parking spaces would be provided at CP and a total of 10,606 structured parking spaces would be provided at HPS2, for a total of 20,560 structured parking spaces.

Table 6 and Appendix A Table A-2 show that the 2018 Modified Project Variant would result in a decrease of 242 structured parking spaces at CP and an increase of 928 structured parking spaces at HPS2, resulting in a total increase at the CP-HPS2 project site of 686 structured parking spaces, as compared to the 2010 R&D Variant (Variant 1).

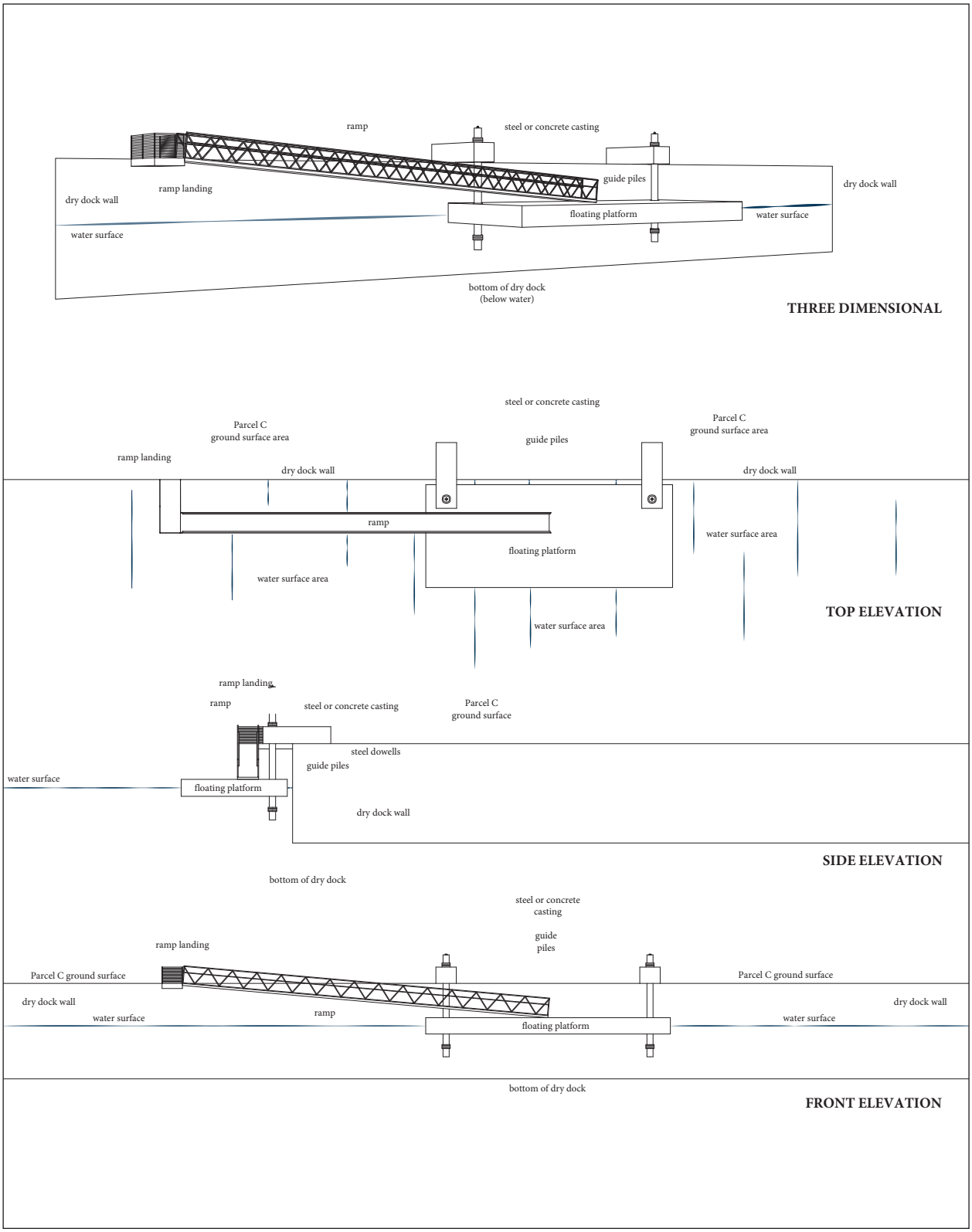
General and Commercial On-Street Parking

On-street parking was estimated using the linear feet of curbside space available for parking in the street cross sections. The 2018 Modified Project Variant includes revised street cross sections, which results in revised estimates of on-street parking availability. As more-detailed plans are developed, this estimate could change. As shown in Table 2 (2018 Modified Project Variant Land Use Program) and Table 6 (Maximum Allowed Parking Supply), a total of 1,360 on-street parking spaces would be provided at CP and a total of 1,487 on-street parking spaces would be provided at HPS2, for a total of 2,847 on-street parking spaces.

Table 6 and Appendix A Table A-2 show that the 2018 Modified Project Variant would result in a decrease of 191 on-street parking spaces at HPS2 as compared to the 2010 R&D Variant (Variant 1).

Water Taxi

The 2018 Modified Project Variant would establish a water taxi service to and from HPS2 at Dry Dock 4 to serve residents and visitors to the Project site. Water taxi services to and from HPS would dock at a landing at Dry Dock 4. New infrastructure on the land and in the water would be constructed to accommodate the services. Figure 13 (Water Taxi Dock at HPS2 Dry Dock 4) provides conceptual drawings depicting the design of the water taxi dock, including all of the elements described below (except the waiting area) in the sections entitled Infrastructure within the Water and Infrastructure on the Land.



SOURCE: Tideline Marine Group, 2016.

FIGURE 13

Addendum 5 to the CP-HPS2 2010 FEIR

WATER TAXI DOCK AT HPS2 DRY DOCK 4

Infrastructure within the Water

The water taxi would require infrastructure to be placed in the water adjacent to Dry Dock 4. The infrastructure would be similar to the water taxi facilities at Pier 1.5 in San Francisco. These items would include:

- **A floating platform**—A floating platform would be required for people to alight to and from the water taxi. The floating platform would be approximately 60 feet in length, approximately 25 feet in width and approximately 4 feet deep. The floating platform would sit on the surface of the water and move vertically with the rise and fall of the tide. It would be secured from horizontal movement by two guide piles (see immediately below) and would generally be offset approximately 1 foot from the wall of the dry dock.
- **Guide piles**—The floating platform would be secured from horizontal movement by two 25-foot guide piles that would connect to castings on the ground surface of Dry Dock 4. The bases of the guide piles would be inserted on the corners of the floating dock nearest the Dry Dock wall. The tops of guide piles would be affixed to castings that are joined to the land surface (see below, under the discussion of Infrastructure on Land). The bases of the guide piles would extend approximately 2 to 4 feet below the surface of the water depending on the height of tide. They would not touch the bottom of the dry dock.
- **Access ramp**—The floating platform and the land would be connected by a ramp that connects with a landing on the dry dock. The ramp would be approximately 90 feet in length and approximately 5 feet in width (approximately 450 sf in total). The ramp would be designed to satisfy ADA requirements by having a maximum grade of 1:20; railings that are approximately 4 feet in height above the walking deck surface; and a hand grip rail that would be attached to the railings above the walking deck surface.

All items of infrastructure within the water would be transportable. In the event that the floating platform, guide piles, or ramps would need to be moved, they could be safely stored in the water against a bulkhead until they could be reinstated back at the Dry Dock 4 landing area.

Infrastructure on the Land

The new landing area would require new items of infrastructure to be constructed on the landside of Dry Dock 4. These items are:

- **Floating Platform Castings**—To connect the guide piles that secure the floating platform with the land surface, two castings would be installed on the ground surface of Parcel C at the edge of the dry dock. Each casting would be approximately 5 feet wide by approximately 4 feet deep by approximately 16 feet in length, and cantilever approximately 7 feet beyond the edge of the dry dock wall. The castings would be anchored into the ground surface of the dry dock.
- **Access Ramp Landing Platform**—To connect the access ramp with the land surface, a landing platform would be constructed at the edge of the dry dock wall. The platform would cantilever approximately 13 feet beyond the edge of the dry dock and be approximately 5 feet in width (approximately 65 sf in total). The access ramp landing platform (or ramp

landing) would be designed to satisfy ADA requirements in the same manner as described for the access ramp in terms of railings and handgrip rails. The ramp landing would be anchored into the ground surface of the dry dock.

- **Waiting Area**—A waiting area of approximately 1,000 sf would be provided on Parcel C near the ramp landing platform.

Trips and Destinations

In the early stages, water taxi service would occur during weekday morning and evening peak hours to accommodate commuter traffic. Approximately 8 AM trips (4 inbound and 4 outbound) and 8 PM trips (4 inbound and 4 outbound), or a total of 16 trips, would be expected. The boat would have a maximum capacity for 22 passengers, as well as captain and crew. As the population at HPS2 grows, trips could occur throughout the day, as supported by demand. At this time, however, future demand is unknown.

Destinations for outbound trips and origins of inbound trips would depend on passenger demand, but are expected to include any of the docking locations in the San Francisco Bay, including San Francisco, Marin County, the East Bay, and the South Bay.

Alternative Utility System

The 2010 FEIR Utilities Variant 4, which was approved in 2010 (refer to Section I.B.2 [Previous Approvals and Development Status]), analyzed implementation of a district heating and cooling system, on-site wastewater treatment, and an automatic waste collection system (which is not proposed under the 2018 Modified Project Variant). Additionally, the 2010 FEIR acknowledged that the Project Sponsor would implement renewable energy strategies at HPS2, including the use of photovoltaic cells to reduce energy usage.

The 2018 Modified Project Variant includes a ground-source geothermal heating and cooling system as the primary source of heating and cooling for the development; solar electricity generation, distribution, and storage; and recycled water treatment and distribution. A general comparison of the alternative utility systems proposed under the 2010 Project as compared to the 2018 Modified Project Variant are provided in the next section, entitled "Comparison of 2010 Project and 2018 Modified Project Variant Alternative Utility Systems." Additional detail regarding the 2018 Modified Project Variant alternative utility systems is provided in the section entitled "2018 Modified Project Variant Alternative Utility Systems," which follows the comparative discussion.

The use of the term "alternative utility system" does not mean that these alternative systems would entirely supplant the use of traditional utility systems at CP and/or HPS2; instead, the alternative utility systems would be supplementary to traditional utility systems.

General Comparison of 2010 Project and 2018 Modified Project Variant Alternative Utility Systems

Heating and Cooling System

Under the 2010 Project, the district heating and cooling system would be provided from a centralized plant. One heating and cooling (district) plant was proposed to serve Candlestick Point and a second district plant was proposed to serve Hunters Point, with hot water (or steam) and chilled water distributed from the district plant to individual buildings via a pipe distribution network located under the streets. Heating was to be provided by natural gas-fired boilers that could generate either steam or hot water, while cooling was to be provided by natural gas-fired, steam-fired, or electrically driven chillers.

Under the 2018 Modified Project Variant, district heating and cooling would use a geothermal heating and cooling system that would include up to three small-scale (about 15,000 sf) central energy plants (CEPs), a vertical bore geothermal heat exchange system, a closed-loop pumping and piping system associated with each CEP that circulates through the boreholes and to residential and commercial buildings, and other systems that transfer heating and cooling to building HVAC systems.

Recycled Water System

The 2010 FEIR Utilities Variant would collect and route wastewater flows to eleven decentralized wastewater treatment plants, each sized to accommodate approximately 100,000 gallons per day of wastewater, with seven plants located in Candlestick Park and four plants in Hunters Point. The eleven decentralized plants would generate 1.05 mgd of reclaimed water. Under the 2010 FEIR Utilities Variant 4, each wastewater treatment plant would require approximately 6,250 sf of aboveground footprint to house the treatment plant components, pumps, and chemical storage area. Wastewater, recycled water, and sludge storage tanks could be located below-grade (e.g., under parking spaces or driveways) to reduce the footprint of the facilities. The estimated belowground footprint requirement for each facility would be approximately 30,000 sf. Thus, each plant would require approximately 36,250 sf and the proposed eleven plants would occupy approximately 400,000 sf.

Under the 2018 Modified Project Variant, the 2018 Modified Project Variant would include a single, dedicated 976,000 gpd central treatment plant at HPS2, rather than 11 decentralized plants, and the single plant would serve both CP and HPS2. Consistent with the Utilities Variant 4, the central treatment plant under the 2018 Modified Project Variant would divert wastewater from the sanitary sewer system for treatment. Rather than storing the solids (sludge) in a storage tank for periodic collection and transport off site for processing, as proposed for the treatment plants in the Utilities Variant 4, the solids removed from the water during treatment would be diverted back to the San Francisco Public Utilities Commission (SFPUC) sewer system.

The footprint area requirements for the 976,000 gpd water reuse facility would range from 10,000 to 82,000 sf, depending on the phase, actual capacity and a number of factors, including available tank depth, membrane type, and final storage area requirements among other area constraints/ considerations. A building containing blowers, pumps, treatment systems, and process controls would take up about one third of that footprint. Outside the building would be below-grade equalization tanks, below-grade sludge holding tanks, and above-grade reuse water tanks. The building would require 17-foot ceilings to accommodate necessary equipment, which would result in a building of approximately 20 feet to 35 feet in height.

Solar Photovoltaic System and Battery Storage Systems

As previously stated, the 2010 FEIR acknowledged that the Project Sponsor would implement renewable energy strategies at HPS2, including the use of photovoltaic cells to reduce energy usage. However, under the 2018 Modified Project Variant, the alternative utilities system incorporates a more robust program to incorporate building-scale solar photovoltaic (PV) systems that would generate renewable energy to supplement SFPUC's power supply to the site. The 2018 Modified Project Variant utilities system would also include a building-scale and utility-scale battery storage system.

2018 Modified Project Variant Alternative Utility Systems

Geothermal Heating and Cooling System

The 2018 Modified Project Variant includes a geothermal heating and cooling system. It includes four integrated components: (1) closed-loop vertical bore geothermal heat exchange systems; (2) water-to-water heat exchangers and pump systems located within the CEPs; (3) closed-loop piping systems for distributing hot and chilled water from the centralized plants to and from buildings within the project area; and (4) heat exchangers and air handling systems within buildings in the project area for the heating and cooling of those buildings.

The CEPs would house the essential plant and operational system infrastructure, including the geothermal source water pumps, distribution pumps, chillers, and heat exchangers associated with the geothermal HVAC system, and lithium ion batteries associated with the electricity storage system (described below). Up to three CEPs would be provided. Each CEP would be approximately 15,000 sf in area (typically 175 feet by 85 feet) with a floor-to-floor height between 18 feet and 25 feet. The CEPs are expected to be integrated with other buildings, such as in the ground floor of parking structures. All components would be entirely within the building footprint and screened to avoid being visible from the public realm. The plant would not contain any combustion or chemicals, and would have acoustic treatment applied to ensure noise does not exceed 40 decibels (dBA) at adjacent, nearby noise-sensitive outdoor use areas, following a detailed noise assessment to be completed upon final design. Potential sites for the CEPs could include Blocks 1, 7, 15, 22, 24, 35, 41, and 43.

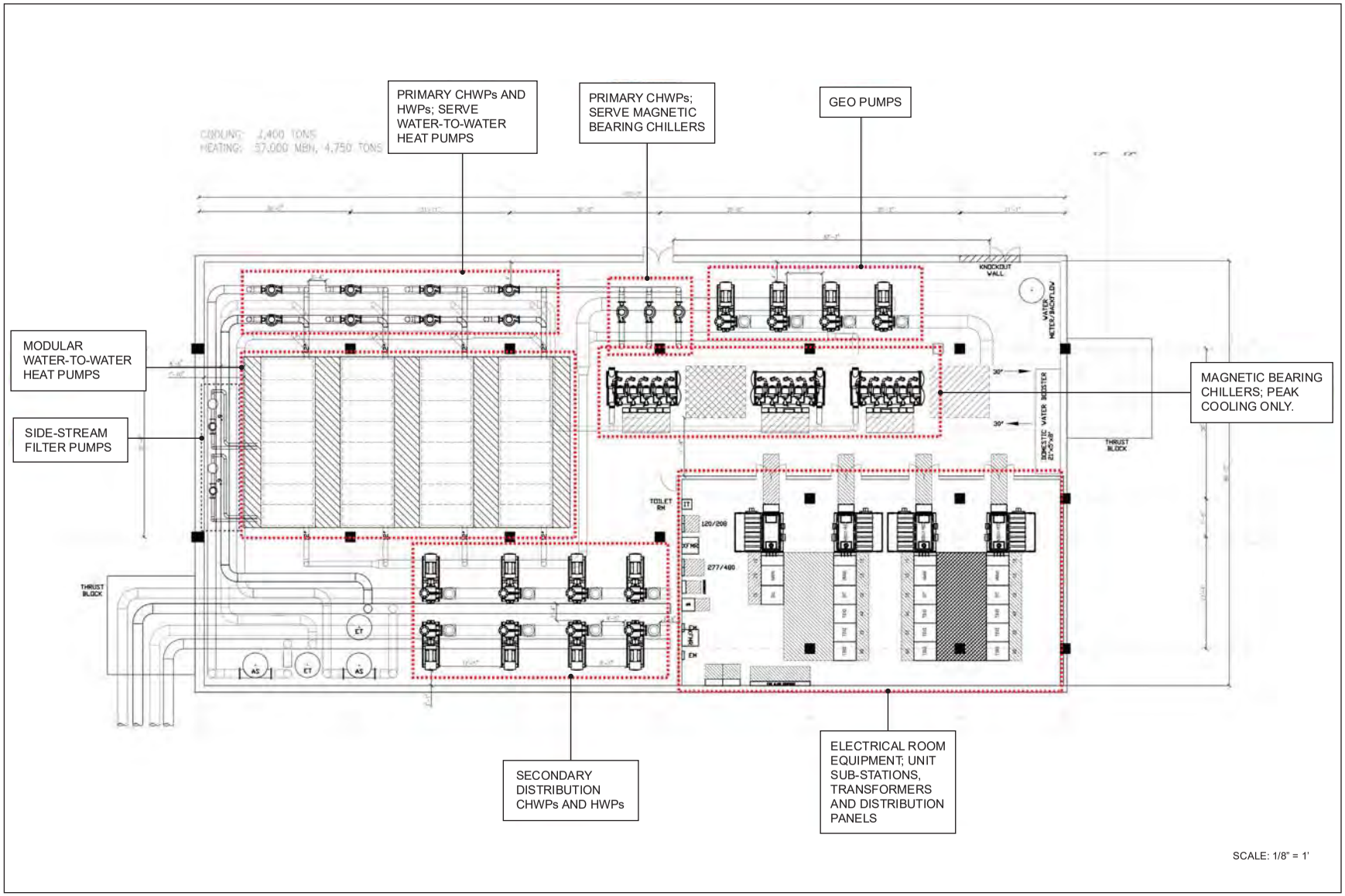
Figure 14 (Central Energy Plant Equipment Layout) shows how the pumps, chillers, heat exchangers, and electrical transformers and distribution panels may be configured within the CEP. The specific components of each element of the geothermal heating and cooling system are discussed below. Geothermal heat exchange systems are more efficient than traditional electric heating and cooling systems. A recent study by the California Energy Commission (CEC) indicates that geothermal heat pump systems for residential buildings should consume 65 percent less energy than conventional heating and cooling systems in the Bay Area region.[15] The key principle behind a geothermal heat exchange system is to utilize the sub-surface temperature of Earth for heating and cooling. Figure 15 (Geothermal Heating and Cooling System: Schematic) provides a conceptual depiction of the type of geothermal heating and cooling system proposed for HPS2. The proposed geothermal heat exchange system pumps a water-based fluid in a closed loop through a series of vertical bores that extend several hundred feet below the ground surface. During the winter, the water being pumped through the geothermal borehole absorbs the warmth of the Earth prior to being directed to water-to-water heat exchangers located in the CEP, where the heat would be extracted before returning the water to the borehole. The water-to-water heat exchangers in the CEP transfer heat from the geothermal loop to a closed loop piping system used to distribute hot water to HPS2 buildings. Electric-powered boilers at the CEP further heat the water in the hot water distribution loop as needed.

In summary, the process would be reversed as relatively cool water would be extracted from the Earth. Heat exchangers in the CEP transfer cooling to a chilled water distribution loop, which would be enhanced as needed by electric-powered chillers. Similar to the hot water loop, the chilled water loop transfers cooling energy to the building HVAC system, and the warmer water returning to the CEP would be replenished with cooling from the geothermal heat pump.

Vertical Bore Geothermal Heat Exchange System

The HPS2 geothermal system would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. Pumps would be located at the CEP, and boreholes would be located in clusters throughout HPS2 where they could be installed without conflicting with other uses of the site and in areas with minimal soil contamination or other environmental restrictions to the extent possible (for more detail on drilling techniques see Section I.D.3 [Construction Methods and Equipment]). Boreholes are anticipated to extend as deep as 600 feet, and would typically be 4 to 6 inches in diameter and spaced at least 15 to 20 feet apart. The conveyance piping that extends from the bores typically are buried a minimum of 3 feet deep and could be buried deeper to avoid conflicts with foundations, utility lines, and other shallow subsurface features if necessary. The geothermal boreholes would be located Warehouse in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited. Specifically,

[15] California Energy Commission, *Assessment of California's Low Temperature Geothermal Resources: Geothermal Heat Pump Efficiencies by Region*, CEC-500-2014-060, April 2012, Table 3, p. 20.

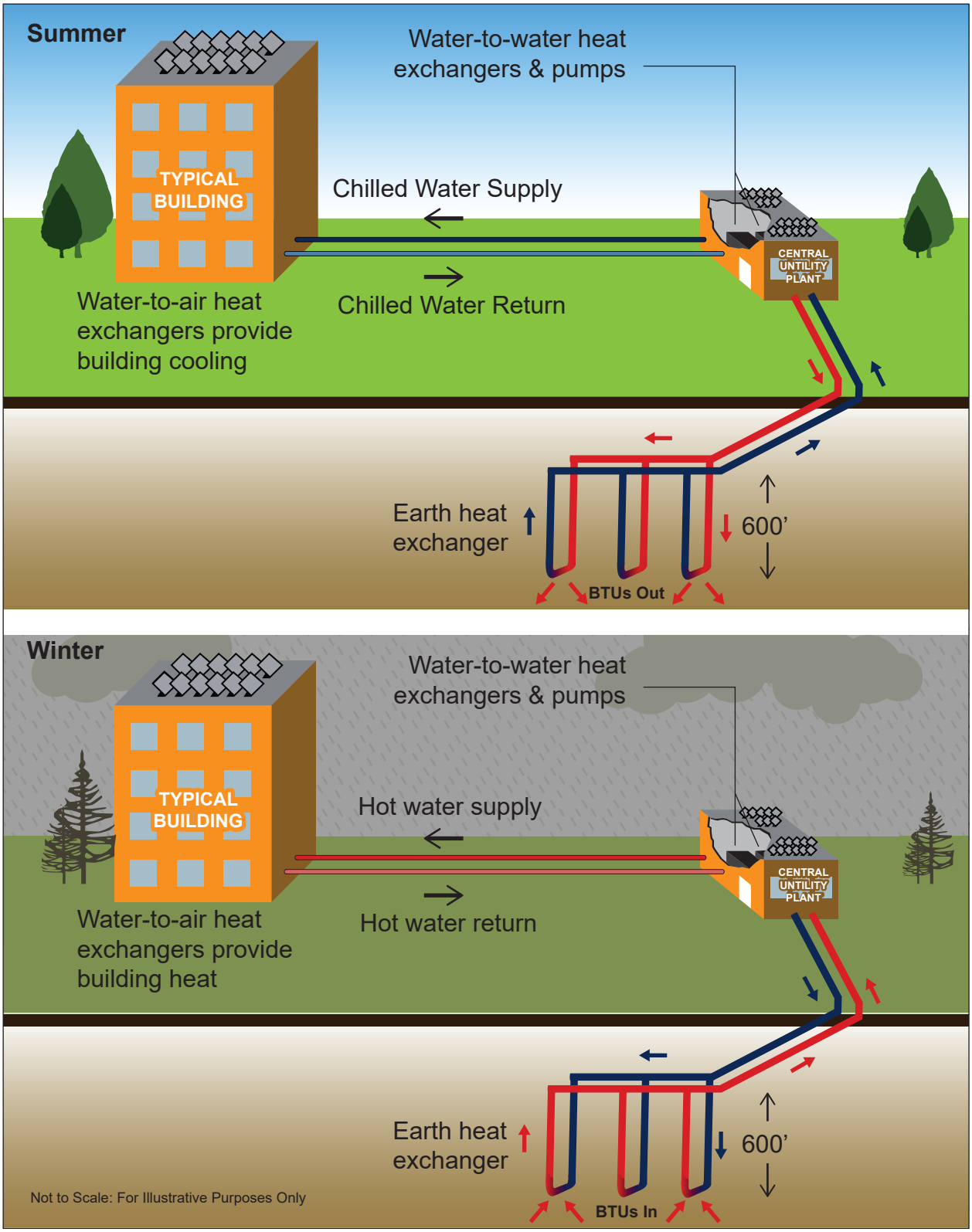


SOURCE: MEP Associates, LLC, 2017.

FIGURE 14

Addendum 5 to the CP-HPS2 2010 FEIR

CENTRAL ENERGY PLANT EQUIPMENT LAYOUT



SOURCE: GI Energy and ESA, 2017

FIGURE 15

Addendum 5 to the CP-HPS2 2010 FEIR

GEOTHERMAL HEATING AND COOLING SYSTEM: SCHEMATIC

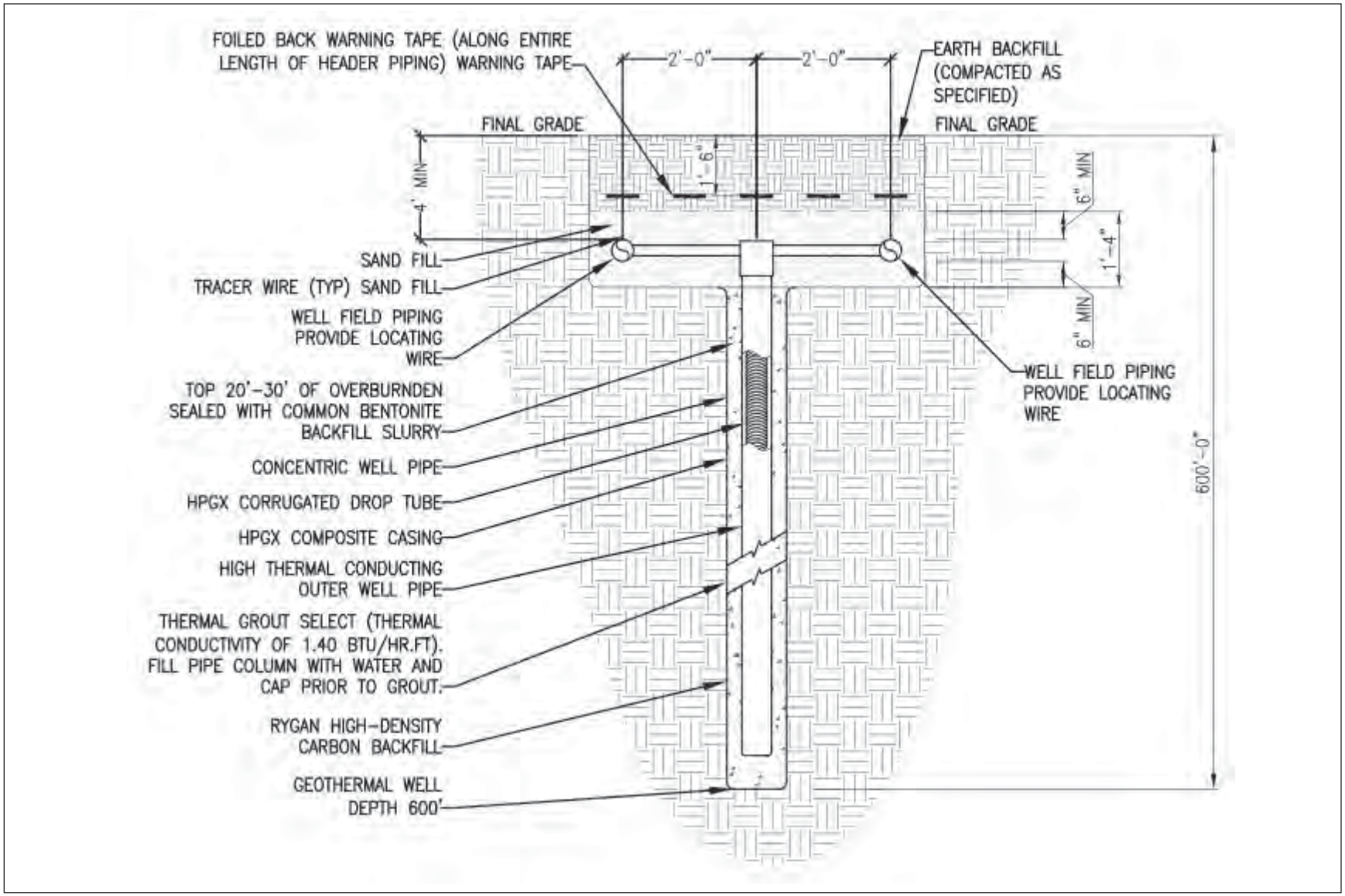
clusters of boreholes would be located below public parks and open space areas, playground or athletic fields, parking structures, and commercial buildings with ground floor or basement level parking. Generally, the environmental restrictions in these areas require regulators to approve workplans prior to disturbing existing fill soil and require maintenance of soil cover once work is completed. The borehole cluster locations would avoid other areas, as feasible, that have additional administrative and/or sub-surface restrictions. Examples of such areas are beneath public roads, public trust lands, radiological restricted areas, and other areas with additional soil or groundwater restrictions such as areas with groundwater monitoring wells or soil vapor mitigation beneath building foundations. Figure 16 (Geothermal Borehole Details) shows cross section details of geothermal borehole construction and associated piping.

The only mechanical equipment required for the heat exchange system would be the pumps used to induce flow through the closed loop of numerous interconnected vertical bores. Once installed, there would be no access or maintenance that would be required for the piping system, which means that it could be located beneath buildings and structures without causing any impact. The fluid inside the pipes would meet certain specifications and would be tested on an annual basis to verify the fluid continues to meet the design specifications.

An alternative approach to installation of the geothermal system (or loop) in a clustered borehole field would be to incorporate the use of "energy piles" that would co-locate the geothermal loop piping with the foundation support piles that are installed under building foundations. The key benefit of the energy pile approach on sites with building foundations is that, subject to the number, quantity, and size of foundations being constructed to support each building, the geothermal loop would be installed as part of the foundation, and not as a separate installation or construction process. In most cases, the foundation shape or size is not altered; therefore, no additional drilling is required. This approach would substantially reduce the amount of soil that is generated as compared to the clustered borehole field approach.

Heating and Cooling Distribution to Buildings

Heating and cooling fluid from the CEP would be pumped to end-user buildings using closed-loop piping systems. For commercial buildings, separate loops would deliver hot and chilled fluid to heat exchangers and air handling systems that control and distribute conditioned air throughout the building as needed. For residential buildings, a single closed loop would be used to deliver geothermal-sourced fluids to fluid-to-air heat pumps located at individual living units. As closed loop systems, fluid supplied to the buildings for heating and cooling would be returned to the CEP and reused. Pipelines connecting the CEP to buildings would be installed along with other utilities beneath roadways.



SOURCE: MEP Associates, LLC, 2017.

FIGURE 16

Addendum 5 to the CP-HPS2 2010 FEIR

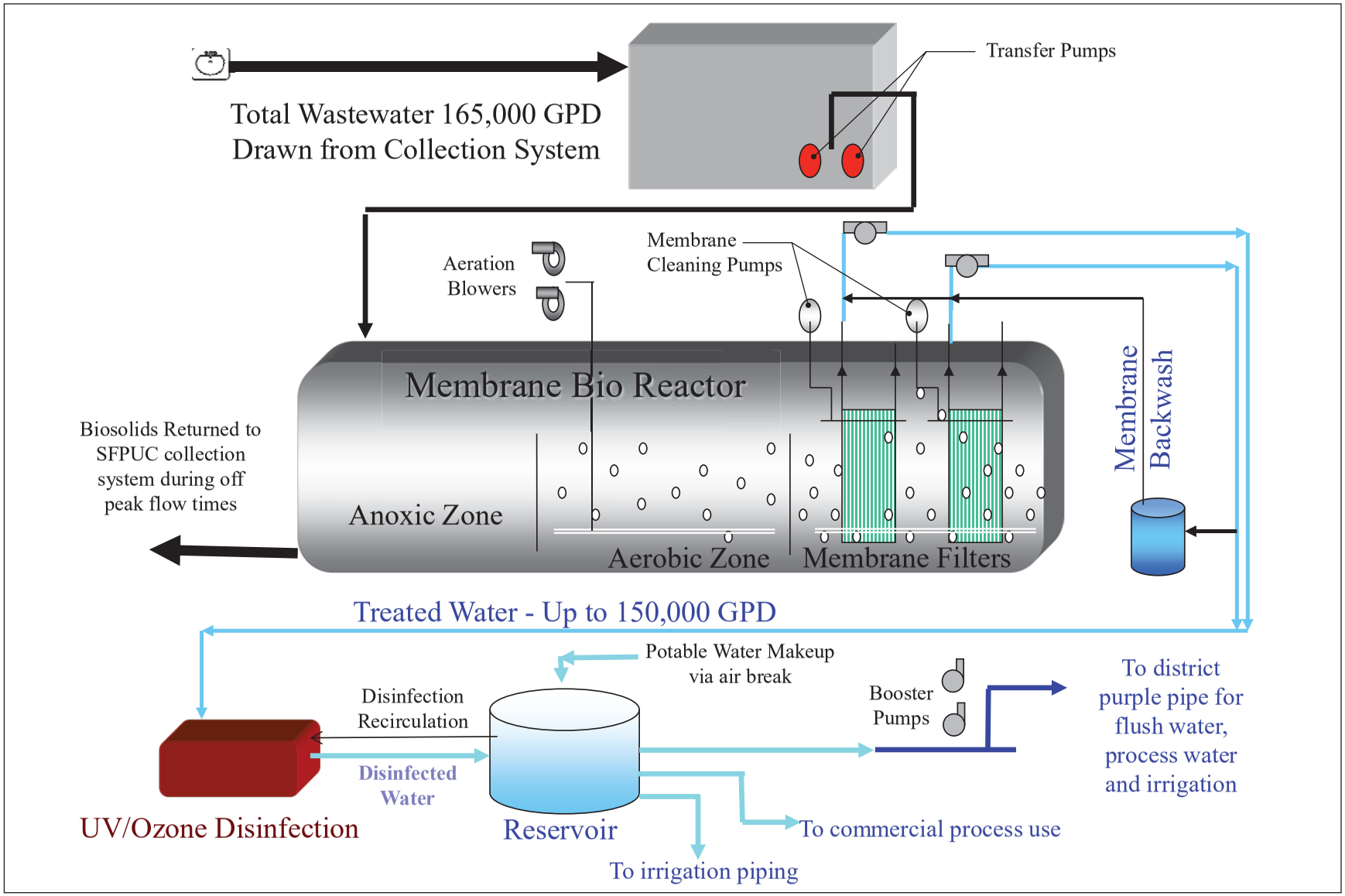
GEOTHERMAL BOREHOLE DETAILS

Recycled Water System

The 2018 Modified Project Variant would include a centralized recycled water system at HPS2, consisting of a dedicated 976,000 gpd central treatment plant and would serve both CP and HPS. The central treatment plant would divert wastewater from the sanitary sewer system for treatment using membrane bioreactor (MBR) technology to obtain a water quality appropriate for irrigation, toilet flushing and other nonpotable uses (i.e., recycled water). Rather than storing the solids (sludge) in a storage tank for periodic collection and transport off site for processing, as proposed for the treatment plants in the Utilities Variant 4, the solids removed from the water during treatment would be diverted back to the SFPUC sewer system.

A typical MBR facility schematic is included as Figure 17 (Distributed Water Reuse System Schematic). Wastewater processed for reuse would be diverted to a sewer collection pipe into the treatment facility. An MBR is divided into a number of steps that consist of:

- **Anoxic Treatment**—This first biological treatment step introduces the raw wastewater into a mixed anoxic, denitrifying bacteria chamber where nitrogen is removed and vented.
- **Aerobic Tank**—This second treatment step provides aerobic biological treatment where the wastewater undergoes carbonaceous oxidation and nitrification via a complete mix tank with air diffusers fed by blowers.
- **Membrane Filters**—This third step is a separate stage that includes ultrafiltration membrane filters that have a very fine pore size to remove virtually all particulate contaminants and produce a filtrate that is passed along for polishing. The membrane filters extract clear, treated water from the mixed liquor that is contained in the aeration tank via a membrane permeate pumping system. The filters are air scoured via air diffusers and can be backwashed in place.
- **UV/Ozone Disinfection**—Upon leaving the MBR, the filtered water can be disinfected further via units that subject the liquid contents to ultraviolet radiation and ozone treatment to oxidize any remaining compounds that impart color and/or odor in the treated water.
- **Storage Tanks**—The recycled water is stored in storage tanks. These storage tanks are kept nearly full at all times and a computer controller that operates the treatment system extracts wastewater from the wastewater collection pipeline for processing as the level in the storage tanks begins to drop. In addition, a continuous loop of water is taken from the tanks and reprocessed through the ultraviolet disinfection and ozone treatment to assure that the contents remain disinfected, clear, and odorless.
- **Water Return Distribution System**—A series of high-pressure pumps draws water from the storage tanks and distributes it via a piping network to the reuse district and irrigation and commercial uses that is labeled as “nonpotable” for reuse purposes.
- **Thermal Recovery System**—A thermal recovery system enables extraction of heat energy from the reclaimed water, which can be used to pre-heat domestic hot water systems along with space heating/cooling, etc. This option would be evaluated further when additional details are known about the HPS2 hot water systems and central plant configuration later in the detailed design process.



SOURCE: Natural Systems Utilities, 2017.

FIGURE 17

Addendum 5 to the CP-HPS2 2010 FEIR

DISTRIBUTED WATER REUSE SYSTEM SCHEMATIC

- **Odor Control Measures**—Odor control measures would be instituted to prevent emission of objectionable odors from the site of the recycled water facility. Treatment unit processes and raw sewage process tanks would be covered. An air collection system connected to the head space of tanks would be installed to keep a negative pressure on process tanks. Captured air would be conveyed to granular activated carbon air scrubbers. Scrubbed air would be discharged to the atmosphere. Scrubber monitoring and maintenance would be part of system operations. A more detailed description of odor control methods is provided in Addendum 5 Section II.B.7 (Air Quality), Impact AQ-8.

The MBR treatment system eliminates the need for secondary clarification and enables MBR facilities to operate at higher mixed-liquor-suspended-solids (MLSS) concentrations, which results in smaller process tanks and a smaller treatment plant footprint; less sludge production; a better ability to automate process control; and high-quality product water with low turbidity, bacteria, total suspended solids (TSS) and biochemical oxygen demand (BOD).

Preliminary design studies show that the recycled water facility, shown on Figure 18 (Location of Recycled Water Facility), could meet over 100 percent of nonpotable water demand through the first three sub-phases of development at HPS2 as determined by the SFPUC calculator. Provisions would be made to have potable makeup and supplemental supply if needed to meet peak or extraordinary demands. Connections to the sanitary collection system would be provided in the event the recycled water facility needs to be bypassed.

Based on current projected water demands, the recommended treatment system capacity for the first three sub-phases at HPS2 would be 150,000 gpd, eventually and potentially expanding to a final treatment system capacity of 976,000 gpd at full build-out. Full build-out includes provision for adding neighboring demands to the district. If a connection would be provided to CP, recycled water would be transported from the HPS2 plant to CP via a pipe attached to the bottom of the Yosemite Slough Bridge.

The 976,000 gpd treatment plant would be constructed in phases as one facility, starting with 150,000 gpd and then would be expanded incrementally as demand dictates. Final sizing would depend on confirmed phasing projections and detailed design calculations based on seasonal cooling demand estimates.

For each 150,000 gpd of recycled water produced, approximately 165,000 gpd of raw wastewater would be diverted from the SFPUC sewer system to the plant, which returns approximately 15,000 gpd of undigested biosolids to the sewer system.

The footprint area requirements for the 150,000 to 976,000 gpd water reuse facility would range from 10,000 to 82,000 sf, depending on the phase, actual capacity and a number of factors including available tank depth, membrane type, and final storage area requirements among other area constraints/considerations. A building containing blowers, pumps, treatment systems, and process

SOURCE: FivePoint, 2018.

FIGURE 18 Addendum 5 to the CP-HPS2 2010 FEIR

LOCATION OF RECYCLED WATER FACILITY

controls would take up about one third of that footprint. Outside the building would be below-grade equalization tanks, below-grade sludge holding tanks, and above-grade reuse water tanks. The building would require 17-foot ceilings to accommodate necessary equipment, which would result in a building of approximately 20 feet to 35 feet in height.

The recycled water would be pressurized and distributed to the demand district through a network of recycled water main lines that are connected to individual buildings. At present, planned uses include irrigation and toilet flush water. Commercial process water is also being contemplated. Actual requirements for commercial users may vary depending on the user, but uses such as specialized cooling, cleaning and washing, additional irrigation, and office uses are possible, either directly or via additional point-of-use treatment. It is possible that there would be a direct off-take to larger-scale irrigation as well.

Noise from equipment inside the recycled water treatment building would result in exterior noise levels that are at or below existing ambient conditions in the immediate vicinity of this building. The recycled water treatment building would be required to comply with Noise Ordinance Section 2909(b), which limits increases in noise levels at adjacent property lines to less than 8 dBA, and with Noise Ordinance Section 2909(d), which would require control of noise so that interior noise levels at the nearest residential receptor are less than 45 dBA.

Construction of the wastewater (or recycled water) treatment plant would begin when demand for recycled water reaches 150,000 gpd (currently projected at the beginning of Sub-phase HP-02). Prior to the operation of the recycled water facility, the low-pressure water system would supply water for irrigation and other nonpotable uses. Before the treatment plant is connected to the recycled water distribution system, the low-pressure water supply would be disconnected (via an air gap).

If the on-site recycled water system is not constructed, the recycled water lines would be interconnected and charged with potable water until SFPUC provides a source for recycled water to the project site. At this time, there are no long-term capital plans to provide such a source.

Solar Photovoltaic System and Battery Storage Systems

The utilities network would incorporate building-scale solar PV systems to generate renewable energy that could supplement SFPUC's power supply to the site. The utilities network would also include a building-scale and utility-scale battery storage system.

Solar Photovoltaic (PV) System

Solar PV systems would be installed on newly constructed buildings to maximize on-site renewable power output. Power produced by the PV cells would be delivered either directly to the building or directly to the local utility (SFPUC) distribution grid at street level utilizing industry standard bi-directional smart meters.

The solar PV system across HPS2 would have a 10.5- to 16.5-megawatt (MW) generating capacity. Figure 19 (Potential Areas of Solar Installation) depicts the aerial extent of the proposed solar PV arrays.

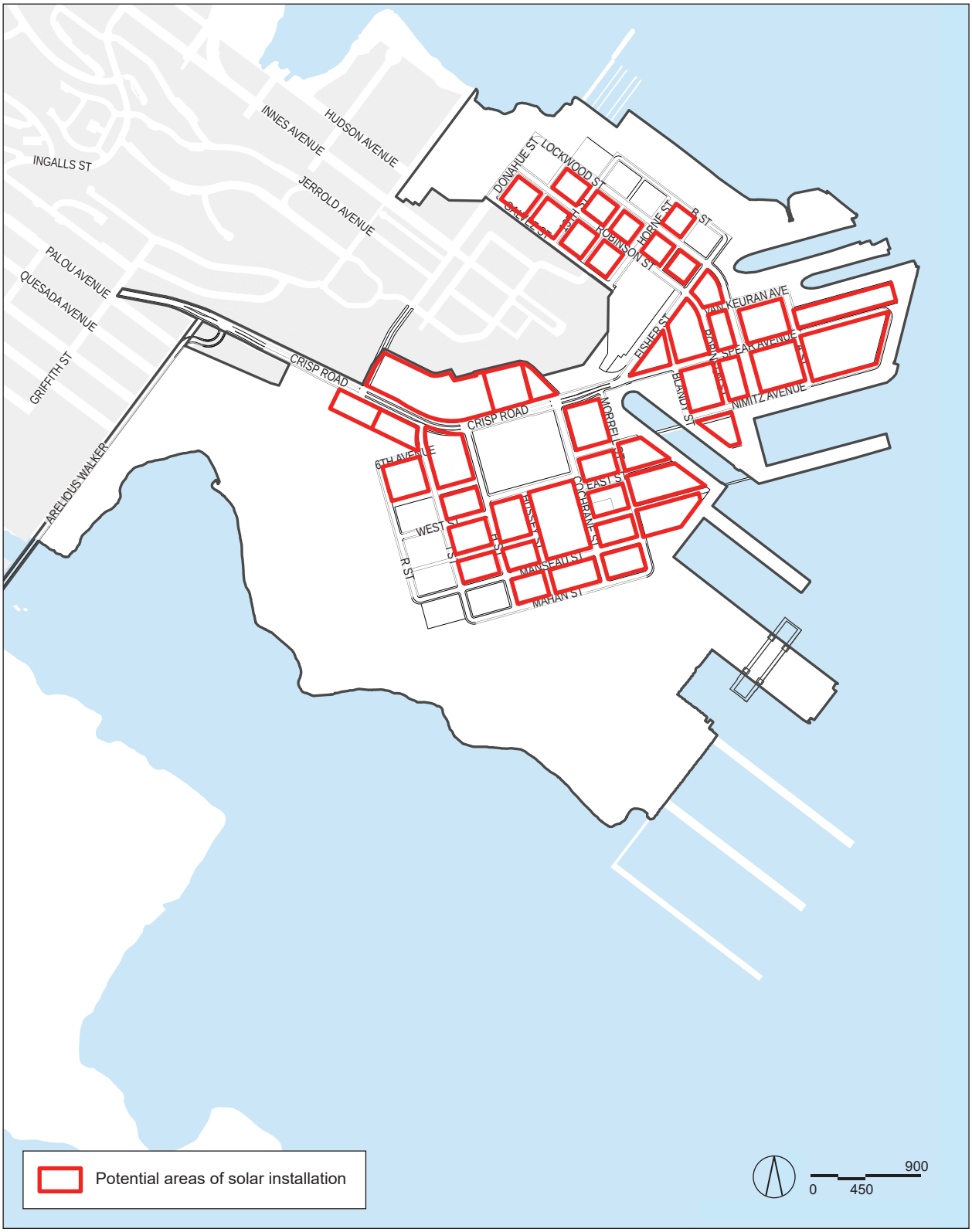
Solar panels would be installed in select areas where vertical PV elements could be integrated within building envelopes as a replacement for conventional building materials. These elements would be developed as buildings become available. The PV system would consist of mounted solar PV panels/tables, solar inverters, and cabling connecting the solar panels to inverters, batteries, and electric conduits in roadways. General building heights within the HPS2 site are anticipated to be between 40 feet and 120 feet high, with the exception of two towers that would be 270 feet and 370 feet tall, respectively. Each solar PV panel would be approximately 3 feet by 5 feet and depending on spacing and planning to optimize sunlight capture, may be grouped together as one larger "table" consisting of multiple panels. Panels/tables may be installed to be stationary and, when installed on rooftops, would be located within a couple feet above the rooftop surface or have the ability to tilt, in which case the panel tables may be up to 5 feet high as needed to optimize sunlight capture.

Photovoltaic arrays have minimal maintenance requirements and zero emissions associated with their operation. The panels would require occasional cleaning during their 20- to 30-year lifespan to ensure they continue to operate at optimal efficiency. The electronic components of the inverters would also need to be replaced during that lifespan; however, this would be infrequent and not cause any impacts to the panels and buildings.

Building-Scale and Utility-Scale Battery Storage System

Building-scale and utility-scale battery storage would be a component of the utility electricity systems to store surplus energy generated from the solar PV systems. The battery storage systems would enable better management of electricity loads during peak periods when electricity is typically most expensive.[16] Specifically, surplus energy stored in the batteries would be discharged into the network in lieu of importing electricity from the SFPUC grid. The battery storage systems could also provide backup power for critical customer loads at the Shipyard. In addition to demand reduction and limited backup power for HPS2 tenants, battery storage is increasingly being used to provide grid services to distribution utilities and transmission operators. The role of battery storage is rapidly evolving and future uses may include participating in demand response programs, providing ancillary services, such as frequency regulation and/or voltage support, and smoothing renewable generation to ease pressure on the grid. These services have traditionally been provided by central generators. However, distributed battery storage is increasingly being seen as a viable alternative provider of these services. In the initial phases of the project, advanced lithium-ion batteries would be used for energy storage due to their cost-effectiveness and space efficiency. Other battery technologies (e.g., reduction–oxidation flow batteries, molten salt batteries, and metal-air batteries) may be considered in future phases.

[16] Battery storage may occur "in front of the meter" and/or "behind the meter" depending on final design of the utility grid and integration with SFPUC's distribution management plan.



SOURCE: FivePoint, 2018.

FIGURE 19

Addendum 5 to the CP-HPS2 2010 FEIR

POTENTIAL AREAS OF HPS2 SOLAR INSTALLATION

The battery storage systems would be located at central plants enclosed in parking structures (discussed above) and in other buildings. Battery systems would consist of numerous battery cell "blocks," typically 10-by-10-foot cubes that may be wired in series, or parallel for increased voltage and amp hours. The blocks would have the ability to charge, store, and discharge energy in a self-sufficient manner. Other components of the battery storage system would include a power conditioning system for conversion between DC and AC power, control cabinets with computer and monitoring equipment, a HVAC system to maintain safe ambient operating temperature conditions, and a fire suppression system. Fire suppression equipment may include sprinklers or flame-retardant chemical dispersants.

I.C.2 CP Proposed Modifications

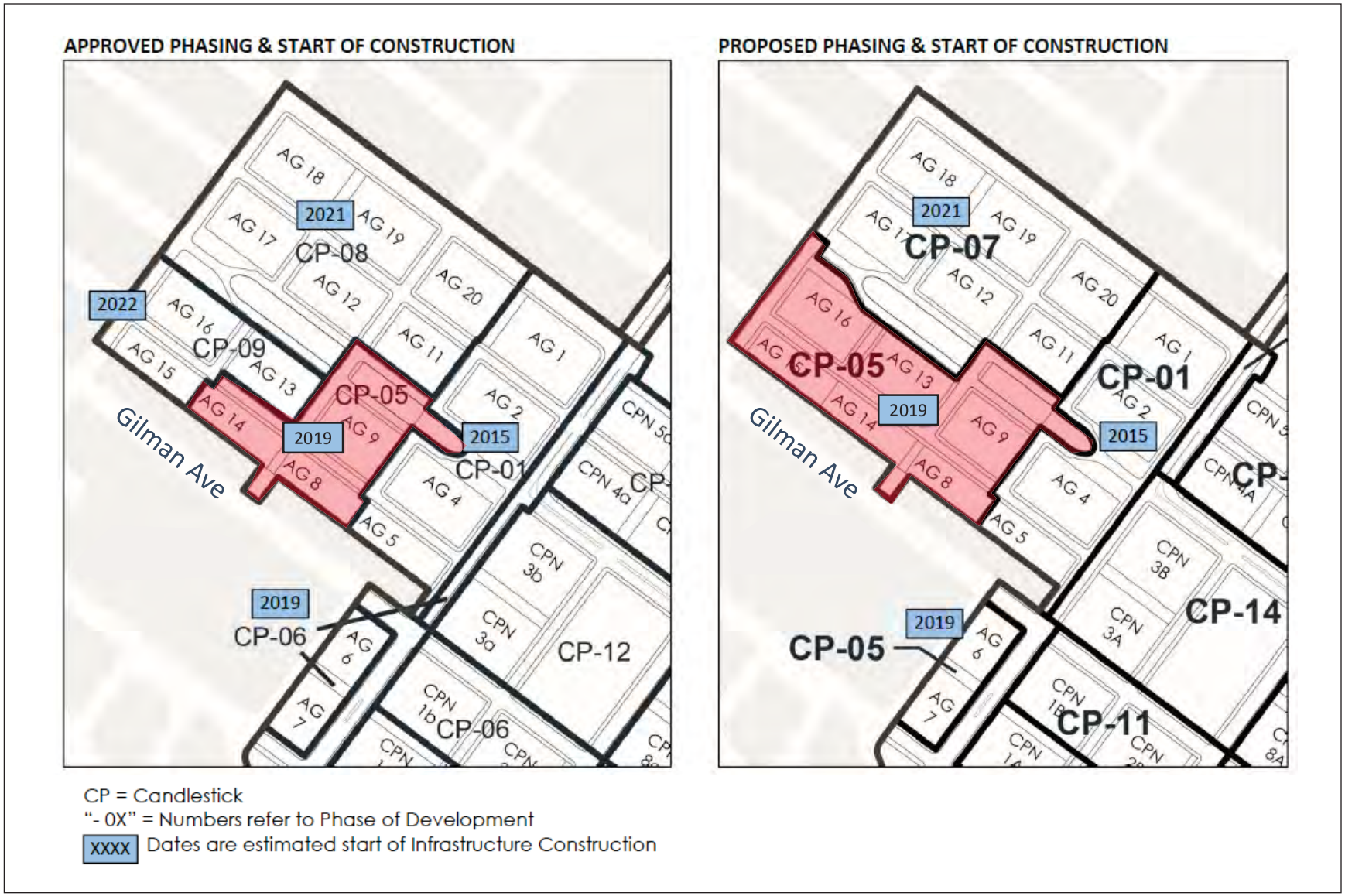
Land Use Plan

The 2018 Modified Project Variant would result in a total of 7,218 units at CP, which is 632 fewer units than assumed in the 2010 Project; however, the overall development program assumes 10,500 units between CP and HPS2, although an additional 172 units that were previously approved for HPS1 are assumed in HPS2, resulting in a total of 10,672 units. All other components of the development program remain the same as assumed in the 2010 Project (refer to Appendix A Table A-2); however, the configuration of the land uses and heights would follow the land use plan evaluated in Addendum 4 and approved in the 2016 CP D4D document by OCII and San Francisco Planning Commission.

The modifications associated with CP also include an updated phasing plan, which would re-order CP Major Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction and modify the boundary of CP-05.[17] Proposed changes to the CP-05 boundary are shown in Figure 20 (CP-05 Boundary and Phasing Modifications).The Jamestown Parcel, which is approximately 9.4 acres (2010 FEIR Table II-4, p. II-15), would be removed from the CP project boundary. Consequently, the Jamestown Parcel would be shifted from Zone 1 (the Candlestick Point Activity Node) to Zone 2 of the Bayview Hunters Point Redevelopment Plan Area (BVHP Project Area B) of the Bayview Hunters Point Redevelopment Plan (BVHP Plan).

The Jamestown Parcel was originally included in the BVHP Plan in 2006. In 2010, the BVHP Plan was amended to allow the development of the CP component of the CP-HPS2 project. The 2010 BVHP Plan amendments established two zones (Zone 1 and Zone 2) within the BVHP Project Area B of the BVHP Plan. Under the 2010 Plan amendments, the Jamestown Parcel was included within Zone 1. The 2010 Project proposed 325 residential units at Density Ranges I and II, with a maximum height of up to 65 feet (Density I) and 85 feet (Density II) for the Jamestown Parcel (2010 Project EIR, p. II-16).

[17] The Sub-phase CP-05 boundary has been expanded from three development blocks to eight development blocks, which allows for all 256 Alice Griffith Replacement Units and the Community Facility Lot to remain designated with the first major phase.



SOURCE: FivePoint, 2018

FIGURE 20

Addendum 5 to the CP-HPS2 2010 FEIR

CP-05 BOUNDARY AND PHASING MODIFICATIONS

Following approval of the proposed shift of the Jamestown Parcel from Zone 1 to Zone 2 of the BVHP Project Area B, this parcel would no longer be subject to the land use controls under the BVHP Plan, which apply only in Zone 1. Zone 2 is regulated by the San Francisco Planning Code. Consequently, the Jamestown Parcel zoning would revert to the underlying zoning of RH-2 District (Residential, House, Two-family). Under the Planning Code, up to one unit per 1,500 sf of lot area is permitted in the RH-2 District with Conditional Use authorization. The 2006 BVHP height limit of 40 feet would be reassigned to the Jamestown Parcel. Given these density and height limits and other Planning Code site development standards (e.g., open space, setbacks, rear yard, and parking), it is reasonable to assume that a conservative estimate of 200 units could be developed on the Jamestown Parcel under Planning Code requirements.

I.D HPS2 Construction Activities

I.D.1 Abatement and Demolition

Proposed demolition activities at HPS2 would include removal of structures and infrastructure to allow the construction of the new infrastructure. Demolition of existing structures within the Project site would occur from 2014 to 2034. The total quantity of construction debris generated by the removal of structures, roads, and infrastructure under the 2018 Modified Project Variant is estimated to remain approximately the same as with the approved plan. The 2010 CP-HPS2 Project called for removal of Piers B and C, removal of the timber cribbing associated with Dry Docks 5, 6, and 7,[18] and demolishing of five buildings due to radiological concerns, prior to the transfer of HPS2 to the City. The Navy has since completed these activities.

The Project Sponsor would demolish all other buildings proposed for removal. As necessary, abatement of hazardous building materials, such as lead and asbestos, would occur in buildings prior to demolition. Existing infrastructure would be demolished and removed or cut and capped. The Navy would remove most stormwater and sewer lines prior to transfer. The Project Sponsor would remove existing surface improvements such as asphalt and concrete pavement, concrete sidewalk and other surface improvements.

I.D.2 Site Preparation and Earthwork/Grading

Earthwork and Grading

For the 2018 Modified Project Variant, total quantity of excavated soil at the HPS2 site is estimated at approximately 100,000 cubic yards (cy) (as compared to 82,500 cy assumed for 2010 Project), with the increase primarily due to additional utility trenching, installation of the geothermal boreholes, and more refined information regarding construction activities. Excavation associated with the geothermal boreholes would result in approximately 12,250 cy of soil.

[18] Figures II-2 and II-19 of the 2010 FEIR depict the boundaries of Piers B and C, and Dry Docks 5, 6, and 7.

As with the 2010 Project, the 2018 Modified Project Variant would require up to 2,546,300 cy of imported fill for the developed areas and open space areas. Of this, up to 10,600 cy (590 dump truck loads) of sand would be imported to use as fill at the base of the trenches. Imported fill dirt and sand would be screened for contaminants in accordance with soil import criteria that would be developed for the project to comply with the regulatory requirements that would be applicable to the site through the CERCLA process and other local, state, and federal regulations.

In addition, locally excavated and imported fill would be used to add 5 to 10 feet of additional fill over existing ground surface, raising the site grade such that finished floor elevations would be 5.5 feet above the Base Flood Elevation (BFE) (as compared to 3.5 feet as analyzed by the Project in the 2010 FEIR) to complete surcharging and ground improvement, to elevate the site in compliance with new requirements for sea level rise (SLR) planning, and to provide the SFPUC with required freeboard and cover for utility systems.

Shoreline Protection Improvements and Sea-Level Rise Adaptation

Since certification of the 2010 FEIR, global sea levels have continued rising due to climate change, and they are expected to continue to rise at an accelerating rate for the foreseeable future. In December 2017, Moffatt and Nichol completed a supplement[19] to their 2009 project specific SLR study (Moffatt and Nichol 2009)[20] to provide updates to SLR projections, applicable policies, and design criteria for the HPS2 project that have occurred since 2010, when the 2010 FEIR, Infrastructure Master Plan, and Open Space and Parks Plan were prepared. The 2017 supplement reflects revised SLR projections from the National Research Council (NRC),[21] and subsequent policies and updated guidance from the California Ocean Protection Council, California Coastal Commission, San Francisco Bay Conservation and Development Commission (BCDC), and the City of San Francisco Planning Department, as they apply to the design and construction of the 2018 Modified Project Variant.

Under the revised design requirements for SLR, the HPS2 site would be graded such that finished floor elevations are a minimum of 5.5 feet above the base flood elevation (BFE), 2 feet higher than the 2010 FEIR requirement that finished floor elevations be 3.5 feet above BFE, to accommodate NRC's future SLR projections for the end of the century. In addition, to protect the perimeter of the HPS2 site and adjacent open space (shoreline areas), which have higher adaptive capacity and resilience compared to development areas, shoreline and public access improvements would be designed to allow for future SLR of 24 inches above the BFE, rather than the 16 inches required by the 2010 FEIR, to account for the NRC's mid-century SLR projection along with anticipated wave run-up along the shoreline.

---

[19] Moffatt & Nichol, *Memorandum: Sea Level Rise Supplement, Hunters Point Shipyard Development Project*, December 7, 2017.
[20] Moffatt & Nichol, *Hunters Point Shoreline Structures Assessment*, October 2009.
[21] National Research Council, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, Washington, DC: The National Academies Press, 2012. Available at https://www.nap.edu/catalog/13389/sea-level-rise-for-the-coasts-of-california-oregon-and-washington, accessed November 30, 2017.

Geotechnical Stabilization

Site preparation at HPS2 would include geotechnical treatments to address the potential hazard of liquefaction, settlement, and lateral spreading that may occur during a major earthquake. Where shallow foundations for low-rise and mid-rise structures would be underlain by artificial fill and the estimated settlement would be small, geotechnical treatment could employ a combination of removal and recompaction with the placement of geogrid[22] beneath structures to help distribute differential settlement that might occur.

In areas of the HPS2 site containing loose artificial fill with a greater risk of liquefaction and settlement, a range of ground improvement techniques could be used to densify the fill and reduce seismically induced settlement risk, including but not limited to Deep Dynamic Compaction (DDC),[23] static soil surcharging, Drilled Displacement Columns, Vibro-Compaction, Vibro-Densification, Deep Soil Mixing (DSM), Stone Columns, and Grout Columns. The use of DDC is identified as a potential solution to address seismically induced ground failure related to liquefaction, lateral spreading, and/or settlement in mitigation measure MM GE-5a of the 2010 FEIR. The use of DDC combined with static soil surcharging has now been advanced as likely ground improvement techniques at HPS2 and CP, consistent with mitigation measure MM GE-5a and, therefore, is evaluated in Addendum 5.

The performance of a full-scale test program (ENGEO 2017)[24] demonstrated that DDC is an appropriate method for densifying the upper 20 to 30 feet of artificial fill across portions of the CP site to mitigate liquefaction risks. In particular, DDC treats the fill sufficiently to allow mid-rise construction to be founded on a shallow foundation system as an alternative to deep foundation systems, which derive support on deeper competent material. In areas where soft young bay mud underlies the fill material, static soil surcharging would be implemented following DDC to provide additional ground improvement that would result in reduced settlement potential beneath building foundations. Static soil surcharging is accomplished by importing soil and placing it on the footprint of a proposed building location in a tall pile (surcharge pile) and leaving the surcharge pile in place for an extended period of time (typically 12 to 24 months depending on local conditions). The soil beneath the surcharge pile compresses under the weight of the pile and results in a stronger load-bearing soil profile. Wick drains are typically installed in the area of the surcharge pile to allow for groundwater to more easily redistribute throughout the soil as the soil becomes compressed. A subsequent technical memo[25] recommends that findings from the CP study could be used as

[22] Geogrids are synthetic fabrics (fiberglass, polyester, treated steel, etc.) formed into nets with openings more than ¼ inch in size to allow the fabric to interlock with surrounding soil, rock, and other below-ground-level materials and to function as reinforcement.
[23] DDC utilizes impact energy from a large weight free falling from a significant height to densify the ground. The weight is repeatedly dropped in a specific grid pattern at a defined drop height. At impact with the ground, energy is transmitted at depth to densify loose material.
[24] ENGEO, Inc., *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017.
[25] ENGEO, Inc., *Technical Memorandum to Daniel Hansen from Leroy Chan: Potential Constraints on Implementation of Deep Dynamic Compaction (DDC)*, December 14, 2017; revised December 21, 2017.

reference for HPS2, but that site-specific studies should be performed to determine the efficacy of DDC and static soil surcharging for mitigating liquefaction and settlement risks at HPS2.

I.D.3 Construction Methods and Equipment

Borehole Installation

The geothermal boreholes would be located in clusters throughout HPS2 where they could be installed without conflicting with other uses of the site and in areas with minimal soil contamination or other environmental restrictions to the extent possible. As noted previously in the section describing the Geothermal HVAC System, approximately 2,800 boreholes would be installed. Each borehole would be approximately 6 inches in diameter and drilled to a depth of approximately 600 feet. The final location of boreholes may be adjusted as necessary based on further-refined engineering and design plans. The analysis in Addendum 5 already considers these location adjustments as the same construction methods and mitigation measures would apply.

Installation of the boreholes would generate approximately 12,250 cy of excavated soil. The excavated soil would be retained on site, as much as practical, for the purposes of raising the grade (see Section I.D.2). The excavated soil would be managed on site in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) land use and activity restrictions that apply to the specific location where the soil is generated (see Section II.B.10 [Hazards and Hazardous Materials]). Specific techniques for installing the boreholes are discussed below.

Multiple drilling rigs would be operational at the site at one time, depending on the final construction phasing and the need to avoid conflicts with other contractors on site. Each rig should be capable of completing two boreholes per day. Drilling techniques are summarized here for noncontaminated areas and for contaminated areas, in case such areas are included in the final system design. A cross-section of a typical geothermal well is included in Figure 16, showing construction details.

Six-inch-diameter boreholes would be drilled through unconsolidated material and into bedrock. During the drilling process, a bentonite clay and water mixture (drilling fluid) would be used to form a filter cake on the borehole wall. This would prevent the borehole from collapsing. Once the borehole is drilled to the design depth, the geothermal heat exchanger and grout pipe would be installed and pressure tested. Following pressure testing of geothermal heat exchanger, the borehole would be grouted in a continuous operation from the bottom to the top, until the grout flows from the borehole at the ground surface. If grout backfill settling occurs within the first 12 hours, then grout would be topped off to ground surface.

Although the boreholes are proposed in areas that avoid known contamination zones, in the event contaminated soil is encountered during drilling, a 7-inch-diameter permanent steel casing would be advanced and cemented in place to seal off and isolate the potentially contaminated soil and groundwater zones. The steel casing would extend from ground surface through the unconsolidated

material to first encountered bedrock. Following placement of the casing, the drill stem and bits would be decontaminated and the boring would be advanced from the base of the casing to its target depth using a 6-inch-diameter mud rotary/polycrystalline diamond compact (PDC) drill bit. Soil and rock cuttings and drilling fluid would be collected, contained, and managed in a controlled manner. Soil and rock cuttings may be used elsewhere on the development site in accordance with the Risk Management Plan. Drilling fluids (around 150 gallons per boring) would be contained and disposed of off site.

Once the boring has reached its design depth, the geothermal heat exchanger piping and tremie pipe (grout pipe) are installed. The geothermal heat exchanger piping would be pressure tested and, upon successful completion of the testing, the hole would be grouted to the surface with a cement-bentonite slurry.

Trenching

Approximately 30,800 linear feet of trenching would be needed along roadways for the installation of the sanitary sewer and utility system. Trenches would vary in dimensions, netting approximately 16,600 cy (924 dump truck loads) of spoils, which would be handled in accordance with the CERCLA environmental restrictions that apply to the specific location where the soil is generated (see Section II.B.10 [Hazards and Hazardous Materials]), adopted mitigation measures, and any additionally applicable federal, state, and local regulatory requirements. It is anticipated that a majority of the spoils would be managed on site by placing the spoils either back in the trench as backfill or elsewhere on the site in accordance with the regulatory requirements. Any spoils that cannot be reused on site would be disposed off site in accordance with regulatory requirements for land disposal. Approximately 10,600 cy (590 dump truck loads) of sand would be imported to use as fill at the base of the trenches. Import backfill sand would be screened for contaminants in accordance with the soil import criteria that would be developed for the project to comply with the CERCLA environmental restrictions that would be applicable to the site and other federal, state, and local regulations.

Water Taxi

Infrastructure associated with the water taxi would involve construction activities related to the floating dock platform and castings, the access ramp and landing platform, guide piles, and safety rails that would be manufactured and fabricated off site. These items would be delivered to the site for final assembly.

On-site work would take approximately 6 weeks. This work would consist of (1) placement of the concrete or steel floating platform and castings and the access ramp and landing platform; (2) placement of rebar and concrete form work; (3) form up and pouring of the guide pile pads; (4) drilling and grouting of the hold down bolts; (5) general trades, including crane operation, rigging, electrical, carpentry, and steel; (6) final assembly of the components; and (7) installation of the waiting area. It would be necessary to demolish short sections of the existing curb at the edge of the dry dock to accommodate the castings and ramp landing.

It is expected that the majority of the construction work associated with the water taxi would utilize conventional tools and equipment. A mobile crane would be required to unload and install the main components of the dock system, specifically lifting the gangway and placing the guide piles.

During construction, it would also be necessary to provide a floating work platform within the water so that workers could gain access beneath the ramp to install the fastenings. Additionally, a small workboat would be used to move equipment and materials within the water. The workboat would remain at the site for the duration of construction of the water taxi elements.

Donahue Street Extension

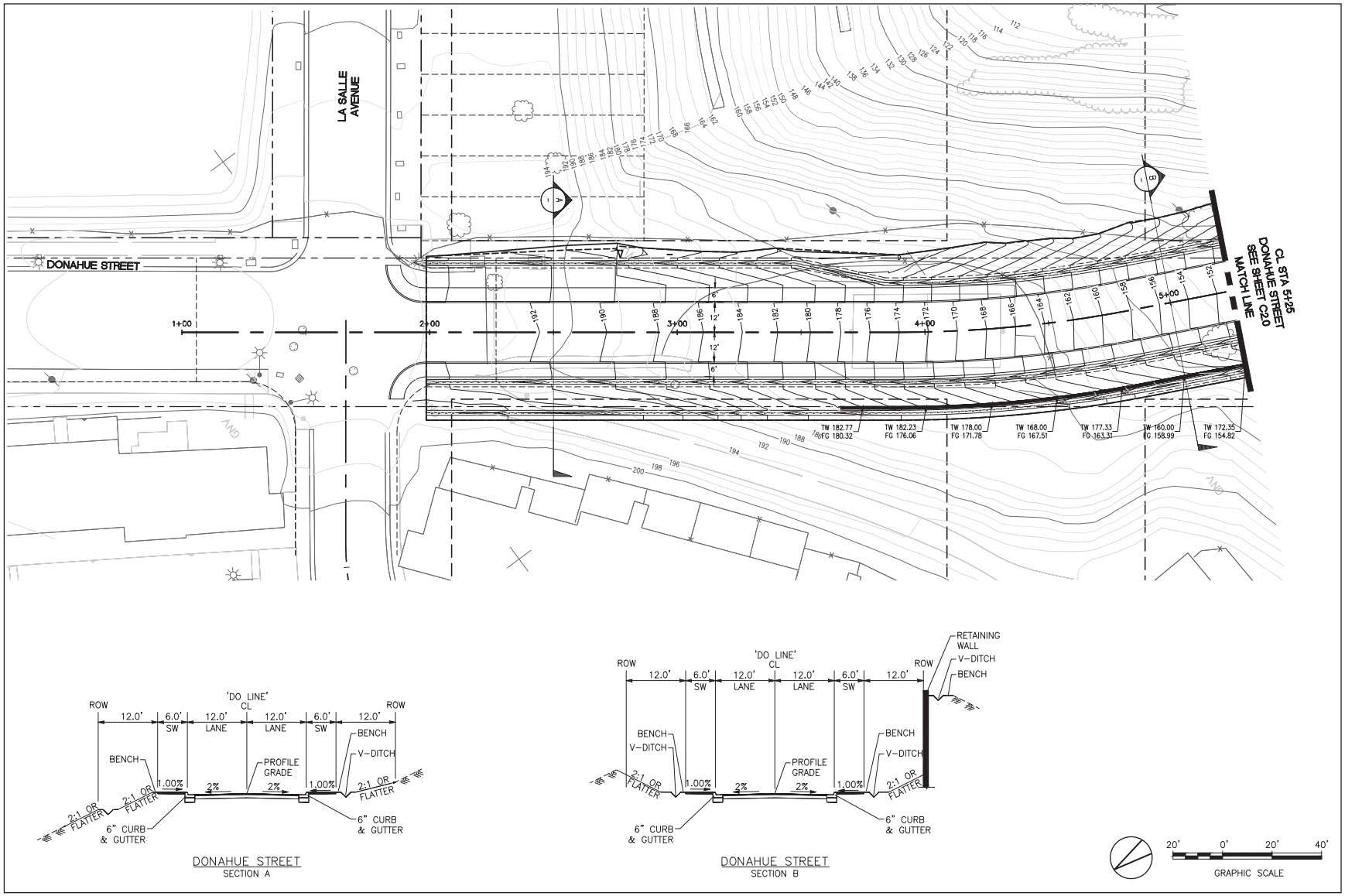
The 2018 Modified Project Variant would extend Donahue Street from La Salle Avenue/Kirkwood Avenue southwards to Crisp Road, pending dedication of land from Mariners Village to the City and determination that construction of the roadway extension is financially feasible. The length of the extension would be approximately 750 feet. The width of the right-of-way would be 60 feet, made up of two 12-foot-wide travel lanes, two 6-foot-wide sidewalks, and two 12-foot-wide grades accommodating the cut into the hillside. See Figure 21 (Donahue Street Extension—Conceptual Grading Plan [1 of 2]) and Figure 22 (Donahue Street Extension—Conceptual Grading Plan [2 of 2]). Other street infrastructure and utilities would be provided, including:

- Vertical curbs and gutters;
- Storm drain systems—12-inch and 18-inch high-density polyethylene [HDPE] pipe, v-ditch drains and inlets, curb inlets, manholes, bioretention, and sub-drains);
- Power—Single-phase power, 1.5-inch street light conduit, 17x30-inch SFPUC box, street light pull box, and street light poles, foundations, and luminaires;
- Landscaping—75x24-inch box trees, soil prep and finish grading, mulch topdressing, import soil, 2,200 1-gallon shrubs, and irrigation; and
- Potable Water Infrastructure—12-inch and 16-inch ductile iron pipe and associated appurtenances.

The road would slope downwards from a ground level of approximately 194 feet above sea level at La Salle Avenue to a ground level of approximately 106 feet above sea level at Crisp Road. A series of retaining walls extending a length of approximately 410 feet would be constructed to facilitate the road. The height of the retaining walls would vary from approximately 0.5 foot to 20 feet.

Construction activities associated with the road extension would include:

- Implementing stormwater pollution prevention and erosion control measures;
- Clearing all vegetation;
- Rough grading;
- Earthworks (excavation and backfill), retaining wall construction and fine grading;

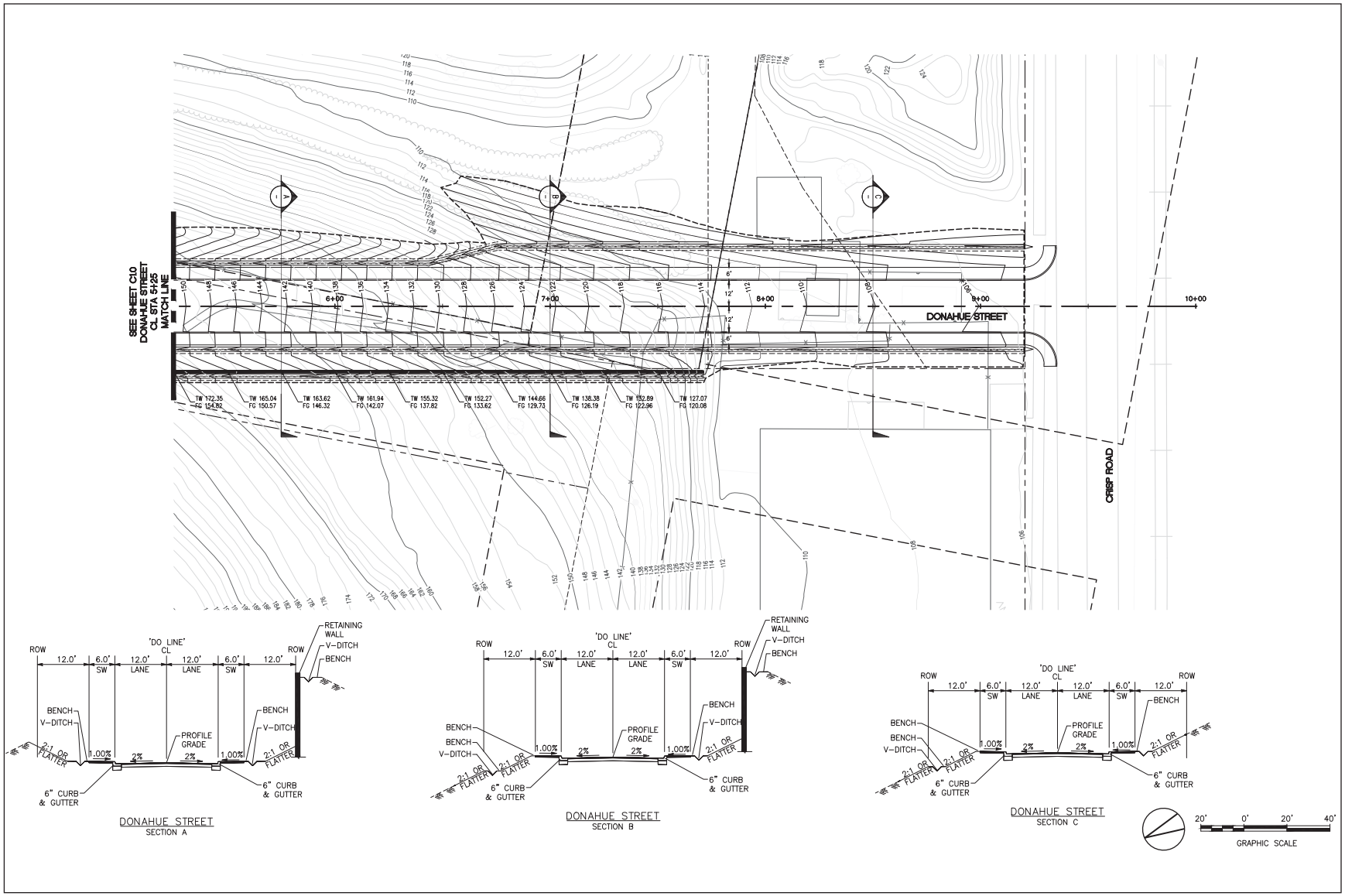


SOURCE: BFK, 2016.

FIGURE 21

Addendum 5 to the CP-HPS2 2010 FEIR

DONAHUE STREET EXTENSION — CONCEPTUAL GRADING PLAN [1 OF 2]



SOURCE: BFK, 2016.

FIGURE 22

Addendum 5 to the CP-HPS2 2010 FEIR

DONAHUE STREET EXTENSION — CONCEPTUAL GRADING PLAN [2 OF 2]

- Construction of 3 inches of asphalt concrete over 8 inches of road base; and
- Utility installation.

Pedestrian Bridges

Design and construction of both bridges at Dry Dock 4 would occur in a manner that is consistent with the Secretary of the Interior's Standards, as further discussed and described in Addendum 5 Section II.B.9 (Cultural Resources).

I.E CP and HPS2 Construction Phasing Plan

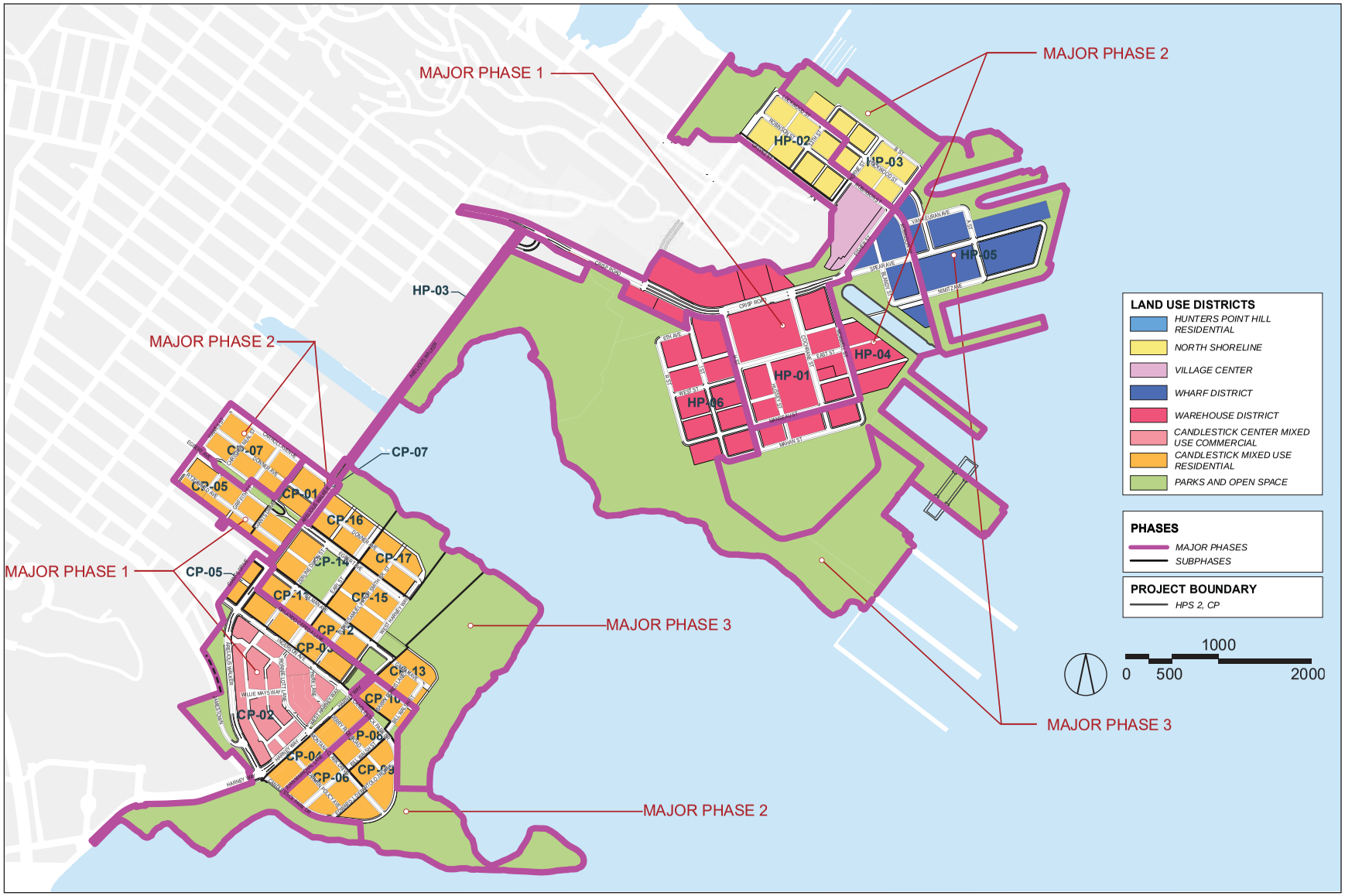
I.E.1 Amendments to Construction and Phasing Plan

The 2010 FEIR identified four major phases of development at both CP and HPS2. Each variant in the 2010 FEIR had a slightly different phasing and construction schedule. Addendum 1 also analyzed an updated phasing and construction schedule based on the Housing/R&D Variant (Variant 2A), which was approved with the Candlestick Point Major Phase 1 application. Addendum 5 proposes a new phasing and construction plan, which is described below. The construction schedule associated with the 2018 Modified Project Variant proposes that construction would begin later (in 2014, rather than 2011, as envisioned in the 2010 FEIR) and concludes later (in 2034, rather than 2031, as envisioned in the 2010 FEIR). Construction would continue to occur over a 21-year period.

HPS2 Phasing Plan

The HPS2 phasing plan under the 2018 Modified Project Variant would update the phasing and construction schedule for HPS2 by reducing the number of major phases from four to three, although it is anticipated that the three major phase applications would be submitted at the same time. Figure 23 (Construction Schedule) shows the delineation of the three major phases (1 through 3) and its six sub-phases (HP-1 through HP-06). Development would commence under Major Phase 1 with Sub-phases HP-01 and HP-02, followed by Major Phase 2 with Sub-phases HP-03 and HP-04, and Major Phase 3 with Sub-phases HP-05 and HP-06. Development of a sub-phase may begin before the development of a previous sub-phase is complete.

Phasing changes under the 2018 Modified Project Variant would distribute sub-phase development more evenly across the North Shoreline District and the Warehouse District than the previously approved phasing plan. This would allow for the concurrent development of a mix of uses, as well as the construction of infrastructure and circulation connections between the northern and southern portions of the Shipyard in the first and second sub-phases. By reducing the number of major phases and increasing the area of each sub-phase, development at the Shipyard would be accelerated.



SOURCE: FivePoint, 2018.

FIGURE 23

Addendum 5 to the CP-HPS2 2010 FEIR

CONSTRUCTION SCHEDULE

Sub-phase HP-01 includes the improvement of Fisher Street and Crisp Road, providing an infrastructure and transportation link between the northern and southern portions of the Shipyard. Sub-phase HP-01 also includes development blocks north and south of Crisp Road, as well as Buildings 813 and potentially Buildings 411 and 351, two existing buildings that would anchor the first sub-phase of development at the Shipyard. Sub-phase HP-02 includes development blocks along Robinson Street in the North Shoreline District and Sub-phase HP-03 includes the balance of development in that District. Sub-phase HP-04 includes the rehabilitation of Dry Dock 4 and the development of the surrounding blocks. Sub-phase HP-05 includes the development blocks in the Wharf District. Sub-phase HP-06 includes the balance of development in the southern portion of the Shipyard (Warehouse District).

CP Phasing Plan

The CP phasing plan under the 2018 Modified Project Variant would update the phasing and construction schedule for CP by reducing the number of major phases from four to three, consolidating Sub-phases CP-05 and CP-09 to advance the development of the Alice Griffith neighborhood and renumbering and resequencing the rest of the CP sub-phases to allow development to advance in an easterly rather than northern direction. The renumbering and resequencing reduces the number of sub-phases from 18 to 17.

I.F Project Approvals

The 2018 approvals required to implement the 2018 Modified Project Variant as addressed in Addendum 5 include the following:

	Project Approval	*Agency*
1	BVHP & HPS Redevelopment Plan Amendments	OCII Commission; Planning Commission; Board of Supervisors
2	HPS1 and CP-HPS2 Disposition & Development Agreement Amendments (including Phasing Plan & Schedule of Performance)	OCII Commission; Oversight Board; California Department of Finance
3	HPS2 D4D Amendments	OCII Commission; Planning Commission; Board of Supervisors
4	HPS2 Streetscape Master Plan & Signage Master Plan	OCII Commission; Art Commission; Board of Supervisors
5	Major Phases 1HP-3HP Application for Major Phases 1 through 3, submitted concurrently	OCII Commission
6	Sub-phases HP-01 to HP-06 Application(s)	OCII Commission
7	CP-HPS2 Transportation Plan	OCII Commission; SFMTA Board; Board of Supervisors
8	HPS2 Infrastructure Plan	Director of San Francisco Department of Public Works (SFDPW); SFMTA Board; Director of San Francisco Public Utilities Commission (SFPUC); Director of San Francisco Fire Department (SFFD); Board of Supervisors

	Project Approval	*Agency*
9	CP-HPS Below Market Rate Housing Plan	OCII Commission; Board of Supervisors
10	CP-HPS2 Parks, Open Space and Habitat Plan	OCII Commission; Board of Supervisor
11	CP-HPS2 Sustainability Plan	OCII Commission
12	General Plan Amendments: HPS Area Plan amended to remove the stadium; CP Sub-Area Plan amended to remove the Jamestown parcel; and CP Activity Node Special Use District amended to remove the Jamestown Parcel	Planning Commission; Board of Supervisors
13	Approvals Under 2011 Public Trust Exchange Agreement	State Lands Commission

I.G Future Approvals

The proposed amendments to the Hunters Point Shipyard Redevelopment Plan and the Bayview Hunters Point Redevelopment Plan provide limits of development within the respective plan areas consistent with the plan, plan documents, and applicable City regulations, limits that are analyzed in Addendum 5. The plans acknowledge that although these limits are the best estimates of development available at this time, the development program would be carried out over more than two decades, and to allow the ability to respond to future conditions, the plans include a provision that allows the OCII Commission to administratively approve future adjustments to the square footage limitations of individual land uses provided in the plans (with the exception of artists' and community use spaces) and attendant conversion of certain specified development uses to other allowed uses, provided that such adjustments do not exceed limits consistent with plan, plan documents, and applicable City regulations, and subject to any required additional environmental review. Additionally, the proposed plan amendments for both redevelopment plans include a provision allowing the OCII Commission to administratively approve a shift of R&D and office square footage from the Hunters Point Shipyard Redevelopment Plan area to those areas of Zone 1 of the Bayview Hunters Point Redevelopment Plan where such use is permitted, also subject to any require additional environmental review and subject to the limitation that the amount of square footage shifted would not exceed 10 percent, or 118,500 sf, of the maximum total nonresidential square footage permitted at CP, which is 1,185,000 sf. These provisions allow the Commission to consider and approve such future proposals without requiring an amendment of the plan sections that specify the square footage for various uses.

At this time, the developer has not made a specific proposal pursuant to these provisions. The provisions in the redevelopment plans provide a framework for future discretionary actions by the OCII Commission and require compliance with CEQA if and when an application is submitted pursuant to these provisions. Nonetheless, a programmatic analysis of the transfer of 118,500 sf of nonresidential uses from HPS2 to CP is provided in Addendum 5 for traffic, air quality, greenhouse gas emissions, and noise, as further described in Section II.A.2 (Approach to the Analysis, Analytic Method) and Appendix I (Transportation, Air Quality/Greenhouse Gas Emissions, and Noise

Analyses of the Transfer of Nonresidential Uses from HPS2 to CP). Section II.A.2 also describes why a programmatic evaluation of the other topical areas cannot be provided at this time.

II. ENVIRONMENTAL ANALYSIS

II.A Approach to the Analysis

As previously mentioned, the development plan analyzed in Addendum 5 is proposed by the Project Sponsor as a new variant, the "2018 Modified Project Variant," which includes revisions to land uses and some other changes from the Project and/or any of the land use variants proposed in 2010, and incorporates elements of the 2010 FEIR Candlestick Tower Variant 3D and certain components of the Utilities Variant 4. If approved, this new variant would be implemented instead of 2010 Project (the main, stadium project), R&D Variant (Variant 1), Housing Variant (Variant 2), or Housing/R&D Variant (Variant 2A), all of which were described and analyzed in the 2010 FEIR.

II.A.1 Authority for Use of an Addendum

CEQA Guidelines Section 15164 provides for the use of an addendum to document the basis for a lead agency's decision not to require a subsequent EIR for a project that is already adequately covered in a previously certified EIR. The lead agency's decision to use an addendum must be supported by substantial evidence that the conditions that would trigger the preparation of a subsequent EIR, as provided in CEQA Guidelines Section 15162, are not present. These conditions indicate that:

> (a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:
>
> (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
>
> (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
>
> (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
>
> (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
>
> (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
>
> (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

Addendum 5 has been prepared to identify and assess the anticipated environmental impacts of the 2018 Modified Project Variant. The document relies on previous environmental documents[26] prepared to address in detail the effects or impacts associated with the project, as well as updated analysis prepared by qualified technical experts to address the 2018 Modified Project Variant. This document has been prepared to satisfy CEQA, (Public Resources Code Sections 21000 et seq.) and the CEQA Guidelines (14 CCR Sections 15000 et seq.). CEQA requires that all state and local government agencies consider the environmental consequences of projects over which they have discretionary authority before acting on those projects.

Where, as here, an EIR addressing an earlier version of the project has been previously prepared and certified, the lead agency considers the adequacy of that prior EIR in light of the current modified version of the project and changed physical circumstances since the time of the preparation of the prior EIR. Pursuant to CEQA Guidelines Section 15164, if the agency finds no basis for requiring the preparation of either a subsequent EIR or an EIR supplement, an EIR addendum shall be prepared. Accordingly, Addendum 5 describes the potential environmental effects of the 2018 Modified Project Variant compared to the impacts identified in the 2010 FEIR and explains how the proposed modifications would not result in any new significant environmental impacts or a substantial increase in the severity of previously identified environmental impacts and would not require the adoption of any new mitigation measures or alternatives to reduce previously identified significant effects.

II.A.2 Analytic Method

Baseline for Analysis

In Addendum 5, the 2018 Modified Project Variant is primarily described and assessed in relation to the 2010 Project (as described in 2010 FEIR Chapter II, Project Description). However, certain impacts are assessed in comparison to the 2010 FEIR R&D Variant (Variant 1), 2010 FEIR R&D/Housing Variant (Variant 2A), 2010 FEIR Utilities Variant 4, and/or the changes evaluated in Addendum 4 and approved by the 2016 D4D and amendments to the CP Major Phase 1 Application, which occurred subsequent to the 2010 FEIR where the impacts are more comparable to those variants or approvals instead of the 2010 Project. This analysis reflects the analytical approach mandated by the applicable sections of the CEQA Guidelines (Sections 15162 through 15164) and comprehensively reviews and compares the effects of the 2018 Modified Project Variant to those disclosed in the 2010 FEIR.

[26] http://sf-planning.org/environmental-impact-reports-negative-declarations, accessed on November 30, 2017.

Utility Systems

As further described in Section I (Project Description), Addendum 5 proposes an alternative utility system, which would complement the City's conventional system and would include a ground source geothermal heating and cooling system as the primary source of heating and cooling for the development, as well as solar power, recycled water, and building-scale and utility-scale battery storage.

A conventional utility system was analyzed as part of the 2010 Project, R&D Variant (Variant 1), and Housing Variant (Variant 2). In addition, certain components of the alternative utility system were also analyzed as part of 2010 Utilities Variant 4 (i.e., solar power, recycled water, and district heating and cooling plants, the latter of which did not, however, assume the use of a geothermal heating and cooling system composed of a vertical bore heat exchange process). The alternative utility system described in Addendum 5 Section I (Project Description), which include some components that were evaluated in the 2010 FEIR, are evaluated in Addendum 5.

Transfer of Nonresidential Uses from HPS2 to CP

The BVHP and HPS Redevelopment Plans allow for the transfer of up to 118,500 sf of nonresidential uses from HPS2 to CP, which represents approximately 10 percent of the total nonresidential land use program at CP of 1,185,000 sf, subject to future discretionary approval and environmental review, as necessary. The transfer of this nonresidential square footage is evaluated in Appendix I (Transportation, Air Quality/Greenhouse Gas Emissions, and Noise Analyses of the Transfer of Nonresidential Uses from HPS2 to CP) for traffic, air quality, greenhouse gas emissions, and noise. This analysis is based on the AM and PM peak hour trip generation associated with a transfer of 118,500 sf of nonresidential uses from HPS2 to CP (as part of the 2018 Modified Project Variant) and comparing that trip generation (and associated impacts) to what was disclosed in the 2010 FEIR, as further described in Addendum 5 Section II.B.3 (Transportation and Circulation).

Impacts related to cultural and paleontological resources, geology and soils, hydrology and water quality, and biological resources are based on the area of land disturbance. Since the transfer of nonresidential uses from HPS2 to CP would not result in a change in the area of land disturbance at either location, the impacts associated with these topical areas are accurately analyzed in the 2010 FEIR and Addendum 5. No further analysis is necessary based on the currently available information related to the transfer of land uses.

Other topical areas, including land use, population and housing, aesthetics, shadows, wind, hazards and hazardous materials, public services, recreation, and utilities, are based on specific locational and development (i.e., land use) information in order assess impacts. Similarly, localized operational and construction-related impacts related to traffic, air quality, and noise would also require specific locational and development information to assess impacts. Therefore, no further analysis can be provided in Addendum 5 based on the currently available information related to the transfer of land uses.

Internal Adjustment of Land Uses within HPS2 and CP

The BVHP and HPS Redevelopment Plans allow for the adjustment of uses within the HPS2 and CP project sites (but not between sites, beyond the ten percent transfer described above). For both CP and HPS2, the Commission may approve, without amendment to either Plan, but subject to any necessary environmental review, the adjustment of the nonresidential square footages over time (except artist or community use space), including the conversion to other nonresidential uses allowed by these Plans, provided the overall square footage limits for nonresidential specified in each Plan are not materially exceeded. However, because there is no information related to any potential "intra-site" adjustments, there is no analysis provided in Addendum 5 to address such adjustments. Any future adjustment of uses would be subject to potential, future discretionary and environmental review and approval, as necessary.

Jamestown Parcel

The 2006 Program EIR identified the zoning for the Jamestown Parcel as RH-2 (Residential, House, Two-family) with a height limit of 40 feet and evaluated proposed development under these zoning controls (see 2006 Program EIR, Figures III.B-1, IIIB-2, III.B-3, and III.B-4). The Jamestown Parcel area was undeveloped in 2006. In the 2006 Program EIR, the Jamestown Parcel was identified as part of the larger South Basin Activity Node.

The 2006 Program EIR evaluated the following proposed development in the South Basin Activity Node: 30,000 sf of Management and Information Professional Services; 100,000 sf of Production, Distribution, and Repair; 40,000 sf of Retail and Entertainment; and 600 Dwelling Units. The residential land uses were proposed to be located in the northeastern and southeast portion of the South Basin Activity Node, which included the Jamestown Parcel. Since 2006, approximately 300 to 310 housing units (of the 600 analyzed in the 2006 Program EIR) have been developed in the South Basin Activity Node.

The proposed shift of the Jamestown Parcel from Zone 1 to Zone 2 of the BVHP Project Area B would mean that this parcel would no longer be subject to the land use controls under the BVHP Plan, which apply only in Zone 1. Zone 2 is regulated by the San Francisco Planning Code. Consequently, the Jamestown Parcel zoning would revert to the underlying zoning of RH-2 District (Residential, House, Two-family). Under the Planning Code, up to one unit per 1,500 sf of lot area is permitted in the RH-2 District with Conditional Use authorization. The 2006 BVHP height limit of 40 feet would be reassigned to the Jamestown Parcel. Given these density and height limits and other Planning Code site development standards (e.g., open space, setbacks, rear yard, and parking), it is reasonable to assume that a conservative estimate of 200 units could be developed on the Jamestown Parcel under Planning Code requirements. The proposed boundary change to shift the Jamestown Parcel from Zone 1 to Zone 2 of the BVHP Project Area B does not require additional environmental review, because the impacts associated with development in the Jamestown Parcel under the 2006 zoning controls were evaluated in the Bayview Hunters Point Redevelopment Projects and Rezoning Program Environmental Impact Report (2006 Program EIR).

The 2010 FEIR considered the estimated development under the BVHP Redevelopment Plan in its cumulative analysis. The 2010 CP-HPS2 FEIR cumulative analysis was based on full buildout of the adopted plans in the project area, including the BVHP Redevelopment Plan. The 2010 FEIR evaluated cumulative impacts "based upon a list of related projects identified by the City and neighboring jurisdictions and/or on full implementation of the City's General Plan and/or other planning documents depending on the specific impact being analyzed." (2010 CP-HPS2 FEIR, III.A-6.) The 2006 BVHP Redevelopment Plan was adopted prior to the 2010 FEIR. Thus, the CP-HPS2 FEIR cumulative analysis accounted for the buildout of the 2006 BVHP Plan, including the development of the Jamestown Parcel.[27] Given that the anticipated residential development in the Jamestown Parcel was evaluated in the 2006 BVHP Redevelopment Plan Program EIR and was accounted for in the cumulative analysis in the 2010 CP-HPS2 FEIR, no additional environmental review of this proposed change is required, and it is not further addressed in Addendum 5.

Recycled Water Facility

Impacts associated with the 976,000-gpd central recycled water treatment facility are evaluated in Addendum 5 in terms of its location (e.g., size, height, geographic location) and/or ground disturbance in land use, aesthetics, shadows, wind, air quality, noise, cultural and paleontological resources, hazards and hazardous materials, geology and soils, hydrology and water quality, biological resources, public services, recreation, and energy. In terms of population, housing, and employment, the facility would require only one employee and, therefore, would not account for any noticeable increase in population, housing, employment, or related operational traffic impacts (or related operation air quality or noise impacts). Odor impacts associated with the operation of the recycled water facility are evaluated in the air quality section in Impact AQ-8. Lastly, the recycled water facility would not generate the need for any water, or, therefore, wastewater, and no further analysis is required in the utilities section of Addendum 5.

II.A.3 Format of Analysis

The analysis provided in Addendum 5 covers each of the technical issue areas addressed in the 2010 FEIR, including:

- Land Use and Plans (Section II.B.1)
- Population, Housing, and Employment (Section II.B.2)
- Transportation and Circulation (Section II.B.3)
- Aesthetics (Section II.B.4)
- Shadows (Section II.B.5)
- Wind (Section II.B.6)
- Air Quality (Section II.B.7)
- Noise (Section II.B.8)

[27] In effect, the CP-HPS2 FEIR evaluated the development of Jamestown in both the project level analysis and the cumulative analysis.

- Cultural and Paleontological Resources (Section II.B.9)
- Hazards and Hazardous Materials (Section II.B.10)
- Geology and Soils (Section II.B.11)
- Hydrology and Water Quality (Section II.B.12)
- Biological Resources (Section II.B.13)
- Public Services (Section II.B.14)
- Recreation (Section II.B.15)
- Utilities (Section II.B.16)
- Energy (Section II.B.17)
- Greenhouse Gas Emissions (Section II.B.18)

Each of the technical sections addresses (1) changes in the project proposed in the 2018 Modified Project Variant that are relevant to that particular issue area and (2) impacts associated with construction and implementation of the 2018 Modified Project Variant as compared to the Project and/or variants analyzed in the 2010 FEIR. To provide context, each impact discussion includes a brief summary of the conclusions of the 2010 FEIR relative to that particular impact discussion, either as an introductory paragraph or woven into the impact analysis itself if a side-by-side comparison to the 2010 FEIR provides a more useful analytical tool.

For most topical areas, the analysis focuses on HPS2 since that is where the land use changes proposed by the 2018 Modified Project Variant occur; the land use program associated with CP is the same land use program as approved by the 2016 D4D. However, the transportation analysis considers the combined CP and HPS2 sites for construction traffic, project-related trips (vehicular, transit, bicycle, and pedestrian), parking and loading, air traffic, design features, and emergency access; similarly, the air quality, greenhouse gas emissions, and noise analysis also considers the combined CP and HPS2 sites for any impacts related to vehicle trips. All other topical areas assume that impacts associated with CP are covered in the 2010 FEIR, unless specifically described and analyzed otherwise.

Decision-makers have relied on prior addenda prepared subsequent to the certification of the 2010 FEIR to demonstrate that previously proposed changes to the 2010 Project, as evaluated in those addenda, could be implemented without changing the conclusions of the 2010 FEIR. Addendum 5 includes all prior changes that were both proposed and evaluated in previous addenda but now carried forward, as well as the additional changes proposed in 2018. It evaluates all of those changes against the 2010 FEIR, including analyses in the variants analyzed in that document. The Project proposed in Addendum 5 represents the "Project."

CEQA Guidelines Section 15162(a)(2) states that for an EIR that has been certified, no subsequent EIR shall be prepared if there are no physical changes in circumstances under which the project is undertaken that give rise to a new significant environmental effect or a substantial increase in the severity of previously identified significant effects. The physical changes in circumstances at CP and HPS2 do not give rise to new significant environmental effects or a substantial increase in the

severity of previously identified significant effects related to the 2018 Modified Project Variant. These physical changes include:

- Additional remediation activities at HPS2 performed by the Navy;
- Demolition of the commercial kitchen at HPS2, which was located along Robinson Street, north of Fisher Avenue;
- Construction of a new commercial kitchen at HPS2 along Fisher Avenue near the intersection of Spear Avenue;
- Excavation of the artist building/plaza at HPS2, with soil being stockpiled behind Buildings 808 and 813;
- Installation of water and storm drain utilities on Galvez Avenue, Horne Avenue, and Robinson Street (with subsequent grading and paving of these roadways anticipated in 2018); and
- Demolition of the stadium, construction of the new Alice Griffith residential buildings, and various civil works associated with the CP Center, all at CP.

For three topical sections—Population, Housing, and Employment; Transportation and Circulation; and Biological Resources—a section entitled "Changes in Circumstances" is provided where specific information, beyond the summary outlined above, better describes physical changes in circumstances related to those particular topics. Similarly, a section entitled "new regulations" is only provided for those topical sections where new regulations are applicable. Again, neither the specific changes in physical circumstances nor any new regulations give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects related to the 2018 Modified Project Variant.

The analytic methods for each topical section follows the same methods used in the 2010 FEIR. Where the methods vary, the reasons why that is necessary are provided in the topical sections of Addendum 5.

The impact statements presented in Addendum 5 include only those that relate to the changes proposed by the 2018 Modified Project Variant. There are other impact statements provided in the 2010 FEIR that are not included in Addendum 5 because they relate to elements of the 2010 Project or its subsequent modifications (prior to 2018) that have not changed, which primarily relate to CP. Addendum 5 Appendix C (Impacts Evaluated in Addendum 5) identifies each of the impact statements provided in the 2010 FEIR and indicates whether they are evaluated in Addendum 5.

Lastly, any project modifications and revised mitigation measures that were identified in the previous addenda and subsequently approved for the CP-HPS2 Project are assumed as part of Addendum 5, and are found in Table A-1 of Addendum 5 Appendix A.

II.B Analysis of Environmental Effects

Sections II.B.1 through II.B.18 describe the environmental effects of the 2018 Modified Project Variant and conclude that the proposed modifications would not result in any new significant environmental impacts or a substantial increase in the severity of previously identified environmental impacts and would not require the adoption of any new mitigation measures or alternatives. Some mitigation measures are recommended for revision or deletion to account for new construction methods, updated technical reports, increased technical clarity, and land use program changes.

For purposes of Addendum 5, and consistent with the general definition in the 2010 FEIR, the "Project Sponsor" is assumed to be FivePoint. The "Project Applicant" is the vertical developer. In Appendix B (MMRP), some of the requirements would be assumed by the Project Applicant rather than the Project Sponsor.

II.B.1 Land Use and Plans

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
10.	**Land Use and Planning.** Would the project:					
B.a	Physically divide an established community?	2010 FEIR p. III.B-33 (Impact LU-1); Addendum 1 p. 28; Addendum 4 p. 13	No	No	No	None
B.b	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	2010 FEIR p. III.B-37 (Impact LU-2); Addendum 1 p. 28; Addendum 4 p. 13	No	No	No	None
B.c	Have a substantial adverse impact on the existing character of the vicinity?	2010 FEIR p. III.B-39 (Impact LU-3); Addendum 1 p. 28; Addendum 4 p. 13	No	No	No	None

Changes to Project Related to Land Use and Plans

The Project modifications related to land use and plans that are relevant to, and considered in, the discussion below include generally the proposed new uses, the density and intensity changes, the adjustment to district boundaries, revised configurations or locations of certain Project elements, the additional pedestrian and bicycle network improvements, the new circulation improvements and modifications, and the proposed recycled water facility.

Comparative Impact Discussions

Impact LU-1: Implementation of the Project would not physically divide an established community. ***[Criterion B.a]***

	2010 CP-HPS2 FEIR	2010 CP-HPS2 FEIR Addendum 5
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR determined the Project would have no impact with regard to the potential to physically divide an established community. The 2010 FEIR recognized the Project would change land uses in the area and increase the density and intensity of development on the Project site. Existing connections between the Project site and surrounding development, however, is limited. CP and HPS2 are physically isolated from nearby neighborhoods. Street connectivity between the CP and HPS2 and the surrounding neighborhoods is restricted. The limited access to CP and HPS2 interferes with access to the Candlestick Point State Recreation Area (CPSRA) and the shoreline.

The 2010 FEIR found the Project would develop new mixed-use districts, a new street grid, new pedestrian, transit, and bicycle access, public gathering places, and new open space and recreational uses that would facilitate connections between the Project site and the surrounding communities. The new land uses would provide services, recreational opportunities, and other amenities that would be used by the existing surrounding communities and the new Project residents. The 2010 FEIR found the Project would improve the connectivity of the site to the surrounding neighborhoods and the City. Consequently, the 2010 FEIR concluded the Project would not divide an established community.

Similar to the 2010 Project, the 2018 Modified Project Variant would develop a new mixed-use community with distinct districts accommodating a variety of residential uses, retail uses, research and development uses, open space, parks, and recreational uses, cultural uses, community uses, on- and off-street parking, and a marina. The 2010 Project included a new stadium in the Shipyard south area. Similar to the approved non-stadium land use Variants in the 2010 FEIR (R&D Variant [Variant 1] and Housing/R&D Variant [Variant 2A]), the 2018 Modified Project Variant would include housing and R&D uses in this area.

The addition of a hotel, school uses, regional retail use, and maker space would add to the diversity of uses in this new urban community and would serve and complement the planned residential and commercial uses at HPS2 and the surrounding neighborhoods. These uses would attract existing City residents and visitors to the site, thereby connecting the site to the larger surrounding community. The addition of maker space would accommodate a Citywide growing contemporary type of small-scale manufacturing uses that would be suitable for the mix of uses planned at HPS2. This use would complement the existing artists and artisans working at HPS2. None of these new uses would divide an established community.

Although the density and intensity of some of the uses proposed in the 2018 Modified Project Variant would vary from the Project, the overall balance of development uses generally would be maintained as square footage, as some uses would be reduced to accommodate the increase in other uses. Some residential units (172) and commercial space (71,000 sf) that were approved for HPS1, but were not constructed, would be accommodated in HPS2. These additional units and commercial space would be contained within and distributed throughout HPS2 and are accounted for in this analysis. Additionally, the changes in density and intensity of development would not interfere with the planned, new physical connections to surrounding neighborhoods, the improved vehicle, pedestrian, bicycle, and transit access to the site, or access to the shoreline. Thus, these Project modifications would not divide an established community.

The 2018 Modified Project Variant would modify the methodology for locating two high-rise towers within HPS2. Tower A would be on the same block as identified for the 2010 Project, but a flexible tower zone would be added to the entire block. Tower B would be moved one block north from the location shown in the 2010 FEIR for the 2010 Project and would include a flexible tower zone for the entire block. These towers would not be located adjacent to or near an existing community. The minor shift in the allowable location of the towers would not interfere with the planned, new physical

connections to surrounding neighborhoods, the improved vehicle, pedestrian, bicycle, and transit access to the site, or access to the shoreline. Thus, these Project modifications would not divide an established community.

The addition of a water taxi would expand transportation options to and from the site providing a service to the residents, commercial users, and visitors and generally increase the connectivity of the Project site to areas around the Bay. The proposed bridges across Dry Dock 4 would enhance the planned pedestrian/bicycle network along the shoreline area and Waterfront Promenade at HPS2. The proposed extension of Donahue Street would provide a new vehicle and pedestrian connection to HPS1 from the south and connect existing communities with future recreation area and services at HPS2. These proposed modifications would improve the connectivity of HPS2 to HPS1, surrounding neighborhoods, and nearby local communities.

The 2018 Modified Project Variant would include minor revisions to the boundaries of the land use districts to reflect the reconfigured limits of development and reconfigured parks and open space areas. In the North Shoreline District, development north of B Street has been removed, which would increase the size of the Waterfront Promenade in this area. The Waterfront Promenade would also increase due to the inclusion of a new civic square at the end of Dry Dock 4, known as the Water Room. These changes would increase the size of the Waterfront Promenade by approximately 4.4 acres. The Water Room would be a community gathering place, and Dry Dock 4 would include seating along the full extent of the dock.

As a result of retaining the existing street grid to reflect the historic shipyard configuration, the 2018 Modified Project Variant would remove three individual parks (Hunters Point Park Blocks, Hunters Point Wedge Park, and R&D Plaza) and provide a consolidated 8.1-acre publicly accessible private open space (POPOS) on Crisp Road, known as the Green Room. The Sports Field Complex would be relocated to the southern edge of the site. The Grasslands Ecology Park would be reconfigured due to changes in the Sports Field Complex and the street layout in the Warehouse District. The Hillside Open Space area would increase in size and would continue to create a pedestrian connection between the Hill Top Park (which is part of HPS1) and the proposed Water Room.

Overall, the amount of public or publicly accessible open space and park area at HPS2 would be 232.0 acres, an increase of 0.4-acre from the 2010 Project and an increase of 9.8 acres from the R&D Variant (Variant 1). These modifications would increase open space along the Waterfront Promenade and provide additional public amenities, including the Water Room. Compared with the 2010 Project, these proposed modifications would maintain or increase open space and public access opportunities to and within the site, particularly along the waterfront and, thus, would not divide an existing community.

The 2018 Modified Project Variant would include revisions to the roadway cross section dimensions and alignments at HPS2 and sidewalk widths. These modifications would maintain the multimodal nature of access to and through HPS2 and thereby increase connectivity with surrounding areas and

within the site over existing conditions by improving the quality of the facilities within the HPS2 site and the connections to the existing neighborhood streets. These modifications would be located within, and would facilitate circulation throughout, the Project site. Thus, these modifications would not divide an existing community.

The proposed reconfiguration of the street network within the Warehouse District would facilitate the sequence of development phasing based on the progressive transfer of parcels from the Navy and allow the retention of Buildings 351 and 411. Streets in the Hunters Point South neighborhood would be similar to what was proposed in 2010 FEIR Variant 1 (R&D) (2010 FEIR Figure IV 1, p. IV-7), but street alignments have been slightly modified to account for retention of these additional existing buildings. Overall, the size and density of the street grid in Hunters Point South is similar to what was originally approved in 2010 FEIR Variant 1 (R&D); therefore, transportation capacity is expected to be similar.

This reconfiguration would not interfere with or adversely affect the planned, new connections to the surrounding area or access to the Project site or shoreline. Additionally, the location of the Hunters Point Transit Center would shift from the south side of Spear Avenue near the intersection of Lockwood Street to the north side of Spear Avenue to near Dry Dock 2. The Transit Center would increase from 10 to 14 bays. The Transit Center would continue to be a Project element that would increase the connectivity of the Project to other neighborhoods throughout the City. The expanded number of bays would facilitate this connectivity. Thus, these modifications would not divide an existing community.

The 2018 Modified Project Variant includes a recycled water facility proposed to be located along Crisp Road. The 2010 FEIR Utilities Variant 4 analyzed on-site wastewater treatment at 11 decentralized facilities, four of which were located at HPS2 and found that these facilities would not divide an existing community. The proposed facility would be located within the Project HPS2 boundary at the edge of the development area in the Warehouse District and is not adjacent to surrounding off-site uses. Given its location, it would not interfere with new access to the Project site and would not divide an existing community.

The modification of the number of housing units proposed for CP, which includes a decrease of 632 units as compared to the 2010 Project, would be accommodated in the planned residential and mixed-use areas, excluding the Jamestown Parcel. This modification would be accommodated within the Project site and would not interfere with or reduce the new planned connections to the surrounding community or the new access to the CPSRA and the shoreline. Thus, this modification would not divide an existing community.

Similar to the 2010 Project, the 2018 Modified Project Variant would redevelop the largely vacant and underused Project site with an active urban community that would create greater connections within the site, with surrounding neighborhoods, and with the City as a whole. The existing site is isolated from surrounding neighborhoods and the City as a whole. Access to HPS2 remains restricted due to Navy remediation activities. Similar to the 2010 Project, the 2018 Modified Project

Variant would remove existing barriers to Project site access and circulation within the Project site. Vehicle, pedestrian, transit, water taxi, and bicycle access to the site would be provided. Access to the parks, open space, and shoreline would be provided. The mix of uses in the 2018 Modified Project Variant would draw people to the site and provide services, employment, entertainment, and recreational opportunities for those living in the Project site, the surrounding neighborhoods, and the city. There would continue to be no impact.

Impact LU-2: Implementation of the Project would not conflict with land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect. ***[Criterion B.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant.

The 2010 FEIR reviewed the Project's consistency with applicable land use plans and policies. The 2010 FEIR determined that the Project was generally consistent with applicable land use plans and recognized that various land use plans would be amended as part of the Project approval actions. No conflicts with plans, policies, or regulations adopted to avoid or mitigate environmental impacts were identified. This potential impact was determined to be less than significant.

At the time of Project approval in 2010, amendments to the Bayview Hunters Point Area Plan, Bayview Hunters Point Redevelopment Plan, Hunter Point Shipyard Redevelopment Plan and San Francisco Planning Code were adopted to reflect and accommodate the Project. Since 2010, the San Francisco Bay Plan, Map 5, Policy 22 (amended January 2012) and San Francisco Bay Area Seaport Plan (amended January 2012) were amended to reflect the redevelopment plans for the Project.

Additionally, as acknowledged in 2010 FEIR Addendum 4, the CPSRA General Plan was amended in 2013. The 2013 General Plan established goals and policies for the CPSRA consistent with the redevelopment of the CP and HPS2 sites. As noted in Addendum 4, the 2013 General Plan describes the vision and role of the park as "an urban state park" which would function as the intermediary between the shoreline and the adjacent large mixed-use development and provide "a green front lawn" for the planned community of townhomes, high rises, and shopping districts. There would be many more people visiting the park, looking to enjoy the incredible water's edge recreation, as well as contact with nature and respite from city life. Thus, future development of the park must carefully navigate this intermediary nature between the city and shoreline edges. CPSRA's spirit of place would continue to evolve, as a gradient of these urban and natural experiences" (CPSRA General Plan p. I-9).

The 2018 Modified Project Variant includes amendments to certain Project regulatory and entitlement documents, including, specifically, the BVHP Redevelopment Plan and HPS Redevelopment Plan, the HPS2 Design for Development, the CP-HPS2 DDA and exhibits thereto (Schedule of Performance, Phasing Plan, Design Review and Document Approval Procedure, Infrastructure Plan, Transportation Plan, Sustainability Plan, Parks and Open Space Plan, Community Benefits Plan, and Housing Plan), and revisions to certain trust boundaries pursuant to

the State Public Trust Boundary Agreement. Modifications are also being sought to remove a parcel from the CP boundary (the Jamestown Parcel, in CP-02) and shift this parcel from Zone 1 and include it in Zone 2 of the BVHP Redevelopment Plan. These document amendments would accommodate the 2018 Modified Project Variant development proposal to allow for changes in the arrangement, density and intensity of uses (including height and bulk limits), the addition of compatible uses, an alternative utility system, and other infrastructure and design changes as described in Addendum 5.

The potential environmental impacts of these proposed modifications are analyzed in Addendum 5. No conflicts with any plans, policies, or regulations necessary to address the environmental impacts of the proposed modifications have been identified. The 2018 Modified Project Variant would be implemented consistent with the Project Mitigation Monitoring and Reporting Program (including proposed amendments as described in Addendum 6) and applicable environmental regulations. The impact would remain less than significant, and no mitigation would be required.

Impact LU-3: Implementation of the Project would not have a substantial adverse impact on the existing character of the vicinity. ***[Criterion B.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR acknowledged the Project would substantially alter the land use character of the Project site by replacing the existing character of the site with new mixed-use development, including a range of residential, commercial, cultural, and entertainment uses, infrastructure, and parks and open space. Additionally, the 2010 FEIR acknowledged the scale of development proposed by the Project would contrast with nearby residential neighborhoods and industrial area. The 2010 FEIR concluded the Project would improve existing land use conditions at the Project site and would not have an adverse effect on the Project site. Additionally, with respect to HPS2, the 2010 FEIR stated "[w]ith the transition in scale and uses, the extension of the existing street grid, and the connectivity of new open space with existing shoreline open space, the Project would be compatible with surrounding land uses. The Project would not result in a substantial adverse change in the existing land use character at the Project site or vicinity" (2010 FEIR p. III.B-40). Based on this analysis, the 2010 FEIR concluded that the Project would result in a less-than-significant impact on the existing character of the vicinity.

The 2018 Modified Project Variant also would result in an overall improvement of the site, redevelopment of vacant underutilized areas with a new mixed-use community, extension of the street grid, and creation of new connections to the Project site including access to the new parks and the shoreline. The 2018 Modified Project Variant would continue the pattern of locating lower-density residential and mixed-uses in the northern area of the site with a transition to higher-density and more intense commercial uses in areas of HPS2 further from existing development. The 2018 Modified Project Variant would add to the mix of uses on the site, which would expand visitor-serving uses (e.g., the hotel, the water taxi, expanded Waterfront Promenade, new bridges), retail options (e.g., regional retail and maker space), and educational options available to the surrounding community.

Similar to the 2010 Project, the 2018 Modified Project Variant would increase vehicle, pedestrian, bicycle, and transit access to the various urban uses on the site and to the open space and recreational opportunities, including shoreline access. Although the 2018 Modified Project Variant would modify certain aspects of the development plan, the general scale and intensity of uses and general arrangement of land uses would be similar to the 2010 Project and R&D Variant (Variant 1). In general, the 2018 Modified Project Variant would improve conditions at the Project site and connect the site to the larger urban fabric of the surrounding area and the city.

Under the 2010 FEIR Utilities Variant 4, wastewater treatment facilities were distributed among 11 locations across the Project site, with four locations in HPS2. The estimated size of each plant was 36,250 sf and each plant included underground facilities. The 2010 FEIR concluded that these facilities were consistent with the overall Project uses and building characteristics and thus would result in less-than-significant land use impacts. In the 2018 Modified Project Variant, one recycled water facility would be located along the south side of Crisp and across from planned R&D uses on the north side of Crisp and across I Street from planned high-density uses in the Shipyard South district. Some aspects of the facility would be located outside the structure and below grade. Above-grade reuse water tanks would be constructed. Design and landscaping for the structure would be required to comply with the HPS2 Design for Development standards.

Existing residential areas to the north of the recycled water facility site would be separated from the facility by topography and distance. HPS1 hilltop residential uses are located approximately 700 feet from the site. Off-site residential uses near Griffith Street in India basin are located approximately 1,200 feet from the site. The distance to nearby residential uses and the applicable design and landscaping requirements would reduce the potential for an impact on the existing character of the vicinity to a less-than-significant level. The facility would be consistent with nearby off-site industrial uses.

The closest on-site residential use near I Street and Crisp road is approximately 50 feet from the facility site. Two of the four previously proposed plants would have been located immediately adjacent to residential development in Shipyard North. Similar to the Utilities Variant 4, the recycled water facility would be consistent with the type of uses associated with a large-scale urban redevelopment project (refer to Sections II.B.7 [Air Quality] and II.B.8 [Noise and Vibration] for a discussion of potential environmental impacts associated with odor and noise). The impact would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to land use and plans impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a

substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to land use and plans, either on a project-related or cumulative basis.

II.B.2 Population, Housing, and Employment

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
13.	**Population, Housing, and Employment.** Would the Project:					
C.a	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	2010 FEIR p. III.C-14 (Impact PH-1), p. III.C-20 (Impact PH-2); Addendum 1 p. 29; Addendum 4 p. 16	No	No	No	None
C.b	Displace substantial numbers of existing housing units or create demand for additional housing, necessitating the construction of replacement housing elsewhere?	2010 FEIR p. III.C-21 (Impact PH-3); Addendum 1 p. 29; Addendum 4 p. 16	No	No	No	None
C.c	Displace substantial number of people, necessitating the construction of replacement housing elsewhere?	2010 FEIR p. III.C-21 (Impact PH-3); Addendum 1 p. 29; Addendum 4 p. 16	No	No	No	None

Changes to Project Related to Population, Housing, and Employment

The elements of the land use program evaluated in Addendum 5 that relate to population, housing, and employment are the number of residential uses, which relates to population and housing; the proposed land uses, which relates to Project employment; and the phasing plan and construction scenario, which relates to construction employment.

Population and Housing

The 2010 FEIR proposed 10,500 residential units over the entire Project site, including both CP and HPS. The current proposal includes 10,672 residential units.

The total number of units would be 172 units more than previously analyzed and disclosed in the 2010 FEIR, and the individual number of units on the CP and HPS sites would also change relative to the 2010 FEIR. The number of units at CP would decrease by 632 units (to 7,218 units), and the number of units at HPS would increase by 804 units (to 3,454 units); therefore, the population at CP would be 16,818[28] and the population at HPS would be 8,048,[29] resulting in 24,866 people.

The total projected population over HPS1 and HPS2 has not changed from what was analyzed and disclosed in the 2010 FEIR (for HPS2) and the 2000 Hunters Point Shipyard Reuse Final EIR[30] (for

[28] This assumes a conversation 2.33 people per household, as identified in 2010 FEIR Table III.C-6.
[29] This assumes a conversation 2.33 people per household, as identified in 2010 FEIR Table III.C-6.
[30] City and County of San Francisco, *Hunters Point Shipyard Reuse Final Environmental Impact Report,* February 8, 2000.

HPS1). But, the population from the addition of 172 units to HPS2 is being accounted for in Addendum 5 to reflect the 2018 Modified Project Variant.

Project Employment

The land use program that is evaluated in Addendum 5 is different than the land use program evaluated in the 2010 FEIR, as described in the Project Description. Accordingly, the number of permanent jobs created as a result of the Project has also changed, as shown in Table 7 (Employment by Land Use). In summary, as compared to 2010 Project and the R&D Variant (Variant 1), which is provided in Table 7, the total number of permanent employment opportunities at CP and HPS2 would increase from 10,730 jobs under the 2010 Project to 16,618 jobs under the 2018 Modified Project Variant; however, the R&D Variant (Variant 1) would result in 16,635 jobs, which is comparable to the 2018 Modified Project Variant. The increase in jobs under both the 2018 Modified Project Variant and the R&D Variant (Variant 1) is primarily due to an increase in retail and R&D/offices uses at HPS2.

Construction Employment

Table 8 (Construction Employment) shows the yearly distribution of workers associated with the 2018 Modified Project Variant. It shows construction initiating in 2014 and extending to 2034, for a total of 21 years.[31] This same table shows that the 2010 Project included construction initiating in 2011 and extending to 2031, also for a total of 21 years.

In summary, the 2018 Modified Project Variant starts approximately 3 years later than the Project evaluated under the 2010 FEIR and would take approximately the same amount of time. Over the course of the entire project, the total number of daily construction workers under the 2018 Modified Project Variant is higher than what was identified in the 2010 FEIR due to the proposed accelerated construction schedule for several sub-phases, modified project land use in HPS, additional accounting for field management workers, and other construction elements, which are clarified below. The following total worker calculation assumes that all the maximum and average workers identified in Table 8 of the 2018 Modified Project Variant and 2010 FEIR Table III.C-8 were working for the duration of each year specified and are summarized below:

- Combined Maximum Daily Workers would increase by 1,356 over the course of the entire project:
  - 2010 FEIR shows 6,971 workers; and
  - 2018 Modified Project Variant shows 8,327 workers.

[31] Addendum 5 evaluates construction of the 2018 Modified Project Variant over a 21-year period (through 2034). The Schedule of Performance shows construction ending in 2036, which allows for potential delays in the transfer of land from the Navy, as well as potential construction delays. The addendum's use of a construction timeline ending in 2034 provides a conservative estimate of potential impacts.

TABLE 7 EMPLOYMENT BY LAND USE

Land Use	Employment Factor[a]	Candlestick Point		HPS2		Total		2010 Project	R&D Variant 1
		Development Program[b]	Employment (jobs)	Development Program[b]	Employment (jobs)	Development Program[b]	Employment (jobs)[c]	Employment (jobs)[c]	Employment (jobs)[c]
Residential	25 units/job	7,218 units	289	3,454 units	138	***10,672 units***	***427***	420	420
Regional Retail	350 gsf/job	635,000 gsf	1,814	100,000 gsf	286	***735,000 gsf***	***2,100***	1,814	1,814
Neighborhood Retail/Maker Space	270 gsf/job and 400 gsf/job[d]	125,000 gsf	463	301,000 gsf	1,025	***426,000 gsf***	***1,488***	926	926
Office	276 gsf/job	150,000 gsf	543	0 gsf	0	***150,000 gsf***	***543***	543	543
Research and Development[e]	400 gsf/job	0 gsf	—	4,265,000 gsf	10,663	***4,265,000 gsf***	***10,663***	6,250	12,500
Hotel	700 gsf/job	150,000 gsf	214	120,000 gsf	171	***270,000 gsf***	***386***	214	214
Football Stadium	2,915 jobs/event	0 events	—	0 events	—	***0 events***	***—***	359	—
Arena	750 gsf/job[f]	75,000 gsf	100	0 gsf	0	***75,000 gsf***	***100***	87	87
Institutional/Schools	2,050 gsf/job[g]	0 gsf	0	410,000 gsf	200	***410,000 gsf***	***200***	N/A[k]	N/A[k]
Water Taxi[h]	4 jobs/day	0 trips/day	0	16 trips/day	4	***16 trips/day***	***4***	N/A[k]	N/A[k]
Community Use	355 gsf/job	50,000 gsf	141	50,000 gsf	141	***100,000 gsf***	***282***	N/A[k]	N/A[k]
Artists' Studios	850 gsf/job[i]	0 gsf	0	255,000 gsf	300	***255,000 gsf***	***300***	N/A[k]	N/A[k]
Public Parking	270 spaces/job[j]	2,736 spaces	10	7,152 spaces	26	***9,888 spaces***	***37***	32	46
Parks and Open Space	0.26 job/acre	105.7 acres	27	232.0 acres	60	***337.7 acres***	***88***	87	85
Total			***3,601***		***13,014***		***16,618[l]***	***10,730***	***16,635***

SOURCES: Economic and Planning Systems, Inc., *Fiscal Analysis of the Candlestick Point/Hunters Point Shipyard Redevelopment Project*, 2018.

NOTES:

N/A = not available

a. Employment factors are from City and County of San Francisco, *Transportation Impact Analysis Guidelines*, October 2002, as well as more current industry standards and EPS studies for individual land use types. The recycled water facility would only result in one employee and, therefore, is not included in this table as it would not change any analysis or conclusions.

b. Based on build-out floor areas provided in Table 2 (2018 Modified Project Variant Land Use Program) of Addendum 5 Section I (Project Description).

c. The total employment is subject to mathematical rounding and may reflect a higher number than the addition of employment for CP and HPS2 individually, each of which may have been rounded down.

d. Includes 351,000 gsf for neighborhood retail between CP and HPS2 (at 270 gsf/job) and 75,000 gsf for maker space at HPS2 (at 400 gsf/job).

e. The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses.

f. Because the type of performance venue has changed since 2010 from a concert hall to a center with a focus on the arena, the employment estimated is based on EPS's study of movie and theater centers and is based on building square footage instead of number of events as was done in 2010.

g. Based on generalized population density at institutions, such as schools.

h. Assumes capacity for 22 passengers plus captain and crew members.

i. Based on information about number of studios and artists provided by FivePoint.

j. Includes all off-street parking.

k. The value for this land use category was not provided in the 2010 FEIR.

l. Total employment calculated by adding individual totals for each land use category. This number may reflect a higher number than the addition of employment for CP and HPS2 individually, each of which may have been rounded down.

TABLE 8 CONSTRUCTION EMPLOYMENT

	Candlestick Point		*Hunters Point Shipyard*		*Field Management*		*2018 Modified Project Variant Combined*		*2010 Project*	
Year	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*	*Max. Number of Daily Workers*	*Avg. Number of Daily Workers*
2011	—	—	—	—	—	—	—	—	95	76
2012	—	—	—	—	—	—	—	—	83	66
2013	—	—	—	—	—	—	—	—	223	178
2014	43	34	0	0	15	12	58	46	363	278
2015	58	46	0	0	15	12	73	58	617	494
2016	142	112	0	0	15	12	157	124	609	488
2017	146	116	30	24	15	12	191	152	440	357
2018	210	168	30	24	25	20	265	212	456	366
2019	292	232	212	168	25	20	529	420	470	376
2020	212	170	342	271	25	20	579	461	460	368
2021	161	129	364	288	25	20	550	437	258	206
2022	172	136	467	365	25	20	664	521	443	355
2023	307	244	687	539	25	20	1019	803	434	348
2024	423	336	501	399	25	20	949	755	295	235
2025	379	301	272	216	25	20	676	537	264	212
2026	398	316	174	140	15	12	587	468	278	235
2027	455	377	110	88	15	12	580	477	235	187
2028	407	324	30	24	15	12	452	360	320	255
2029	173	138	33	26	15	12	221	176	348	278
2030	78	61	137	110	12	10	227	181	195	156
2031	51	40	167	134	12	10	230	184	85	68
2032	109	85	114	92	25	20	248	197	—	—
2033	0	0	33	26	12	10	45	36	—	—
2034	0	0	15	12	12	10	27	22	—	—
Total	***4,216***	***3,365***	***3,718***	***2,946***	***393***	***316***	***8,327***	***6,627***	***6,971***	***5,582***

SOURCE: MACTEC, 2010; TRC, 2018.

NOTE: Number of daily workers includes on-site construction, off-site roadway improvements, and shoreline improvements and assumes construction of the alternative utility system. Construction employment information is not available in the 2010 FEIR for the R&D Variant (Variant 1).

- Combined Average Daily Workers would increase by 1,045 over the course of the entire project:
  - 2010 FEIR shows 5,582 workers; and
  - 2018 Modified Project Variant shows 6,627 workers.

The increase in daily construction workers is primarily due to the accelerated schedule for several sub-phases of the project, modified project land use in HPS, and additional accounting for field management

workers. Other factors that affected the increase were the addition of the following infrastructure construction elements as presented in the Project Description:

- Dry Dock 4 bridges;
- Geothermal heating and cooling system;
- Geotechnical ground improvements; and
- Recycled water treatment system.

Changes in Circumstances

Environmental Setting

Population and Housing

As disclosed in the 2010 FEIR, the population in the city as of January 1, 2008, was 824,525, its highest population on record at that time.[32] The population in the city as of 2014 was 829,072,[33] an increase of approximately about 0.6 percent between 2008 and 2014, a 6-year period. According to ABAG *Projections 2013*, the population is expected to increase steadily through Year 2040.[34]

The 2010 FEIR indicated that in in 2005, San Francisco had a total vacancy rate of approximately 4.9 percent (including owner-occupied and rental units). Approximately 62 percent of the total housing stock consisted of rental units. By 2007, the 2010 FEIR indicated that the total vacancy rate, was even lower, at about 3 percent.[35] The low vacancy rates indicated that the demand for housing in the city, at that time, remained strong.

According to the Housing Element of the San Francisco General Plan,[36] in 2010, vacancy rates were at 5.4 percent for rentals and 2.3 percent for homeownership, for a total of about 8 percent. This is considered a healthy fractional rate in most housing markets in the United States. By 2012, the vacancy rate rose to a vacancy rate of 9.3 percent, which may suggest an increase in time-shares and corporate homes used for employee housing. Even with the increase in vacancy rates, And, by January 2016, according the U.S. Department of Housing and Urban Development,[37] vacancy rates for rentals were 0.8 percent and vacancy rates for homeownership was 3.1 percent, for a total of 3.9 percent. In summary, the vacancy rates fluctuate between 3 percent and 9.3 percent according to market conditions and the use of housing for time-shares and corporate homes, with most years reflecting vacancy rates below 8 percent, which is considered a healthy rate.

---

[32] California Department of Finance, *E-1 Population Estimates for Cities, Counties, and the State with Annual Percent Change—January 1, 2008 and 2009*, 2009. Available at http://www.dof.ca.gov/research/demographic/reports/estimates/e-1_2006-07 (accessed June 12, 2009). Also cited by Economic and Planning Systems, Inc., *Fiscal Analysis of the Candlestick Point/Hunters Point Shipyard Redevelopment Project*, 2009.
[33] City and County of San Francisco, *India Basin Mixed Use Draft Environmental Impact Report*, September 13, 2017, Table 3.3-1.
[34] City and County of San Francisco, *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24, 2017, p. 4.C-2.
[35] San Francisco Planning Department, *Downtown San Francisco Market Demand, Growth Projections and Capacity Analysis,* May 2008, p. III-15.
[36] City and County of San Francisco, *San Francisco General Plan*, Housing Element, April 27, 2015, p. I.36.
[37] U.S. Department of Housing and Urban Development, *Comprehensive Housing Market Analysis, San Francisco-San Mateo-San Rafael*, as of January 1, 2016.

By the end of 2015, there were approximately 379,597 dwelling units in the city. While there was a net addition of 2,954 units to the city's housing stock in 2015, it represented a 16 percent decrease from 2014's net addition of 3,514 units.[38] While this 1-year increase is higher than the 10-year average of 2,244 units/year, it represents a slowed but continuing upward trend in net unit production from the lowest production point of 2011.[39]

In summary, the demand for housing remains high, and the supply has not been able to keep up with the demand, which results in low vacancy rates and high housing costs, a similar condition as in 2010.

Employment

San Francisco is a primary employment hub for the Bay Area and contains regional employment centers. According to ABAG Projections 2013, San Francisco had about 617,420 jobs in 2015.[40] The city is projected to have a total of approximately 671,230 jobs by 2020, approximately 707,670 jobs by 2030, and approximately 759,500 jobs by 2040, resulting in an approximately 23 percent increase (142,080 total jobs) over the 25-year period.[41] Between 2015 and 2040, the total number of jobs in the nine-county Bay Area is expected to increase by almost 835,240 jobs, a 22.8 percent increase. During this period, San Francisco's share of regional employment is expected to increase slightly, from 16.8 percent in 2015 to 16.9 percent in 2040.[42]

At the time of the 2000 Census, the 2010 FEIR indicated that about 55 percent of the workers holding jobs in San Francisco lived in the city, while the remaining 45 percent lived in other jurisdictions.[43] For this reason, the daytime population associated with local employment substantially exceeded the residential (nighttime) population according to the 2000 census.

As of 2010, commuters into San Francisco held 27.3 percent of the jobs in San Francisco,[44] meaning that approximately 73 percent of workers resided in the city, showing an increase in resident workers as compared to the 2000 census. However, the share of San Francisco jobs held by residents from other Bay Area counties is expected to increase as compared to 2010 to approximately 43 percent by 2020, 40 percent by 2030, and 42 percent by 2040,[45] likely the result a low supply of housing relative to demand and the subsequent increase in housing costs. As a regional job center, San Francisco will continue to have a larger share of commuters than other cities in the Bay Area.[46]

---

[38] San Francisco Planning Department, *2014 San Francisco Housing Inventory*, April 2015, p. 5.
[39] San Francisco Planning Department, *2015 Housing Inventory*, April 2015, p. 5.
[40] ABAG, *Projections 2013*, p. 22.
[41] ABAG, *Projections 2013*, p. 75.
[42] ABAG, *Projections 2013*, p. 22.
[43] U.S. Department of Transportation, *Census 2000 Transportation Planning Package*, 2006. It should be noted that a certain percentage of San Francisco residents also commute to other communities.
[44] City and County of San Francisco, *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24, 2017, p. 4.C-9.
[45] City and County of San Francisco, *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24, 2017, p. 4.C-9.
[46] City and County of San Francisco, *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24, 2017, p. 4.C-9.

Comparative Impact Discussions

Impact PH-1: Construction of the Project would not induce substantial direct population growth. ***[Criterion C.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As disclosed in the 2010 FEIR, there would be direct, but temporary, construction job growth at the Project site as a result of the Project. It was assumed that construction employees not already living in the Bayview Hunters Point neighborhood would commute from elsewhere in the Bay Area rather than relocate to the Bayview Hunters Point neighborhood for a temporary construction assignment, and construction hiring policies associated with the 2010 Project would aim to maximize hiring among local residents.

Table 8 shows the estimated average and maximum number of daily construction workers, for each Project year under the 2018 Modified Project Variant. The peak year for construction at CP is 2027, with 455 maximum daily workers (and 377 average daily workers), while the peak year for construction at HPS is 2023, with 687 maximum daily workers (and 539 average daily workers). The peak year for combined activities is in 2023, with 1,019 combined maximum daily workers (and 803 combined average daily workers), coinciding with the peak year at HPS.

The 2010 Project disclosed different peak years for CP and HPS. For CP, it was 2029 and for HPS it was 2015, with the peak combined year in 2015, also coinciding with the peak construction year at HPS.

Overall, the total number of daily construction workers (including all years of construction) has increased by approximately 27 percent when comparing the 2010 FEIR estimates to the 2018 Modified Project Variant estimates.

The increase in daily construction workers is primarily due to the accelerated schedule for several sub-phases of the project, modified project land use in HPS, and additional accounting for field management workers. Other factors that affected the increase were the addition of the following infrastructure construction elements as presented in the Project Description:

- Dry Dock 4 bridges;
- Geothermal heating and cooling system;
- Geotechnical ground improvements; and
- Recycled water treatment system and other green infrastructure elements.

If the conventional utility system were pursued, fewer construction workers would be required, which would likely be similar to the number of construction workers identified in the 2010 FEIR.

As assumed in the 2010 FEIR, it is anticipated that construction employees not already living in the Bayview Hunters Point neighborhood would commute from elsewhere in the Bay Area rather than relocate to the Bayview Hunters Point neighborhood for a temporary construction assignment, and

construction hiring policies associated would aim to maximize hiring among local residents. Thus, development of this Variant would not generate a substantial, unplanned population increase. Impacts associated with construction employment resulting from the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Impact PH-2: Operation of the Project would not induce substantial direct or indirect population growth. ***[Criterion C.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The total population would be 16,818 at CP and 8,048 at HPS2, for a total population of 24,866, an increase of 401 over the population of 24,465 disclosed in the 2010 FEIR. In addition, the number of permanent employment opportunities would increase by approximately 5,880, which is primarily due to an increase in neighborhood retail and R&D uses at HPS2.

Although the 2018 Modified Project Variant would result in an increase in population and employment at CP, growth in this area has long been the subject of many planning activities. The primary objective of the 2018 Modified Project Variant is to provide new housing and nonresidential uses in support of planned redevelopment. Planning activities pertaining to CP date to 1969, with initial adoption of the Hunters Point Shipyard Redevelopment Plan (later to be subsumed under the BVHP Redevelopment Plan). As discussed in Chapter I, development of CP was also anticipated in the BVHP Area Plan, and in a series of initiatives approved by San Francisco voters (Propositions D, E, and G).[47,48] The Hunters Point Shipyard Redevelopment Plan was updated in 2005, and uses approved for HPS1 under that plan are currently under construction. The 2018 Modified Project Variant, as proposed, was developed based on the land uses, number of housing units (10,672 units total at HPS2 and CP), and objectives approved by voters under Proposition G in 2008. In summary, the uses provided as part of the Project support planned growth at the Project site.

As a result of these ongoing planning activities, City service providers have been aware of, and have included future growth projections for CP, in their long-term operations plans. Planning department population projections[49] include the population growth associated with the Project and are the basis of the San Francisco Public Utilities Commission's *Water Supply Availability Study*. In addition, the Southeast Water Pollution Control Plant has capacity to treat wastewater from the Project site. The Project would provide all on-site infrastructure for connections to City mains, and would include on-site treatment of stormwater runoff. Refer to Section II.D (Project Objectives), Section III.O (Public Services), Section III.P (Recreation), Section III.Q (Utilities), and Section III.R (Energy) in the 2010 FEIR for further description of the Project's potential impacts on infrastructure and services. In summary,

[47] Candlestick Point is outside the boundaries of the HPS Redevelopment Plan.
[48] Proposition G repealed Propositions D and F.
[49] San Francisco Planning Department, Memorandum from Jon Rahaim, Director of Planning, to Michael Carlin, Deputy General Manager, San Francisco Public Utilities Commission, *Projections of Growth by 2030*, July 9, 2009.

the infrastructure needed to support the level of growth anticipated under the Project was planned based on population projections that included the housing and employment associated with the Project.

Employment growth would also be considered substantial if it resulted in housing demand that would exceed planned regional housing development. Table 9 (Housing Demand) estimates the number of housing units that would be needed to provide housing for employees of jobs created as a result of the Project. These calculations were derived from existing Census Bureau employment and U.S. Department of Transportation commuting pattern data.[50] The average household would be expected to have 1.36 workers. This rate is based on the Planning Department's projection of the number of workers in the average city household in 2025.[51] Utilizing the rate of 1.36 workers per dwelling unit, the Project, with a total employment of 16,618 workers, would require 0.74 housing unit per worker (calculated as 1 dwelling unit/1.36 workers equals the number of dwelling units per worker, which is 0.74). The calculations also assume a vacancy rate of 4.7 percent,[52] which requires an add-on demand to account for the vacancy rate (see footnotes c and d in Table 9). Based on these assumptions, and assuming the housing demand from other communities has remained relatively constant, the 2018 Modified Project Variant would result in a total demand for 12,791 housing units based on employee demand, and a total of 10,672 units would be provided.[53] However, as shown in Table 9, it is assumed that approximately 55 percent of the workers would seek housing in the city, consistent with existing commuting patterns.[54] As such, to meet housing demand of the 2018 Modified Project Variant within the City, approximately 7,035 housing units would be required. As discussed above, the 2018 Modified Project Variant would provide approximately 10,672 housing units, which would exceed estimated housing demand of 7,035 housing units. Therefore, the population increase associated with employment from the 2018 Modified Project Variant could be entirely accommodated. It is likely that some employees would elect to live elsewhere in the City or within surrounding Bay Area communities. Based on existing commuting patterns, the 2018 Modified Project Variant would generate a demand for about 5,756 units in surrounding Bay Area communities. This housing demand would be dispersed throughout the nine-county Bay Area, which would result in negligible potential increases in housing demand within the Bay Area. While the 2018 Modified Project Variant would generate more jobs than the CP-HPS2 Project (by approximately 5,880 jobs), it would generate fewer jobs than the R&D Variant (Variant 1) (by approximately 17 jobs). As with the R&D Variant (Variant 1), the total number of jobs generated by the 2018 Modified Project Variant would represent a fraction of the 748,100 jobs anticipated citywide in 2030 (the 2018 Modified Project Variant would represent 2.2 percent of the total jobs in the city in 2030 and the

[50] Census Bureau, 2009; US Department of Transportation, *Census 2000 Transportation Planning Package*, 2006.
[51] City and County of San Francisco, *General Plan Housing Element*, 2004, Table I-14.
[52] This rate is based on California Department of Finance, January 2008 Projections.
[53] It should be noted that one of the Project objectives is to provide employment opportunities for existing residents in the Bayview Hunters Point neighborhood; thus, it is anticipated that some of the future employees at Candlestick Point would include residents already living in the neighborhood. Although total housing demand could include existing households, this analysis conservatively assumes that all housing demand generated by the Project would need to be accommodated by new units.
[54] This assumption provides a conservative estimate of the housing demand that the Project would generate in other Bay Area communities, such as nearby cities in San Mateo County. Information pertaining to commuting trends was derived from US Department of Transportation, *Census 2000 Transportation Planning Package*, 2006.

R&D Variant (Variant 1) would also represent 2.2 percent of the total jobs in the city in 2030). Further, employment opportunities would be provided in an area that has been jobs-poor since WWII; it would provide a new employment center in the city, allowing commute patterns to be further dispersed into an area that has long been the subject of many planning activities. This variant, as with the R&D Variant (Variant 1), would provide all on-site infrastructure for connections to city mains and would include on-site treatment of stormwater runoff. Therefore, the 2018 Modified Project Variant would not encourage growth where appropriate infrastructure would not be available.

TABLE 9 HOUSING DEMAND

Analysis Area	*2018 Modified Project Variant Employment[a,b]*	*2018 Modified Project Variant Housing Demand, San Francisco[c]*	*2018 Modified Project Variant Housing Demand, Other Communities[d]*	*2018 Modified Project Variant Total Demand*	*2010 Project Total Demand*	*Variant 1 Total Demand*	*2018 Modified Project Variant Housing*	*2010 Project and Variant 1 Housing*
Candlestick Point	3,601	1,525	1,248	***2,773***	2,677	7,044	7,218	7,850
HPS2	13,014	5,510	4,508	***10,018***	5,586	5,763	3,454	2,650
Project Site Total	***16,618***	***7,035***	***5,756***	***12,791***	***8,263***	***12,807***	***10,672***	***10,500***

NOTES:

a. Does not include existing employment.

b. Project employment data are derived from Table 7, Employment by Land Use.

c. Calculated as the projected employment divided by 1.36, plus 4.7% additional housing units to account for vacancy rate, times 55% total demand in San Francisco.

d. Based on existing commuting patterns, housing demand in other communities is estimated to be 45% of total housing demand; calculated as projected employment divided by 1.36, plus 4.7% additional housing units to account for vacancy rate, times 45% total demand in other communities.

Therefore, the analysis and conclusions reached in the 2010 FEIR and the 2000 Hunters Point Shipyard Reuse Final EIR with respect to direct or indirect population growth would remain the same. The impact would be less than significant, and no mitigation would be required.

Impact PH-3: Implementation of the Project would not displace existing housing units or residents at HPS Phase II, necessitating the construction of new units elsewhere. ***[Criteria C.b and C.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

There are no existing housing units at HPS2, either when the 2010 FEIR was published or in 2018. Therefore, as with the Project, the 2018 Modified Project Variant would similarly not replace housing units with new uses, and no existing residents would be displaced. Because there would be no residential displacement at HPS, development of the 2018 Modified Project Variant would have no impact on displacement of housing and residents, and no mitigation would be required, which is the same conclusion reached in the 2010 FEIR.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to population, housing, and employment impacts. There is no new information of substantial

importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to population, housing, and employment, either on a project-related or cumulative basis.

II.B.3 Transportation and Circulation

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
17.	**Transportation and Circulation.** Would the project:					
D.a	Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	2010 FEIR p. III.D-69 (Impact TR-2), p. III.D-71 (Impact TR-3), p. III.D-81 (Impact TR-4), p. III.D-82 (Impact TR-5), p. III.D-83 (Impact TR-6), p. III.D-83 (Impact TR-7), p. III.D-84 (Impact TR-8), p. III.D-85 (Impact TR-9), p. III.D-85 (Impact TR-10), p. III.D-86 (Impact TR-11), p. III.D-90 (Impact TR-12), p. III.D-90 (Impact TR-13), p. III.D-94 (Impact TR-14), p. III.D-95 (Impact TR-15), p. III.D-96 (Impact TR-16), p. III.D-144 (Impact TR-51), p. IV-21 (Variant 1 Impacts); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	MM TR-2, MM TR-4, MM TR-6, MM TR-7, MM TR-8, MM TR-16, MM TR-17, MM TR-51, R&D Variant (Variant 1) Mitigation Measure
D.b	Exceed, either individually or cumulatively, an LOS standard established by the county congestion management agency for designated roads or highways (unless it is practical to achieve the standard through increased use of alternative transportation modes)?	2010 FEIR p. III.D-71 (Impact TR-3), p. III.D-81 (Impact TR-4), p. III.D-82 (Impact TR-5), p. III.D-83 (Impact TR-6), p. III.D-83 (Impact TR-7), p. III.D-84 (Impact TR-8), p. III.D-85 (Impact TR-9), p. III.D-86 (Impact TR-11), p. III.D-90 (Impact TR-12), p. III.D-90 (Impact TR-13), p. III.D-94 (Impact TR-14), p. III.D-95 (Impact TR-15), p. III.D-144 (Impact TR-51), p. IV-21 (Variant 1 Impacts); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	MM TR-4, MM TR-6, MM TR-7, MM TR-8, MM TR-51, R&D Variant (Variant 1) Mitigation Measure
D.c	Result in a change in air traffic patterns, including either an increase in traffic levels, obstructions to flight, or a change in location, that causes substantial safety risks?	2010 FEIR p. III.D-149 (Impact TR-56); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	No
D.d	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses?	2010 FEIR p. III.D-149 (Impact TR-57); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	No

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
D.e	Result in inadequate parking capacity that could not be accommodated by alternative solutions?	2010 FEIR p. III.D-118 (Impact TR-35), p. III.D-124 (Impact TR-36), p. III.D-148 (Impact TR-55); Addendum 1 p. 10; Addendum 4 p. 18	No	No	No	No
D.f	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., conflict with policies promoting bus turnouts, bicycle racks, etc.), or cause a substantial increase in transit demand that cannot be accommodated by existing or proposed transit capacity or alternative travel modes?	2010 FEIR p. III.D-97 (Impact TR-17), p. III.D-99 (Impact TR-18), p. III.D-101 (Impact TR-19), p. III.D-102 (Impact TR-20), p. III.D-147 (Impact TR-52); Addendum 1 p. 10; Addendum 4, p. 18	No	No	No	MM TR-17; MM TR-23.1

The transportation and circulation impact findings herein are also based on the following significance criteria used by the San Francisco Planning Department for the determination of impacts associated with a proposed project:[55]

D.g Traffic—In San Francisco, the threshold for a significant adverse impact on traffic has been established as deterioration in the LOS at a signalized intersection from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. The operational impacts on unsignalized intersections are considered potentially significant if project-related traffic causes the level of service at the worst approach to deteriorate from LOS D or better to LOS E or LOS F and Caltrans signal warrants would be met, or causes Caltrans signal warrants to be met when the worst approach is already at LOS E or LOS F.

For an intersection that operates at LOS E or LOS F under existing conditions, there may be a significant adverse impact depending upon the magnitude of the project's contribution to the worsening of delay. In addition, a project would have a significant adverse effect if it would cause major traffic hazards, or would contribute considerably to the cumulative traffic increases that would cause the deterioration in LOS to unacceptable levels (i.e., to LOS E or LOS F).

The operational impacts on freeway mainline segments and freeway on-ramp merge and off-ramp diverge operations are considered significant when project-related traffic causes the level of service to deteriorate from LOS D or better to LOS E or LOS F, or from LOS E to LOS F. In addition, a project would have a significant effect on the environment if it would contribute substantially to congestion at unacceptable levels.

It should be noted that the City of San Francisco Planning Department no longer uses intersection LOS as a metric for identifying significant traffic impacts. However, this is an addendum to an FEIR that did use LOS. Furthermore, OCII is the lead agency for this project and OCII does use LOS as described above; therefore, intersection LOS is an appropriate metric for Addendum 5.

D.h Parking—Parking supply is not considered to be a part of the permanent physical environment in San Francisco.[56] Parking conditions are not static, as parking supply and demand varies due to seasonal and temporal factors. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, as parking changes over time as people change their modes and patterns of travel.

Parking deficits are considered to be social effects, rather than impacts on the physical environment as defined by CEQA. Under CEQA, a project's social impacts need not be treated as significant impacts on the environment. Environmental documents should, however, address the secondary physical impacts that could be triggered by a social impact (CEQA Guidelines § 15131(a)). The social inconvenience of parking deficits, such as having to find a parking space when parking

[55] Five of the study intersections are in the City of Brisbane. The level of service standard for all arterial streets within the City of Brisbane is LOS D, except for the intersections on Bayshore Boulevard at Old County Road and San Bruno Avenue, which shall not be less than LOS C.

[56] Under California *Public Resources Code*, Section 21060.5, "environment" can be defined as "the physical conditions which exist within the area which will be affected by a Project, including land, air, water, minerals, flora, fauna, noise, and objects of historic or aesthetic significance."

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
spaces are scarce, is not an environmental impact, but there may be secondary physical environmental impacts, such as increased traffic congestion at intersections, air quality impacts, safety impacts, or noise impacts caused by congestion. Scarcity of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles or travel by foot), and a relatively dense pattern of urban development, may cause drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service in particular, would be in keeping with the City's "Transit First" policy. The City's Transit First Policy, established in the City's Charter Section 16.102 provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation." The transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the project site and then seek parking farther away if convenient parking is unavailable.					
D.i Transit—The project would have a significant effect on the environment if it would cause a substantial increase in transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service; or cause a substantial increase in operating costs or delays such that significant adverse impacts in transit service levels could result. The project would also have a significant effect on the environment if it would increase transit travel times on a particular route such that existing (or proposed) headways could not be maintained based on the existing (or proposed) vehicle fleet.					
D.j Pedestrians—The project would have a significant effect on the environment if it would result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.					
D.k Bicycles—The project would have a significant effect on the environment if it would create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.					
D.l Loading—The project would have a significant effect on the environment if it would result in a loading demand during the peak hour of loading activities that could not be accommodated within the proposed on-site loading facilities or within convenient on-street loading zones, and if it would create potentially hazardous traffic conditions or significant delays affecting traffic, transit, bicycles or pedestrians.					
D.m Emergency Vehicle Access—The project would have a significant impact on the environment if it would result in inadequate emergency vehicle access.					
D.n Construction—Construction-related impacts generally would not be considered significant due to their temporary and limited duration. However, in circumstances involving large development plans where construction would occur over long periods of time, construction-related impacts may be considered significant.					

Changes to Project Related to Transportation and Circulation

Compared to 2010 FEIR R&D Variant (Variant 1), the 2018 Modified Project Variant would relocate 632 residential dwelling units from CP to HPS, add a 175-room hotel in HPS, add 410,000 sf of institutional/educational uses in HPS, reduce R&D/Office in HPS from 5,000,000 sf to 4,265,000 sf, and increase the retail space in HPS from 125,000 sf to 391,000 sf. Furthermore, 71,000 sf of the new retail space and an additional 172 residential dwelling units at HPS would be space previously approved and no longer planned to be built as part of HPS1. This would result in changes to the overall site's vehicular traffic generation. In the AM peak hour, the 2018 Modified Project Variant would reduce trips in CP by 46 and in HP by 147, for a net increase of 101 trips. In the PM peak hour, the 2018 Modified Project Variant would reduce vehicle trips in CP by 31 and would increase vehicle trips in HP by 510, for a net increase of 479 vehicle trips. Increases in trips associated with the 2018 Modified Project Variant in the PM peak hour include approximately 100 AM peak hour and 200 PM peak hour vehicle trips for the 172 dwelling units and 71 ksf of retail space that was approved but not built, and no longer planned to be built, as part of the adjacent HPS Phase 1 project. These new trips would not affect the total amount of traffic in the area at Project buildout because they were previously included as part of a different project; however, they do represent an increase in the number of trips that are considered a

part of the 2018 Modified Project Variant. Although the 2018 Modified Project Variant's contribution in traffic is expected to increase by 101 vehicle trips in the AM peak hour and 510 vehicle trips in the PM peak hour, the total traffic volume in the area is expected to remain virtually unchanged in the AM peak hour and increase by approximately 280 vehicle trips in the PM peak hour, because the other vehicle trips were previously accounted for as part of Phase 1. The net increase would be nominal compared to the overall site's forecasted trip generation, and would likely to be dispersed among different roadways in the site, and is not likely to be perceptible to the public. The revised land uses would also result in a slight decrease in transit demand during both the AM and PM peak hours.

The 2018 Modified Project Variant would also include the potential for water taxi service at Dry Dock 4 in HPS2. As noted in the Project Description, the service would involve up to 8 trips in the AM peak hour and up to 8 trips in the PM peak hour, depending on demand. Vessels would accommodate up to 22 passengers each. To the extent this service affects any of the travel demand forecasts, it would serve to reduce vehicle trips and possibly accommodate travelers who would otherwise take transit, walk, or bike. In other words, the service would have relatively small effects on overall travel behavior at the site and, if anything, would tend toward easing traffic and transit congestion. Because the actual level of water taxi service is uncertain, and to ensure a worst-case assessment, this analysis conservatively assumes no effects associated with the water taxi service.

The 2018 Modified Project Variant would also include slight revisions to the construction phasing associated with the modifications to the land use program, which would change the way in which construction traffic demands are spread over time, and would include minor modifications to the phasing of roadway and transit infrastructure and service.

The 2018 Modified Project Variant would also include minor changes to roadway alignment and cross-sections in HP. Proposed changes in HPS South are associated with re-orientation of street grid in order to preserve some existing buildings on the site. Proposed changes in the R&D and HPS North areas are associated with improvements to the bicycle network to connect the proposed cycletrack through entire CP and HPS site. However, street design principles generally remain unchanged and facility capacity generally remains unchanged. Appendix D (Revised Roadway Cross-Sections) of Addendum 5 Appendix D (Analysis of Transportation Effects) includes the revised cross-sections. Changes within HP also include an optional extension of Donahue Avenue from its current terminus south to connect to Crisp Avenue as well as the provision of transit-only lanes along Lockwood Street and Donahue Street.

Bicycle and pedestrian facilities would be modified as a result of the roadway alignment and cross-sectional changes discussed above; however, changes would generally be minor. One exception is the proposed change to the proposed cycletrack. Changes are proposed in HP to realign the cycletrack away from Crisp Avenue, through the open space to the south, and to connect to a midblock break within HPS South. The cycletrack would continue through HPS South and across Dry Dock 4 as a two-way cycletrack, and then travel up Spear and Robinson Street as a directional separated bicycle facility to connect to the cycletrack planned in the Northside Park, west of Donahue Street.

The 2018 Modified Project Variant would also include changes to total parking supply associated with changes in land use and refinements to street and intersection designs. No changes to maximum parking rates by land use are proposed. Specifically, maximum parking supply (including on- and off-street supply) at CP would decrease by nearly 250 spaces and the maximum supply at HP would increase by approximately 750, resulting in a net site-wide increase of approximately 500 spaces. Generally, the 2018 Modified Project Variant would supply parking within or slightly above the range contemplated in the 2010 FEIR for R&D Variant (Variant 1) (3,000 to 23,000 on- and/or off-street parking spaces).

Changes in Circumstances

The transportation system in the vicinity of the project site has not substantially changed since certification of the 2010 FEIR, as there has been relatively little development in the study area. Exceptions to this are portions of HPS1 and the 267-unit Hunters View Project near the northern portion of the HPS site, which are minor.

Regional transportation demand has increased; as a result, traffic on regional transportation facilities, including public transit, regional freeways, and major local thoroughfares, has increased congestion and crowding somewhat on roadway facilities and transit service further from the project site.

However, the effects of regional growth were contemplated in the 2010 FEIR's cumulative analysis.

Comparative Impact Discussions

Impact TR-1: Construction of the Project would result in transportation impacts in the Project vicinity due to construction vehicle traffic and roadway construction and would contribute to cumulative construction impacts in the Project vicinity. ***[Criterion D.n]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that construction of the Project would result in transportation impacts in the Project vicinity due to construction vehicle traffic and roadway construction and would contribute to cumulative construction impacts in the Project vicinity. The 2010 FEIR concluded implementation of mitigation measure MM TR-1, which would require the Applicant to develop and implement a Construction Traffic Management Plan to reduce the impact of construction activity on transportation facilities, would reduce the impacts caused by construction, but not to a less-than-significant level.

The overall amount of construction anticipated to occur as part of the 2018 Modified Project Variant would be the same as or less than originally conceived and described for the 2010 Project, although the sequencing would be different. The 2010 Project analysis anticipated development phasing that would create more construction activities in the HPS in the early years of project build-out, with increased construction levels at CP during later phases. Additionally, the 2010 Project also included construction of a new NFL stadium in the early phases of development, which would have resulted in more intense construction activities than would likely ever occur during any of the non-stadium variants.

The revised phasing proposed for the 2018 Modified Project Variant would reverse this, with more construction activities in CP during the earlier years and more activity in the HPS site during later years. Further, because the 2018 Modified Project Variant does not include a new NFL stadium, the overall construction activities would be more spread out over time and well below the peak levels anticipated for the 2010 Project.

Although the latest proposed phasing at CP is different from previous analyses of accelerated construction at CP, such as the evaluation outlined in 2010 FEIR Addendum 1, the overall construction activities and general proposal is similar to what was analyzed in 2010 FEIR Addendum 1. Portions of the construction activities outlined in Addendum 1, including demolition of Candlestick Park, have already occurred. Postponement of construction in HPS is primarily a result of delays in transferring land from the US Navy to the City and County of San Francisco. An estimate of construction activities during the course of project build-out associated with the 2010 Project and the 2018 Modified Project Variant, as well as a chart illustrating the difference in terms of construction truck trips over time between the two, is provided in Appendix C (Construction Activities) of Addendum 5 Appendix D.

In summary, there are no changes in the Project that would require revisions of the 2010 FEIR; accordingly, the impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-2: Implementation of the Project would cause an increase in traffic that would be substantial relative to the existing and proposed capacity of the street system, even with implementation of a Travel Demand Management Plan. ***[Criterion D.a]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that general traffic increases in the study area would be substantial compared to the existing setting and overall capacity of the street system. The 2018 Modified Project Variant would slightly increase forecasted traffic volumes from the Project, by approximately 2 percent in the AM peak hour and 6 percent in the PM peak hour. As noted earlier, although the 2018 Modified Project Variant's trip generation would be between 2 and 6 percent higher than contemplated in the 2010 FEIR in the AM and PM peak hours, it would include land uses that were previously approved but not built, and no longer planned to be built, at HPS Phase 1. Trips from these uses were previously included in the cumulative analysis in the 2010 FEIR, but were not associated with 2010 FEIR Variant 1 (R&D). The 2018 Modified Project Variant's vehicular trip generation would be between 2 and 6 percent than FEIR Variant 1 (R&D), which would cause a net increase to area-wide traffic of less than 3.5 percent. The Transportation Assessment conducted for the 2018 Modified Project Variant (p. 19), included as Appendix D, found that these types of fluctuations would be within the range of error of the overall project travel demand forecasts and would not likely to cause a perceptible difference to the public.

The 2010 FEIR's discussion of traffic impacts is based on project build-out. Refinements have been made to the internal roadway network, both to cross-section dimensions and roadway alignments. Refinements to roadway cross sections would be made to encourage slow-speed auto traffic, but also to better accommodate transit, bicyclists, and on-street parking based on recent SFMTA design guidance for travel lane widths. Some of these changes have been discussed in prior addenda. Specifically, Addendum 1 (p. 10) described some general categories of modifications, such as establishing consistent design principles, establishing a more consistent BRT alignment, the design of the Yosemite Slough Bridge, and reorientation of some streets in CP. These principles have not changed since Addendum 1, although some additional modifications to cross-sections have been proposed as a consequence of modification of some roadway alignments in HPS. Revised cross-sections associated with the 2018 Modified Project Variant are presented in Addendum 5 Appendix D.

However, other principles affecting the roadway designs described in Addendum 1, such as the revised bicycle network and the re-orientation of the street grid in Hunters Point South are no longer directly applicable, and additional modification is proposed as part of the 2018 Modified Project Variant. Those elements are described below:

- **Revised Bicycle Network.** Project modifications described in Addendum 1 included a new cycletrack facility that closed a gap in the bicycle network near the project's retail center. The cycletrack would extend west of the project site, along Harney Way toward US-101[57] replacing the originally proposed Class II bicycle lanes on both sides of the street. The cycletrack was also anticipated to travel along Crisp Road in HPS, before terminating near Spear Avenue. The modifications described in Addendum 1 related to the bicycle network revisions in CP remain unchanged since Addendum 1. Refer to Addendum 1, p. 26 for a comparison of the 2010 Project and the Addendum 1 refinements to the bicycle network. However, the 2018 Modified Project Variant proposes to realign the cycletrack through HPS such that it would traverse the open space to the south of Crisp Road, and then would use a neighborhood midblock break in Hunters Point South to travel parallel to Crisp Road. This modification is discussed in more detail in the bicycle impacts section.
- **Reorientation of Street Grid in the Warehouse District.** Streets in the Warehouse District neighborhood associated with the 2018 Modified Project Variant are similar to what was proposed in 2010 FEIR R&D Variant (Variant 1) (2010 FEIR Figure IV-1, p. IV-7), but street alignments have been slightly modified to account for retention of some additional existing buildings. Overall, the size and density of the street grid in Hunters Point South is similar to what was originally approved in 2010 FEIR R&D Variant (Variant 1); therefore, transportation capacity is expected to be similar.

[57] The EIR anticipated that Harney Way would be constructed in two phases. The first phase would construct two auto travel lanes in each direction (with two BRT lanes, on-street bicycle lanes, and a center turn lane). The changes proposed for the initial configuration of Harney Way do not affect auto capacity, but rather use land reserved for potential future expansion to extend the two-way Class I cycletrack from the project site west toward the Bay Trail. The Class I cycletrack would be removed if Harney Way were widened to its ultimate width because of the need for auto capacity. Under these circumstances, bicycle conditions along Harney Way would be identical to what was originally approved in the EIR.

- **Extension of Donahue Street South to Crisp Road.** Within Hunters Point, the 2010 Project provided one travel route to the north (via Donahue and Innes Avenue) and one travel route to the south (via Crisp Road and Palou Avenue). Travelers on the northern side of the HPS who wanted to travel south would have to travel through the entire Shipyard site to reach Crisp Avenue and Palou Avenue. Similarly, travelers in the southern part of Hunters Point who wish to travel north, would have to travel through the entire site to get to Innes Avenue. The extension of Donahue Street would provide a direct connection between Crisp Avenue and Innes Avenue, allowing for less circuitous travel and fewer vehicle trips through the center of the Shipyard site.

At build-out, project refinements, including both changes to land use that would slightly alter build-out traffic volumes and cause changes to internal roadway infrastructure, would result in very small changes to operating characteristics and would not cause this significant impact to be substantially more severe.

The 2010 FEIR also included an analysis of infrastructure phasing to ensure that the appropriate roadways were constructed along with land development to ensure adequate circulation. Although, for purposes of assessing transportation impacts, the 2018 Modified Project Variant would be similar to 2010 FEIR R&D Variant (Variant 1) at build-out, the project development phasing has changed. The initial phasing of traffic improvements was set forth in a memorandum included as 2010 FEIR Appendix A4 (Fehr & Peers, Roadway and Transit Phasing Plan, March 17, 2010).[58] An analysis of the 2018 Modified Project Variant phasing and infrastructure implementation timing was conducted to determine whether the 2018 Modified Project Variant would provide auto circulation and access at a level adequate to meet the travel demand throughout the build-out period.

Candlestick Point

As noted earlier, development at CP is anticipated to occur earlier than originally anticipated. As a result, and to respond to some of the changes in the order of development, revisions to the implementation phasing are proposed to better respond to land use phasing.[59] As shown in Table 10 (2018 Modified Project Variant Street Segment Improvements—Candlestick Point), most roadway improvements are scheduled to be implemented at the same triggers or sooner (relative to development levels) than proposed in the 2010 FEIR, with the exception of Jamestown Avenue and Ingerson Avenue and the automobile route around Yosemite Slough. However, Jamestown Avenue and Ingerson Avenue improvements are largely streetscape improvements, designed to improve the overall urban design of the streets, and would not affect vehicular capacity along the streets, so in terms of assessing traffic impacts, this modification is not material. Furthermore, the need for the auto route around Yosemite Slough is driven by the need for connection between HP and CP. Since development at HP is somewhat delayed compared to the forecasted schedule from the 2010 FEIR, these improvements are not needed as quickly, and technical analysis has shown that they could be postponed until Sub-phase CP-07 (see discussion below).

[58] Fehr & Peers, *Roadway and Transit Phasing Plan*, March 17, 2010.
[59] Although previous EIR addenda also considered revisions to the project phasing compared to what was analyzed in the EIR, the comparison in Addendum 5 compares the 2018 Modified Project Variant with the 2010 Project, and not to previously contemplated revisions.

TABLE 10 2018 MODIFIED PROJECT VARIANT STREET SEGMENT IMPROVEMENTS—CANDLESTICK POINT

		Original Non-Stadium Option[a]		*2018 Modified Project Variant*	
Intersection	*Improvement*	*Traffic Volume Trigger?*[b]	*Trigger*	*Traffic Volume Trigger?*[b]	*Trigger*[c]
Arelious Walker Drive, Shafter Avenue to Carroll Avenue	Construct Yosemite Slough Bridge[d]	No	Implementation of BRT	No	Implementation of BRT (HP-04)
Arelious Walker Drive, Carroll Avenue to Gilman Avenue	Interim Two-Lane Condition (see Addendum 2)		N/A	No	CP-01 (Adjacency)
	Ultimate Condition (see description above)	No	Implementation of BRT	Yes	CP-07 (approximately 3,900 PM Peak Hour Vehicle Trips CP) or Implementation of BRT
Arelious Walker Drive, Gilman Avenue to Harney Way	Construct two travel lanes in each direction with center median/turn lane	No	Implementation of BRT	No	CP-02 (Adjacency)
Harney Way Widening, Arelious Walker Drive to Thomas Mellon Drive	Near Term (see Addendum 2)	Yes	3,537 PM Peak Hour Vehicle Trips or Implementation of BRT[b]	No	CP-02 (Adjacency)
	Long-Term (see Addendum 2)	TBD[e]	Per MM TR-16 (as modified by Addendum 5)	TBD[e]	Per MM TR-16 (as modified by Addendum 5)
Jamestown Avenue, Arelious Walker Drive to Third Street	Resurface and Restripe	No	Demolition of Candlestick Park	No	CP-07
Ingerson Avenue, Arelious Walker Drive to Third Street	Resurface and Restripe	No	Demolition of Candlestick Park	No	CP-07
Gilman Avenue, Arelious Walker Drive to Third Street	Reconstruct or Resurface and Restripe	No	TBD	No	CP-02
Carroll Avenue, Arelious Walker Drive to Ingalls Street	See Figures 2.1.2A–2.1.2G	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[b]	Yes	CP-07 (Approximately 7,600 PM Peak Hour Vehicle Trips, CP & HP)[b]
Ingalls Street, Carroll Avenue to Thomas Avenue	See Figures 2.1.2A–2.1.2G	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[c]	Yes	CP-07 (Approximately 7,600 PM Peak Hour Vehicle Trips, CP & HP)[c]

NOTES:

a. As summarized in the 2010 FEIR (Comments and Responses, Appendix A4, Roadway and Transit Phasing Plan, Fehr & Peers, March 17, 2010. Note that the "Original Non-Stadium Option" as presented in the FEIR and replicated here is applicable to all non-stadium options.

b. Based on trip rates by land use used in the 2010 FEIR for R&D Variant (Variant 1) and currently proposed phasing. See Appendix D for LOS calculation showing that approximately 85% of project-related growth (corresponding to approximately 7,700 vehicle trips) could be accommodated at this intersection before significant LOS impacts would occur.

c. Where multiple triggers are provided, the trigger shall be whichever event occurs first. When a sub-phase is listed as the trigger, the improvement shall be fully constructed and operational prior to occupancy of the sub-phase.

d. The cross-section for Yosemite Slough Bridge has been modified from what is shown in the 2010 FEIR for the Non-Stadium alternative. However, at 45 feet in width, the structure would be smaller than the bridge approved in the Stadium scenario.

e. The isolated intersection analysis conducted for this study shows that the two intersections along Harney Way would operate acceptably with the near-term configuration even with full build-out of the project. However, because Harney Way is part of a complex series of roadway improvements and due to the inherent uncertainty in traffic forecasts, a study would be conducted prior to construction of each development phase to determine whether conditions are better or worse than projected. The results of that study would indicate whether additional development could be accommodated under the near-term configuration while maintaining acceptable LOS or whether widening.

The major connections between the CP development and the external transportation network are expected to be developed as part of the first Major Phase. These include Arelious Walker Drive, the four-lane internal spine roadway that connects the smaller internal streets to the external roadways connecting to the rest of the City via Carroll, Gilman, Ingerson, and Jamestown Avenues.

Within Major Phase 1 in CP, the development would occur in five sub-phases, CP-01 through CP-05. CP-01 is already constructed or under construction, and includes 337 residential dwelling units on the Alice Griffith site, which would generate approximately 100 PM peak hour auto trips, based on the methodology described in the 2010 FEIR. As part of this sub-phase, a portion of Arelious Walker has been constructed, between Gilman Avenue and Carroll Avenue. Ultimately, as noted earlier, Arelious Walker Drive would be constructed to provide two travel lanes in each direction, separated by a median. However, as part of CP-01, only the two lanes west of the median were constructed. During this initial period, this segment of Arelious Walker provides one travel lane in each direction. Then, during later phases of development, as noted below, the remaining half of Arelious Walker Drive would be constructed such that two auto lanes would be provided in each direction. The construction of this interim portion of Arelious Walker Drive is consistent with and supports the final configuration of Arelious Walker Drive. Refer to Addendum 1 (Appendix A, Sub-appendix D) for figures showing the interim and final configuration of Arelious Walker Drive.

As proposed, providing only one travel lane in each direction along Arelious Walker Drive is adequate for this small number of units comprising CP-01, and essentially serves to connect the four development blocks together and provide connections to Carroll Avenue and Gilman Avenue, two primary east/west connections to the greater Bayview neighborhood.

Sub-phase CP-02 would develop the 635,000 sf regional retail center, a 220-room hotel, 419 residential units, 150,000 sf of office, and the 10,000-seat arena. To support this new development, the key transportation infrastructure connecting CP to external routes would be constructed, including Harney Way between the retail center and Thomas Mellon Drive and Arelious Walker Drive, between Harney Way and Gilman Avenue. This portion of Arelious Walker Drive would be constructed to its ultimate width of four lanes, and would connect to the interim two-lane portion to the north of Gilman. Harney Way would be constructed to its initial configuration with four lanes, as described in the 2010 FEIR.[60] Additionally, Gilman Avenue, between Arelious Walker and Third Street would be reconfigured to provide one travel lane in each direction, center turn lanes, on-street

[60] EIR Addendum 4 discussed the potential for the initial phase of Harney Way to be constructed in two sequences corresponding to the need for information from SFMTA regarding the ultimate interim routing of the 28R BRT route. Addendum 4 concluded that since the sequenced construction would still result in the same auto capacity at all times and would still complete the exclusive right of way for the BRT in advance of service, there would be a less-than-significant impact of this sequencing. The same conclusions still apply to the 2018 Modified Project Variant.

parking, and would retain the existing sidewalks on both sides of the street. Intersections along Gilman Avenue would be signalized between Arelious Walker Drive and Third Street.[61]

Other than ensuring that other existing east/west streets connect to Arelious Walker Drive, none of the project-proposed improvements to Carroll Avenue, Ingerson Avenue, or Jamestown Avenue would be constructed as part of Sub-phase CP-02. Carroll Avenue is at the northernmost portion of the CP site, and therefore, would not likely to be a desirable route to the CP retail center, which sits at the southern end of the CP site. Further, improvements proposed for Ingerson Avenue and Jamestown Avenue are generally streetscape improvements designed to improve the attractiveness of the streets and not to increase auto capacity; therefore, for purposes of discussing traffic impacts, the timing of improvements to these streets is not critical and most of the auto capacity connecting the CP site to the external roadway network would be constructed as part of Sub-phase CP-02 with the described improvements to Harney Way and interim improvements to Arelious Walker Drive.

At this point, prior to occupancy of Sub-phase CP-02, with the exception of the interim portion of Arelious Walker Drive between Gilman Avenue and Carroll Avenue, all of the major auto traffic infrastructure in CP required to connect project-related traffic to the external roadway network would be constructed, as would most of the off-site capacity enhancements, including Harney Way and Gilman Avenue.

Sub-phase CP-03 involves construction of the blocks directly opposite the retail center across Ingerson Avenue. No additional transportation improvements are proposed as part of CP-03 because the major improvements needed to serve CP-03 would be constructed earlier, as part of CP-01 and CP-02.

With the opening of CP-04, the first four sub-phases would generate about 3,750 vehicle trips, which would exceed the trigger point identified in the 2010 FEIR of approximately 3,150 vehicle trips that would require improvements to the auto route around the Yosemite Slough, that includes Carroll Avenue, Ingalls Street, Thomas Avenue, and Griffith Avenue.[62] The analysis conducted for the 2010 FEIR was based on the original phasing, which as noted earlier, would develop in the HPS site faster than currently proposed. As a result, the automobile route around Yosemite Slough was identified as appropriate infrastructure to provide access to CP and US-101 from the development at HPS. The trigger in the 2010 FEIR was identified as the appropriate time when the improvements would be necessary.

However, based on current proposed phasing, the previously identified trigger point for the auto route around Yosemite Slough would be met with less development in the HPS and substantially more development in CP than originally anticipated. As a result, there would likely be less auto demand for travel between the Hunters Point site and US-101 or between the CP and HPS sites, making the auto route around Yosemite Slough less critical during an early stage.

[61] This is different from the EIR proposal for Gilman Avenue. The proposed changes were evaluated in EIR Addendum 4, which showed the revised design would operate similar to the originally proposed configuration, with less disruption to the neighborhood due to construction.
[62] Fehr & Peers, *Roadway and Transit Phasing Plan*, March 17, 2010, p. 5, Table 4.

The improvements around Yosemite Slough would be required when approximately 85 percent of the total forecasted increase in vehicle traffic at the intersection of Carroll Avenue and Ingalls Street would occur. Based on currently proposed phasing, this would occur around CP-07, which is also when the northern portion of Alice Griffith development adjacent to Carroll Avenue is scheduled to be constructed. Thus, the trigger for improvements to Carroll Avenue and the automobile route around Yosemite Slough has been modified based on the revised phasing.

The remaining auto capacity enhancements on Arelious Walker Drive, between Gilman Avenue and Carroll Avenue would also be required to be constructed prior to occupancy of Sub-phase CP-07. At the end of Sub-phase CP-06 in CP, which represents the condition at which the most traffic would be using the interim portion of Arelious Walker Drive, the intersection of Arelious Walker Drive and Gilman Avenue would operate within acceptable level of service; therefore, no significant impacts would occur as a result of providing this interim condition through Sub-phases CP-01 through CP-06.

As a result, the roadways that facilitate travel between the project site and the external roadway network would generally provide their full capacity prior to any new trips being generated from Major Phase 2, with the exception of the portion of Arelious Walker between Gilman and Carroll. This segment would be widened to its full capacity near the beginning of Major Phase 2, at which point all major roadways in the CP portion of the project site would be at their full capacity. Otherwise, as shown in Figures 3 to 5, Major Phases 2 and 3 would only add internal circulation roadways adjacent to new development parcels to connect to the major roadways built as part of Major Phase 1. As a result, auto capacity in the CP area would be greater than or similar to what was described in the 2010 FEIR throughout the development build-out.

Hunters Point Shipyard

As noted earlier, development at HPS is anticipated to occur later than originally anticipated. As a result, and to respond to some of the changes in the order of development, revisions to the 2010 FEIR improvement phasing requirements are proposed to better respond to land use phasing. As shown in Table 11 (2018 Modified Project Variant Street Segment Improvements—Hunters Point Shipyard), similar to the proposed changes at CP, all roadway improvements are scheduled to be implemented at the same triggers or sooner (relative to development levels) than proposed in the 2010 FEIR.

At build-out, the primary access routes to the HPS site include the four-lane Innes Avenue and the two-lane Palou Avenue. The main southern access route to the Shipyard Site, Crisp Avenue, would also be constructed as part of Major Phase 1. Improvements to Crisp Avenue, Spear Avenue, and a portion of Robinson Street, and associated internal streets to connect between them, would be constructed as part of Sub-phase CP-01, prior to any new trips generated by development in the HPS site. The remainder of Robinson Street, and improvements to Donahue Street and Innes Avenue would be reconstructed as part of HP-02, when the first nearby developments as part of HP-02 are constructed. With the improvements constructed in HP-02, the roadway network would provide a complete, continuous route from Innes Avenue to Crisp and Palou avenues. This access route would account for the total auto

capacity of the HPS site to connect with the surrounding neighborhoods and would be adequate to serve the development proposed as part of Major Phase 1 in HPS. Internal streets proposed as part of Major Phase 1 in HPS would connect between Donohue Street and Innes Avenue.

TABLE 11 2018 MODIFIED PROJECT VARIANT STREET SEGMENT IMPROVEMENTS—HUNTERS POINT SHIPYARD

		Original Non-Stadium Option[a]		*2018 Modified Project Variant*	
Intersection	*Improvement*	*Traffic Volume Trigger?*[b]	*Trigger*	*Traffic Volume Trigger?*[b]	*Trigger*[c]
Palou Avenue, Griffith Avenue to Third Street	Resurface and Restripe, Streetscape Amenities	Yes	TBD—Based on Transit Phasing	No	HP-05 or Based on Transit Phasing to coincide with improved service frequencies
Thomas Avenue, Ingalls Street to Griffith Street	Resurface and Restripe, Streetscape Amenities	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[d]	Yes	CP-07[e]
Griffith Street, Thomas Street to Palou Street	Resurface and Restripe, Streetscape Amenities	Yes	Reconstruction of Crisp Avenue	Yes	CP-07[e]
Innes Avenue, Donahue Street to Earl Street	Resurface and Restripe, Streetscape Amenities	Yes	1,000 PM Peak Hour Vehicle Trips	No	HP-02
Crisp Avenue, Palou Avenue to Fischer Street	Resurface, Restripe, Realign	No	Adjacency	No	HP-01
Innes Avenue/Hunters Point Boulevard/Evans Street, Earl Street to Jennings Street	Resurface and Restripe, Streetscape Amenities	Yes	1,000 PM Peak Hour Vehicle Trips	No	HP-02
Donahue Street, LaSalle Avenue/Kirkwood Avenue to Crisp Road	Extend Street		N/A	No	None; Optional Improvement

NOTES:

a. As summarized in the 2010 FEIR (Comments and Responses, Appendix A4, Roadway and Transit Phasing Plan, Fehr & Peers, March 17, 2010. Note that the "Original Non-Stadium Option" as presented in the 2010 FEIR and replicated here is applicable to all non-stadium options.

b. Based on trip rates by land use used in the 2010 FEIR for R&D Variant (Variant 1).

c. Where multiple triggers are provided, the trigger shall be whichever event occurs first. When a sub-phase is listed as the trigger, the improvement shall be fully constructed and operational prior to occupancy of the sub-phase.

d. Combined total from CP and HP

e. Although these two segments are technically part of the HP improvements, they are part of an overall strategy to provide increased auto capacity between HP and CP and should be implemented simultaneously with other improvements on Carroll Avenue and Ingalls Street that are triggered by development in CP.

Other than the optional extension of Donahue Street to Crisp Avenue, subsequent phases would build out the internal roadway network adjacent to individual development parcels, all of which would connect to the major access routes. Therefore, the major pieces of auto infrastructure connecting HPS with the external roadway network would be constructed as part of Major Phase 1 in HPS; therefore, auto capacity would be greater than (meaning more capacity would be provided) or similar to what was described in the 2010 FEIR during all phases of development.

As noted earlier, the 2018 Modified Project Variant includes an optional extension of Donahue Street to provide a better connection between the northern and southern portions of HPS. The technical

analysis conducted as part of this letter report does not include this extension and conclusions are not premised on its completion.

However, the decision to implement this extension would not alter impact conclusions. For example, under conditions without the extension, traffic from the southern portion of HPS destined for Innes Avenue and points north would drive through the site, "around the hill" (likely via Fischer Street, Robinson Street, and Donahue Street) to reach Innes Avenue. With the extension, this traffic could simply drive along Crisp Road to Donahue Street and drive directly "over the hill" to Innes Avenue. Traffic on external roadways would likely be similar, and traffic within the site would likely be less, as there would be less need for circuitous travel within the site. Thus, the extension of Donahue Street would likely reduce congestion within the site.

As a result of the analysis described above, no new or substantially increased significant traffic impacts are expected as a result of the 2018 Modified Project Variant or the modified phasing compared to the traffic impacts described in 2010 FEIR R&D Variant (Variant 1). Conditions would continue to operate similarly to conditions described in the 2010 FEIR. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

The 2010 FEIR also called for the Project to develop and implement a Transportation Demand Management Plan. This Plan is still applicable, and although it would reduce the severity of the Project's significant impact, the impact would remain significant and unavoidable.

Impact TR-3: Implementation of the Project would contribute traffic to significant cumulative impacts at intersections in the Project vicinity. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR identified significant project-specific impacts and considerable contributions to significant cumulative impacts at eleven study intersections projected to operate at acceptable LOS without the project and unacceptable LOS with the project, where no feasible mitigation was identified. This includes nine intersections that were identified for the 2010 Project, as well as two additional intersections (Ingalls/Carroll and Bayshore/Oakdale) that were identified specifically for 2010 FEIR R&D Variant (Variant 1). As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-4: At the intersection of Tunnel/Blanken, implementation of the Project would result in significant Project AM peak hour traffic impacts, and would contribute to cumulative PM peak hour traffic impacts. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR identified a significant project-specific impact and a considerable contribution to a significant cumulative impact at the intersection of Tunnel/Blanken. The 2010 FEIR identified mitigation measure MM TR-4, which consisted of striping changes at the intersection, to reduce the severity of the impact; however, the Mitigation Measure would not reduce the impact to less-than-significant levels. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-5: Implementation of the Project would contribute traffic at some study area intersections that would operate at LOS E or LOS F under 2030 No Project conditions. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR identified considerable contributions to significant cumulative impacts at 17 study intersections projected to operate at unacceptable LOS under conditions without the project, and where no feasible mitigation was identified. This includes 16 intersections that were identified for the 2010 Project, as well as one additional intersection (Evans/Jennings) that was identified specifically for 2010 FEIR R&D Variant (Variant 1). As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-6: Implementation of the Project could contribute traffic at the intersections of Geneva/US-101 Southbound Ramps and Harney/US-101 Northbound Ramps, which would operate at LOS F under 2030 No Project conditions. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR identified a significant project-specific impact and a considerable contribution to a significant cumulative impact at the intersections of Geneva/US-101 Southbound Ramps and Harney Way/US-101 Northbound Ramps. The 2010 FEIR identified mitigation measure MM TR-6, which called

for the Project to pay a fair-share contribution to construction of the Geneva Avenue extension and reconstruction of the Geneva Avenue/Harney Way/US-101 interchange; however, the impact would remain significant and unavoidable. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would increase traffic volumes slightly compared to 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, even with implementation of the identified mitigation measure.

Impact TR-7: Implementation of the Project could contribute traffic to the intersections of Amador/Cargo/Illinois, which would operate at LOS E under 2030 No Project. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR identified a significant project-specific impact and a considerable contribution to a significant cumulative impact at the intersection of Amador/Cargo/Illinois. The 2010 FEIR identified mitigation measure MM TR-7, which consisted of striping changes at the intersection, to reduce the severity of the impact; however, the impact would remain significant and unavoidable since its feasibility was uncertain. The 2010 FEIR noted that if it were found to be feasible, the Mitigation Measure would reduce the Project's impact at this intersection to less-than-significant levels. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-8: Implementation of the Project could contribute traffic to the intersections of Bayshore/Geneva, which would operate at LOS F under 2030 No Project. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR identified a significant project-specific impact and a considerable contribution to a significant cumulative impact at the intersection of Bayshore/Geneva. The 2010 FEIR identified mitigation measure MM TR-8, which called for the Project to contribute a fair share contribution toward improvements along Geneva Avenue associated with its extension to Harney Way, and would account for projected traffic volume increases to improve forecasted operations at the intersection. However, the impact would remain significant and unavoidable. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-9: Implementation of the Project would have less-than-significant Project and cumulative impacts at some study area intersections that would operate at LOS E or LOS F under 2030 No Project conditions. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR identified a number of intersections where the Project would have a less-than-significant impact. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. Furthermore, to be thorough in its assessment, that study conducted an analysis of intersection LOS at a subset of the 2010 FEIR study intersections to demonstrate whether the slight changes would affect intersection LOS. The study found that the slight increases would not create significant transportation-related impacts at the subset, which could reasonably be extrapolated to suggest that none of the study intersections that were forecasted to experience a less-than-significant impact due to the 2010 FEIR R&D Variant (Variant 1) would now experience a new significant impact associated with the 2018 Modified Project Variant. There would continue to be no impact.

Impact TR-10: Implementation of the Project would result in significant Project traffic spillover impacts and contribute to cumulative traffic spillover impacts. ***[Criterion D.a]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

In addition to the specific intersection impact analysis, the 2010 FEIR identified Impact TR-10, which noted that Project-related traffic may result in significant "spillover" traffic into neighborhood streets. Mitigation measures MM TR-2 and MM TR-17 were identified as likely to reduce the overall effects of traffic spillover by encouraging use of nonautomobile modes; however, the impacts were expected to remain significant and unavoidable with these mitigation measures. Note that minor modifications to mitigation measure MM TR-17 associated with changes to the Transit Operating Plan are included here. Those changes are discussed in greater detail in the discussion under Impact TR-17; however, the changes have minimal effect on the discussion of impacts associated with Impact TR-10.

As discussed Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public.

In summary, there are no changes in the Project that would require revisions of the 2010 FEIR; accordingly, the impact would remain significant and unavoidable even with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM TR-17: Implement the Project's Transit Operating Plan. The Project Applicant shall work with SFMTA to develop and implement the Project's Transit Operating Plan. Elements of the Project Transit Operating Plan shall include:

- Extension of the 24-Divisadero, the 44-O'Shaughnessy, and the 48-Quintara-24th Street into Hunters Point Shipyard.
- Increased frequency on the 24-Divisadero to ~~6~~10 minutes in the AM and PM peak periods. Extension of the 29-Sunset from its current terminus near the Alice Griffith housing development, near Gilman Avenue and Giants Drive, into the proposed Candlestick Point retail area. The 29-Sunset would operate a short line between Candlestick Point and the Balboa Park BART station. This would increase frequencies on the 29-Sunset by reducing headways between buses from 10 minutes to 5 minutes during the AM and PM peak periods between Candlestick Point and the Balboa BART station. Every other bus would continue to serve the Sunset District (to the proposed terminus at Lincoln Drive and Pershing Drive in the Presidio) at 10-minute headways.
- Convert T-Third service between Bayview and Chinatown via the Central Subway from one-car to two-car trains or comparable service improvement. Extension of the 28L-19th Avenue Limited from its TEP-proposed terminus on Geneva Avenue, just east of Mission Street, into the Hunters Point Shipyard transit center. The 28L-19th Avenue Limited would travel along Geneva Avenue across US-101 via the proposed Geneva Avenue extension and new interchange with US-101, to Harney Way. East of Bayshore Boulevard, the 28L-19th Avenue Limited would operate as BRT, traveling in exclusive bus lanes into the Candlestick Point area. The BRT route would travel through the Candlestick Point retail corridor, and cross over Yosemite Slough into the Hunters Point Shipyard transit center.
- The 28L-19th Avenue Limited would operate a short line to the Balboa Park BART station. This would increase frequencies on the 28L-19th Avenue Limited by reducing headways between buses from 10 minutes to 5 minutes for the segment between Hunters Point Shipyard and the Balboa Park BART station. Every other bus would continue to the Sunset District (to the proposed terminus at North Point Street and Van Ness Avenue) at 10-minute headways. If the TEP-proposed extension of the 28L has not been implemented by the SFMTA by the time implementation of this measure is called for in ~~the Transportation Study (Appendix D)~~ Addendum 5, based on the revised project phasing, the Project Applicant shall fund the extension of that line between its existing terminus and Bayshore Boulevard.
- New CPX-Candlestick Express to downtown serving the Candlestick Point site, traveling along Harney Way (with potential stops at Executive Park), before traveling on US-101 toward downtown, terminating at the Transbay Terminal.
- New HPX-Hunters Point Shipyard Express to downtown serving the Hunters Point Shipyard site, traveling from the Hunters Point Shipyard Transit Center, along Innes Avenue, with stops at the India Basin and Hunters View areas, before continuing

along Evans Avenue to Third Street, eventually entering I-280 northbound at 25th/Indiana. The HPX would continue non-stop to the Transbay Terminal in Downtown San Francisco.

Impact TR-11: Implementation of the Project would contribute to significant cumulative traffic impacts at four freeway segments. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would contribute to significant cumulative traffic impacts on freeway segments. No mitigation measures were identified to reduce the severity of these impacts. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there would continue to be no feasible mitigation measure to reduce the level of this impact.

Impact TR-12: Implementation of the Project would result in significant impacts at four freeway on-ramp locations. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would contribute to significant cumulative traffic impacts on freeway on-ramps. No mitigation measures were identified to reduce the severity of these impacts. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR Variant (R&D Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measure to reduce the level of this impact.

Impact TR-13: Implementation of the Project would contribute to significant cumulative traffic impacts at 12 freeway ramp locations. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would contribute to significant cumulative traffic impacts on freeway ramps. No mitigation measures were identified to reduce the severity of these impacts. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measure to reduce the level of this impact.

Impact TR-14: Implementation of the Project could result in significant impacts related to freeway diverge queue storage at the Harney/US-101 Northbound Off-ramp. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant traffic impact related to freeway diverge segment and queue storage at the off-ramp to Harney Way from northbound US-101. Mitigation measure MM TR-6, identified as part of the Project's impacts to the interchange intersections at Harney Way, would also serve to reduce impacts to the off-ramp diverge section and queue storage. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-15: Implementation of the Project could contribute to significant cumulative traffic impacts related to freeway diverge queue storage at some off-ramp locations (US-101 Northbound off-ramp to Harney Way, and US-101 Southbound Off-ramp to Harney Way/Geneva Avenue). ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would contribute to significant cumulative traffic impacts related to freeway diverge segment and queue storage at the off-ramps to Harney Way from northbound and southbound US-101. Mitigation measure MM TR-6, identified as part of the Project's impacts to the interchange intersections at Harney Way, would also serve to reduce impacts to the off-ramp diverge sections and queue storage capacities. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes slightly compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-16: Implementation of the Project would increase traffic volumes, but would not make a considerable contribution to cumulative traffic volumes on Harney Way. ***[Criterion D.a]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR found that the Project would increase traffic volumes along Harney Way from northbound and southbound US-101. Mitigation measure MM TR-16, identified as part of the Project's impacts to the interchange intersections at Harney Way, would also serve to reduce impacts to the off-ramp diverge sections and queue storage capacities.

Harney Way was proposed to be constructed in two phases. The first phase, shown in Figure 5 in the Project's Transportation Plan, approved as part of the Project in 2010, called for the BRT lanes, two travel lanes in each direction, on-street Class II bicycle lanes in each direction, and a landscaping strip on the southern edge of Harney Way, adjacent to the State Parks property. The 2010 FEIR identified mitigation measure MM TR-16, which called for conversion of a portion of the bicycle lanes and the landscape strip into a travel lane such that Harney Way would have two travel lanes in the eastbound and three travel lanes in the westbound direction, shown in Figure 7 in the Transportation Study.

The 2010 FEIR Addendum 1 refined the design of Harney Way Phase 1 to incorporate a two-way cycletrack on the south side of the street, but maintaining the two BRT lanes on the north side and the four auto travel lanes. Mitigation measure MM TR-16 was revised to reflect this modified cross-section for Phase 1. Phase 2 would remain the same as per the 2010 FEIR.

The 2010 FEIR Addendum 4 did not modify any of the cross-sections for Harney Way, but did note that Phase 1 would be constructed in two sub-phases, Phases 1A and 1B. Phase 1A would construct the segment between Arelious Walker Drive and Executive Park East, while Phase 1B would construct the segment between Executive Park East and Thomas Mellon Drive. The purpose for splitting construction of Phase 1 into two sub-phases was to reflect the potential that the San Francisco County Transportation Authority (Transportation Authority) may wish to refine the routing for the BRT, and if so, the design of the westernmost segment (between Executive Park East and Thomas Mellon Drive) may be revised. The 2010 FEIR Addendum 4 noted that since both sub-phases of Phase 1 would be required to be constructed prior to operation of the BRT service, which would cause a less-than-significant impact.

Because the phasing of the 2018 Modified Project Variant is different than the phasing analyzed in 2010 FEIR Addendum 4, when mitigation measure MM TR-16 was last modified, additional modifications are proposed as part of Addendum 5 to link the construction of Harney Way Phase 1B with the revised "trigger" point for implementation of the BRT. These proposed changes are reflected below. The full length of Harney Way Phase 1 would be completed prior to implementation of the BRT service under the new phasing and revised language for MM TR-16; therefore, the phasing plan for Harney Way would continue to have a less-than-significant impact.

Otherwise, at build-out, as discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would increase traffic volumes slightly compared to 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM TR-16: Widen Harney Way as shown in Figure 5 in the Transportation Study.** The Project Applicant shall widen Harney Way as shown in Figure 5 in the Transportation Study with the modification to include a two-way cycle track, on the southern portion of the project right-of-way. The portion between Arelious Walker Drive and Executive Park East

(Phase 1-A) shall be widened to include a two-way cycle track and two-way BRT lanes, prior to issuance of an occupancy permit for Candlestick Sub-phase CP-02. The remaining portion, between Thomas Mellon Drive and Executive Park East (Phase 1-B), shall be widened prior to implementation of the planned BRT route which coincides with construction of ~~CP-07 and~~ HP-04 ~~in 2023~~, as outlined in the transit improvement implementation schedule identified in Addendum 1, based on the alignment recommendations from an ongoing feasibility study conducted by the San Francisco County Transportation ~~Agency~~ Authority.

Prior to the issuance of grading permits for Candlestick Point Major Phases 2~~,~~ and 3~~, and 4~~, the Project Applicant shall fund a study to evaluate traffic conditions on Harney Way and determine whether additional traffic associated with the next phase of development would result in the need to modify Harney Way to its ultimate configuration, as shown in Figure 6 in the Transportation Study, unless this ultimate configuration has already been built. This study shall be conducted in collaboration with the SFMTA, which would be responsible for making final determinations regarding the ultimate configuration. The ultimate configuration would be linked to intersection performance, and it would be required when study results indicate intersection LOS at one or more of the three signalized intersection on Harney Way at mid-LOS D (i.e., at an average delay per vehicle of more than 45 seconds per vehicle). If the study and SFMTA conclude that reconfiguration would be necessary to accommodate traffic demands associated with the next phase of development, the Project Applicant shall be responsible to fund and complete construction of the improvements prior to occupancy of the next phase.

Impact TR-17: Implementation of the Project would not exceed available transit capacity, because the Project and the Project's contribution to cumulative demand would be accommodated within the existing transit service, proposed TEP service, plus the service proposed as part of the Project. ***[Criterion D.f]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Similar to traffic impacts, the 2018 Modified Project Variant's transit impacts at build-out would be similar to what was described in the 2010 FEIR for R&D Variant (Variant 1), although two minor changes have been proposed. Specifically, the 2018 Modified Project Variant proposes minor changes to the proposed routes for the 29 Sunset in CP and to all routes in the HPS associated with a shift of the Hunters Point Shipyard Transit Center. As these routes were part of the Project's Transit Operating Plan, which was required as part of mitigation measure MM TR-17, the changes described below, are considered changes to the mitigation measure itself (although no changes to the text of the measure in the 2010 FEIR are required). Changes described herein have been developed in consultation with SFMTA. Refer to the original Transit Operating Plan, which was included as Appendix A to the Project's Transportation Plan, approved in 2010 as part of the 2010 Project for details on the original transit plan. Refer to the revised Transit Operating Plan, included as Appendix A to the 2018 Modified Project Variant's Transportation Plan, which has been prepared as part of the 2018 Modified Project Variant, for a more detailed presentation of the 2018 Modified Project Variant transit service plan.

The modification to the 29 Sunset was evaluated as part of 2010 FEIR Addendum 1 (pp. 19-24), which found that the revisions to the route would offer similar or better transit service levels to the route evaluated in the 2010 FEIR. The 29 Sunset routing proposed as part of the 2018 Modified Project Variant is identical to what was evaluated in Addendum 1 and approved by OCII and SFMTA.

The changes to routes in HPS involve moving the Hunters Point Transit Center two blocks to the north from the original EIR proposal. The 28R BRT route and the 23 Monterey/24 Divisadero would travel an additional two blocks along Spear Street to reach the center. Routes approaching the Transit Center from Innes Avenue would travel along Lockwood Street to reach the Transit Center instead of Robinson Street, as originally proposed in the 2010 FEIR. Land uses along Lockwood Street and Robinson Street are similar, so no change to transit mode share is expected as a result of this change. In Hunters Point South, transit (the 28R BRT and the 23 Monterey/24 Divisadero) would travel along Crisp Avenue along the northern edge of Hunters Point South. This is similar to the original EIR proposed routing in Hunters Point South.

The land use changes contemplated as part of the 2018 Modified Project Variant would not substantially change transit demand compared to 2010 FEIR R&D Variant (Variant 1). Furthermore, the proposed changes in routing would not likely have an effect on mode share. Therefore, the proposed modifications would not likely result in additional or substantially more severe significant impacts beyond those identified in the 2010 FEIR under build-out conditions as it relates to transit capacity impacts.

As noted above, the 2018 Modified Project Variant would increase traffic volumes within the Hunters Point Shipyard site, possibly increasing delays to transit serving the Hunters Point Shipyard site. However, the 2018 Modified Project Variant includes several features designed to ensure that transit within and around the Hunters Point Shipyard site is not adversely affected by increased traffic. Internal to the site, all transit would operate in transit-only lanes, as the 2018 Modified Project Variant includes new transit only lanes along Lockwood Avenue that were not part of the 2010 FEIR Variant 1 (R&D), as well as the transit lanes along Crisp Avenue that have always been a part of the project.

External to the site, mitigation in the form of transit-only lanes was identified for the Palou Avenue routes in the 2010 FEIR, and monitoring would be required to determine when or if the mitigation is needed. To the extent changes in Addendum 5 increase conflicts and delay to transit, the mitigation measure would simply be triggered sooner, as identified by the monitoring. Therefore, the delay to transit along Palou would not get worse than what the 2010 FEIR contemplated.

Similarly, the 2010 FEIR identified mitigation in the form of transit-only lanes along Evans Avenue. A similar monitoring program was established, such that if transit delays associated with the 2018 Modified Project Variant are greater (or materialize more quickly in the buildout stages of the 2018 Modified Project Variant) than identified in the 2010 FEIR, the mitigation measure would simply be implemented sooner, meaning that excessive transit delays would still be avoided.

Furthermore, although not required as part of the 2010 FEIR R&D Variant (Variant 1) or the 2018 Modified Project Variant, a nearby development project has been proposed, called the India Basin Mixed-Use Development Project, and would developed within India Basin along Innes Avenue, west of HPS2 site. A Draft EIR for the India Basin Mixed-Use Development Project has recently been published for public review and comment, although as of the preparation of this analysis, the India Basin Mixed-Use Development Project Draft EIR has not been certified nor has the associated project been approved. However, the India Basin Mixed-Use Development Project Draft EIR identified a significant impact to transit associated with movements into and out of the India Basin project's site. The India Basin Mixed-Use Development Project Draft EIR has called for conversion of one lane in each direction on Innes Avenue to be converted to transit-only as mitigation for that project's transit impacts. That mitigation measure, if approved, would ensure a continuous transit-only lane between the 2018 Modified Project Variant and Third Street, potentially resulting in increased traffic congestion and more efficient transit service.

While implementation of the India Basin Mixed-Use Development Project's mitigation measure for transit-only lanes along Innes Avenue would be an additional benefit to transit, the analysis herein does not assume that mitigation measure to be in place because it has not yet been approved. If those transit-only lanes are not implemented, transit conditions along the Innes Avenue corridor would be similar to those identified in the 2010 FEIR for Variant 1 (R&D) as the amount of traffic increase along Innes Avenue associated with the 2018 Modified Project Variant would be relatively small (i.e., less than 100) since the 2018 Modified Project Variant represents a net increase of only approximately 250 vehicle trips in the PM peak hour compared to 2010 FEIR Variant 1 (R&D), and only approximately half of those trips would occur along Innes Avenue, and only a fraction of the trips along Innes Avenue would occur in the peak direction. Therefore, the 2018 Modified Project Variant would not increase transit delays associated with traffic congestion, and mitigation measure MM TR-17, which calls for the Project Applicant to work with SFMTA to implement the proposed transit service increases, would still apply.

Similar to the Project's roadway infrastructure, the Project's transit network was proposed to be implemented at various levels throughout the development as described in the Transit Operating Plan. As a result of proposed changes to the development phasing, the transit phasing has been modified in order to ensure that the appropriate transit service is provided throughout the development as currently envisioned. Mitigation measure MM TR-17 notes that the transit operating plan may be modified from what was approved in the 2010 FEIR "to address changes in the operating environment and service demands" based on SFMTA's planning methodology and public input if modifications result in:

- Similar or higher transit mode share to what was projected in the 2010 FEIR
- Adequate capacity to serve projected transit ridership
- Similar or less severe traffic impacts to those identified in the 2010 FEIR

Although the changes to the Transit Operating Plan are not specifically to address current or observable changes in the operating environment and service demands, the Project Sponsor and SFMTA believe that the proposed changes to development phasing would affect the future operating environment and service demands, and are thus proposing changes to the Transit Operating Plan to better meet those future demands consistent with the provisions in mitigation measure MM TR-17.

The 2010 Project and 2018 Modified Project Variant transit phasing are shown in Table 12 (Transit Phasing). Generally, changes to the transit phasing delay the provision of transit service to the HPS site, due to the delay in development there. In response to the acceleration of planned development in CP, transit service at CP would be accelerated, compared to the 2010 FEIR phasing plan. Overall, the revised phasing has been developed in collaboration with SFMTA service planning staff to retain a relatively close approximation to the level of transit demand that would be generated for each level of transit service between the 2010 Project and 2018 Modified Project Variant, combined with engineering judgment to account for the unique development phasing currently proposed. Additionally, at build-out, slightly higher service frequency would be provided on the HPX Hunters Point Downtown Express Route, with slightly less frequent service on the 24 Divisadero. This minor change would provide a similar amount of service, but better target that service to serve expected market demands. These changes are expected to provide even better matches between service and demands, and thus, would not likely to decrease transit usage at the site or deteriorate the quality of transit service provided such that new significant impacts would occur.

Addendum 1 modified the Transit Operating Plan to include a privately funded shuttle, available complimentary for the general public, including existing neighbors, future residents, and shopping center patrons and employees, to provide service between the project site and the Balboa Park BART station, replicating service that will ultimately be offered by the 28R BRT route. This shuttle would be provided by the Project Sponsor or other on-site tenant. Service would be offered at 7.5-minute frequency with approximately 30-passenger vehicles. This service would provide interim service until the 28R BRT route, or other comparable transit service is implemented. Although the shuttle service would initially be oriented to the Balboa Park BART Station, the site's TDM coordinator would retain the ability to reroute the shuttle to other regional transit hubs to better match patron and employee demand, with the mutual agreement of the Environmental Review Officer. This shuttle service would remain in the Transit Operating Plan as part of the 2018 Modified Project Variant.

Addendum 1 also modified the Transit Operating Plan to include a temporary extension of the 56 Rutland route into the CP site to provide additional connections to Caltrain and other regional transit. However, that modification called for the extension to be implemented temporarily, only until such time as the CPX was implemented. Since the 2018 Modified Project Variant phasing includes implementation of the CPX early on, the 56 Rutland extension would no longer be necessary, and that would be removed from the Transit Operating Plan, consistent with the 2010 FEIR Transit Operating Plan.

TABLE 12 TRANSIT PHASING

Route	Frequency	2010 Project/Approved Transit Operating Plan		2018 Modified Project Variant	
		Major Phase	Approx. Year	Major Phase/ Sub-phase	Approx. Year
Hunters Point Shipyard					
Hunters Point Express (HPX)	20	1	2017	1 / HP-01	2021[d]
	10	1[a]	2019[a]	2 / HP-04	2025
	6	N/A	N/A	3 / HP-06	2026
23 Monterey	20	1	2017	1 / HP-01	2021
23 Monterey or 24 Divisadero[b]	15	2	2023	2 / HP-04	2025
	10	2	2025	3 / HP-06	2026
48 Quintara	15	1	2015	1 / HP-01	2021
	10	1	2019	2 / HP-03	2025
44 O'Shaughnessy	10	N/A	N/A	1 / HP-02	2022
	7.5	1	2017	2 / HP-03	2025
	6.5	1	2019	3 / HP-06	2026
Candlestick Point					
Privately Funded Shuttle[c]	7.5	N/A	N/A	1 / CP-02	2022
Candlestick Point Express (CPX)	20	2	2021	N/A	N/A
	15	2	2022	1 / CP-03	2021
	10	3	2027	1 / CP-02	2022
29 Sunset	10	2	2021	1 / CP-03	2021
	5	2	2022	1 / CP-02	2025
Routes Serving Both Sites					
28R/BRT (Includes Construction of Yosemite Slough Bridge)	8	2	2021	2 / HP-04	2025
	5	2	2022	3 / CP-07	2028
T Third	6	2	2020	No Change—Not triggered by project development	
	5	3	2025		

NOTES:

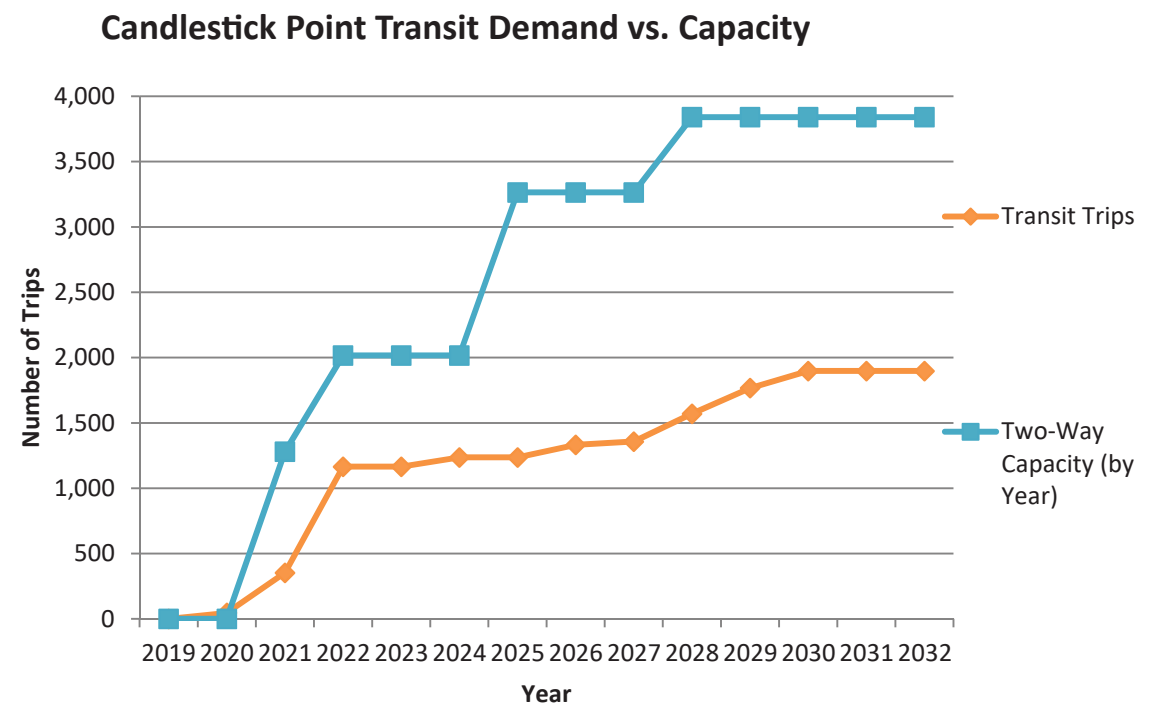
a. Approved Transit Operating Plan called for service increases to 12-minute headways. This has been revised to 10-minute headways as part of the 2018 Modified Project Variant.

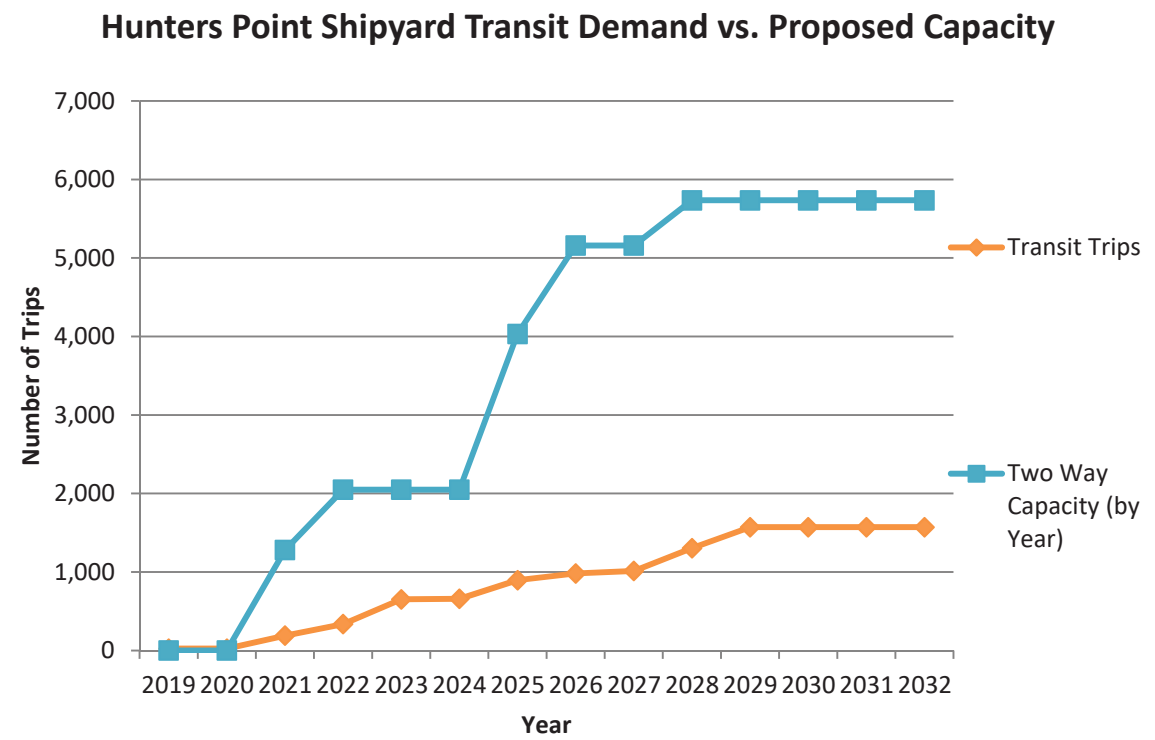
b. The 23 Monterey service may extend into HPS until SFMTA's fleet is modified to eliminate the need for an Overhead Contact System (OCS) wires extended into the HPS site, at which point the 24 Divisadero would be extended and the 23 Monterey would return to its original (existing) routing. Note that the Approved Transit Operating Plan also called for three levels of service, corresponding to 15-, 10-, and 7.5-minute frequencies. The Modified Transit Operating Plan has been changed to reduce service levels on this route and increase service levels on express bus routes based on direction from SFMTA staff.

c. Temporary until initiation of BRT.

d. Although the anticipated development schedule calls for the first portions of HP-01 to be complete in 2019, that portion is primarily reconstruction of existing artists' studios. The first portion of new development is scheduled to be complete by approximately 2021, which is when new transit service would likely be warranted.

Figure 24 (Transit Service Comparison) summarizes the level of transit supply proposed to be implemented over time relative to the expected transit ridership demand, based on the development phasing schedule and the transit implementation triggers described above, for CP and HPS. Whereas most of the transportation analysis compares the Modified Project to the R&D Variant





SOURCE: Fehr &Peers, 2018.

FIGURE 24

Addendum 5 to the CP-HPS2 2010 FEIR

TRANSIT SERVICE COMPARISON

(Variant 1), the assessment of changes to transit phasing compares the revised phasing to the phasing proposed and analyzed as part of Addendum 1 because the changes included as part of the Modified Project are relatively minor compared to Addendum 1. Transit service and phasing associated with the R&D Variant (Variant 1) was deemed to be an unrealistic base against which to compare Modified Project changes because SFMTA has been planning for the changes included as part of Addendum 1 since its approval.

The figures illustrate that with the proposed changes in development and transit phasing, the level of transit service proposed over time would increase generally proportionally to (and where possible, in advance of) increases in development and associated transit demand. The CP portion shown in Figure 24 illustrates that with the 2018 Modified Project Variant development schedule and transit phasing, the level of transit service relative to demand would remain substantially higher than the demand at the CP site. For example, the transit service capacity increases substantially in 2021 and 2022, coincident with substantial increases in demand over those same two years. Transit service increases again in 2025, in advance of increases in demand in years 2027 through 2030. The alignment of transit service increases with land use development throughout the development process and at build-out, which means the transit would remain an attractive option for travelers in the area.

The HPS half of Figure 24 similarly illustrates that transit service relative to development at HPS would generally increase along with, and where possible, in advance of development.

Therefore, transit capacity would be adequate to serve the expected demand, and the mode split (i.e., the percentage of trips made by transit) would remain similar, meaning that there would not be additional significant transit impacts beyond those described in the 2010 FEIR, nor would the 2018 Modified Project Variant substantially increase the severity of significant impacts identified in the 2010 FEIR. The impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM TR-17, Implement the Project's Transit Operating Plan**, was provided in full on p. 111 under Impact TR-10.

Impact TR-18: With full implementation of the Project with proposed transit improvements, the Project demand and the Project's contribution to cumulative demand would not exceed the proposed transit system's capacity at the study area cordons. ***[Criteria D.f, D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR found that the Project would cause a less-than-significant impact related to transit crowding, with implementation of the Project's Transit Operating Plan, identified as mitigation measure MM TR-17. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would very slightly decrease transit demand compared to 2010 FEIR R&D Variant (Variant 1); therefore,

transit capacity would continue to remain adequate to serve the 2018 Modified Project Variant. Impacts would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM TR-17, Implement the Project's Transit Operating Plan, was provided in full on p. 111 under Impact TR-10.

Impact TR-19: Implementation of the Project would add transit trips and the Project's contribution to cumulative transit trips to the Downtown Screenlines would not increase demands in excess of available capacity. ***[Criterion D.f, D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR found that the Project would cause a less-than-significant impact related to transit crowding at the Downtown Screenlines. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly decrease transit demand compared to the 2010 FEIR R&D Variant (Variant 1); therefore, transit capacity would continue to remain adequate to serve the 2018 Modified Project Variant. There would continue to be no impact.

Impact TR-20: Implementation of the Project would add transit trips and the Project's contribution to cumulative transit trips would not contribute significantly to Regional Screenlines conditions where overall ridership is projected to exceed available capacity. ***[Criterion D.f, D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR found that the Project would cause a less-than-significant impact related to transit crowding on regional transit providers. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would very slightly decrease transit demand compared to 2010 FEIR R&D Variant (Variant 1); therefore, transit capacity would continue to remain adequate to serve the 2018 Modified Project Variant. There would continue to be no impact.

Impact TR-21: Implementation of the Project could increase congestion and contribute to cumulative conditions at intersections along San Bruno Avenue, which would increase travel times and impact operations of the 9-San Bruno. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 9-San Bruno due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-21.1 and MM TR-21.2, which called for physical

improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-22: Implementation of the Project would contribute traffic to cumulative conditions at intersections along Palou Avenue, which would increase travel times and impact operations of the 23-Monterey, 24-Divisadero, and the 44-O'Shaughnessy. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on Palou Avenue due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-22.1 and MM TR-22.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-23: Implementation of the Project would increase congestion at intersections along Gilman Avenue and Paul Avenue, which would increase travel times and would impact operations of the 29-Sunset. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 29-Sunset due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-23.1 and MM TR-23.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As part of 2010 FEIR Addendum 4, the proposed configuration of Gilman Avenue between Arelious Walker and Third Street was revised to retain a single traffic lane in each direction, with on-street parking, center turn lanes, and installation of new traffic signals at all intersections. The transportation analysis conducted as part of Addendum 4 showed that operations with this modification would be the same as or better than those forecasted to be in place under original 2010 Project conditions with mitigation measure MM TR-23.1 in place. Thus, mitigation measure MM TR-23.1 was revised as part of Addendum 4 to remove requirements for changes to Gilman Avenue between Arelious Walker and Third Street. Improvements to other portions of the corridor, such as Paul Avenue, remained in

mitigation measure MM TR-23.1. The impact was considered to remain significant and unavoidable because the feasibility of improvements to Paul Avenue was not certain.

As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-24: Implementation of the Project would increase congestion at intersections along Evans Avenue, which would increase travel times and impact operations of the 48-Quintara-24th Street. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on Evans Avenue due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-24.1 and MM TR-24.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-25: Implementation of the Project would increase congestion at intersections in the study area, and make a considerable contribution to cumulative impacts that would increase travel times and impact operations of the 54-Felton. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 54-Felton due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measure MM TR-25, which called for additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-26: Implementation of the Project would increase congestion at intersections along Third Street, and make a considerable contribution to cumulative impacts that would increase travel times and impact operations of the T-Third. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the T-Third due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-26.1 and MM TR-26.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-27: Implementation of the Project could increase congestion at the intersection of Geneva Avenue and Bayshore Boulevard. This would increase travel times and impact operations of the 28L-19th Avenue/Geneva Limited. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 28R-19th Avenue/Geneva Rapid due to delays associated with Project-related traffic congestion. The 2010 FEIR identified mitigation measures MM TR-27.1 and MM TR-27.2, which called for physical improvements to improve transit speeds or, if not feasible, additional vehicles added to the route to maintain headways. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable even with implementation of the identified mitigation measure.

Impact TR-28: Implementation of the Project would increase congestion on US-101 mainline and ramps, which would increase travel times and impact operations of the 9X, 9AX, 9BX-Bayshore Expresses, and 14X-Mission Express. The Project would also contribute to cumulative impacts on these transit routes on US-101. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would cause a significant impact related to transit service on the 9X, 9AX, 9BX-Bayshore Express and 14X Mission Express routes for the portions of those routes on US-101 due to delays associated with Project-related traffic congestion. (The 9X San Bruno

Express has been renamed the 9R San Bruno Rapid, and the 9AX and 9BX have been renamed the 8AX Bayshore A Express and the 8BX Bayshore B Express, respectively, with slight changes to routing and service since publication of the 2010 FEIR). For purposes of Addendum 5, the impacts previously identified for the 9 Bayshore Routes would apply to the 8 Bayshore routes.

The 2010 FEIR determined that no feasible mitigation existed to improve operations on these routes. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there would continue to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-29: Implementation of the Project would not contribute to cumulative impacts on the 14X-Mission Express transit route when on I-280. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR found that the Project would cause a less-than-significant impact related to transit service on the 14X Mission Express routes on I-280 due to delays associated with Project-related traffic congestion. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. There would continue to be no impact.

Impact TR-30: Implementation of the Project would increase congestion and contribute to cumulative congestion on US-101 and on Bayshore Boulevard, which would increase travel times and adversely affect operations of SamTrans bus lines on these facilities. No feasible mitigation has been identified. ***[Criterion D.i]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2010 FEIR found that the Project would cause a significant impact related to regional transit service on Bayshore Boulevard and US-101. The 2010 FEIR determined that no feasible mitigation existed to improve operations on these routes. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there would continue to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-31: During implementation of the Project, bicycle facilities would be expanded to serve additional users. This would be a beneficial impact of the Project. ***[Criterion D.k]***

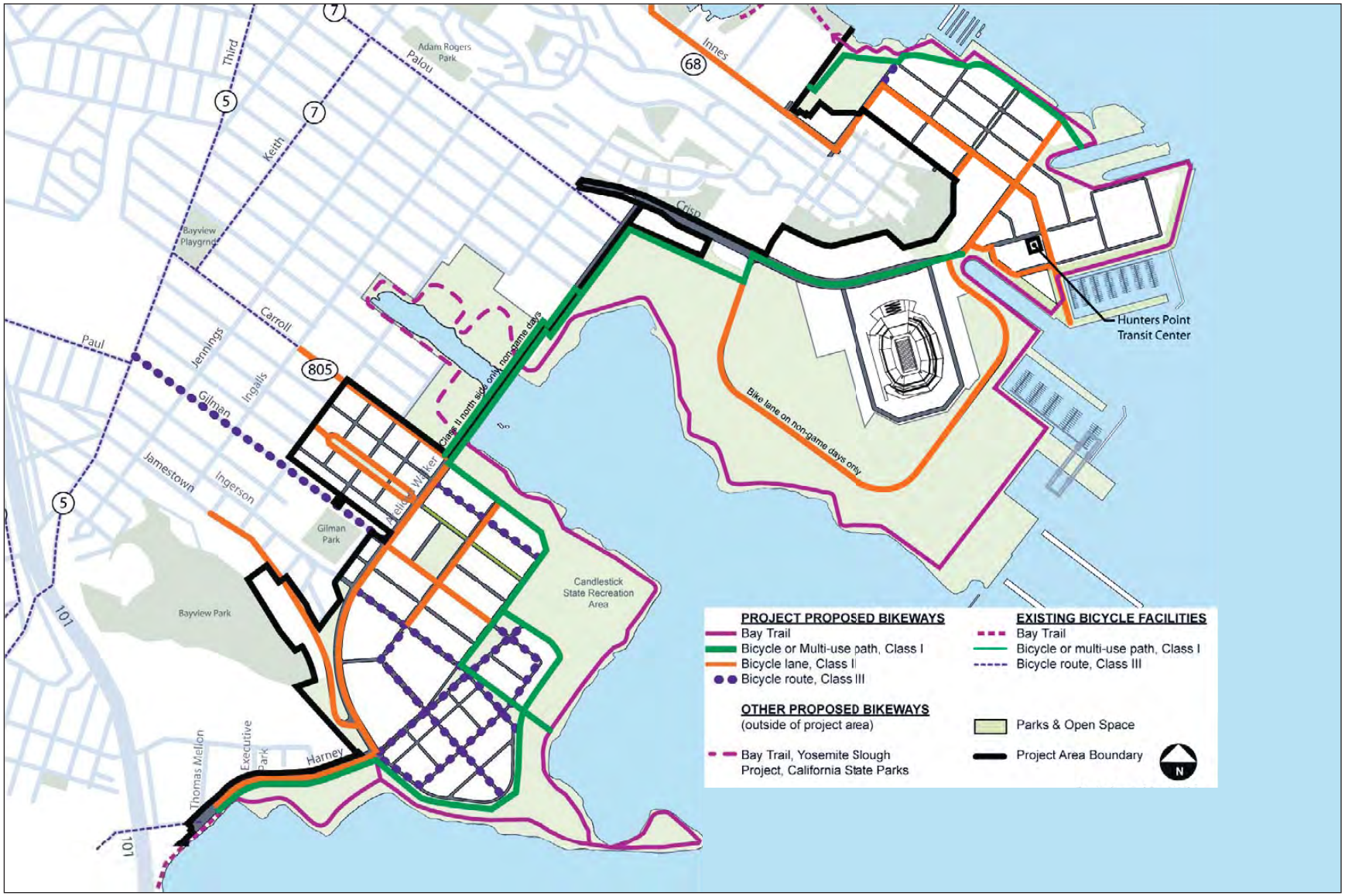
	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As shown in Figure 25 (2010 Project Bicycle Network Plan) and Figure 26 (2018 Modified Project Variant Bicycle Network Plan), the 2018 Modified Project Variant includes refinements to the proposed bicycle network. Many of these changes—particularly those in CP—were addressed in and approved as part of Addendum 1 (pp. 25–27), and would not be changed further as part of the 2018 Modified Project Variant being assessed herein. Therefore, they are not discussed further here.

The primary change to the bicycle network in the 2018 Modified Project Variant compared to the changes approved as part of Addendum 1 would be the re-alignment of the cycletrack in HPS South. One of the primary modifications approved as part of Addendum 1 was a new two-way cycletrack connecting the CP and HPS neighborhoods. Within HPS, the cycletrack was to travel along the northern side of Crisp Avenue.

However, the 2018 Modified Project Variant proposes an institutional/educational use and some R&D uses on the northern side of Crisp Avenue, which may require driveways or other curb cuts that may disrupt the cycletrack. Therefore, the 2018 Modified Project Variant proposes to align the cycletrack through the open space and park area south of Crisp Avenue, and along one of the midblock breaks in HPS South. From there, it would extend across the new bridges across Dry Dock 4, where it would connect to the planned portion of the Bay Trail traversing the perimeter of HPS and with proposed facilities on Robinson Street. The facility on Robinson Street would be constructed as a Class IV separated facility providing an additional buffer between cyclists and adjacent traffic. These changes would ensure a more direct route between HPS and CP, and would ensure a complete connection within HPS, and to proposed cycletrack facilities west of HPS, within the proposed India Basin Mixed-Use Development Project. As a result, the 2018 Modified Project Variant would provide a more complete and connected network of routes and facilities, and would penetrate through the center of HPS South, instead of along its northern edge as had previously been contemplated.

Overall, the project refinements would continue to improve the overall bicycle network in the study area and facilities would be adequate to meet bicycle needs, and Impacts TR-31 and TR-32 would remain unchanged. Mitigation measure MM TR-32 would also still apply, and as part of the requirements of MM TR-32, SFMTA has already initiated conversations with the Project Sponsor regarding a study to consider relocating the existing bicycle route on Palou Avenue to Quesada Avenue, immediately to the south, and part of the City's Green Connections project. As noted in the 2010 FEIR, this study must be complete prior to issuance of the grading permit for Major Phase 1 at HPS. No new significant impacts beyond those identified in the 2010 FEIR would result from the 2018 Modified Project Variant and the 2018 Modified Project Variant would not make bicycle impacts substantially more severe than identified in the 2010 FEIR, and therefore, there would continue to be no impact.

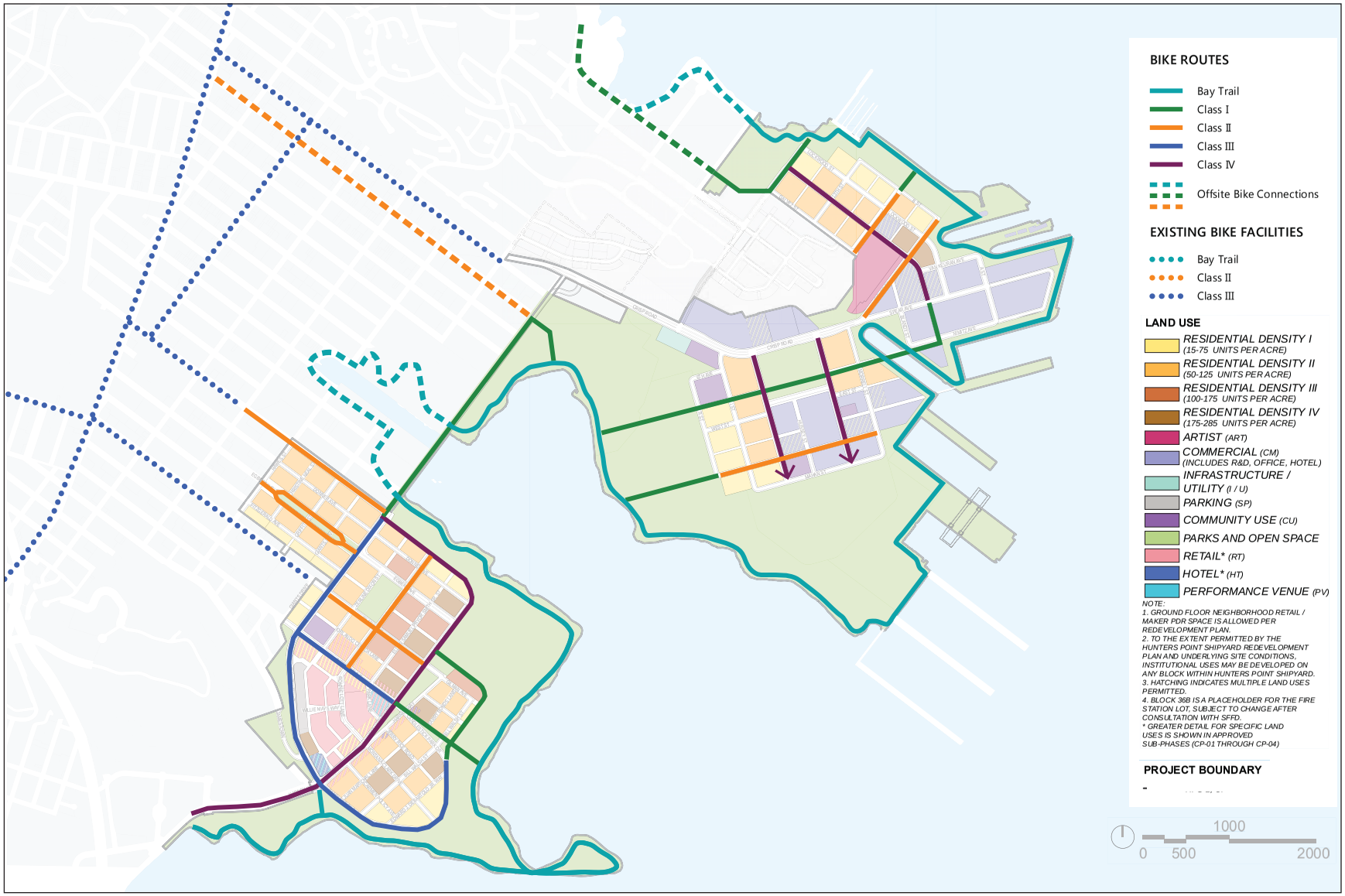


SOURCE: Lennar Urban, 2010

FIGURE 25

Addendum 5 to the CP-HPS2 2010 FEIR

2010 PROJECT BICYCLE NETWORK PLAN



SOURCE: FivePoint, 2018; Fehr & Peers, 2018.

FIGURE 26

Addendum 5 to the CP-HPS2 2010 FEIR

2018 MODIFIED PROJECT VARIANT BICYCLE NETWORK PLAN

Impact TR-32: Implementation of the Project's proposed transit preferential treatments and significant increases in traffic volumes on Palou Avenue could result in impacts on bicycle travel on Bicycle Routes #70 and #170 between Griffith Street and Third Street. ***[Criterion D.k]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

The 2010 FEIR found that the Project would cause a significant impact related to bicycle circulation related to traffic volume increases on Palou Avenue. The 2010 FEIR identified mitigation measure MM TR-32, which called for relocating the bicycle facility on Palou Avenue to another, less-congested, parallel street. Because the feasibility of relocating the facility was uncertain, the impact was considered significant and unavoidable. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain significant and unavoidable, and there would continue to be no feasible mitigation measures to reduce the level of this impact.

Impact TR-33: During implementation of the Project, pedestrian facilities would be expanded to serve additional users. This would be a beneficial impact of the Project. ***[Criterion D.j]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR noted that the Project would generally improve pedestrian conditions in the area by widening existing sidewalks and creating a pedestrian-oriented neighborhood within the project site, therefore creating a beneficial impact. The 2018 Modified Project Variant maintains the project's goals of prioritizing the pedestrian realm through provision of generous sidewalks with streetscape amenities and safety measures, such as bulbouts at key locations. Sidewalks would generally remain between 12 and 15 feet, within the range of sidewalks considered in the original plan.

Overall, the 2018 Modified Project Variant includes minor changes with respect to the pedestrian realm, such as slightly modified sidewalk widths and reoriented streets and the beneficial impact of the 2018 Modified Project Variant are expected to be similar to those identified for the 2010 FEIR R&D Variant (Variant 1). There would continue to be no impact.

Impact TR-34: Implementation of the Project would result in traffic volumes on area roadways that would not substantially affect pedestrian circulation and safety in the Project vicinity. ***[Criterion D.j]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that although the Project would be increasing conflicts between pedestrians, bicycles, and autos, the overall benefits to pedestrian safety associated with the project's

proposed improved pedestrian facilities would result in a less-than-significant impact. As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1); however, the slight increases would be generally imperceptible to the public. The impact would remain less than significant, and no mitigation would be required.

Impact TR-35: Implementation of the Project would not result in significant impacts associated with a lack of an adequate supply of parking that could not be accommodated within alternative modes. ***[Criteria D.e and D.h]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that although the Project would result in a shortfall of parking spaces compared to its projected demand, the Project's impacts to parking conditions would be less than significant. The 2018 Modified Project Variant would potentially result in slightly fewer parking spaces on-street than the maximum envelope anticipated as part of 2010 FEIR R&D Variant (Variant 1). Specifically, the 2010 FEIR identified that R&D Variant (Variant 1) would include approximately 3,000 on-street parking spaces (roughly evenly split between CP and HPS) and between zero and approximately 20,000 off-street spaces. Therefore, the 2010 FEIR concluded there would be a range of between approximately 3,000 spaces and 23,000 spaces in the entire development area.

The 2018 Modified Project Variant would reduce new on-street parking supply by up to several hundred spaces between CP and HPS based on more detailed designs prepared as part of sub-phase applications and the desire to provide separated bicycle facilities along Robinson Street (a precise count is unknown because the actual number of spaces that would have been provided cannot be determined until more detailed final designs are complete). Although the range of off-street parking spaces constructed was projected to be between zero and approximately 20,000 spaces in the 2010 FEIR, it is reasonable to expect that the 2018 Modified Project Variant would build at least as many off-street spaces as on-street spaces that would be removed through the minor design changes, such that with the loss of a few hundred on-street spaces, the 2018 Modified Project Variant would still contain between 3,000 spaces and 23,000 spaces.

Furthermore, as discussed in Addendum 5 Appendix D, there would be an overall increase in the maximum spaces allowed at Hunters Point Shipyard of 737 spaces and a corresponding decrease in the maximum amount of parking allowed at CP of 242 spaces. The resulting maximum total of parking allowed within the 2018 Modified Project Variant would be 495 spaces more than allowed under 2010 FEIR Variant 1 (R&D).

Therefore, since the 2018 Modified Project Variant would still provide parking within or slightly above the range identified in the 2010 FEIR, conclusions in the 2010 FEIR related to parking remain valid. The impact would remain less than significant, and no mitigation would be required.

Impact TR-36: Implementation of the Project roadway improvements would displace on-street parking spaces, and the existing demand could be accommodated in the nearby vicinity. ***[Criteria D.e and D.h]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project would remove some existing on-street parking associated with project-proposed off-site improvements and with mitigation measures, particularly those geared toward transit priority treatments. However, the 2010 FEIR determined that those impacts would be less than significant as vehicles would be able to park in other nearby streets. The 2018 Modified Project Variant would not affect the off-street parking supply and thus, does not create any changes to this impact discussion. The impact would remain less than significant, and no mitigation would be required.

Impact TR-37: Implementation of the Project would not result in significant impacts associated with a lack of adequate supply of loading spaces. ***[Criterion D.l]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project would provide adequate loading supply and, therefore, concluded that impacts related to loading would be less than significant, and no mitigation measures would be required. As the 2018 Modified Project Variant would not change the overall loading requirements, implementation of the 2018 Modified Project Variant would not result in any new significant impacts related to loading. The impact would remain less than significant, and no mitigation would be required.

Impacts TR-38 through TR-50: Transportation impacts related to the Proposed NFL Stadium.

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	N/A	N/A

The 2010 FEIR included a number of impacts related to operation of the proposed new NFL stadium in the HPS site. However, the stadium is not part of the 2018 Project Modification Variant, and these impacts and associated mitigation measures no longer apply.

Impact TR-51 through TR-55: Transportation impacts related to the proposed new arena. ***[Criteria D.a, D.b, D.e, D.f, D.g, D.h, D.i, D.j, D.k]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation (Impacts TR-51 and TR-52), Less than Significant (Impacts TR-53 to TR-55)	Significant and Unavoidable with Mitigation (Impacts TR-51 and TR-52), Less than Significant (Impacts TR-53 to TR-55)

The 2010 FEIR determined that the Project's proposed 10,000-seat Arena use would create new significant impacts associated with events at the arena not captured in the typical day-to-day operations at the site with no arena event. The 2018 Modified Project Variant does not propose any changes to the arena location, capacity, or operational characteristics compared to the 2010 FEIR. Therefore, the 2018 Modified Project Variant would not create any new significant impacts or substantially increase the severity of a significant impact associated with events compared to what was described in the 2010 FEIR. Therefore, impacts would remain significant and unavoidable with respect to Impacts TR-51 and TR-52, even with implementation of the identified mitigation measures. Impacts would remain less than significant with respect to Impacts TR-53, TR-54, and TR-55, and no mitigation would be required for these impacts.

Impact TR-56: Implementation of the Project would not impact air traffic. ***[Criterion D.c]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project would have a less-than-significant impact on air traffic. The 2018 Modified Project Variant would contain the same overall land uses and general development form and would not change the 2010 FEIR's conclusion regarding air traffic. The 2018 Modified Project Variant would not create any new significant impacts with respect to air traffic and no additional mitigation measures are required. Impacts would remain less than significant, and no mitigation would be required.

Impact TR-57: Implementation of the Project would not create hazards due to any proposed design features. ***[Criterion D.d]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project's transportation infrastructure would be designed in accordance with City standards, and would be reviewed and approved by the City prior to construction. As a result, the Project's impacts to hazards would be less than significant. The 2018 Modified Project Variant would also be designed accordance with City standards and would be reviewed and approved by the City. Therefore, the impact to design features would remain less than significant, and no mitigation would be required.

Impact TR-58: Implementation of the Project would not result in significant emergency access impacts. ***[Criterion D.m]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that the Project's transportation infrastructure would adequately facilitate emergency access and be designed to City standards, which include provisions that address emergency vehicles. The 2018 Modified Project Variant would also be designed accordance with City standards and would be reviewed and approved by the City. Therefore, the impact to emergency access would remain less than significant, and no mitigation would be required.

Additional Intersection Impacts for R&D Variant (Variant 1): The R&D Variant (Variant 2) and Housing/R&D Variant (Variant 2A) would worsen degraded traffic conditions at the intersection of Crisp and Palou. The R&D Variant (Variant 1) would cause acceptable traffic conditions to become unacceptable at the intersection of Innes and Earl. ***[Criteria D.a, D.b, D.g]***

	2010 CP-HPS Phase II FEIR	*2010 CP-HPS Phase II FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR identified a number of intersections where the 2010 Project would create significant impacts for which mitigation measures were available. The 2010 FEIR identified two additional intersections where R&D Variant (Variant 1) would create significant impacts and where mitigation measures were also available to reduce the R&D Variant (Variant 1) impacts to less-than-significant levels.

As discussed in Addendum 5 Appendix D, the 2018 Modified Project Variant would slightly increase traffic volumes compared to the 2010 FEIR R&D Variant (Variant 1). Although the slight increases in total volumes would be generally imperceptible to the public, the changes in specific movement volumes at the intersection of Crisp/Palou would require slight modification to the mitigation measure from the 2010 FEIR in order to ensure the mitigation measure continues to reduce the 2018 Modified Project Variant impact to a less-than-significant level at that intersection. With the modification shown below, the intersection of Crisp/Palou would continue to operate at acceptable level of service with implementation of the 2018 Modified Project Variant, and the impact at this intersection would be reduced to a less-than-significant level.

The intersection of Innes/Earl would also operate at acceptable levels with implementation of the 2018 Modified Project Variant and the associated mitigation measure (a new traffic signal) at that intersection from the 2010 FEIR without any modifications to the measure. Overall, these additional intersection impacts would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

R&D Variant (Variant 1)/Housing/R&D Variant (Variant 2A)/2018 Modified Project Variant Mitigation Measure MM TR-VAR1:

(a) Under the R&D and Housing/R&D Variants, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated left-turn lane and a shared through/right-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues. Under the 2018 Modified Project Variant, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated right-turn lane and a shared through/left-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues, and constructing the westbound approach on Crisp Avenue to provide two dedicated left-turn lanes and one shared through/right-turn lane. Implementation of this mitigation would reduce impacts from these variants to a less-than-significant level.

(b) Under the R&D Variant (Variant 1) and the 2018 Modified Project Variant, the Project Applicant would be required to fund the installation of a traffic signal at the intersection of Innes and Earl when warranted by traffic conditions. Implementation of this mitigation would reduce impacts from this variant to a less-than-significant level.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to transportation and circulation impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. Conclusions from this analysis remain the same as those reached in the 2010 FEIR related to transportation and circulation, both on a project-related and cumulative basis.

II.B.4 Aesthetics

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
1. Aesthetics. Would the project:					
E.a. Have a substantial adverse effect on a scenic vista?	2010 FEIR p. III.E-50 (Impact AE-1), p. III.E-53 (Impact AE-4), p. III.E-65 (Impact AE-6b); Addendum 1 p. 34; Addendum 4 p. 30	No	No	No	None
E.b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting?	2010 FEIR p. III.E-50 (Impact AE-1), p. III.E-59 (Impact AE-5b); Addendum 1 p. 34; Addendum 4 p. 30	No	No	No	None
E.c. Substantially degrade the existing visual character or quality of the site and its surroundings?	2010 FEIR p. III.E-51 (Impact AE-2), p. III.E-60 (Impact AE-6); Addendum 1 p. 34; Addendum 4 p. 30	No	No	No	MM AE-2
E.d. Create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties?	2010 FEIR p. III.E-53 (Impact AE-3), p. III.E-74 (Impact AE-7b); Addendum 1 p. 34; Addendum 4 p. 30	No	No	No	MM AE-7b.1, MM AE-7b.2

Changes to Project Related to Aesthetics

The 2018 Modified Project Variant includes changes in the height and bulk of certain buildings at HPS2 (with some buildings increasing in height and others decreasing in height), and the specific location of buildings within HPS2, including adjustments to the two high-rise towers at HPS2. The visual simulations provided in Addendum 5 made reasonable assumptions about the bulk of the proposed buildings in order to achieve the identified heights.

HPS2 proposed modifications would also establish a water taxi service to and from HPS2 at Dry Dock 4. New infrastructure on the land and in the water would be constructed to accommodate the services. In addition, two bridges would be provided over Dry Dock 4.

The proposed heights at CP have remained the same since the CP height changes evaluated in Addendum 4 and approved by the 2016 D4D and amendments to the CP Major Phase 1 Application, which occurred subsequent to the 2010 FEIR. Therefore, there are no height changes at CP to evaluate in this section of Addendum 5.

Comparative Impact Discussions

Impact AE-1: Construction activities associated with the Project would not have a substantial adverse effect on a scenic vista or scenic resources. ***[Criteria E.a and E.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the 2010 Project, construction activities would occur under the 2018 Modified Project Variant. Demolition of existing buildings would occur, and site preparation, excavation, and grading would occur to accommodate new development. Construction workers and equipment would be parked and staged within the Project construction site. Construction-related visual impacts that would be seen with implementation of the 2018 Modified Project Variant, and similar to the 2010 Project, include exposed staging areas, on-site construction equipment, the inclusion of temporary structures throughout the duration of construction phases, exposed trenches, exposed soil, and debris/material piles. As with 2010 Project, a construction-related visual impact would occur on Project site. However, the change in visual conditions would be temporary and typical of construction activities in already developed areas. Scenic vistas of the Bay, the East Bay hills, and the San Francisco downtown skyline would not be impacted by construction activities. Consequently, as with the 2010 Project, the visual impact from construction activities under the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Impact AE-2: Construction activities associated with the Project would not result in temporary degradation of the visual character or quality of the site. ***[Criterion E.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the 2010 Project, construction activities would occur under the 2018 Modified Project Variant. Demolition of existing buildings would occur, and site preparation, excavation, and grading would occur to accommodate new development. Construction workers and equipment would be parked and staged within the Project construction site. As with the Project analyzed in the 2010 FEIR, construction-related visual impacts that would be seen with implementation of the 2018 Modified Project Variant include exposed staging areas, on-site construction equipment, the inclusion of temporary structures throughout the duration of construction phases, exposed trenches, exposed soil, and debris/material piles. To address these impacts, mitigation measure MM AE-2 is prescribed under the 2010 FEIR. MM AE-2 would require temporary screening of a particular construction or staging site, as outlined below. MM AE-2 would also require the Project Applicant to stage all construction equipment on the Project site and to keep all construction equipment egressing the Project site to be free of mud. Incorporation of MM AE-2 would ensure that impacts related to construction activities would not result in temporary degradation of the visual character or quality of the site. Consequently, as with the 2010 Project, the impact to the visual character or quality of the

site from construction activities under the 2018 Modified Project Variant would remain less than significant with implementation of the identified mitigation measure.

Impact AE-3: Construction activities associated with the Project would not create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties. ***[Criterion E.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the 2010 Project, construction activities would occur during daylight hours, generally between 7:00 a.m. and 8:00 p.m. or as otherwise allowed by the City (San Francisco Police Code Article 29, Section 2908). A negligible amount of glare could occur from reflection off windows of trucks but would not affect daytime views in the area. Security lighting comparable to the level of existing night lighting levels in urban areas would be provided after hours on all construction sites. Night lighting would be minimal and restricted to the Project site. Consequently, as with the 2010 Project, impacts from construction activities related to substantial light and glare adversely affecting day or night views in the area associated with the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Impact AE-4: Implementation of the Project would not have a substantial adverse effect on a scenic vista. ***[Criterion E.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2018 Modified Project Variant includes changes in the height of certain buildings at HPS2 (with some buildings increasing in height and others decreasing in height), and the specific location of buildings within HPS2, including adjustments to the location of two high-rise towers at HPS2. Under the 2010 FEIR Tower Variant (Variant 3), four different tower variants were introduced and analyzed. Each of these variants would have the same land use program as with the Project, but would have different locations, massings, heights, and number of residential towers at Candlestick Point.

Three of the tower locations were subsequently adjusted and analyzed in Addendum 4 to the 2010 FEIR. Tower G, at CP Center, would be moved west from the middle of the block to a location on Arelious Walker Drive. Towers J and K would be relocated in CP-04 immediately southeast of the previously approved locations. Refer to Exhibit C, Tower Location Analysis, of Addendum 4 for a graphical representation of the tower relocation.

Under the 2018 Modified Project Variant, Tower A would be located in the same location and on the same block as an encouraged tower location as shown in the 2010 FEIR; however, a flexible tower zone would be added to the remainder of the block. Tower B would be located one block north of its previously approved location, and a flexible tower zone would also be created for the balance of this

block. The establishment of a flexible tower location zone would provide flexibility in the geographic placement of Tower A and Tower B. If the zone is established, both Towers A and B could be located in any part of the flexible tower location zone. However, for purposes of this environmental analysis, the towers are proposed at the locations depicted in Figure 7 (Tower Locations: Towers A and B), p. 19. The heights of both towers would not change. While the heights of both towers would not change, the 2018 HPS D4D would allow screened mechanical equipment to be up to 10 percent of the total height of the building (within an area that represents 85 percent of the building floorplate).

HPS2 proposed modifications would also establish a water taxi service to and from HPS2 at Dry Dock 4. At Dry Dock 4, two bridges would be built over the water inlet to provide direct access to either side of the marina area. As with the project analyzed in the 2010 FEIR, views of Bayview Hill and Hunters Point Hill would be partially obstructed under the 2018 Modified Project Variant, but not to the extent to be considered significant. As with the 2010 Project, the two most prominent features under the 2018 Modified Project Variant would be the high-rise residential towers, which would represent a considerable change in the existing low-scale pattern of development on the Project site. As with the 2010 Project, implementation of the residential towers would be similar to other developed areas of San Francisco and would not substantially obstruct existing views of Bayview Hill and Hunters Point or other scenic vistas. Consequently, the 2018 Modified Project Variant would not have a substantial adverse effect on a scenic vista. The impact would remain less than significant, and no mitigation would be required.

Impact AE-5b: Implementation of the Project at HPS Phase II would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting. ***[Criterion E.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the 2010 Project, implementation of 2018 Modified Project Variant would include redevelopment of HPS and would remove old, deteriorating structures associated with ship repair, piers, dry docks, storage, and administrative uses. As noted in the 2010 FEIR, HPS2 currently contains limited landscaping and is primarily a degraded industrial area. There are several proposed components of the Project that would alter the overall aesthetics of the area, but no significant adverse impacts would occur.

As discussed above, views of Hunters Point Hill and Bayview Hill would remain largely intact with implementation of 2018 Modified Project Variant. Obstructed views of Bayview Hill would occur from close-in vantage points. The Project would demolish Building 253, which is not identified as a scenic resource, but some viewers may use the building as visual orientation. Structures at the potential HPS Drydock Historic District and the Re-gunning crane would remain intact.

Under the 2018 Modified Project Variant, and similar to the 2010 Project, development of HPS2 would result in new and renovated parkland and open space, along with shoreline improvements. The new and renovated open space would improve the scenic quality of the area by providing natural and landscaped parkland, sports fields, active urban recreational areas, and other public gathering places. Further, shoreline improvements would remove debris, reduce erosion, revegetate areas with marsh plantings, and would increase the visual quality of the shoreline. Overall, as also concluded in the 2010 FEIR, addition of new and renovated parkland and shoreline improvements would increase the scenic quality of the area.

Consequently, 2018 Modified Project Variant would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting. The impact would remain less than significant, and no mitigation would be required.

Impact AE-6b: Implementation of the Project at HPS Phase II would not substantially degrade the visual character or quality of the site or its surroundings. ***[Criterion E.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

Five visual simulation viewpoints from the 2010 FEIR where changes under the 2018 Modified Project Variant could be visible were selected: Views 14, 15, 18, 19, and 20. Figure 27 (Viewpoint Locations) illustrates the location of these viewpoints. Changes that would occur with implementation of the 2018 Modified Project Variant are not expected to be noticeably visible from the remaining viewpoints.

View 14

As shown in Figure 28 (Existing and Proposed Views from View 14: Southeast from CPSRA), under existing conditions, Yosemite Slough is seen in the foreground with shipyard structures (primarily the Re-gunning crane) in the background. The East Bay hills are visible in the long-range view from Candlestick Point State Recreation Area (CPSRA).

The proposed changes between existing conditions and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from this viewpoint include the Yosemite Slough bridge, the new 49ers stadium, the new marina, residential towers at HPS2, the demolition of Building 253 (which was proposed to be demolished as part of the 2010 Project), and associated landscaping. Additionally, to the north, the development undergoing construction at HPS1 (not a part of this Project) would be visible. Short- and mid-range views of the Slough would be slightly altered with the inclusion of the Yosemite Slough bridge, but relatively unchanged when compared to current conditions. New structures would not obstruct existing views of the East Bay hills. Building 253 is prominently seen under existing conditions, but does not make a substantial contribution to the public scenic setting. The demolition of Building 253 would not degrade the existing visual character of the site. The 2010 FEIR concluded that the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.

SOURCE: Clement Designs, 2009; ESA, 2018

FIGURE 27 Addendum 5 to the CP-HPS2 2010 FEIR

VIEWPOINT LOCATIONS

Under the 2018 Modified Project Variant, additional buildings are proposed to be added. These buildings are medium-height buildings, similar in height to the 2010 proposed building shown in Figure 28. These buildings would be seen most prominently in the mid-range viewshed, in the same viewshed as the Re-gunning crane. Under the 2018 Modified Project Variant, the Yosemite Slough bridge would remain in the same proposed location. New structures would not obstruct existing views of the East Bay hills or the Re-gunning crane. Overall changes between the 2010 Project and the 2018 Modified Project Variant would be minimal, mostly affecting the mid-range viewshed, as seen from View 14. The most notable difference between the 2010 Project and the 2018 Modified Project Variant would be the development of buildings in place of the stadium. The construction of newly proposed buildings and the Yosemite Slough Bridge would slightly alter mid-range views of the Slough, but not to an extent that would degrade the existing visual character or quality of the site or its surroundings; as such, the impact would remain less than significant.

View 15

As shown in Figure 29 (Existing and Proposed Views from View 15: Southeast from Palou Avenue), under existing conditions, residential streetscape with overhead utility lines dominate the short- and mid-range viewshed, with distant views of the Bay and the East Bay hills.

The proposed changes between existing conditions and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from View 15 include streetscape improvements in the short- and mid-range viewshed. In the long-range viewshed, a part of the previously proposed 49ers stadium would be partially visible, but would not obstruct the view of the Bay or the East Bay hills. The streetscape improvements include parking improvements, bicycle lanes, pavement treatments, and street trees. Streetscape improvements proposed under the 2010 Project would be considered to improve the visual character of the Palou corridor. The 2010 FEIR concluded that the Project would not would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings.

Under the 2018 Modified Project Variant, there are few notable changes to the viewshed. In the short- and mid- range viewshed, proposed streetscape improvements to the Palou Corridor would remain, thus improving the visual character of the viewshed if implemented. The 49ers stadium is no longer proposed under the 2018 Modified Project Variant. However, new medium-height buildings are proposed under the 2018 Modified Project Variant in the same relative location as the previously proposed 49ers stadium, and are visible in the long-range viewshed, as seen from View 15. Implementation of the newly proposed medium-height buildings and the previously proposed streetscape improvements would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings; as such, the impact would remain less than significant.

2010 Existing

2010 Proposed

2018 Proposed

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 28

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 14: SOUTHEAST FROM CPSRA

[THIS PAGE INTENTIONALLY LEFT BLANK]

2010 Existing

2010 Proposed

2018 Proposed

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 29

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 15: SOUTHEAST FROM PALOU AVENUE

[THIS PAGE INTENTIONALLY LEFT BLANK]

View 18

As show in Figure 30 (Existing and Proposed Views from View 18: South from Hilltop Open Space), existing conditions are shown from hilltop open space that would be implemented as a result of HPS1 (not a part of this Project). Existing conditions show existing buildings, shipyard structures, and the Re-gunning crane to the south in the mid-range viewshed. In the long-range viewshed are the Santa Cruz Mountains.

The proposed changes between existing conditions and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from View 18 include the 49ers stadium and associated parking area and dual-use fields. These previously proposed developments would be seen in the short-, mid-, and long-range viewshed. The stadium would partially obstruct the view of the Santa Cruz Mountains. The waterfront area near the Re-gunning crane would become a new recreation area. The Re-gunning crane and the new marina would be visible, with mid-range views of currently degraded and unmaintained areas. These mid-range views would be replaced with modern, aesthetically pleasing development. As concluded in the 2010 FEIR, the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.

Under the 2010 R&D Variant (Variant 1), which did not include a stadium, development would be visible in the short-, mid-, and long-range viewshed. Ornamental trees and grass would be lined along roadways and would be seen from the short- and mid-range viewshed. Mid-range views of the Regunning crane would be partially obstructed, although views of the Regunning crane would remain largely intact, distinct, and preserved. Long-range views of the Santa Cruz Mountains would remain unobstructed. A visual simulation showing views from the Hilltop Open Space under the 2010 R&D Variant (Variant 1) is provided in the 2010 FEIR on p. IV-29, Figure IV-6 (R&D Variant South from Hilltop Open Space).

Under the 2018 Modified Project Variant, views from View 18 looking toward the exact same direction as previously analyzed in the 2010 FEIR would be substantially different. Existing views would be largely blocked by newly proposed development that would be located where the stadium would have been located, with partial views of the Re-gunning crane and surrounding area remaining. Newly proposed development would include new medium-height buildings although taller and closer in to the open space area than would have occurred under the various land use variants analyzed in 2010, along with and ancillary open space, landscape improvements, and a portion of the water taxi docking area. To the south, in the long-range viewshed, the uppermost portion of the Re-gunning crane is visible, but not the Santa Cruz Mountains.

The 2010 View 18 from the yet-to-be-constructed hillside open space area (in HPS1) was from a point a few feet south of the now existing and newly constructed path that is part of the hillside open space (and off the path). The view presented includes the Re-gunning crane and distant South Bay mountains and is looking southwest toward South Basin. Dry Dock 4 and the Water Room, although just to the left of the edge of the photo, were not included in the baseline photograph.

Since 2010, the hillside park associated with HPS1 (not a part of this project) has been constructed, which includes a pathway. As a result, the baseline condition on the site have changed. The 2010 FEIR View 18 location is now on an unimproved slope (within the Hilltop Park) that is not intended as the main public access. Further, this area is intended for native plants that would provide natural character and habitats; therefore, not only would the original viewpoint location be unimproved, but it is intended for native plants, further rendering the location unsuitable for viewing purposes. And, the constructed pathway leads to an overlook that is specifically intended for views of the Bay and other locations. To account for this, two alternative viewpoints were proposed and analyzed under the 2018 Modified Project Variant from the new pathway: View 18 Alternative A and View 18 Alternative B. These alternatives are better suited to analyze the proposed development program because they represent views from the location where pedestrians access is provided. Further, beyond views from this particular location (whether from View 18, or Alternative A or B), there are other locations within the CP-HPS2 project site that provide aesthetically pleasing views of the Bay, the city, and surrounding points of visual interest. The locations and viewsheds of the View 18 alternatives are shown in Figure 31 (Locations and Viewsheds of View 18 and View 18 Alternatives A and B).

View 18 Alternative A

This alternative viewpoint is shown in Figure 32 (Existing and Proposed Alternative A Views from View 18: South from Hilltop Open Space) and as View 18 Alternative A on Figure 31. This alternative viewpoint presents baseline conditions as they are currently, and is taken from the currently existing path that did not exist in 2010 and is in a more easterly direction than View 18. View 18 Alternative A is taken 45 feet to the north of the 2010 View 18, and is 3 feet higher in elevation. It provides a more complete version of the Dry Dock 4 viewshed, framing the Re-gunning crane, Dry Dock 4, and the East Bay hills.

As shown in Figure 32, 2010 views show unmaintained remnants of the shipyard in the short- and mid-range viewshed. To the south, in the long-range viewshed, is the Re-gunning crane. Across the bay, the East Bay hills can be seen in the distance.

As shown from View 18 Alternative A, existing shipyard structures and buildings would be replaced with medium-height buildings on either side of the water taxi docking area. These medium-height buildings in the short- and mid- range viewshed would not substantially obstruct views of the Bay, the Re-gunning crane, or the East Bay hills. In the mid-range viewshed, two bridges would be built over the water inlet to provide direct access to either side of the marina area. Under the 2018 Modified Project Variant, views of the East Bay hills would be partially obstructed by the proposed medium-height buildings. Views of the Regunning crane would be partially obstructed by the new development, but would remain largely intact, similar to Variant 1. Thus, overall views of the Bay, the Re-gunning crane, and the East Bay hills would remain largely intact, distinct, and preserved. Implementation of the 2018 Modified Project Variant would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings. The impact remains less than significant, and no mitigation would be required.

2010 Existing

2010 Proposed

2018 Proposed

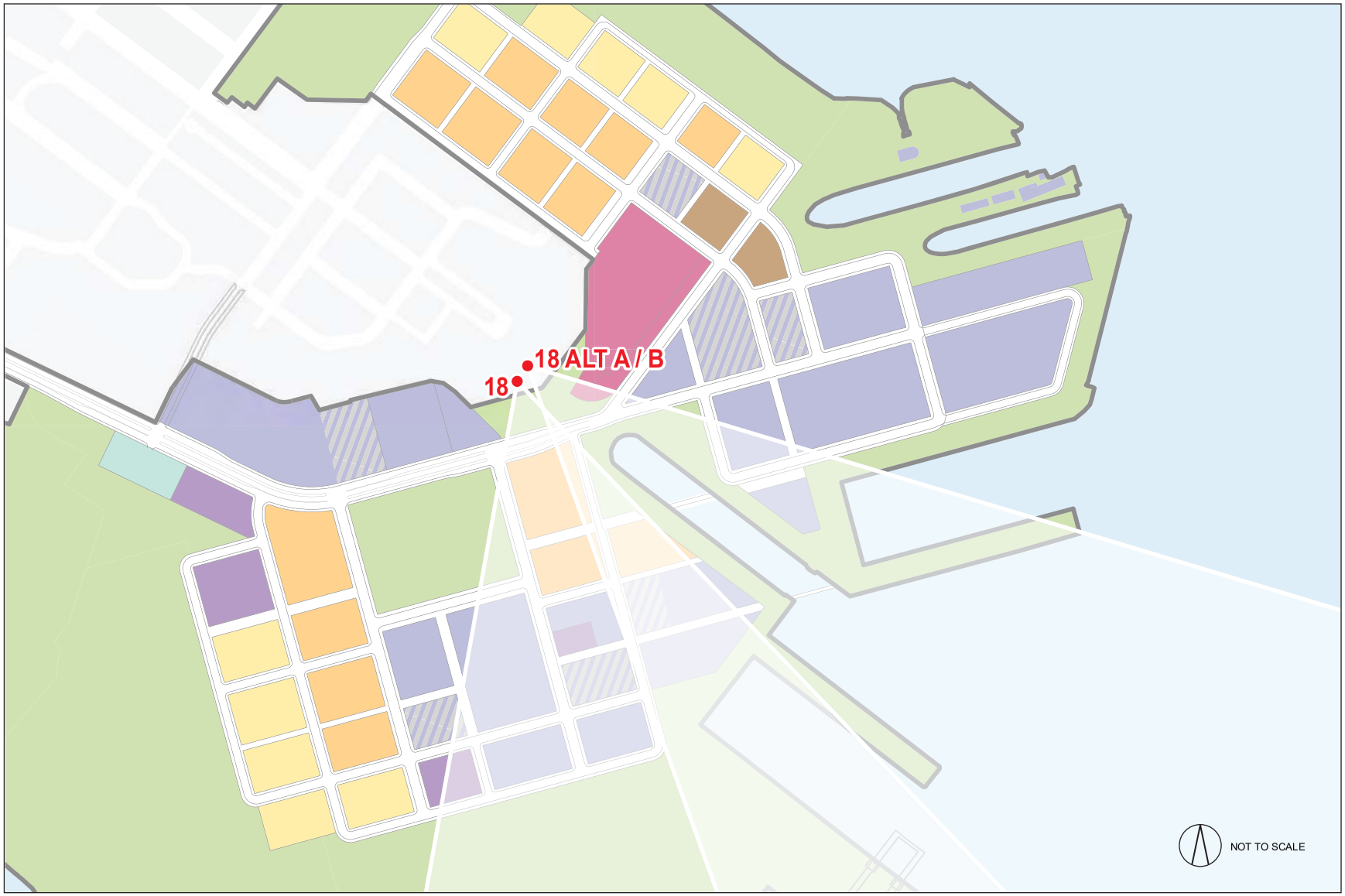
SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 30

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 18: SOUTH FROM HILLTOP OPEN SPACE

[THIS PAGE INTENTIONALLY LEFT BLANK]



SOURCE: FivePoint, 2018.

FIGURE 31

Addendum 5 to the CP-HPS2 2010 FEIR

LOCATIONS AND VIEWSHEDS OF VIEW 18 AND VIEW 18 ALTERNATIVES A AND B

View 18 Alternative B

This alternative viewpoint is shown from Figure 33 (Existing and Proposed Alternative B Views from View 18: South from Hilltop Open Space) and on Figure 31. This alternative viewpoint presents baseline conditions as they are currently, and is taken from the currently existing hilltop open space Hilltop Park viewing overlook that did not exist in 2010. It is a standout vantage point from which one would look onto the scenic vista of Dry Dock 4 and the Re-gunning crane. View 18 Alternative B is taken 45 feet to the north of the 2010 View 18, and is 15 feet higher, as it is taken from the hilltop open space overlook. It provides a more complete version of the viewshed, framing the Re-gunning crane, Dry Dock 4, the mountains in the south bay, and the mountains in the east bay.

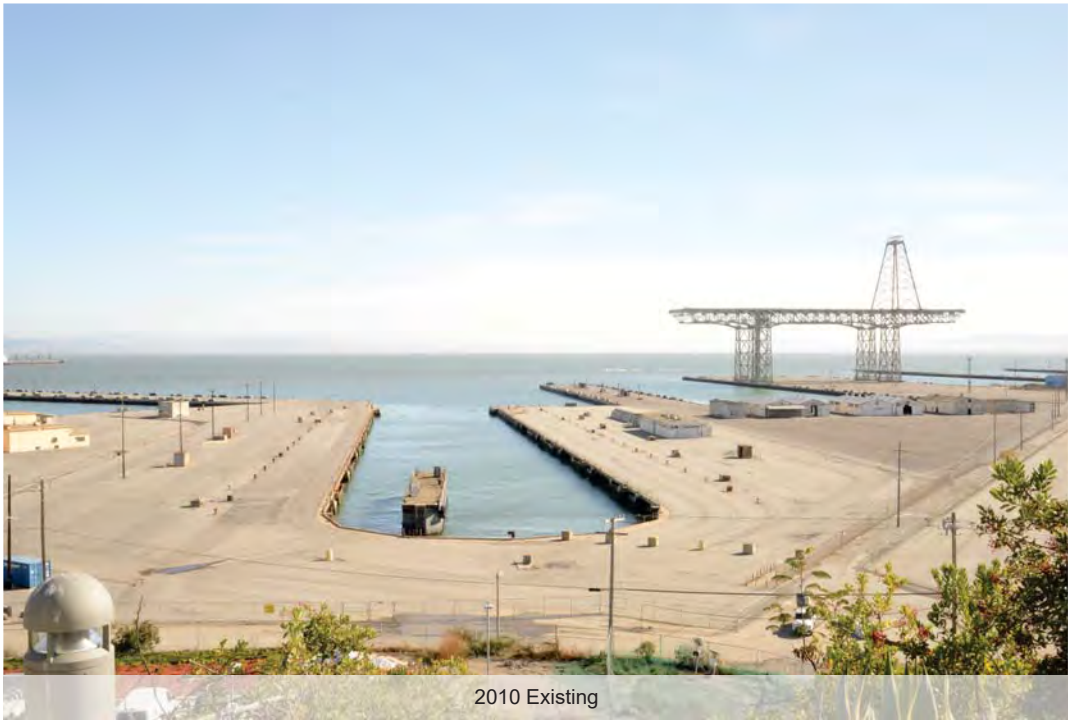
As shown in Figure 33, existing views show unmaintained remnants of the shipyard in the short- and mid-range viewshed. To the south, in the long-range viewshed, is the Re-gunning crane. Across the bay, the East Bay hills can be seen in the long-range viewshed.

View 18 Alternative B is substantially similar to View 18 Alternative A. However, due to the fact that View 18 Alternative B is taken at a higher elevation than View 18 Alternative A, the Bay, the Re-gunning crane, and the East Bay hills are slightly more visible in Alternative B as compared to Alternative A.

As shown from View 18 Alternative B, existing shipyard structures and buildings would be replaced with medium-height buildings on either side of the water taxi docking area. These medium-height buildings in the short- and mid- range viewshed would not substantially obstruct views of the Bay, the Re-gunning crane, or the East Bay hills. In the mid-range viewshed, two bridges would be built over the water inlet to provide direct access to either side of the marina area. Under the 2018 Modified Project Variant from View 18 Alternative B, overall views of the Bay, the Re-gunning crane, and the East Bay hills would remain largely intact and preserved. Views of the Re-gunning crane would be partially obstructed by the new development, but would remain largely intact, similar to 2010 Project Variant 1. Implementation of the 2018 Modified Project Variant would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings. The impact would remain less than significant, and no mitigation would be required.

View 19

As shown in Figure 34 (Existing and Proposed Views from View 19: East from Hunters Point Hill Open Space), existing conditions are seen from an area of open space on Northridge Road on Hunters Point Hill looking southeast. From this viewpoint, existing structures and open area at HPS Phase I can be seen in the short- and mid-range viewshed. Across the Bay is the East Bay hills.



Note: The bridges and seating plan are illustrative only (for environmental review purposes). No final designs have been prepared.

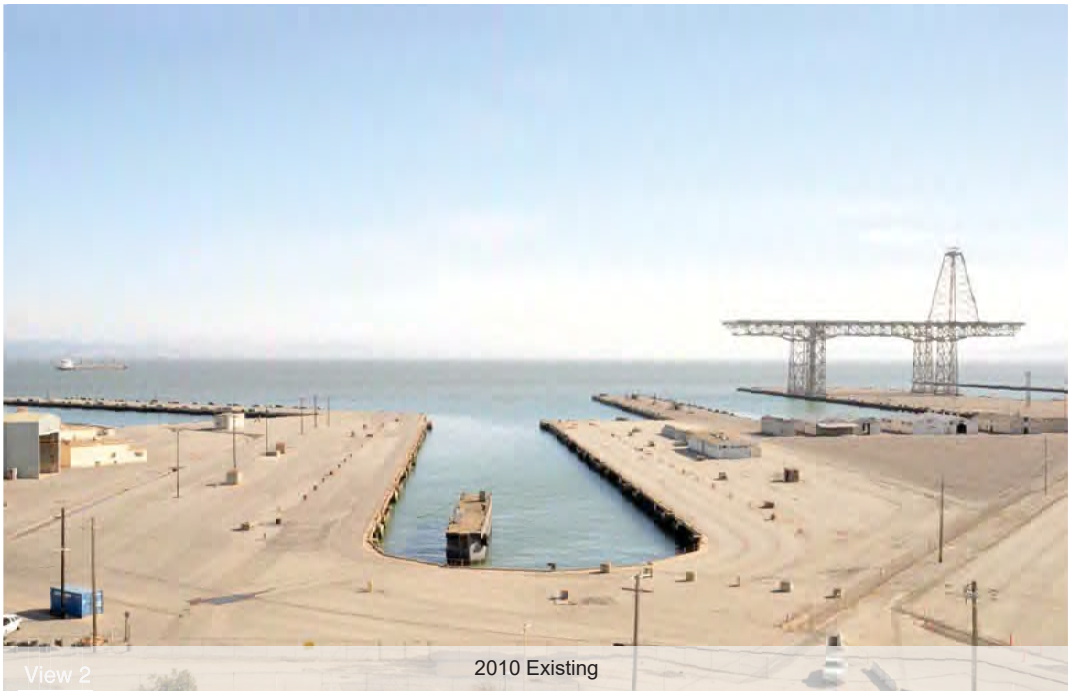
SOURCE: Square One Productions, 2018

FIGURE 32

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED ALTERNATIVE A VIEWS FROM VIEW 18: SOUTH FROM HILLTOP OPEN SPACE

[THIS PAGE INTENTIONALLY LEFT BLANK]



Note: The bridges and seating plan are illustrative only (for environmental review purposes). No final designs have been prepared.

SOURCE: Square One Productions, 2018

FIGURE 33

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED ALTERNATIVE B VIEWS FROM VIEW 18: SOUTH FROM HILLTOP OPEN SPACE

[THIS PAGE INTENTIONALLY LEFT BLANK]

2010 Existing

2010 Proposed

2018 Proposed

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 34

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 19: EAST FROM HUNTERS POINT HILL OPEN SPACE

[THIS PAGE INTENTIONALLY LEFT BLANK]

The proposed changes between existing conditions and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from View 18 would be the two residential towers, one tower up to 270 feet in height, and one tower up to 370 feet in height, along with new open space at the Shipyard. Development from HPS1 (not a part of the Project and currently under construction) would be seen in the mid-range viewshed. The 2010 FEIR concluded that the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.

Under the 2018 Modified Project Variant, the proposed maximum building heights are similar in height to the HPS1 development in the mid-range viewshed. The height of the two residential towers remains unchanged, while their locations have been shifted. Views of the Bay and the East Bay hills remain intact. Implementation of the building heights and ancillary landscaping would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings. The impact would remain less than significant, and no mitigation would be required.

View 20

As shown in Figure 35 (Existing and Proposed Views from View 20: Southeast from Heron's Head Park), existing conditions are seen from Heron's Head Park, looking southeast, towards the Shipyard. From this viewpoint, wetlands are seen in the short-range viewshed, Shipyard structures including the Re-gunning crane are seen in the mid-range viewshed, and the Bay and the East Bay hills are seen in the long-range viewshed.

The proposed changes between the 2018 Modified Project Variant and the 2010 Project, as reflected in the 2010 FEIR, that would be seen from View 20 would primarily be the residential towers, up to 370 feet in height. These residential towers are seen distinctly and clearly as two separate buildings. Additional Project-related medium-height structures would be seen, along with HPS1 development. Views of the Re-gunning crane would remain intact. Mid-range views of degraded, vacant, and unmaintained areas would be replaced with well-designed development. Long-range views of the Bay and the East Bay hills would remain intact. The 2010 FEIR concluded that the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.

Under the 2018 Modified Project Variant, there are relatively few changes from Viewpoint 20 with the exception of the proposed changes to the high-rise tower locations. Under the 2018 Modified Project Variant, view of the residential towers as modeled in the preferred tower location within the allowable tower zone would overlap, and, as such, previously analyzed impacts to the visual character of the mid-range viewshed would be less than previously determined. However, the flexible tower zones allow the two residential towers to be located anywhere on their respective development blocks. As such, it is possible that when the design and development process for the towers proceeds, and more information is known about their particular sites, the two towers may be located in such a way that they are seen as distinct buildings from the vantage of View 20, as they were in the 2010 Project (refer to Figure 35). Consequently, impacts to the visual character of the mid-range viewshed would be consistent with those previously determined to be less than significant in the 2010 FEIR. Short-range

views of the wetlands and long-range views of the Bay and East Bay hills remain intact. Implementation of the 2018 Modified Project Variant would not substantially obstruct, alter, or otherwise degrade the existing visual character or quality of the site or its surroundings. The impact would remain less than significant, and no mitigation would be required.

Height Changes

Figure 36 (Height Changes: 2018 Modified Project Variant vs. 2010 Project), p. 167, compares the 2018 Modified Project Variant to the 2010 Project. Under the 2018 Modified Project Variant, when compared to the 2010 Project, proposed building heights change throughout HPS2, as discussed below.

In the North Shoreline District, the maximum height of waterfront buildings would generally decrease to 40 feet from an approved 2010 height of 65 feet, with the exception of one Agency Lot, which would remain at 65 feet. The maximum height of buildings along Galvez and Robinson Streets in 2010 was 65 to 85 feet, depending on location. Heights in this area would remain at 65 feet or below, with the exception of Lots 14 and 15, which would have a maximum height of 85 feet. In 2010, Lot 14 had a maximum height of 85 feet. The height of Tower A would remain at 370 feet.

In the Wharf District, the height of Tower B would remain at 270 feet. The remaining blocks (or portions thereof) within this district would generally increase in height. Height increases would be from a previous maximum height of 65 feet to 85 and 120 feet in height, and from 85 and 105 feet to 120 feet. Although a number of blocks would remain at 85 feet. Existing buildings would remain at 120 feet.

The area now known as the Warehouse District was proposed to only contain a stadium with a maximum height of 156 feet. North of Crisp Road, the maximum building height was proposed to be 85 feet with small portions of land with a maximum building height of 65 feet. South of Crisp Road, but north of the stadium, the maximum building height was proposed to be 65 feet at two portions of land directly abutting Crisp Road. Generally, the maximum height of the community use and residential blocks along the waterfront, west of H Street, would be 40 feet on some blocks and would be 85 feet on some blocks. Generally, the maximum height of the commercial blocks (which include R&D) and some residential blocks would be 75, 85, 100, or 120 feet. For Lots 1, 2, 3, 55, and 56, which abut Crisp Road, maximum building heights would be 65 feet, with an interspersed existing building within this height parameter.

2010 Existing

2010 Proposed

2018 Proposed

SOURCE: Lennar Urban, 2009; Square One Productions, 2018

FIGURE 35

Addendum 5 to the CP-HPS2 2010 FEIR

EXISTING AND PROPOSED VIEWS FROM VIEW 20: SOUTHEAST FROM HERON'S HEAD PARK

[THIS PAGE INTENTIONALLY LEFT BLANK]

Public Trust Views

Although the 2010 FEIR did not provide visual simulations specifically from public trust view vantage points, as it is not required for CEQA compliance, such visual simulations were provided separately in support of the State Lands Commission decision-making process. These simulations have been updated to illustrate the 2018 Modified Project Variant and are now voluntarily provided in Addendum 5 Appendix E (Public Trust View Corridors Visual Simulations) for informational purposes only. The following discussion identifies the separate public trust viewpoint process in order to provide context associated with the visual simulations that are provided in Appendix E.

To maintain and protect view corridors of San Francisco Bay for visitors to the Hillside Open Space (which is located outside of the CP-HPS2 Project Site, but on public trust lands), the construction of new buildings within HPS2 shall conform to height limits identified in the *Hunters Point Shipyard/Candlestick Point Title Settlement, Public Trust Exchange and Boundary Line Agreement*, recorded June 27, 2011. Deviations from the building height limits may be allowed if approved by the State Lands Commission. Visual simulations for the three public trust viewpoint locations that were prepared in connection with the 2010 Project (but submitted to the State Lands Commission separately from the 2010 FEIR) have also been prepared for the 2018 Modified Project Variant and are included in Addendum 5 Appendix E for informational purposes only.

Impact AE-7b: Implementation of the Project at HPS Phase II would not create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties. ***[Criterion E.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant

As with the Project analyzed in the 2010 FEIR, implementation of 2018 Modified Project Variant would include lighting for public areas that would increase ambient lighting. These new sources of light would be typical of urban development seen in San Francisco and would not generate obtrusive lighting that would adversely affect day or night views or negatively affect other neighborhoods.

The 2010 Project originally included a new proposed San Francisco 49ers stadium. Under the 2010 FEIR, stadium lighting occurring from stadium uses and parking uses was extensively analyzed, and two mitigation measures were prescribed to mitigate light and glare impacts from the proposed stadium.

Under the 2018 Modified Project Variant, the 49ers stadium is no longer proposed. As such, stadium lighting is no longer a consideration. Under the 2018 Modified Project Variant, impacts would be less than the analyzed impacts in the 2010 FEIR. The impact would subsequently be less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to aesthetics impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to aesthetics, either on a project-related or cumulative basis.

II.B.5 Shadows

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
16.	**Shadows.** [The City and Agency have not formally adopted significance standards for impacts related to wind.] Would the project:					
F.a	Create new shadow in a manner that substantially affects outdoor recreation facilities or other public areas?	2010 FEIR p. III.F-26 (Impact SH-1b); Addendum 1 p. 34; Addendum 4 p. 33	No	No	No	None

Changes to Project Related to Shadows

The 2018 Modified Project Variant includes the following activities related to shadows:

- Changes in the height of certain buildings (with some buildings increasing in height and others decreasing in height); and
- The specific location of buildings, including adjustments to the two high-rise towers at HPS2.

Comparative Impact Discussions

Impact SH-1b: Implementation of the Project at HPS2 would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space. ***[Criterion F.a]***

	2010 CP-HPS2 FEIR	2010 CP-HPS2 FEIR Addendum 5
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR determined that construction of the Project features would not create adverse shadow effects on existing open space. Construction activities and equipment would not cast substantial shadows on existing open spaces under the jurisdiction of the San Francisco Recreation and Parks Department (SFRPD) that are near HPS2. Some construction equipment, such as cranes, would exceed 40 feet in height, but would not cause substantial shadow casting due to the crane's lack of bulk. Additionally, use of equipment in excess of 40 feet would be limited to the period of construction.

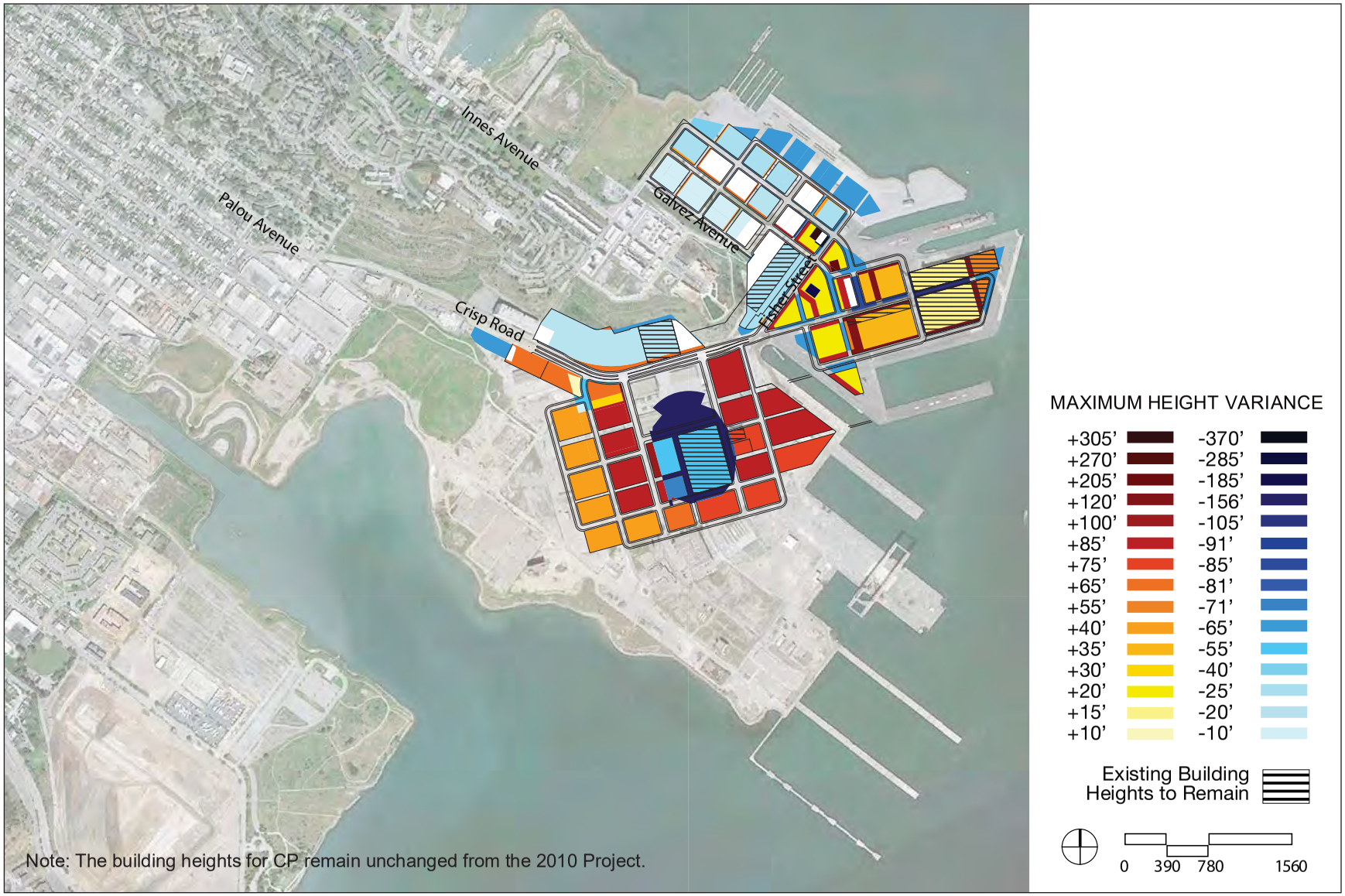
The 2010 FEIR also concluded that implementation of the Project at HPS2 would result in less-than-significant shadow impacts to SFRPD public open space in the Project vicinity, which include India Basin Shoreline Park and India Basin Flats. These parks, subject to Planning Code Section 295, are located northwest of Earl Street and generally north of Crisp Road, just outside of the Project boundaries. The 2010 FEIR determined that no Project building or structure in excess of 40 feet in height would be nearby these parks so as to create shadow effects. Additionally, there are no changes in height at CP, and the less-than-significant conclusions of the 2010 FEIR remain unchanged.

Building heights at HPS2 would change under the 2018 Modified Project Variant, as shown in Figure 36 (Height Changes: 2018 Modified Project Variant vs. 2010 Project). India Basin Flats and India Basin Shoreline park, the closest Section 295 parks to HPS2, are located northwest of Earl Street and north of Crisp Road, beyond Northside Park (a park proposed as part of the CP-HPS2 Project). The buildings closest to both of these Section 295 parks would be reduced in height from between 10 feet to 40 feet. While some buildings along Galvez Avenue would increase in height by about 15 feet, they would not extend shadow lengths beyond what was disclosed in the 2010 FEIR. The most substantial height increases (from 40 feet to 120 feet) are proposed to occur south of Crisp Road, with interspersed proposed height decreases (from 10 feet to 120 feet). The 2010 FEIR R&D Variant (Variant 1) identified two high-rise towers at HPS2. Tower A was shown in a fixed location within the North Shoreline District on the corner of Fisher Avenue and Lockwood Street (with maximum height of 370 feet), and Tower B was shown in a fixed location within the Wharf District on the corner of Fisher Avenue and Galvez Avenue (with maximum height of 270 feet). The 2018 Modified Project Variant would modify the location of Towers A and B, as illustrated in Figure 7 (Tower Locations: Towers A and B).

Tower A would be located in the same location and on the same block as an encouraged tower location shown in the 2010 FEIR; however, a flexible tower zone would be added to the remainder of the block. Tower B would be located one block north from the approved location shown in the 2010 FEIR. A flexible tower location zone would also be created for the balance of this block. The heights of both towers would not change. While the heights of both towers would not change, the 2018 HPS D4D would allow screened mechanical equipment to be up to 10 percent of the total height of the building (within an area that represents 85 percent of the building floorplate). Due to the minor change in location for Tower B, and even allowing for a change in tower locations within a limited flexible tower zone, the proposed or potential modifications to tower locations would not result in changes to shadow effects.

With respect to Planning Code Section 295 parks, and as concluded in the 2010 FEIR, HPS2 would not add shade to existing SFRPD (Section 295) open space due to the provision of reduced building heights nearest to those parks as compared to the 2010 Project and variants (Variants 1 and 2).

As shown in Figure 9 (HPS2 Parks and Open Space), the 2010 Project would develop new parks and open space, including neighborhood parks, destination parks, boulevard parks, and waterfront trails. These parks are not subject to Planning Code Section 295. The parks would include a range of passive and active recreation facilities, playgrounds, walks, and other features. The majority of these proposed public open spaces would experience little to no new shade throughout the year, but would not adversely affect the public's use of the open spaces. While new Project buildings and proposed height variances could add shade to new Project open space, at certain times of the year, over certain hours, and only in locations were building heights are increased (largely, south of Crisp Road), the Project would increase overall open space in the area, when compared to existing conditions, as well as R&D Variant (Variant 1) and the Housing/R&D Variant (Variant 2A).



SOURCE: FivePoint, 2018.

FIGURE 36

Addendum 5 to the CP-HPS2 2010 FEIR

HEIGHT CHANGES: 2018 MODIFIED PROJECT VARIANT VS. 2010 PROJECT

Proposed open space would be beneficial to Project residents, visitors, and employees. Shading of sidewalks along street corridors in the Project area could increase in certain areas, but in other areas would decrease, but not in excess of that which would be expected in a highly urban area.

As with the 2010 FEIR, the impact on existing and proposed open space from shadow effects as a result of construction and implementation at HPS2 under the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to shadows impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to shadows, either on a project-related or cumulative basis.

II.B.6 Wind

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
19.	**Wind.** [The City and Agency have not formally adopted significance standards for impacts related to wind.] Would the project:					
G.a	Alter wind in a manner that substantially affects public areas?	2010 FEIR p. III.G-8 (Impact WI-1b); Addendum 1 p. 35; Addendum 4 p. 35	No	No	No	MM W-1a

Changes to Project Related to Wind

The 2018 Modified Project Variant includes the following activities related to wind:

- Changes in the height of certain buildings (with some buildings increasing in height and others decreasing in height); and
- The specific location of buildings, including adjustments to the two high-rise towers at HPS2.

Comparative Impact Discussions

Impact W-1b: Implementation of the Project at HPS Phase II would not include tall structures that would result in ground-level equivalent wind speed exceeding 26 mph for a single hour of the year in pedestrian corridors and public spaces. ***[Criterion G.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR acknowledged that buildings near or greater than 100 feet in height could affect pedestrian-level conditions such that the wind hazard criteria of 26-mph-equivalent wind speed for a single hour of the year would be exceeded. In the 2010 FEIR, the proposed building heights at HPS would range from 65 feet to 105 feet. Two towers, ranging from 370 feet (Tower A) to 270 feet (Tower B), were included at HPS. The 2010 Project also included the proposed 156-foot-high stadium, which is no longer included in the Project. The 2010 FEIR noted that the degree of changes in pedestrian-level wind conditions would be influenced by building design, such as building height, shape, massing, setbacks, and location of pedestrian area. Mitigation measure MM W-1a requires a wind study for structures over 100 feet in height to assess whether a building would exceed the wind hazard threshold and, if so, requires design changes to mitigate the adverse wind impact. The 2010 FEIR concluded, with the implementation of MM W-1a, the potential adverse wind impacts at HPS would be reduced to a less-than-significant level.

The 2018 Modified Project Variant proposes building heights at HPS that range from 45 feet to 120 feet (refer to Project Description Figure 8 [Building Heights]). Thus, some areas of HPS would have slightly lower heights and some slightly higher heights than the 2010 Project. The tower heights have not

changed. Tower A has a maximum height of 370 feet and Tower B has a maximum height of 270 feet. Both Towers would be located on blocks that have a flexible tower zone, rather than a fixed location. Tower B would be located one block north of the location shown in the 2010 FEIR.

Mitigation measure MM W-1a has been adopted for the Project and would require wind studies for buildings over 100 feet and implementation of design changes to ensure the wind hazard threshold would not be exceeded. Under both the 2010 Project and the 2018 Modified Project Variant, there would be buildings over 100 feet, including the two towers (with unchanged heights of 270 feet and 370 feet). Consequently, there would be no new impacts or a substantial increase in the severity of previously identified impacts related to wind. As such, the impact would remain less than significant with implementation of the identified mitigation measure.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to wind impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to wind, either on a project-related or cumulative basis.

II.B.7 Air Quality

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
3. Air Quality. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:					
H.a. Conflict with or obstruct implementation of the applicable air quality plan?	2010 FEIR p. III.H-33 (Impact AQ-4), p. III.H-38 (Impact AQ-9); Addendum 1 p. 36; Addendum 4 p. 37	No	No	No	None
H.b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	2010 FEIR p. III.H-25 (Impact AQ-1), p. III.H-35 (Impact AQ-5); Addendum 1 p.36; Addendum 4 p. 37	No	No	No	MM HZ-15
H.c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal, state, or regional ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	2010 FEIR p. III.H-33 (Impact AQ-4); Addendum 1 p. 36; Addendum 4 p. 37	No	No	No	None
H.d. Expose sensitive receptors to substantial pollutant concentrations?	2010 FEIR p. III.H-25 (Impact AQ-1), p. III.H-29 (Impact AQ-2), p. III.H-31 (Impact AQ-3b), p. III.H-36 (Impact AQ-6), p. III.H-37 (Impact AQ-7); Addendum 1 p. 36; Addendum 4 p. 37	No	No	No	MM AQ-2.1, MM AQ-6.1, MM AQ-6.2, MM HZ-15
H.e. Create objectionable odors affecting a substantial number of people?	2010 FEIR p. III.H-38 (Impact AQ-8); Addendum 1 p. 36; Addendum 4 p. 37	No	No	No	None

Changes to Project Related to Air Quality

The 2018 Modified Project Variant includes the following activities related to air quality:

- Modifications to the land use program;
- Changes in traffic volumes and traffic distribution;
- Inclusion of the central energy plants and recycled water facility; and
- Changes in construction activity, including the use of deep dynamic compaction (DDC) and the installation of geothermal boreholes.

Comparative Impact Discussions

Impact AQ-1: Construction activities associated with the Project would not result in short-term increases in emission of criteria air pollutants and precursors that exceed BAAQMD CEQA significance criteria. ***[Criteria H.b and H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2018 Modified Project Variant would not change the conclusions of the 2010 FEIR. As discussed in the 2010 FEIR, heavy construction activity on dry soil exposed during construction would cause emissions of dust. As also discussed in the 2010 FEIR, heavy-duty equipment, material transport, and employee commutes would result in emissions of criteria air pollutants (e.g., CO) and precursors (e.g., ROG and NO_x). However, these are included in regional emissions inventory, which serves as the basis for air quality plans, and BAAQMD had not adopted mass emissions thresholds for construction at the time of the 2010 FEIR. Thus, conclusions were based on fugitive PM_{10} dust. Implementation of MM HZ-15 reduced the impacts caused by construction dust to a less-than-significant level in the 2010 FEIR. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact AQ-2a: Construction at Candlestick Point would not result in impacts to off-site populations from Project-generated emissions of DPM. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As disclosed in the 2010 FEIR, construction impacts at CP would not exceed BAAQMD CEQA thresholds for cancer risk or chronic noncancer health indices (HI) after mitigation. DPM emissions were modeled for operation of off-road construction equipment and on-road hauling trucks. Risk was assessed at off-site sensitive receptors, workers, and potential on-site residents at the Alice Griffith parcels. The maximum exposed individual (MEI) cancer risk would be 3.3 in one million, while the maximum chronic noncancer HI would be 0.007, well below the BAAQMD significance thresholds of 10 in one million and 1.0, respectively.

Land use at CP is the same for the 2018 Modified Project Variant as was analyzed in the 2010 FEIR; thus, construction activity will be the same as analyzed in the 2010 FEIR. Therefore, construction impacts for CP will not change for the 2018 Modified Project Variant.

Impact AQ-2b: Construction at HPS Phase II would not result in impacts to off-site populations from Project-generated emissions of DPM. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As disclosed in the 2010 FEIR, construction impacts at HPS2 would not exceed BAAQMD CEQA thresholds for cancer risk or chronic noncancer health indices (HI) after mitigation. DPM emissions were modeled for operation of off-road construction equipment and on-road hauling trucks. Risk was assessed at off-site sensitive receptors, workers, and potential on-site residents at the Alice Griffith parcels. The maximum exposed individual (MEI) cancer risk would be 3.8 in one million, while the maximum chronic noncancer HI would be 0.01, well below the BAAQMD significance thresholds of 10 in one million and 1.0, respectively.

Revised construction modeling and health risk assessments were performed for the 2018 Modified Project Variant. Because the major changes to construction occur on the HPS section of the Project, the revised construction HHRA is focused only on this portion of the Project. Impact AQ-2a evaluated impacts at CP. The 2018 Modified Project Variant reduces the land use of CP and thus would reduce construction impacts. Therefore, construction at CP was not evaluated quantitatively.

Detailed assumptions and results are described in Appendix F1 (Air Quality Construction Methods Memorandum). Because the construction of HPS begins after the phase in of the emission control device requirement in MM AQ-2.1, 100 percent of equipment was assumed to meet USEPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent).

The MEI cancer risk for the 2018 Modified Project Variant is 3.5 in one million at a worker location. This is less than the MEI for the 2010Project. The revised construction schedule resulted in cleaner off-road construction equipment than modeled for the 2010 Project and moved more equipment away from the perimeter of the site. Because the construction impacts from HPS have decreased and construction at CP is similar to what was analyzed previously, the combined impact of HPS and CP construction is expected to be lower than reported in the 2010 FEIR.

Due to the decrease in cancer risk with the 2018 Modified Project Variant and the minimal impact of the chronic HI, the chronic HI would also continue to be below thresholds. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact AQ-2c: Construction activities associated with the Project would not result in impacts to the existing Alice Griffith Public Housing from Project-generated emissions of DPM. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As disclosed in the 2010 FEIR, the cancer risk at the MEI inside Alice Griffith would be 4.5 in one million. Due to its proximity, Alice Griffith would be most impacted by construction at CP. Since the construction at CP is not changing from the 2010 Project and impacts from HPS have generally decreased, the impact at Alice Griffith would not change as a result of the 2018 Modified Project Variant.

Impact AQ-2: Construction activities associated with the Project would not result in impacts to on-site and off-site populations from Project-generated emissions of DPM. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, the maximum inhalation cancer risk at the on-site and off-site MEI would be 4.5 in one million. Construction at CP is not changing with the 2018 Modified Project Variant. Impacts at the MEI for HPS would be lower for the 2018 Modified Project Variant than for the 2010 Project. Thus, the combined impact from CP and HPS would not change with the 2018 Modified Project Variant.

Impact AQ-3: Construction activities associated with the Project would not result in impacts to off-site and Alice Griffith populations from emissions of TACs bound to soil-PM_{10}. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, historical operations within the site have increased the concentrations of certain metals and/or organic compounds in the on-site soils, and construction activities could release these chemicals into the air. The 2010 Project included an evaluation of the health impact of the release of these chemicals in fugitive dust as a result of construction activity. This evaluation was based on all organic chemicals detected within the 0- to 10-foot depth in Navy environmental investigations of the soil. The analysis in the 2010 FEIR assumed soil disturbance on the entirety of every parcel.

The 2018 Modified Project Variant covers the same land area as analyzed in the 2010 FEIR. Thus, the evaluation and mitigation measures for the 2010 Project still apply, which include mitigation measure MM HZ-15 (Asbestos Dust Mitigation Plans and Dust Control Plans). The impact would remain less than significant with implementation of the identified mitigation measure.

Impact AQ-4: Operation of the Project would violate BAAQMD CEQA significance thresholds for mass criteria pollutant emissions from mobile and area sources and contribute substantially to an existing or projected air quality violation at full build-out. ***[Criteria H.a and H.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

As discussed in the 2010 FEIR, project operational emissions for HPS2 and CP would exceed the BAAQMD CEQA significance threshold for ROG, NO_X, PM_{10}, and $PM_{2.5}$. The 2010 FEIR reports daily emissions of ROG and NO_X under summer conditions since ozone concentration is highest during this season, and it reports daily emissions of PM_{10} and $PM_{2.5}$ under winter conditions when ambient concentrations of pollutants are highest. The estimated daily ROG emissions were 921 lb/day, above the BAAQMD significance threshold of 80 lb/day. Primary sources of ROG include area sources like natural gas combustion for heating/cooling purposes, consumer product use in residences etc. The total daily NO_X emissions for the project were 384 lb/day, exceeding the BAAQMD threshold of 80 lb/day. Daily PM_{10} emissions were 1,453 lb/day higher than the BAAQMD threshold of 80 lb/day. Daily $PM_{2.5}$ emissions were 278 lb/day. BAAQMD did not have a threshold for $PM_{2.5}$ emissions at the time of the 2010 FEIR. Mobile sources contribute a large fraction of PM_{10}, $PM_{2.5}$, and NO_X for the Project. However, no additional feasible mitigation measures were identified for the 2010 Project that would reduce the Project's operational emissions below the BAAQMD thresholds.

Emissions of the operation of the 2018 Modified Project Variant were estimated, as described in Appendix F2 (Air Quality Operational Emissions Data). CalEEMod was used to estimate operational emissions because tools used for the 2010 FEIR analysis are no longer available. CalEEMod incorporates new regulations such as California Air Resources Board (CARB) In-Use Off-Road Diesel Vehicle Regulation and CARB Statewide Truck and Bus Regulation as well as CARB's Advanced Clean Cars (ACC) program from 2012.

Consistent with the 2010 Project, daily ROG and NO_X emissions are reported under summer conditions, and daily PM_{10} and $PM_{2.5}$ emissions are reported under winter conditions. Daily ROG emissions for the 2018 Modified Project Variant are 428 lb/day, which is lower than the ROG emissions in the 2010 FEIR. Daily NO_X emissions for the 2018 Modified Project Variant are 340 lb/day, which is lower than the NO_X emissions in the 2010 FEIR. While NO_X emissions at HPS2 increase, total NO_X emissions are lower for the 2018 Modified Project Variant compared to the 2010 Project. Daily PM_{10} and $PM_{2.5}$ emissions are, 397 lb/day and 125 lb/day, respectively, which are all below the emissions reported for the 2010 Project.

Emissions have decreased from those disclosed for the 2010 Project largely due to the delay in implementation of the Project, land use and vehicle trip generation changes and updated calculations methodology for mobile emissions that incorporate new regulations (e.g., EMFAC2007 emission factors in the 2010 FEIR and EMFAC2014 emission factors in the addendum). For most pollutants, the majority of emissions are from vehicular travel. Newer vehicles tend to emit less pollutants than older vehicles, so the vehicle fleet would emit less when the Project is built out

compared to the build-out assumed for the 2010 Project. Emissions from the 2018 Modified Project Variant continue to exceed the BAAQMD significance threshold for all criteria air pollutants, but are below emission levels estimated for the 2010 Project. Results comparing the 2010 Project and Addendum 5 are shown in Table 13 (Emissions Comparison). The impact would remain significant and unavoidable, and there continues to be no feasible mitigation measure to reduce the level of this impact.

TABLE 13 EMISSIONS COMPARISON

	2010 Project (Operational Emissions for Project, Build-Out 2030)[a]				*Addendum 5 (Operational Emissions for 2018 Modified Project Variant, Build-Out 2032*[b]			
Analysis Area	*ROG (lb/day)*	*NO_x (lb/day)*	*PM_{10} (lb/day)*	*$PM_{2.5}$ (lb/day)*	*ROG (lb/day)*	*NO_x (lb/day)*	*PM_{10} (lb/day)*	*$PM_{2.5}$ (lb/day)*
Candlestick Point	666	265	1,029	197	215	164	203	66
HPS2	255	119	424	81	213	176	193	59
Project Site Total	***921***	***384***	***1,453***	***278***	***428***	***340***	***397***	***125***

Daily ROG and NO_X emissions are calculated under summer conditions and daily PM_{10} and $PM_{2.5}$ emissions are calculated under winter conditions.

ROG = reactive organic gases; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter.

a. Emissions from *Candlestick Point–Hunters Point Shipyard Phase II Development Plan EIR*, Section III.H (Air Quality), Table III.H-5 (2009).

b. Operational emissions calculated with CalEEMod® version 2016.3.2.

c. Emissions were calculated for the entire project for operational year 2032, although construction goes to 2034. Construction after 2032 only includes parks. Using an earlier operational year is more conservative because emissions tend to decrease with time.

Impact AQ-5: Operation of the Project would not cause local concentrations of CO to exceed State and federal ambient air quality standards due to motor vehicles trips. ***[Criterion H.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As discussed in the 2010 FEIR, localized CO emissions were modeled using CALINE4 dispersion modeling at four intersections. These intersections were selected because they represent the locations where Project traffic would produce the greatest change in traffic level of service associated with the Project (and, therefore, the greatest increase in congestion, which would produce the greatest increase in CO emissions) and/or the highest total traffic volumes of all intersections in the Project vicinity. Modeling of the localized CO concentration was completed for the existing (2009), future baseline (2030), and future project (2030) cases and then added to the background CO concentrations for San Francisco.

The maximum 1-hour CO concentration (including the background concentration) of the four modeled intersections was 3.1, 3.0, and 3.2 ppm for the existing, future baseline, and future project cases, respectively. The maximum 8-hour CO concentration (including the background concentration) of the four modeled intersections was 2.0, 2.0, and 2.1 ppm for the existing, future baseline, and future project cases, respectively. These are all below the state and federal ambient air quality standards due to motor vehicle trips of 20 ppm and 35 ppm, respectively for 1-hour concentrations and 9 ppm for 8-hour concentrations.

Revised concentrations for the 2018 Modified Project Variant were calculated by scaling the previous concentrations by the percent change in traffic at the selected intersections. The existing and future baseline cases have not changed with the 2018 Modified Project Variant so those CO concentrations remain the same when compared to the 2010 Project. For the future project case, traffic at the selected four intersections increased on a range of 1 percent to 32 percent compared to the 2010Project.

The maximum future project 1-hour and 8-hour CO concentrations (including the background concentration) of the four modeled intersections was 3.2 ppm and 2.1 ppm, respectively. These values are below the state and federal ambient air quality standards due to motor vehicle trips. Table 14 (CO Concentration Comparison—Future Project) shows the comparison of the 1-hour and 8-hour CO concentrations at the four intersections for the 2010 Project and 2018 Modified Project Variant. The impact would remain less than significant, and no mitigation would be required.

TABLE 14 CO CONCENTRATION COMPARISON—FUTURE PROJECT

	1-hour Average CO Concentration (ppm)				*8-hour Average CO Concentration (ppm)*		
Analysis Area	*2010 Project[a]*	*2018 Modified Project Variant[b]*	*State Standard*	*Federal Standard*	*2010 FEIR[a]*	*2018 Modified Project Variant[b]*	*State and Federal Standard*
Arelious Walker Dr/Gilman Ave	3.1	3.1	20	35	2.0	2.0	9
Third St/Gilman Ave	3.2	3.2			2.1	2.1	
Griffith St/Palou Ave	2.8	2.9			1.8	1.9	
Evans Ave/Jennings St	3.0	3.1			2.0	2.1	

a. FEIR CO concentrations are from 2010 FEIR Table III.H-6
b. 2018 Modified Project Variant CO concentrations are scaled EIR values based on the traffic study changes.

Impact AQ-6: Implementation of HPS Phase II would not expose nearby receptors to an increase in local concentrations of toxic air contaminants due to the operation of Research and Development uses. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR included an evaluation of toxic air contaminants (TACs) released in R&D buildings to determine health impact on nearby receptors. The combined impact of each R&D area was modeled to determine the combined impact of the R&D areas. Due to the number of facilities that could emit TACs, this impact was considered potentially significant, but an explicit analysis of unmitigated impacts was not performed. The analysis was based on the assumption that no individual TAC emission source could exceed 10 in a million cancer risk (1×10^{-5}) or a 1.0 chronic noncancer HI for a receptor at the boundary of each site, which is consistent with MM AQ-6.2. This scenario is consistent with BAAQMD requirements for sources equipped with best available control technology for toxics (T-BACT), and would be a requirement for sources in the R&D areas. With this mitigation measure, the impact in the 2010 FEIR (for the 2010 Project) was less than significant as estimated risk at residential locations were below thresholds.

The 2018 Modified Project Variant contains less R&D square footage as compared to R&D Variant (Variant 1) and does not introduce new locations for R&D as compared to the R&D Variant (Variant 1) land use plan. Figure 3-1b-of 2010 FEIR Appendix H1 Attachment III shows the areas analyzed to have TAC emissions from R&D in the 2010 FEIR and the R&D areas proposed now. As shown in Figure 4-1a of 2010 FEIR Appendix H1 Attachment III, cancer risk from TAC emissions from R&D is below the threshold of 10 in a million at all proposed residential locations, except the north eastern portion of HPS-5. Mitigation measure MM AQ-6.2 of the Development Agreement restricts land uses with TAC emissions within 300 feet of any residence. This mitigation measure reduced risk to below thresholds in this area. The 2018 Modified Project Variant does not propose R&D in any locations that were not previously analyzed and does not place residences in any new areas that were not previously analyzed. Thus, the analysis in the 2010 FEIR (for the 2010 Project) would be inclusive of the 2018 Modified Project Variant. The evaluation and conclusion in the 2010 FEIR would still apply, and the 2018 Modified Project Variant would not pose a human health risk as a result of hazardous air emissions within 0.25 mile of a school. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact AQ-7: Operation of the Project would not expose receptors to concentrations of $PM_{2.5}$ above a 0.2 μg/m³ action level for $PM_{2.5}$ and, therefore, would not substantially affect the health of nearby receptors as a result of an increase in local concentrations of vehicle emissions ($PM_{2.5}$) associated with vehicle use attributable to operation of the Project. ***[Criterion H.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As disclosed in the 2010 FEIR, operational traffic impacts would not exceed the SFDPH $PM_{2.5}$ localized concentration threshold for potential health effects of 0.2 μg/m³. $PM_{2.5}$ concentration levels were evaluated at nearby roadways and intersections that Project-related traffic would use to access neighboring freeways and other areas of San Francisco. The maximum $PM_{2.5}$ concentration would be 0.2 μg/m³, which would not exceed the SFDPH's threshold.

Revised $PM_{2.5}$ concentrations for the 2018 Modified Project Variant were calculated by scaling the 2010 Project $PM_{2.5}$ concentrations by the respective percent change in annual average daily traffic (AADT) along each of the previously modeled road sections and also by the change in emission factors. The change in the AADT was determined using traffic volumes provided by Fehr & Peers and is different for each modeled road segment. AADT generally increased along Innes, Palou, and Gilman Avenues, but AADT generally decreased on Third Street. The change in emission factors take into account the reduction in exhaust emissions that have been realized from emissions control requirements since the 2010 FEIR was published. Figure 4-3 of 2010 FEIR Appendix H3 Attachment IV shows the roadways and receptors modeled.

The resulting maximum $PM_{2.5}$ concentration is 0.211 μg/m³, 0.011 μg/m³ over the threshold used in the 2010 FEIR. This maximum occurs on Innes Avenue, near the intersection with Arelious Walker

and is on the roadway segment with the maximum percent increase in AADT. There are three total points with a concentration greater than the 2010 FEIR threshold of 0.2 μg/m^3, with 0.211 μg/m^3 as the maximum and all points are located on Innes Avenue, near the intersection of Arelious Walker. All other locations are below the threshold.

The SFDPH $PM_{2.5}$ localized concentration threshold for potential health risks of 0.2 μg/m^3 was used as a health protective proxy in the 2010 FEIR due to the absence of a threshold established by the BAAQMD for this type of analysis at the time of the 2010 FEIR. However, impacts to a person's health better correlate with the cumulative total impact from all sources rather than impacts from one individual source. Accordingly, the City of San Francisco now evaluates a project's significance for health impacts on a cumulative basis in combination with nearby sources. The City performed citywide modeling in 2012 to determine the cumulative impact of all sources known at the time and created thresholds based on cumulative $PM_{2.5}$ concentrations. The threshold used in the 2010 FEIR was a temporary proxy due to the lack of a threshold established by BAAQMD, The City now uses a cumulative approach, which is based on the scientific evidence discussed below. The City of San Francisco's current cumulative threshold approach is more appropriate to use to determine significance here, and the 2018 Modified Project Variant effects are assessed below using this approach.

San Francisco Modeling of Air Pollution Exposure Zones and Thresholds

In an effort to identify areas of San Francisco most adversely affected by sources of TACs, the City and County of San Francisco (the Planning Department and Department of Public Health) partnered with BAAQMD to conduct a citywide health risk assessment based on an inventory and assessment of air pollution and exposures from mobile, stationary, and area sources within San Francisco. Citywide dispersion modeling was conducted using AERMOD[63] to assess emissions from the following primary sources: roadways, permitted stationary sources, port and maritime sources, and Caltrain. Emissions of DPM (which represent PM_{10} exhaust emissions from diesel-fueled engines), $PM_{2.5}$ (including brake and tire wear), TOG, and other TACs from stationary sources were modeled on a 20-by-20-meter receptor grid covering the entire city. The results represent a comprehensive assessment of existing cumulative exposures to air pollution throughout the city. The methodology and technical documentation for modeling citywide air pollution are available in the document titled *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*.[64] Model results were used to identify areas in the city at the lot level with poor air quality, termed the Air Pollutant Exposure Zone (APEZ), based on the following health-protective criteria:

[63] AERMOD is the USEPA's preferred or recommended steady state air dispersion plume model. For more information on AERMOD and to download the AERMOD Implementation Guide, see https://www3.epa.gov/ttn/scram/7thconf/aermod/aermod_implmtn_guide_3August2015.pdf.

[64] BAAQMD, San Francisco Department of Public Health, and San Francisco Planning Department, *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*, December 2012.

- **Excess Cancer Risk.** The 100 per one million persons (100 excess cancer risk) criterion is based on USEPA guidance for conducting air toxic analyses and making risk management decisions at the facility- and community-scale level.[65]
- **Fine Particulate Matter.** In April 2011, USEPA published *Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards*. In this document, USEPA staff concludes that the then-current federal annual $PM_{2.5}$ standard of 15 μg/m^3 should be revised to a level within the range of 13 to 11 μg/m^3, with evidence strongly supporting a standard within the range of 12 to 11 μg/m^3. APEZ designations within San Francisco are based on the health-protective $PM_{2.5}$ standard of 11 μg/m^3, as supported by USEPA's Particulate Matter Policy Assessment, but then the standard is lowered further to 10 μg/m^3 to account for uncertainty in accurately predicting air pollutant concentrations using emissions modeling programs.
- **Health Vulnerable Locations.** Also included in the APEZ were lots within San Francisco ZIP codes that were in the lowest 20 percent of Bay Area Health Vulnerability scores (ZIP codes 94102, 94103, 94105, 94124, and 94130). For lots within both an APEZ and Health Vulnerability ZIP code, the standard for identifying areas as being within the zone was lowered to (1) excess cancer risk from the contribution of emissions from all modeled sources greater than 90 per one million persons, and/or (2) cumulative $PM_{2.5}$ concentrations greater than 9 μg/m^3.[66]

The thresholds of significance used to evaluate health risks from new sources of TACs are based on the potential for the project to substantially affect the extent and severity of an existing APEZ at sensitive receptor locations or create a new APEZ. The Project site is not within the APEZ (as mapped by the San Francisco Planning Department), but is in a Health Vulnerability zone (ZIP code 94124). Therefore, the relevant threshold would be cumulative $PM_{2.5}$ concentration of 9 μg/m^3, which is the standard for becoming an APEZ in a Health Vulnerability ZIP code. While the Project is not in an APEZ, the intersection of Third Street and Gilman Avenue is within an APEZ. The relevant threshold for this area for the Project impact would be 0.2 μg/m^3.

As discussed in Appendix F2, the maximum cumulative $PM_{2.5}$ concentration near the maximum impact from the Project would be 8.8 μg/m^3, which includes ambient concentrations, nearby sources, and the 2018 Modified Project Variant. This concentration is below the cumulative threshold of 9 μg/m^3 for the health protective ZIP code, which applies to this area.

The maximum concentration due to the 2018 Modified Project Variant inside the APEZ would be 0.17 μg/m^3, which is below the APEZ threshold of 0.2 μg/m^3. According to the CRRP, the maximum concentration along Third Street from the existing sources is just below the APEZ threshold of 9 μg/m^3. However, traffic along Third Street from the 2018 Modified Project Variant would be lower than traffic analyzed in the 2010 FEIR (for the 2010 Project). Thus, this area would not have an

[65] BAAQMD, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October 2009, p. 67.
[66] San Francisco Planning Department and San Francisco Department of Public Health, 2014 Air Pollutant Exposure Zone Map (Memo and Map), April 9, 2014. These documents are part of San Francisco Board of Supervisors File No. 14806, Ordinance No. 224-14, Amendment to Health Code Article 38.

increased impact from what was analyzed in the 2010 FEIR for the 2010 Project. Therefore, the $PM_{2.5}$ concentration from the 2018 Modified Project Variant would be below this threshold.

Furthermore, proposed mitigation measures for the nearby India Basin project, should it be approved and implemented, would reduce the number of travel lanes on the nearby roads to provide for bus rapid transit along Innes, indirectly reducing the amount of traffic and, therefore, further reducing the localized $PM_{2.5}$ concentrations. The Project impact would remain less than significant, and no mitigation would be required.

Impact AQ-8: Implementation of the Project would not generate objectionable odors affecting a substantial number of people. ***[Criterion H.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

In the 2010 FEIR, this impact was considered less than significant, and mitigation was not required. The 2010 Project assumed a large mixed-use development containing residential, office, retail, R&D, recreational, entertainment uses, and a large centralized recycled water facility. The 2010 FEIR concluded that although there may be some potential for small-scale, localized odor issues to emerge around Project sources such as solid waste collection or food preparation, substantial odor sources and consequent effects on on-site and off-site sensitive receptors would be unlikely and/or would be resolved by appropriate and effective intervention after receipt of any complaints. The 2018 Modified Project Variant includes most of the same land uses, but adds a hotel, schools, and a geothermal heating and cooling system. Hotels and schools are not expected to be significant sources of odors. The primary source of odors from hotels and schools would be from solid waste collection and food preparation; however, these source of potential odors would be collected in closed containers and would be disposed of on a regular basis.

The recycled water facility, which was proposed as part of the 2010 FEIR Utilities Variant 4, is also proposed as part of the 2018 Modified Project Variant. Under Utilities Variant 4, four decentralized treatment plants were proposed at HPS2 and seven decentralized treatment plants were proposed at CP, each with a capacity of approximately 100,000 gallons per day (gpd) of wastewater, totaling 1.1 million gpd. The 2018 Modified Project Variant, by comparison, proposes one 976,000 gpd centralized treatment plant at HPS2. This plant has been designed to minimize and/or eliminate perceptible odors to nearby sensitive uses. All exhaust air associated with the recycled water treatment process would be conveyed to a granular-activated carbon scrubber system before being released to the environment. Water would enter the facility through a screen box, which would remove any large solid materials from the water flow. The large solid materials would go straight to an enclosed container and exhaust air would be routed to the carbon scrubber system. The water then would enter a series of tanks, all of which would be completely enclosed. The air in the area above the water line in the tanks would be captured via a suction blower and conveyed to the carbon scrubber system.

Raw sewage would be conveyed to equalization tanks. The tanks would be covered and exhaust air would go through the carbon scrubber system. The anoxic tank would treat water at low oxygen concentrations. Mixing would occur in this tank, which would have air going through the scrubber system. The water then would enter the aeration and membrane tanks where air would pass through the tank to activate the biological process and to scour membranes. These tanks would be covered and all exhaust air would go through the carbon scrubber. Sludge that is generated as part of the treatment would be directly released into the San Francisco Public Utilities Commission (SFPUC) sewer system in enclosed pipes. None of the sludge would be processed on site. The treated water would be conveyed to finished water tanks, which typically do not have an odor, but would be enclosed in an abundance of caution.

The design of the recycled water facility thus substantially minimizes the potential for waste-related odors using the odor control technologies described above and in Table 15 (Odor Control Technologies Used for Waste-Related Odors).

TABLE 15 ODOR CONTROL TECHNOLOGIES USED FOR WASTE-RELATED ODORS

Technology	*Description of Technology*
Enclosed tank/systems	All treatment unit processes and raw sewage process tanks would be located in enclosed buildings or under covers, limiting the amount of waste that comes into contact with the ambient environment and reducing the potential for odors to escape from the system.
Negative pressure	Tank headspace would be kept under negative pressure, which reduces the amount of air that can escape from the tank and reduces the potential for odors to be released.
Sludge would not be processed on site	By processing the sludge off site, the potential for odors would be reduced.
Carbon Scrubber	All captured air would be routed through granular-activated carbon air scrubbers. Carbon scrubbers use activated carbon as the adsorption medium to remove odors, gases, and other VOCs. Activated carbon has a complex pore structure with a very large surface area. As the air is forced through the carbon bed, odorous compounds are transferred from the air to the surface of the carbon though a physical attraction called adsorption. The odor compounds would continue to adsorb onto the surface of the carbon until all the pore space in the carbon is saturated, at which point the carbon would be replaced (or reused after regeneration, which restores the adsorption capacity of the saturated activated carbon). The system would be monitored to determine when replacement of carbon is necessary. Scrubbed air would be discharged to the atmosphere.
Monitoring and Maintenance	Monitoring and maintenance would be part of the system operations to reduce and address odors in a timely manner. The operators would manage the facility to minimize odors and address odor complaints, if any.

Addendum 5 Appendix F3 (Recycled Water Facility Location and Odor Control) confirms that the proposed HPS2 recycled water facility would not have any objectionable or detectable odor at the perimeter of the facility that would be noticed by the public. Appendix F3 states that odor has not been an issue at other facilities that Natural Systems Utilities has previously completed. Three example facilities, noted below, have a similar design to but are somewhat smaller than the recycled water facility that is proposed at HPS2. All are in close proximity to residences and businesses and have been in operation for over 15 years without any odor complaints:

- **Battery Park, New York City, New York:** Six complete water reuse systems located inside the buildings of high-end residential apartment complexes with a total capacity of 165,000 gpd.
- **Queset Commons, North Eaton, Massachusetts:** Wastewater treatment plant for a mixed-used development located directly adjacent to homes and commercial establishments with 150,000 gpd capacity;
- **Gillette Stadium, Foxboro, Massachusetts:** On-site water reuse facility for the New England Patriots with the treatment facility located within the commercial district and immediately adjacent to surrounding restaurants with 250,000 gpd capacity; and

Addendum 5 Appendix F4 (Recycled Water Facility Odor Control Measures) describes the design features of the recycled water facility that would reduce odors.

The recycled water facility at HPS2 would be designed and constructed with the same standards and design principles as the three example facilities. The recycled water facility at HPS2 would be constructed as separate modules, each about the size of the Queset Commons facility. Due to the modular design and similar capacity, the lack of odor complaints at these facilities are representative of what would be expected at HPS2.

Due to the enclosed design and the use of a granular activated carbon system, the recycled water facility would not would not generate objectionable odors affecting a substantial number of people.

Furthermore, the recycled water facility would comply with the 2010 FEIR conclusion that effects "would be resolved by interventions after receipt of any complaints." The HPS Redevelopment Plan requires that any recycled water treatment facility comply with additional odor control measures established in the D4D, which requires the establishment of a point of contact for odor control complaints, post-contact information for such point of contact, and implement additional odor control measures until odor issues are addressed. In addition, complaints could be addressed to BAAQMD to be handled under BAAQMD Regulation 7 (Odorous Substances), which establishes general limitations on odorous substances and specific emission limitations on certain odorous compounds. The enforcement of these limitations is provided on a complaint-based system. If the Air Pollution Control Officer (APCO) receives odor complaints from 10 or more complainants within a 90-day period alleging odors are perceived at or beyond the property line and are deemed to be objectionable by the complainants in the normal course of their work, travel, or residence, Regulation 7 provides for a collection, analysis, and evaluation process to determine whether there are, in fact, odors and/or whether they exceed established discharge concentrations. The monitoring mandated by the Regulation shall remain effective until such time as no citizen complaints have been received by the APCO for one year. The limits of this Regulation shall become applicable again when the APCO receives odor complaints from five or more complainants within a 90-day period.

The impact would remain less than significant, and no mitigation would be required.

Impact AQ-9: The Project would conform to the current regional air quality plan. ***[Criterion H.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

In the 2010 FEIR, the Project was compared against the Bay Area 2005 Ozone Strategy and the then draft 2009 Clean Air Plan. The Project was determined to conform to the 2005 Plan in that it promotes the use of alternative transportation modes, such as transit, biking and walking. In addition, it puts housing in close proximity with jobs and retail establishments, reducing the length of trips and further reducing reliance on single-occupancy vehicles. The project characteristics are the same for the 2018 Modified Project Variant, so the 2018 Modified Project Variant would also conform to the 2005 Plan.

The 2010 FEIR also contained a comparison to the then draft 2009 Clean Air Plan (CAP). The comparison focused on transportation control measures and land use and local impact measures. As discussed above for the 2005 Plan, the 2018 Modified Project Variant does not change transportation goals. The 2018 Modified Project Variant continues to improve transit services by adding and expanding certain transit routes, improve system efficiency and encourages sustainable travel behavior by locating residences near jobs and services, and support focused growth. The 2018 Modified Project Variant also does not change conformity with the land use and local impact measures. As discussed in the analysis for other impacts above, the 2018 Modified Project Variant does not increase exposure to air pollution compared to the analysis for the 2010 Project.

Since the 2010 FEIR was certified, the Bay Area Air Quality Management District (BAAQMD) developed the 2017 CAP. The 2017 CAP is an update to the 2010 Clean Air plan and is the most recently adopted strategy by the Bay area to meet air quality standards. The 2017 plan serves to protect public health and the environment by using a multipollutant air quality plan with new measures in sectors including transportation, energy, buildings, water, and natural working lands.

The proposed project supports the primary goals of the Clean Air Plan, in that it proposes to reduce impacts by implementing transportation control measures, energy and building measures and water conservation measures. The proposed extension supports the development of transit ways that would encourage use of local bus routes (MUNI bus lines to downtown) and promotes the development of multi-use pathways encouraging pedestrian and bicycle usage. *This would help reduce vehicle trips, vehicle usage and traffic congestion.* The proposed project would result in decarbonizing buildings by using geothermal HVAC systems reducing the need for use of natural gas fired boilers and in turn reducing overall energy consumption by 65 percent, which are consistent with the building control measure goals delineated in the 2017 CAP. In addition, the generation of on-site renewable energy through solar photovoltaics to supplement on-site power supply from SFPUC, and the use of lithium-ion batteries for storing surplus energy generated by PV systems supports the plan to decarbonize electricity production. Surplus energy stored in the batteries would also be discharged back into the grid in place of the electricity imported from the PG&E grid.

Finally, the proposed project also improves water efficiency and supports water conservation, thus resulting in an overall GHG emissions reduction and water conservation. In particular, use of a centralized treatment plant for sanitary sewer water to be used for nonpotable uses as opposed to multiple decentralized treatment systems would result in limiting methane emissions from the treatment facilities. The impact would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to air quality impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to air quality, either on a project-related or cumulative basis.

II.B.8 Noise and Vibration

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
12.	**Noise and Vibration.** Would the project result in:					
I.a	Result in exposure of persons to or generation of noise levels in excess of standards established in the Environmental Protection Element of the *San Francisco General Plan* or San Francisco Noise Ordinance (Article 29, *San Francisco Police Code*)?	2010 FEIR p. III.I-30 (Impact NO-1b); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	MM NO-1a.1, MM NO-1a.2
I.b	Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	2010 FEIR p. III.I-32 (Impact NO-2), p. III.I-40 (Impact NO-5); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None
I.c	Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	2010 FEIR p. III.I-39 (Impact NO-4), p. III.I-40 (Impact NO-6); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None
I.d	Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	2010 FEIR p. III.I-36 (Impact NO-2c), p. III.I-38 (Impact NO-3), p. III.I-44 (Impact NO-7); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	MM NO-1a.1, MM NO-1a.2, MM NO-2a
I.e	For a project located within an airport land use plan area, or, where such a plan has not been adopted, in an area within two miles of a public airport or public use airport, would the Project expose people residing or working in the area to excessive noise levels?	2010 FEIR p. III.I-51 (Impact NO-8); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None
I.f	For a project located in the vicinity of a private airstrip, would the Project expose people residing or working in the project area to excessive noise levels?	2010 FEIR p. III.I-51 (Impact NO-8); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None
I.g	Be substantially affected by existing noise levels	2010 FEIR p. III.I-51 (Impact NO-8); Addendum 1 p. 37; Addendum 4 p. 40	No	No	No	None

Changes to Project Related to Noise and Vibration

The 2018 Modified Project Variant includes the following activities related to noise and vibration:

- Modifications to the land use program, including a decrease in R&D uses, an increased number of residential units, and the addition of a hotel and schools that were not envisioned in the 2010 FEIR;
- Changes in traffic volumes and traffic distribution;
- Revised design details on central energy plants and recycled water plant and the addition of a ground source geothermal heating and cooling system; and
- Changes in construction activity and methods, including the use of deep dynamic compaction (DDC) at CP and HPS2 and the installation of geothermal boreholes at HPS2.

Comparative Impact Discussions

Noise impacts associated with the 2018 Modified Project Variant are evaluated in this section. An assessment of noise impacts at CP is not provided because the 2018 Modified Project Variant results in fewer noise-sensitive receptors at CP as compared to both the 2010 Project and the R&D Variant (Variant 1); the number of dwelling units are decreased and there are no additional sensitive receptors or sensitive receptors provided in different locations. Further, there are no changes to the land use program relative to the 2010 Project at CP that would result in different noise impacts. Therefore, the potential for noise impacts at CP would either be the same or less than was identified in the 2010 FEIR.

The 2018 Modified Project Variant includes an assessment of noise from new construction techniques at HPS2 that were not previously analyzed in the 2010 FEIR, including the use of a drill rig truck during the installation of geothermal boreholes. The assessment of vibration impacts for the 2018 Modified Project Variant includes HPS2 and CP as it relates to the use of deep dynamic compaction (DDC) to stabilize loose soils throughout the site, which represents a new source of vibration that was not previously analyzed in the 2010 FEIR.

Impact NO-1b: Construction at HPS Phase II would generate increased noise levels for both off-site and on-site sensitive receptors; however, the Project's construction noise impacts would be temporary, they would also not occur during recognized sleep hours, and would be consistent with the requirements for construction noise that exist in Sections 2907 and 2908 of the *Municipal Code*. *[Criterion I.a]*

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The potential for construction noise related impacts is based on comparison with the San Francisco Noise Ordinance, as summarized in Sections 2907 and 2908. Further, construction activities would occur during daylight hours, generally between 7:00 a.m. and 8:00 p.m. or as otherwise allowed by the City (i.e., no nighttime construction work is anticipated). Because construction of the 2018 Modified Project Variant would occur during daytime hours it would be subject to a limit of 80 dBA at 100 feet

for individual, non-impact construction equipment. The following assessment provides a summary of expected noise levels from construction equipment, and the potential for construction noise impact at existing off-site and future on-site receivers. Illustrations of the 2018 Modified Project Variant's sensitive land uses are provided in Figure 37 (Locations of Noise-Sensitive Receptors at HSP2) and Figure 38 (Locations of Noise-Sensitive Receptors at CP). While the 2018 Modified Project Variant proposes a modification of the land use program, it would not place noise-sensitive receptors closer to sources of construction noise and vibration than were evaluated in the 2010 FEIR.

Table 16 (Construction Equipment Noise Emission Levels) provides a list of powered equipment that would be used during construction, and includes typical noise levels as measured at 50 and 100 feet from each source. The equipment and noise levels in Table 16 are similar to those identified in the 2010 FEIR and are based FTA noise guidance.[67] Additional equipment not identified previously include drill rig trucks that would be used when installing boreholes. As in the 2010 FEIR, these sound levels are considered representative of the equipment that would be used during construction of the 2018 Modified Project Variant. See Addendum 5 Appendix G (Noise Data) Table G-1 (Project Related Construction Equipment) for a full list of the construction equipment, quantities, construction phases, and noise levels used for this assessment.

TABLE 16 CONSTRUCTION EQUIPMENT NOISE EMISSION LEVELS

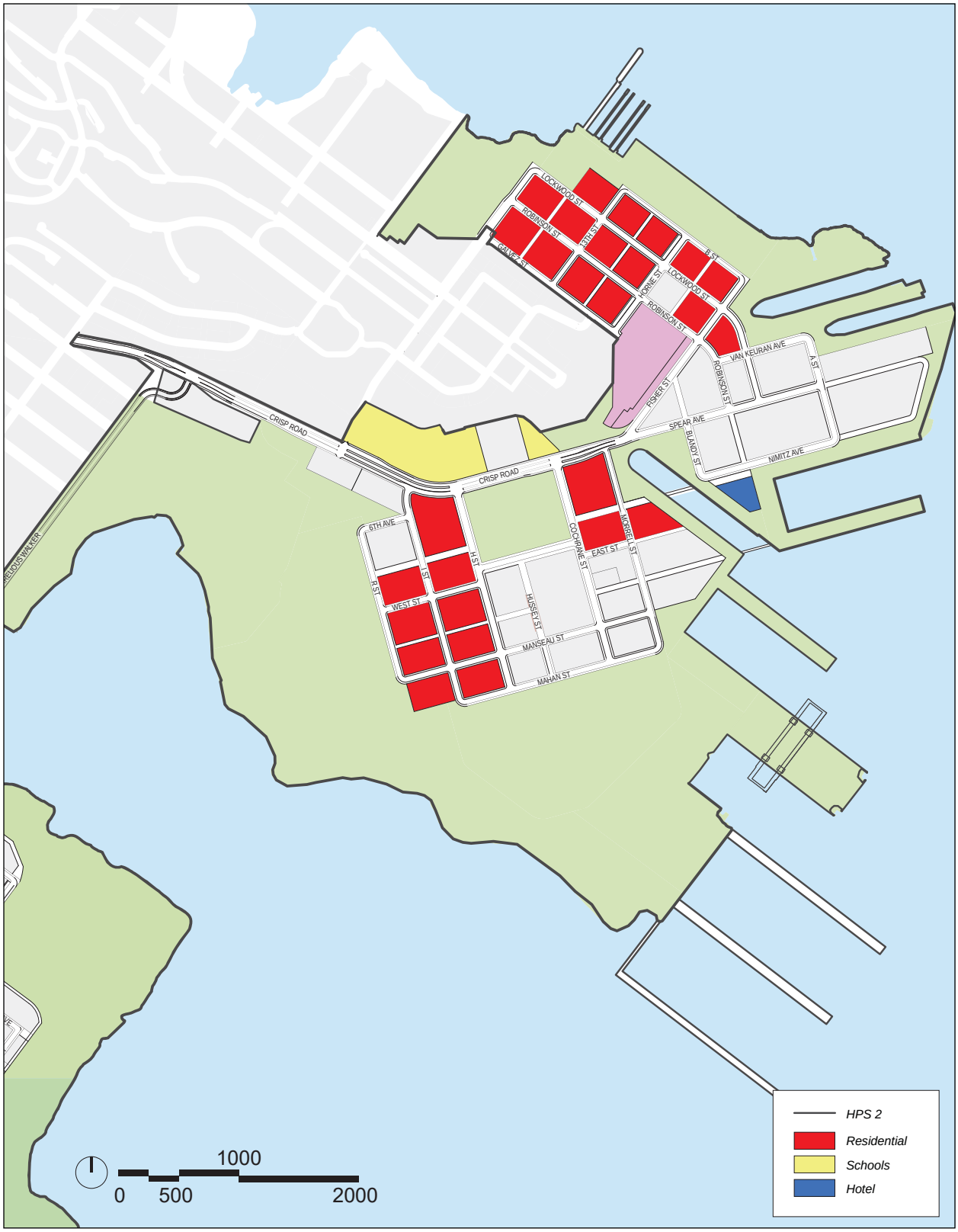
Equipment	*Typical Noise Level (dBA) 50 Feet from Source*	*Typical Noise Level (dBA) 100 Feet from Source*
Compactor	82	76
Concrete Mixer	85	79
Concrete Pump	82	76
Crane, Mobile	83	77
Dozer	85	79
Grader	85	79
Loader	85	79
Paver	89	83
Pile-driver (Impact)	101	95
Drill Rig Truck[a]	79	73
Roller	74	68
Scraper	89	83
Truck	88	82

SOURCE: FTA, *Transit Noise and Vibration Guidance Handbook*, May 2006.

NOTE:

[a] "Drill Rig Truck" noise level not found in FTA manual; sound level data from Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). Sound level data found online at https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook09.cfm.

[67] U.S. Federal Transit Authority, *Transit Noise and Vibration Impact Assessment*, May 2006. Available at https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf.

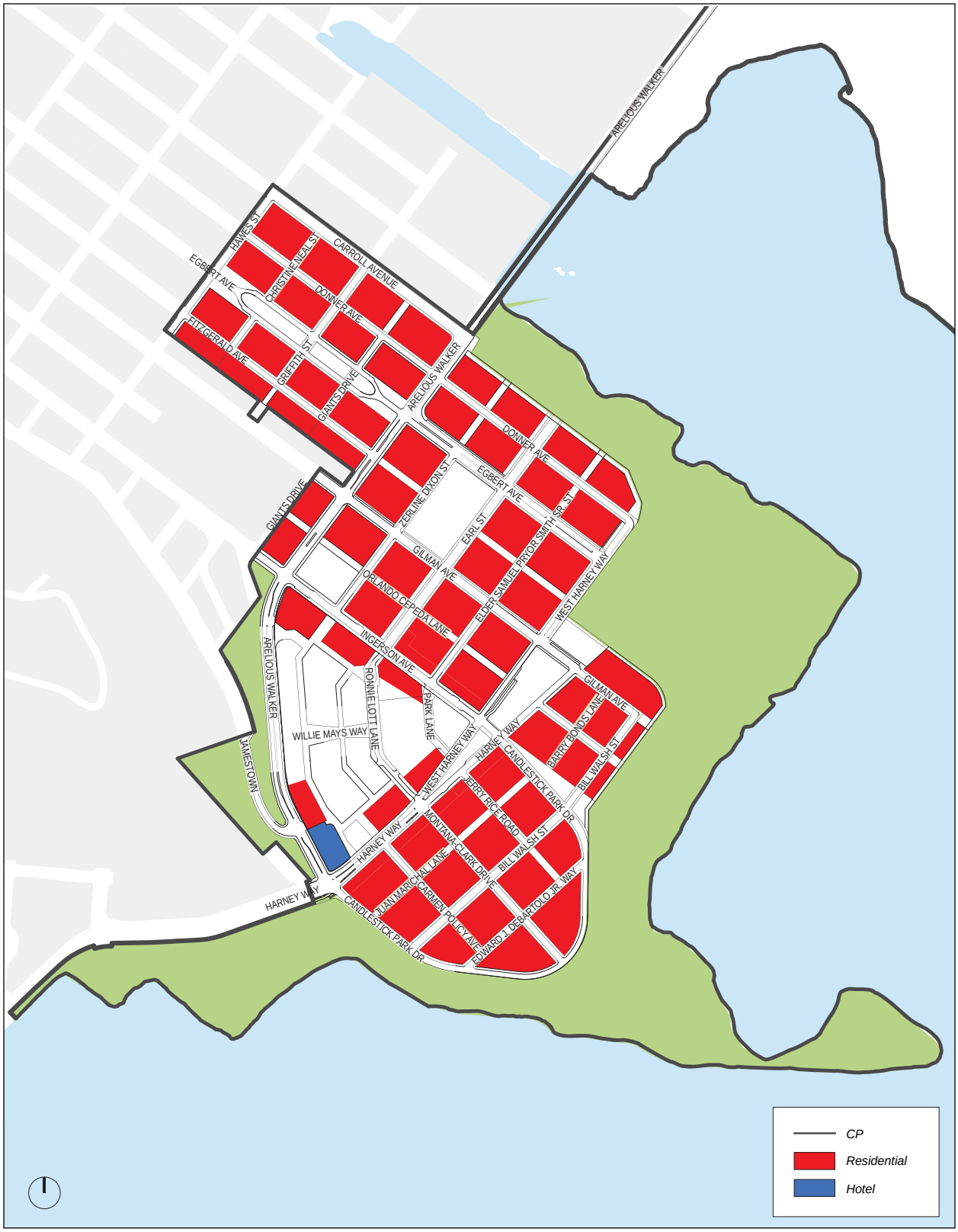


SOURCE: Ramboll. 2018; FivePoint, 2018.

FIGURE 37

Addendum 5 to the CP-HPS2 2010 FEIR

LOCATIONS OF NOISE-SENSITIVE RECEPTORS AT HPS2



SOURCE: FivePoint, 2018.

FIGURE 38

Addendum 5 to the CP-HPS2 2010 FEIR

LOCATIONS OF NOISE-SENSITIVE RECEPTORS AT CP

Construction Noise Impacts at Off-Site Receivers

Existing off-site noise-sensitive receivers near the HPS2 developments, such as the residences in HPS1, the surrounding Bayview and Hunters Point neighborhoods, including existing and proposed residences adjacent to the proposed Northside Park along Innes Avenue, could be exposed to elevated levels of noise during some construction activities.

During grading of the Northside Park, residences along Innes Avenue may experience noise levels of up to 91 dBA when both graders and scrapers operate at the same time, approximately 50 feet from these residences (nearest and worst-case construction noise levels).

At existing off-site residences and places of worship that are within 25 feet of the proposed Donahue Extension, or the Palou and Innes Avenue improvements, exposure to activity from graders and from pavement crushers could result in noise levels of up to 91 dBA under worst-case operating conditions.

At the geothermal borehole locations, drill rigs would be used to drill approximately 2,800 boreholes for the proposed geothermal heat exchange system. The 2010 FEIR did not assume installation of boreholes; noise emissions from this new construction activity has been included in assessment of the 2018 Modified Project Variant. The boreholes would be located in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited. Specifically, clusters of boreholes would be located below public parks and open space areas, playground or athletic fields, parking structures, and commercial buildings with ground floor or basement level parking. The borehole cluster locations would avoid other areas, as feasible, that have unsuitable administrative and/or sub-surface conditions, such as beneath public roads, State Trust lands, radiological restricted areas, and other areas of extensively restricted soil and groundwater contamination. The nearest off-site receptors that would be exposed to drilling noise are located to the north, at the Hunters Point neighborhood. Based on the noise levels presented in Table 16 and in Addendum 5 Appendix G Table G-1 (Project Related Construction Equipment) for a "drill rig truck," a drill rig truck operating 200 feet from a noise sensitive receptor would result in a noise level of 67 dBA.

The above construction noise levels would represent the worst-case construction noise levels that would be experienced at these off-site receivers. During most of the 2018 Modified Project Variant construction program, noise from construction activities, as received off site, would be lower as equipment operates farther from these receiving areas. In addition, all project-related construction equipment would be required to adhere to the noise limits identified in Section 2907, limiting individual, non-impact construction equipment noise to 80 dBA at 100 feet.

The equipment that would generate impact-type noise emissions identified in Table 16, and which are exempted from the noise limits provided in Section 2907 of the City's Municipal Code, include pile drivers. Note that DDC is considered an impact-type activity, however the impact from weight drops result in noticeable levels of vibration, but not noise. That is, weights generally land on soils that absorb the impact and sound of the weight drop (i.e., impact noise from dropping of a weight is

a low-level "thud" sound). Steady noise emissions from DDC is emitted at relatively low levels from mobile cranes that move and drop weights during DDC activities, and this activity has been included in the assessment of construction noise. Mobile cranes were evaluated in the 2010 FEIR, although not associated with DDC. Vibration emissions from DDC have been evaluated for the 2018 Modified Project Variant under Impact NO-2c.

A detailed summary of off-site construction impacts is found in Addendum 5 Appendix G Table G-2 (Construction-related Noise Results, by Activity and Area).

Construction Noise Impacts at On-Site Receivers

The 2018 Modified Project Variant would include additional on-site noise-sensitive receivers, including 802 new residential units, a 175-room hotel, and potentially schools, which may include live-in dormitories. The hotel could be occupied as early as 2022, and the schools, constructed under Sub-phase HP-01, may be occupied as early as 2021.

Depending on the location of the potential schools, the loudest construction activities would occur during use of pile drivers for installation of foundation piles. Pile driving would occur during development of structures and rough-in construction of the Shipyard Hillside Open Space and Green Room park developments. Pile driving activities at the Shipyard Hillside Open Space could be located as close as approximately 50 feet from a school and pile-driving activities at the Green Room could be located as close as approximately 150 feet from a school. Based on FTA noise levels for impact pile driving, the potential school use may be exposed to noise levels of 101 and 91 dBA, respectively. However, note that these sound levels would be lower as pile-driving equipment are located farther from the schools. As noted, impact equipment, such as noise from pile drivers, is not subject to the limits in Noise Ordinance Section 2907. However, noise from pile driving would be subject to the mitigation measures identified in the 2010 FEIR under MM NO-1a.2 (reduce noise during pile driving).

Residential units developed for the 2018 Modified Project Variant would be constructed in various phases. As units are developed, they may be exposed to construction noise from development of subsequent phases. Residential units are proposed within all sub-phases except Sub-phase HP-05, however the 175-room hotel to be located in Sub-phase HP-05 is considered a noise-sensitive receiving location. At all proposed residential units (with the exception of residential units constructed in Sub-phase HP-06) and the hotel, there is potential for noise impact during use of impact pile driving and heavy equipment operated during construction of adjacent sub-phases, constructed after residences or hotel units are occupied. As summarize in Table 16, noise from impact pile driving could reach 101 dBA at a distance of 50 feet, or as high as 107 dBA assuming a distance of 25 feet (similar to what was presented in the 2010 FEIR).

Construction activities, including abatement, demolition, grading, and structural finishes would result in noise levels from individual equipment that would range from between 82 dBA and 95 dBA at the nearest adjacent on-site noise-sensitive receivers. Of these activities using non-impact equipment,

grading is expected to result in the highest levels of construction noise, specifically when scrapers are used, resulting in a noise level of 95 dBA at distance of 25 feet. However, as noted above, sound levels during most construction activities would be lower as equipment are located farther from impacted residential area. Also, noise from standard construction equipment would be subject to the limits in Noise Ordinance Section 2907 and would be required to meet these standards, if necessary through the mitigation measures identified in the 2010 FEIR within MM NO-1a.1 (reduce noise during construction).

Construction of Tower A, which would be located adjacent to Tower B under the 2018 Modified Project Variant, could be completed up to 5 years before the completion of Tower B. Pile driving equipment are anticipated during construction of Tower B foundations, and could result in noise levels at Tower A of approximately 95 dBA from Tower B (based on a distance of approximately 100 feet between Towers A and B). Noise from pile driving would be subject to the mitigation measures identified in the 2010 FEIR under MM NO-1a.2.

A detailed summary of on-site construction impacts is found in Addendum 5 Appendix G Table G-2 (Construction-Related Noise Results, by Activity and Area). The impact would remain less than significant with implementation of the identified mitigation measures in MM NO-1a.1 and MM NO-1a.2.

Impact NO-2c: Construction at HPS Phase II would create excessive groundborne vibration levels in existing residential neighborhoods adjacent to the Project site and at proposed on-site residential uses should the latter be occupied before Project construction activity on adjacent parcels is complete. Although the Project's construction vibration impacts would be temporary, would not occur during recognized sleep hours, and would be consistent with the requirements for construction activities that exist in Sections 2907 & 2908 of the Municipal Code, vibration levels would be significant. ***[Criterion I.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

Construction-related vibration impacts that are disclosed in the 2010 FEIR would result primarily from pile driving activities, specifically when pile driving occurs within 50 feet of a building, and from heavy equipment such as trucks and bulldozers, when operating very near a structure or sensitive receiving location. The potential for vibration-related impacts from these activities would remain under the 2018 Modified Project Variant, and the mitigation measures that are referenced within Impact NO-2c would continue to apply, including MM NO-1a.1, MM NO-1a.2, and MM NO-2a. Under the 2018 Modified Project Variant, DDC, a construction technique not specifically analyzed in the 2010 FEIR, but identified by mitigation measure MM GE-5a as one of several techniques to reduce impacts related to liquefaction, could also have vibration impacts on structures as discussed below. The 2010 FEIR concluded vibration impacts would remain significant and unavoidable to off-site sensitive receptors even with implementation of all mitigation measures. Noted adjustments to MM NO-2a, specific to the 2018 Modified Project Variant, are described below.

Pile Driving

The 2018 Modified Project Variant would require the use of impact pile driving similar to what was disclosed and analyzed in the 2010 FEIR. Pile driving would be required for new development in the 2018 Modified Project Variant, such as buildings and shoreline improvements, and perhaps the water taxi docks and the pedestrian bridge, and/or pedestrian/bicycle bridges, depending on final design.

The potential for significant and unavoidable impacts relative to distance from a pile driving vibration source would be the same for the 2018 Modified Project Variant. Specifically, vibration from impact pile drivers would range from 103 VdB at 50 feet to 85 VdB at 100 feet. The threshold established in the 2010 FEIR is 80 VdB for vibration-related impacts at residences and buildings where people normally sleep and is based on infrequent events (less than 30 vibration events per day of the same source). To mitigate the potential for structural damage from vibration related to pile driving activities associated with the 2018 Modified Project Variant, MM NO-2a, as established in the 2010 FEIR, requires that vibration monitoring be conducted when impact pile driving occurs within 50 feet of new or existing structures. This mitigation measure would continue to apply for the proposed Addendum 5 revisions to the Project.

Deep Dynamic Compaction

The 2018 Modified Project Variant uses DDC as a means to densify soils in the project area to reduce the risk of liquefaction during an earthquake. As summarized by ENGEO, DDC "utilizes impact energy from a large weight free falling from a significant height to densify the ground. The weight is repeatedly dropped in a specific grid pattern at a defined drop height; the number of drop times at each location is determined based on using the principles of transforming potential energy to kinetic energy. At impact with the ground, the energy is transmitted at depth to densify loose material. The drop height and weight is initially determined by empirical formulas based on material types and the desired depth of improvement and then modified as appropriate during the process based on observed craters that form during the DDC process. Since the impact force is at the surface, the effective depth of improvement is typically limited to the upper 20 to 30 feet. The height and weight for the test section were selected by the ground improvement contraction, Hayward Baker."[68]

DDC currently is considered for most of the project area, including both HPS2 and CP, as a means to densify soils prior to construction of project buildings. DDC could generate high levels of vibration in the immediate vicinity of the compaction event, and there is potential for vibration impacts at existing and new structures. Distances at which vibrations from DDC may result in damage or perception are provided in Table 17 (Deep Dynamic Compaction Vibration Impact Distance Thresholds). Note that Table 17 details vibration levels in PPV, or peak particle velocity, and not VdB, as were evaluated in the 2010 FEIR and above for pile driving. PPV is often is used to evaluate the potential for temporary vibration impacts from construction-related activities.

[68] ENGEO Incorporated, *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017, p. 4.

TABLE 17 DEEP DYNAMIC COMPACTION VIBRATION IMPACT DISTANCE THRESHOLDS

Building Category	*PPV (in/sec)*	*Min. Distance from DDC (feet)*
Reinforced-concrete, steel, or timber (no plaster)	0.5	125
Engineered concrete or masonry (no plaster)	0.3	150
Non-engineered timber and masonry buildings	0.2	225
Buildings extremely susceptible to vibration damage	0.12	275
Perception in occupied building	0.04	400

SOURCE: ENGEO Incorporated, *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017, Table 3.3.3-1 (Vibration Impacts), p. 9.

As noted in Table 17, the distance at which vibration impacts may occur from DDC depends on the materials used to construct the impacted building and the distance between the building and the locations where DDC would be used. Where DDC is proposed closer to existing or proposed structures than the distances identified in Table 17, MM NO-2a is proposed to be modified to identify measures that would be implemented to protect structures from structural damage caused by DDC-related vibration impacts.

In areas where soil compaction is required, but DDC is not proposed, alternate methods of compaction would be implemented. A list of alternate compaction methods is summarized in Section III.L (Geology and Soils) on pp. III.L-41 to III.L-42 as mitigation measure MM GE-5a. As provided in Section III.L, compaction methods, such as vibro-compaction, stone columns, soil-cement columns, and deep displacement grout columns do not require use of excessive vibration-generating equipment or activities, and no structural damage would be anticipated at nearby structures. The impact would remain significant and unavoidable even with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM NO-2a: Pre-construction Assessment to Minimize Pile Driving <u>and Deep Dynamic Compaction</u> Impacts. The Project Applicant shall require its geotechnical engineering contractor to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby buildings subject to pile driving <u>and deep dynamic compaction (DDC)</u> impacts prior to receiving a building permit. <u>The building surveys will review existing conditions and confirm whether fractures in building footings or walls existed prior to pile driving and/or DDC activities.</u>

If recommended by the geotechnical engineer, for structures or facilities within 50 feet of pile driving, the Project Applicant shall require groundborne vibration monitoring of nearby structures. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the following:

- Pre-pile driving surveying of potentially affected structures
- Underpinning of foundations of potentially affected structures, as necessary

- The construction plan shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of an excavation. Monitoring results shall be submitted to DBI. In the event of unacceptable ground movement, as determined by DBI inspections, all pile driving work shall cease and corrective measures shall be implemented. The pile driving program and ground stabilization measures shall be ~~reevaluated~~ reviewed and approved by ~~DBI~~OCII.

For DDC work, the Project Applicant shall prepare and implement a construction plan that includes a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of DDC activity. Structures in the vicinity of DDC work shall be defined as reinforced-concrete, steel, or timber structures within 125 feet, engineered concrete or masonry structures within 150 feet, non-engineered timber and masonry structures within 225 feet, or other structures that are extremely susceptible to vibration damage within 275 feet of DDC activities as determined by the Project Applicant's geotechnical engineer or structural engineer. The DDC program shall be evaluated and approved by DBI and results of the monitoring program shall be submitted to OCII. In the event of unacceptable ground movement, as determined by DBI inspection and review, all DDC work shall cease and corrective measures shall be implemented. A geotechnical engineer approved by OCII shall determine which of the following ground stabilization measures or alternate measures would be necessary to avoid structural impacts related to DDC activities:

- Underpinning of foundations of potentially affected structures, as necessary to avoid structural impacts
- If deemed necessary by the geotechnical engineer, based either on proximity of DDC to a structure and/or on potential for damage to a structure, a cutoff trench shall be installed between the DDC activity and the structure. The cutoff trench should be at least 10 feet deep and 2 feet wide.[69] The trench should be long enough to effectively shield the structure from DDC vibrations.

Impact NO-3: Construction activities associated with the Project would result in a substantial temporary or periodic increase in ambient noise levels. ***[Criterion I.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Significant and Unavoidable with Mitigation

Noise generated during construction of the 2018 Modified Project Variant would result in substantial increases in the ambient noise environment at both off-site and on-site receivers when construction equipment operate nearest these noise-sensitive uses. Construction noise levels would vary by construction equipment type and proximity to nearby noise-sensitive uses. As identified in Impact NO-1b, noise from construction activities may substantially exceed the existing ambient sound levels that are summarized in 2010 FEIR Table III.I-3 (Existing Day-Night Noise Levels [L_{dn}]). In some locations, use of multiple equipment at any one time could result in combined noise levels

[69] ENGEO Incorporated, *Potential Constraints on Implementation of Deep Dynamic Compaction*, December 14, 2017, p. 1.

that would exceed those identified in Table 16. The highest level of construction noise for the 2018 Modified Project Variant are anticipated to occur from pile driving activities, as was similarly concluded in the 2010 FEIR.

Construction of the 2018 Modified Project Variant is anticipated to last approximately 14 years. Off-site receivers that are exposed to multiple years of construction, even if sound level from construction vary over time, may experience increased sensitivity and thus perceived noise impacts, due to the length of the construction program.

As in the 2010 FEIR, noise mitigation measures MM NO-1a.1, MM NO-1a.2, and MM NO-2a (as proposed for revision in Addendum 5) have been identified to reduce overall construction noise, and the potential for noise impact at nearby off-site and on-site noise-sensitive receivers but the impact to human receptors would remain significant and unavoidable even with mitigation. As previously mentioned, while the 2018 Modified Project Variant proposes a modification of the land use program, it would not place noise-sensitive receptors closer to sources of construction noise and vibration than were evaluated in the 2010 FEIR; nonetheless, the impact would remain significant and unavoidable even with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

> **MM NO-2a, Pre-construction Assessment to Minimize Pile Driving Impacts**, is provided in full on p. 195 under Impact NO-2c.

Impact NO-4: Implementation of the Project, including the use of mechanical equipment or the delivery of goods, would not expose noise-sensitive land uses on or off site to noise levels that exceed the standards established by the City. ***[Criterion I.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

Utility Systems

Sources of operational noise that were identified in the 2010 FEIR included mechanical cooling systems (i.e., HVAC), deliveries of retail and commercial products and activities such as trash collection. As stated in the 2010 FEIR, noise levels from these activities and systems would be similar throughout the entire Project site on a daily basis, and the daily noise environment would be typical of an urban area with average noise levels ranging between 60 and 70 dBA.

The 2018 Modified Project Variant would include features not previously evaluated in detail in the 2010 FEIR. Modifications include three central energy plants (CEPs) to provide heating and cooling for the entire district. The CEPs would include essential plant and operational system infrastructure, including circulation pumps, chillers, and heat exchangers associated with the geothermal HVAC system, and lithium ion batteries associated with the electricity storage system. It is important to note that all components of the CEPs would be located entirely within each building footprint where

a CEP is housed, and screened to avoid being visible. The CEPs would have acoustic treatment applied to ensure noise does not exceed 40 dBA at adjacent, nearby noise-sensitive outdoor use areas, following a detailed noise assessment to be completed upon final design.

Electric power for the utilities network of the 2018 Modified Project Variant would be provided by solar photovoltaic (PV) systems located throughout the 2018 Modified Project Variant to supplement SFPUC's power supply to the site. Power generated by the PV system would be stored in batteries. Operation of PV panels and batteries are not anticipated to generate noise that would be audible at any nearby noise-sensitive area. Occasional noise may be generated from cleaning of PV panels, possibly through use of pressure washers. Noise from pressure washers would include noise from gasoline-powered motors and from water striking the panels. These activities, however, would be infrequent and would be exempted from the limits in Noise Ordinance Section 2909 Appendix C (Exceptions), identified as "landscaping and property maintenance equipment."

Battery storage within the 2018 Modified Project Variant would replace the need for emergency generators assumed as part of the 2010 FEIR analysis. The battery storage would reduce the potential for noise generated during emergency power use and during testing of generators. Batteries would be stored within CEPs enclosed within parking structures and in other buildings. Ancillary equipment supporting battery storage would include, among others, HVAC units to maintain an adequate climate within the battery storage room. HVAC units would be required to operate in compliance with Noise Ordinance Section 2909.

Use of geothermal heating would negate the need for natural-gas-fired boilers, therefore removing the potential for noise emissions from boiler exhausts. The principal source of noise associated with the geothermal heating system is related to electric pumps that pump water through a closed-loop system, including pumps for a network of vertical boreholes extending several hundred feet underground, and pumps to pump the heated water through the distribution system to each of the project buildings. All electric pumps would be located within the CEPs, and noise from this equipment would be shielded by the acoustical treatment described above. All piping would be located underground; therefore, noise from fluid moving through these pipes would not be audible.

Heating and cooling distribution to the project buildings would be provided by fluid pumped from the geothermal boreholes, through the CEP, to the buildings. Water-water or water-air heat exchangers would provide hot and cold water, as well as comfort heating and cooling. Heat exchangers, which could include HVAC systems, are expected to be located on building rooftops, and would be subject to Noise Ordinance Section 2909.

The modifications also include an on-site recycled water system capable of treating 976,000 gallons of water per day, diverting water from the sanitary sewer system for treatment using membrane bioreactor (MBR) technology. The treated water would be used for irrigation, toilet flushing, and other nonpotable uses. The recycled water system would be located within a central treatment plant, to be located southwest of Crisp Road and north of project 6th Avenue, as illustrated in Section I (Project

Description) Figure 18 (Location of Recycled Water Facility), p. 48. The treatment plant would include an anoxic treatment facility, aerobic tanks, membrane filters, OV/Ozone disinfection, storage tanks, a water return distribution system, and a thermal recovery system. All blowers, pumps, treatment systems, and process controls would be located inside the treatment building, a completely enclosed building with a 17-foot-tall ceiling, which would result in a building of approximately 20 feet to 35 feet in height and range in footprint area between 10,000 and 30,000 square feet. Outside of the treatment building would be located various tanks, but no pumps or other sources of noise.

Noise from equipment inside the recycled water treatment building is anticipated to result in exterior noise levels that are at or below existing ambient conditions in the immediate vicinity of this building. The recycled water treatment building would be required to comply with Noise Ordinance Section 2909(b), which limits increases in noise levels at adjacent property lines to less than 8 dBA, and with Noise Ordinance Section 2909(d), which would require control of noise so that interior noise levels at the nearest residential receptor are less than 45 dBA.

As stated in the 2010 FEIR, large HVAC systems associated with the residential, retail and commercial buildings could result in noise levels that average between 50 and 65 dBA L_{eq} at 50 feet from the equipment. HVAC systems associated with the heat exchange system described above may generate similar or lower levels of noise. Noise from mechanical equipment associated with operation of the 2018 Modified Project Variant would be required to comply with California Building Code Title 24 requirements pertaining to noise attenuation, requiring that residential units achieve an interior noise level of 45 dBA during nighttime hours. HVAC equipment would not be anticipated to produce noise levels that would be 5 dBA above the ambient noise level, the threshold under Noise Ordinance Section 2909(a).

Servicing

The 2018 Modified Project Variant, as with the 2010 FEIR, would include servicing of commercial and retail operations associated with the project including delivery of goods and food stuffs, as well as refuse pick up for both the commercial and residential project components. The 2018 Modified Project Variant would include residential units, a hotel, and two schools that also would require servicing of goods and food stuffs.

Delivery of goods and food stuffs would be provided by truck delivery. Noise from truck operations, including diesel engine noise and backup alarms, would be similar to what was evaluated in the 2010 FEIR, and would be temporary, typically lasting no more than 5 minutes. As with the 2010 FEIR, loading docks associated with the 2018 Modified Project Variant would be screened from sensitive receptors both on site and off site by intervening structures and design of the loading spaces. In addition, as noted in the 2010 FEIR, noise generated by authorized City of San Francisco refuse collectors would be limited to 75 dBA per Noise Ordinance Section 2904.

In general, noise associated with servicing residential, hotel, schools, retail and commercial facilities would be similar to what was identified in the 2010 FEIR, comparable to a typical urban environment.

Transit

The 2018 Modified Project Variant would include extensions to four existing MUNI-bus lines, including Route 44-O'Shaughnessy, Route 48-Quintara, BRT Route 28R-19th, and Route 24-Divisidero. Buses traveling along these routes would access the 2018 Modified Project Variant transit center, located on the north side of Spear Avenue, near Dry Dock 2. Buses would drive along new on-site roadways, primarily along two main routes: the North Transit Route, from Innes Avenue to Donahue Street to Lockwood Street to the new transit center (including the 44-O'Shaughnessy, 48-Quintara, and Hunters Point Express routes), and the South Transit Route from Palou Avenue to Crisp Road to Spear Avenue to the new transit center (including 24-Divisadero and San Francisco Rapid Transit routes).

On-site traffic noise from the proposed transit line extensions was evaluated to determine the potential for impacts at future on-site noise-sensitive receiving locations (residences). On-site travel speeds were assumed at 30 mph. Transit noise modeling was completed using the same noise model described in Impact NO-6, the FHWA TNM Lookup tool, version 2.1 (TNM Lookup). Hourly L_{eq} data from TNM Lookup were converted to L_{dn} using the methodology summarized in Impact NO-6.

Future L_{dn} levels along the North Transit route are anticipated to reach up to 62.2 dBA at the nearest residential receivers, assumed to be as near as 30 feet to the center of the roadway at Donahue Street. Actual sound levels may be lower if actual residential setback are farther, or if transit does not reach speeds of 30 mph along this stretch of road.

Future L_{dn} levels along the South Transit route are anticipated to reach up to 60.0 dBA at the nearest residential receivers, assumed to be as near as 50 feet to the center of the roadway at Crisp Road. Actual sound levels may be lower if actual residential setbacks are farther, or if transit does not reach speeds of 30 mph along this stretch of road.

Noise from transit activity may exceed general plan compatibility criteria for residential use at locations nearest the north and south transit routes. However, noise impacts identified above would be at the exterior use areas of the affected residences (e.g., balconies, if applicable). New residential units would be required to adhere to Title 24 noise insulation standards, ensuring indoor noise levels do not exceed 45 dBA L_{dn} with window and doors closed.

Indoor Noise Environments: Noise-Sensitive Uses

Noise-sensitive uses associated with the 2018 Modified Project Variant include residential units, a hotel, and schools. At all locations where people may reside or sleep, such as residential units, the hotel, and school residences, interior noise levels are required to comply with California Building Code Title 24 requirements pertaining to noise attenuation, requiring that interior noise levels do not exceed 45 dBA L_{dn}, and Noise Ordinance Section 2909, which limits noise from fixed sources, as received at interior sleeping or living spaces, to 45 dBA during nighttime hours. There are no major sources of nighttime noise expected as part of the 2018 Modified Project Variant, and future ambient

noise levels are expected to be typical of an urban environment. Further, the 2018 Modified Project Variant would not exacerbate noise conditions for future residents relative to the 2010 FEIR.

The impact would remain less than significant, and no mitigation would be required.

Impact NO-5: Implementation of the Project would not generate or expose persons on or off site to excessive groundborne vibration. ***[Criterion I.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2018 Modified Project Variant does not introduce new operational activities or equipment that would expose persons, either on or off site, to excessive groundborne vibration. As summarized under Impact NO-4, operational equipment associated with 2018 Modified Project Variant CEPs and related infrastructure would be located inside the CEP buildings, and shielded from exposure to sensitive receivers. Further, pumps, blowers, and other equipment associate with the CEPs would not generate substantial levels of vibration, even within the CEP buildings.

The 2018 Modified Project Variant also would include trucks for deliveries and servicing of retail and other commercial facilities, the hotel, and schools. In addition, buses would be present, accessing the project's proposed transit center located on the north side of Spear Avenue, near Dry Dock 2. The transit center would service four existing MUNI-bus lines, including Route 44-O'Shaughnessy, Route 48-Quintara, BRT Route 28R-19th, and Route 24-Divisidero.

In general, and as described in the 2010 FEIR, vibration levels from trucks and buses are relatively low and generally consistent with existing vibration levels in the project area, as well as what would be expected in the project during operation of the 2018 Modified Project Variant. Vibration from trucks and buses would be well below the FTA vibration impact criteria of 80 VdB for human annoyance, as described in the 2010 FEIR, and below the Caltrans perceptibility standards, as defined in Table 16. No other substantial sources of vibration are anticipated with the 2018 Modified Project Variant. The impact would remain less than significant, and no mitigation would be required.

Impact NO-6: Operation of the Project would generate increased local traffic volumes that could cause a substantial permanent increase in ambient noise levels in existing residential areas along the major Project site access routes. ***[Criterion I.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable	Significant and Unavoidable

The 2018 Modified Project Variant would not change the 2010 FEIR's findings of significant and unavoidable impact with respect to operational traffic noise in existing residential areas along the major Project site access routes. Additionally, the operational traffic noise cumulative impact conclusions would similarly not be altered.

The 2010 FEIR documented a significant increase in traffic noise at selected area roadways due to project-related traffic volume increases. The 2010 FEIR analysis was based on the FTA noise impact criteria that evaluate the existing and future noise environments, and allowed increases in traffic noise based on comparisons between future baseline (i.e., 2030 without project) and future baseline plus project, as well as existing and existing plus project conditions.

Similar to the traffic impact discussion in the 2010 FEIR, the 2018 Modified Project Variant would add to existing traffic volumes along roadways in the project vicinity. Project-related traffic volumes would increase slightly when compared to the 2010 FEIR due to the addition of residential units, retail spaces, and schools, as well as additional parking capacities. Traffic Report Table 2 specifically compares the 2018 Modified Project Variant to the 2010 Project and the R&D Variant (Variant 1) in terms of both vehicle trips and transit trips.

The 2010 FEIR evaluated impacts along ten roadway segments, including near the Candlestick Point and the Hunters Shipyard regions of the 2010 FEIR study area. For the 2018 Modified Project Variant, a smaller set of intersections was evaluated, focusing on roadways in the immediate vicinity of the 2018 Modified Project Variant area that would be most affected by Project-related changes in traffic compared with the 2010 FEIR. The roadway segments evaluated for this project included Innes Avenue south of Earl Street, Palou Avenue east of Third Street, Gilman Avenue east of Third Street, Jamestown Avenue north of Harney Way, and Harney Way west of Jamestown Avenue.

The following impact analysis compares traffic noise based on existing and future traffic volumes identified in the 2010 FEIR (i.e., based on 2009 existing data, and on 2030 future baseline data) with traffic noise based on project-related traffic volumes identified in the 2018 Modified Project Variant Traffic Report. Traffic Noise levels were calculated using the FHWA Traffic Noise Model (TNM) Lookup tool, version 2.1 (TNM Lookup).[70] Traffic compositions were assumed to be 97 percent light-duty vehicles, 2 percent medium duty vehicles, and 1 percent heavy duty vehicles, based on existing uses in the project area. The 2018 Modified Project Variant was conservatively assumed to result in similar future traffic compositions along area roadways. Existing area speed limits were derived through site observations and/or though review of Google Earth Street View. Setback distances from roadway centerline to the nearest affected noise-sensitive receiver were based on the same distance setbacks provided in the 2010 FEIR. A detailed summary of traffic data used for this assessment is provided in Addendum 5 Appendix G Table G-3 (Traffic Volumes, Composition, and Speeds Assumed for Operational Impact Assessment).

Buses were included in the traffic noise assessment for 2018 Modified Project Variant traffic volumes. Existing transit volumes were included in existing and future traffic scenarios.[71] As noted,

[70] Note that the 2010 FEIR employed the full version of the FHWA TNM noise model, Version 2.5 (TNM 2.5), which is based on the same traffic noise calculation algorithms that are used in TNM Lookup. The 2018 Modified Project Variant employed TNM Lookup in lieu of TNM 2.5 because TNM Lookup allowed for a more streamlined assessment of traffic noise through increased flexibility and ease of use during assessment of traffic data.

[71] San Francisco Municipal Transportation Agency, Muni System Map. Available at https://www.sfmta.com/maps/muni-system-map, accessed December 20, 2017.

the 2018 Modified Project Variant would include extension of four existing MUNI-bus lines, including Route 44-O'Shaughnessy, Route 48-Quintara, BRT Route 28R-19th, and Route 24-Divisidero.

Afternoon peak-hour L_{eq} traffic noise levels, as determined using the TNM Lookup model, were converted to 24-hour L_{dn} values using the same procedure identified in the 2010 FEIR. That is, L_{dn} values were computed through comparison of peak-hour L_{eq} noise model data and the nearest long-term sound level measurement data. The relative change in existing diurnal sound levels over a 24-hour period was used to calculate hourly L_{eq} over a 24-hour period, and then to compute the L_{dn}. The long-term measurement data and locations are documented in the 2010 FEIR Appendix I1 (Wilson Ihrig San Francisco 49ers Stadium Operational Noise Study, October 15, 2009).

The 2010 FEIR applied FTA noise impact criteria to determine traffic noise impacts at nearby receivers. Therefore, these same criteria were applied for the 2018 Modified Project Variant, applying the modeling methods described above. Results of this modeling assessment, compared with 2010 FEIR impact determinations, are provided in Table 18 (Modeled Traffic Noise Levels Compared with the 2010 FEIR). A summary of cumulative impacts, compared with 2010 FEIR impact determinations, is provide in Table 19 (Modeled Traffic Noise Levels Compared with the 2010 FEIR, Cumulative).

The FTA impact criteria (i.e., allowable increase) are based on either existing sound levels, or future 2030 baseline sound levels (as identified in Table 18 and Table 19, respectively). Noise modeling results of existing sound levels and future 2030 baseline sounds levels, for the *same* roadway segments identified in the 2010 FEIR, yielded generally higher sound levels for the 2018 Modified Project Variant, and may be due to differing traffic compositions. Regardless, the 2018 Modified Project Variant's higher existing and future baseline sound levels result in lower (i.e., more stringent) FTA impact criteria at four of the five roadways segments identified in Table 18. In addition, Project-related noise is predicted to increase more than was assumed in the 2010 FEIR at the three roadway segments identified in Table 18 (due to revised project-related traffic projections), resulting in a significant impact along roadway segments where the previous analysis indicated there would not be a significant impact. Therefore, more roadway segments would be expected to experience noise impacts than predicted in the 2010 FEIR under Project conditions (see Table 18). Impact NO-6, however, broadly found that there would be a significant and unavoidable permanent noise impact "in existing residential areas along the major Project site access routes," rather than individual locations. Additionally, the 2030 buildout date for the Project, which was used above in Table 18 to identify 2018 Modified Project Variant project-level contributions to the noise impacts at selected locations along the Project access routes, coincides with the cumulative buildout year of 2030. As shown in Table 19, below, all of the selected study locations were identified in the 2010 FEIR and in Addendum 5 as significant and unavoidable under the 2030 cumulative plus Project scenario.

TABLE 18 MODELED TRAFFIC NOISE LEVELS COMPARED WITH THE 2010 FEIR

Roadway[a]	*Existing Noise Level*	*2030 Without Project (as modeled in 2018)*	*2030 With Project (as modeled in 2018)*	*2018 MPV Increase over Future Background (as modeled in 2018)*	*Allowable Increase*[b]	*2018 MPV Significant Impact?*	*2010 Project Increase over Future Background (as modeled in 2010)*	*2010 Project Significant Impact?*
Innes Avenue south of Earl Street[c]	65.9	74.6	76.5	1.9	0	**Yes**	N/A	N/A
Palou Avenue east of Third Street	61.9	65.5	67.3	1.8	1	**Yes**	0.5	No
Gilman Avenue east of Third Street	61.4	64.3	68.0	3.7	2	**Yes**	4.0	**Yes**
Jamestown Avenue north of Harney Way	58.3	64.9	66.6	1.7	1	**Yes**	5.7	**Yes**
Harney Way west of Jamestown Avenue	57.1	67.8	70.6	2.8	1	**Yes**	0.6	No

NOTES:

1. All sound levels are L_{dn}, dBA.
2. Noise modeling was completed for the 2010 FEIR and separately for the 2018 Modified Project Variant. This table includes a summary of results from both modeling studies, indicated as either "as modeled in 2010" or "as modeled in 2018."
3. Noise levels calculated for the 2018 Modified Project Variant were computed using TNM Lookup based on traffic volumes provided within the Project traffic assessment report. L_{dn} computed through comparison with existing sound level measurements reported in 2010 FEIR Appendix I1 (Wilson Ihrig San Francisco 49ers Stadium Operational Noise Study, October 15, 2009). Note that traffic noise levels calculated for the 2010 FEIR were computed using the FHWA Traffic Noise Model, Version 2.5, which is based on the same traffic noise calculation algorithms that are used in TNM Lookup.
4. Traffic composition for the 2018 Modified Project Variant assumes 97 percent light duty vehicles, 2 percent medium duty vehicles, and 1 percent heavy duty vehicles.

a. The 2010 FEIR evaluated impacts along ten roadway segments, including near the Candlestick Point and the Hunters Shipyard regions of the 2010 FEIR study area. For the 2018 Modified Project Variant, the analysis focuses on roadways in the immediate vicinity of the Project area (CP and HPS2) that would be most affected by changes in Project-related traffic when compared with the 2010 FEIR.

b. Allowable increase thresholds based on FTA criteria specified in Table III.1-9 of the Transit Noise Impact and Vibration Assessment, May 2006.

c. Previous study included "Innes north of Carroll Avenue." However, because these two streets do not meet, Ramboll analyzed the next closest intersection on Innes to the Hunter's Point Development.

As noted in Table 19, cumulative plus Project increases in traffic noise over existing conditions range from 5.4 to 13.5 dBA. Cumulative increases in traffic noise over existing conditions is approximately consistent with the range of increases identified for most roadway segments identified in the 2010 FEIR. For Harney Way west of Jamestown Avenue, the cumulative noise increase over existing conditions increased from 7.0 dBA in the 2010 FEIR to 13.5 dBA for 2018 Modified Project Variant. The higher increase in noise is due to a combination of increases in cumulative background traffic and Project-related traffic above what was predicted for the 2010 FEIR.

TABLE 19 MODELED TRAFFIC NOISE LEVELS COMPARED WITH THE 2010 FEIR, CUMULATIVE

Roadway[a]	*Existing Noise Level*	*2030 Without Project (as modeled in 2018)*	*2030 With Project (as modeled in 2018)*	*2018 MPV Cumulative + Project Increase over Existing (as modeled in 2018)*	*Allowable Increase*[b]	*2018 MPV Significant Impact?*	*2010 Cumulative + Project Increase over Existing (as modeled in 2010)*	*2010 Significant Cumulative Impact?*
Innes Avenue south of Earl Street[c]	65.9	74.6	76.5	10.6	1	**Yes**	7.6	**Yes**
Palou Avenue east of Third Street	61.9	65.5	67.3	5.4	2	**Yes**	5.3	**Yes**
Gilman Avenue east of Third Street	61.4	64.3	68.0	6.6	2	**Yes**	6.9	**Yes**
Jamestown Avenue north of Harney Way	58.3	64.9	66.6	8.3	3	**Yes**	9.8	**Yes**
Harney Way west of Jamestown Avenue	57.1	67.8	70.6	13.5	3	**Yes**	7.0	**Yes**

NOTES:

1. All sound levels are L_{dn}, dBA.
2. Noise modeling was completed for the 2010 FEIR and separately for the 2018 Modified Project Variant. This table includes a summary of results from both modeling studies, indicated as either "as modeled in 2010" or "as modeled in 2018."
3. Noise levels calculated for the 2018 Modified Project Variant were computed using TNM Lookup based on traffic volumes provided within the Project traffic assessment report. L_{dn} computed through comparison with existing sound level measurements reported in 2010 FEIR Appendix I1 (Wilson Ihrig San Francisco 49ers Stadium Operational Noise Study, October 15, 2009). Note that traffic noise levels calculated for the 2010 FEIR were computed using the FHWA Traffic Noise Model, Version 2.5, which is based on the same traffic noise calculation algorithms that are used in TNM Lookup.
4. Traffic composition assumes 97 percent light duty vehicles, 2 percent medium duty vehicles, and 1 percent heavy duty vehicles

a. The 2010 FEIR evaluated impacts along ten roadway segments, including near the Candlestick Point and the Hunters Shipyard regions of the 2010 FEIR study area. For the 2018 Modified Project Variant, the analysis focuses on roadways in the immediate vicinity of the Project area that would be most affected by changes in Project-related traffic when compared with the 2010 FEIR.

b. Allowable increase thresholds based on FTA criteria specified in Table III.1-9 of the Transit Noise Impact and Vibration Assessment, May 2006.

c. Previous study included "Innes north of Carroll Avenue." However, because these two streets do not meet, Ramboll analyzed the next closest intersection on Innes to the Hunter's Point Development.

Note that the 2010 FEIR states that "Project operations would create a substantial permanent increase in traffic noise levels that would affect existing and future residential uses along all Project site access roads" (2010 FEIR, p. III.I-53). Thus, a conclusion of significant unavoidable impacts for residential uses along all Project site access roads was identified in the 2010 FEIR and that conclusion remains unchanged with the 2018 Modified Project Variant. Additionally, there would continue to be no feasible mitigation measures to reduce the level of this impact.

Impact NO-8: Implementation of the Project would not expose residents and visitors to excessive noise levels from flights from San Francisco International Airport such that the noise would be disruptive or cause annoyance. ***[Criteria I.e, I.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR describes the location of the project as being well outside of the San Francisco International Airport's (SFO) existing and foreseeable future 65 dBA CNEL noise contour. The 65 dBA CNEL noise contour is described by the Federal Aviation Authority (FAA) as the impact threshold level for noise-sensitive land use such as residences.

New buildings constructed for the 2018 Modified Project Variant, including where people may sleep (residences, hotel, school dormitories), must be constructed according to the Title 24 Noise Insulation Standards. These standards require that interior spaces do not exceed 45 dBA L_{dn} (or CNEL, depending on which descriptor is used in the applicable general plan noise element) in any habitable room, with all doors and windows closed. Therefore, proposed noise-sensitive uses where aircraft may be audible would require sufficient noise insulation to meet the Title 24 requirements.

In summary, there are no changes to the Project that would require revisions of the 2010 FEIR; accordingly, the impact would remain less than significant, and no mitigation would be required.

II.B.9 Cultural Resources and Paleontological Resources

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
5.	**Cultural Resources.** Would the project:					
J.a	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5, including those resources listed in Article 10 or Article 11 of the *San Francisco Planning Code*?	2010 FEIR p. III.J-33 (Impact CP-1b); Addendum 1 p. 39; Addendum 4 p. 42	No	No	No	MM CP-1b.1, MM CP-1b.2
J.b	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	2010 FEIR p. III.J-39 (Impact CP-2b); Addendum 1 p. 39; Addendum 4 p. 42	No	No	No	MM CP-2a
J.c	Disturb any human remains, including those interred outside of formal cemeteries?	2010 FEIR p. III.J-35 (Impact CP-2a); Addendum 1 p. 39; Addendum 4 p. 42	No	No	No	MM CP-2a
J.d	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature as defined in CEQA Guidelines Section 15064.5 (3)?	2010 FEIR p. III.J-41 (Impact CP-3b); Addendum 1 p. 39; Addendum 4 p. 42	No	No	No	MM CP-3a

Changes to Project Related to Cultural Resources and Paleontological Resources

The 2018 Modified Project Variant would include new construction in and around Dry Dock 4, an individually eligible historical resource. These Project changes, analyzed below, include construction of Water Room, including seating surrounding Dry Dock 4, two bridges (including the Water Room Bridge and Eastern Bridge), and a water taxi service at Dry Dock 4.

Comparative Impact Discussions

Impact CP-1b: Construction at HPS Phase II could result in a substantial adverse change in the significance of an historical resource. ***[Criterion J.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Significant and Unavoidable with Mitigation	Less than Significant with Mitigation

The 2018 Modified Project Variant would include new construction in and around Dry Dock 4, an individually eligible historical resource. These Project changes include construction of Water Room, including seating surrounding Dry Dock 4, two bridges including the Water Room Bridge and

Eastern Bridge, and a water taxi ramp at Dry Dock 4. These Project changes are currently conceptual and their design is under development. However, the Project changes would not adversely impact Dry Dock 4 because the Project would adhere to the Secretary of the Interior's Rehabilitation Standards (SOI Standards) and would, thereby, protect the historic significance of Dry Dock 4. Project conformance with the SOI Standards would be governed by Preservation Guidelines that have been prepared by a qualified preservation consultant and would be required by the proposed amended DDA. The Preservation Guidelines are supported by substantial information on the history, eligibility, character-defining features, and condition of Dry Dock 4, and are provided in Addendum 5 Appendix H (Historic Resources Memorandum). Therefore, with incorporation of the Preservation Guidelines as a Project Design Feature, the Project would conform to the SOI Standards and would have a less-than-significant impact on Dry Dock 4, and after Project completion, the historic significance of Dry Dock 4 would be retained and would be materially unimpaired.

As described on 2010 FEIR p. III.J-21, two historical resources are situated within the vicinity of the HPS2 project site, including the Hunter's Point Commercial Dry Dock and Naval Shipyard Historic District (District), and Dry Dock 4 that is an individual resource.

The District, described in greater detail in Addendum 5 Appendix H, consists of 11 contributing buildings, structures, and objects associated with the area's "transition from early commercial dry-dock operation to high tech naval repair and Radiological research" (Circa Historic Property Development, *Hunter's Point Commercial Dry Dock and Naval Shipyard Historic District DPR Form*, October 31, 2008).

Dry Dock 4 and six buildings and structures in the District were previously determined eligible for the National Register of Historic Places (National Register) by consensus through the Section 106 process and are, therefore, automatically listed in the California Register of Historical Resources by act of law (Bonnie I. Baumberg, Urban Programmers, *Historical Overview of Hunters Point Annex, Treasure Island Naval Base and Descriptions of Properties that Appear to Qualify for Listing in the National Register of Historic Places*, 1988; Letter, Louis S. Wall, Department of the Navy to Lee Keatings, Advisory Council on Historic Preservation, October 15, 1998—findings of May 29, 1998, letter from SHPO to Navy are stated in this letter). Later, five additional structures were identified as contributors to the District in the 2008 survey.

Of these, only Dry Dock 4, as shown in Table 20 (Identified Historical Resources) and discussed below, would be potentially impacted by the 2018 Modified Project Variant. However, the Project would include Preservation Guidelines for Dry Dock 4 that would ensure the proposed improvements would conform to the SOI Standards; therefore, potential impacts would be less than significant pursuant to CEQA.

TABLE 20 IDENTIFIED HISTORICAL RESOURCES

Structure	*Date*	*CRHR Status Code*	*Eligibility*	*Resources Affected under Addendum 5*
140	1918	2D2*	NR/CR District Contributor	No Adverse Impact
204	1901	2D2*	NR/CR District Contributor	No Adverse Impact
205	1901	2D2*	NR/CR District Contributor	No Adverse Impact
207	ca. 1930 (remod. 1942)	2D2*	NR/CR District Contributor	No Adverse Impact
208	ca. 1930 (remod. 1942)	3CD**	CR District Contributor	No Adverse Impact
211	1942	3CD**	CR District Contributor	No Adverse Impact
224	1944	3CD**	CR District Contributor	No Adverse Impact
231	1942–45	3CD**	CR District Contributor	No Adverse Impact
253	1947	3CD**	CR District Contributor	No Adverse Impact
Dry Dock 2	1903	2D2*	NR/CR District Contributor	No Adverse Impact
Dry Dock 3	1918	2D2*	NR/CR District Contributor	No Adverse Impact
Dry Dock 4	1943	2S2***	NR/CR Individual Property	Potential Impact that is Less than Significant

* Contributor to district determined eligible for NR by consensus through Section 106 process. Listed in the CR.
** Appears eligible for CR as a contributor to a CR eligible district through survey evaluation.
*** Individual property determined eligible for NR by a consensus through Section 106 process. Listed in the CR.

Dry Dock 4

Dry Dock 4 is a graving dock that has been determined eligible for listing in the National Register of Historic Places by consensus through the Section 106 process and is listed in the California Register of Historical Resources under for its association with the events and patterns identified in the defense of the United States during World War II and as a significant marine engineering entity. It is significant under Criterion A of the National Register and Criterion 1 of the California Register for its association with events related to the defense of the United States during World War II, and under Criterion C of the National Register and Criterion 3 of the California Register as a significant marine engineering entity. The period of significance is October 1942 when construction began, through August 15, 1945, the end of World War II. In the context of marine architecture, Dry Dock 4 is the largest graving dry dock on the Pacific Coast and is one of the largest in the world. Within the context of stateside Naval facilities of World War II, Dry Dock 4 was one of the more important structures constructed and one of the largest topographical alterations undertaken during the 1940s to expand a naval facility. Despite recent removal of adjacent mobile cranes and trackage, Dry Dock 4 retains a high degree of integrity of materials, design, workmanship, setting, feeling, location and association (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008). The structure has been documented for the Historic American Engineering Record (HAER) by Steven R. Black in 1994, and the records are held by the Library of Congress.

Dry Dock 4 Character-Defining Features

This description of character-defining features is based upon the Dry Dock 4 National Register nomination form, HAER Report, and a site visit conducted by ESA's qualified architectural historian, Dr. Margarita Jerabek, on Thursday, November 2, 2017.

- Dry Dock 4 is a reinforced-concrete graving dock measuring 1,096 feet long, 171 feet wide, and 53 feet deep. Completed in June 1943, it includes a floating caisson and underground pump and control rooms.
- The land or deck immediately adjacent to the dry dock is dominated by wide expanses of concrete or asphalt with embedded crane tracks (covered with asphalt), steel bollards, and capstans along the perimeter of the dry dock.
- Coping protrudes over the top portion of the dry-dock wall; service galleries with trapezoidal faces, and stairwells are built into the coping.
- Cleats are placed at even intervals along the curb.
- Chain handrails run along the curb and down the concrete stairwells.
- Crane tracks surround the dry dock (covered with asphalt).
- A series of mooring bollards border the perimeter and some of the original 13 electrically powered capstans are also present around the perimeter, outside the location of the nonvisible crane tracks.
- Two entrances to the pump room are sited on the south side of the east end of the dry dock, each with a descending staircase and sliding grates covering the opening.

Nonvisible contributing character-defining features of Dry Dock 4 include:

- The cross section profile of Dry Dock 4 reveals a relatively simple reinforced concrete design. Rather than having multiple altars (steps in the wall of a dry dock) like nearby Dry Docks 2 and 3, it has one altar a few feet beneath the service galleries. Walls descend at an angle from the altar to the thin reinforced concrete slab dry-dock floor.
- Drainage tunnels beneath the floor extend along both sides of the dry dock. A utility tunnel, beneath the coping and behind the service galleries, runs along the perimeter. Dry Dock 4 floods through two 8-foot valves installed in flooding culverts, located on either side of the dry dock near the entrance. Once the valves were opened, it took 1 hour to flood the dry dock through the culverts. Both valves were accessible through manholes and controlled from the pump room.
- The underground pump room for Dry Dock 4 is located south of the dry dock, near the entrance (east) end. The pump and control rooms are constructed of reinforced concrete formed integrally with the bedrock and dry-dock wall. The design allowed cranes to lift equipment in and out of the rooms through a flush-to-grade concrete roof made of removable sections. Three S. Morgan Smith axial flow pumps powered by General Electric synchronous motors could dewater Dry Dock 4 in 2.5 hours, if all three pumps operated at

full capacity. Byron Jackson, 150-horsepower, deep-well, turbine-type drain pumps, located in the lower level of the pump room, could be operated manually or automatically.

Noncontributing alterations include:

- Dry Dock 4 has received few major alterations over its 66-year history, the most notable include the filling of bilge block slots and drainage trenches in the dry-dock floor (date unknown), addition of three steel pipes in the south-side utility tunnel in 1957 when the crane track was extended on that side of the dry dock, addition of six small service galleries and the lengthening of four original service galleries in 1972, and construction of additional salt water and electrical services to accommodate larger ships in the 1980s.

Project Description (Related to Historic Resources)

The 2010 Project, as approved, proposes to retain the buildings and structures in the District and Dry Dock 4 that were determined eligible for listing in the National Register and are listed in the California Register. Dry Docks 2, 3, and 4 and Buildings 140, 204, 205, and 207 would be rehabilitated in conformance with the SOI Standards. Rehabilitation of the dry docks would include repair of concrete surfaces and addition of guardrails along their perimeter.

Buildings that were later identified as contributors to the District in the 2008 survey and are eligible for the California Register (i.e., not determined eligible for the National Register and not listed in the California Register), Buildings 211, 224, 231, and 253 were identified for preservation under Subalternative 4a, CP-HPS Phase II Development Plan with Historic Preservation. The 2010 FEIR found that the project, with the adoption of Subalternative 4a, would not result in a significant adverse impact to the District that would affect its eligibility for inclusion in the California Register. The decision-makers adopted the preservation alternative when they approved the 2010 CP-HPS2 Project. In addition, two mitigation measures were included in the 2010 FEIR, provided below, to minimize impacts to historic resources.

The 2018 Modified Project Variant would include project modifications that may impact Dry Dock 4, including the addition of two bridges over the dry dock, provision of water taxi service from Dry Dock 4, and creation of the Water Room surrounding the dry dock that would be programmed to serve as a central community gathering point and new seating.

The 2018 Modified Project Variant includes new construction related to Dry Dock 4 that was not included in the 2010 FEIR and, therefore, is the focus of the analysis related to historic resources. Previously, the only scope related to Dry Dock 4 in the 2010 FEIR was to repair the concrete and replace a fence. Under the 2018 Modified Project Variant, new construction would occur in the vicinity of Dry Dock 4 including regrading of the site, construction of the Water Room with seating around Dry Dock 4, construction of two new bridges over Dry Dock 4 including the Water Room Bridge and the Eastern Bridge, and installation of a water taxi ramp at Dry Dock 4. Although Dry Dock 4 would be retained intact under the 2018 Modified Project Variant, potential adverse impacts may occur to the character-defining features, materials, and contributing setting of Dry Dock 4 that

could result in a potentially significant impact if they do not avoid direct physical impacts to Dry Dock 4 including its visible, subsurface, and submerged features or indirect impacts to the associated setting. Current project plans are conceptual and are expected to evolve as the project progresses through design development and construction plans are finally prepared. Therefore, to project the historic integrity and significance of Dry Dock 4, Preservation Guidelines shall govern the project including the proposed landscape improvements, bridges, and taxi ramp to ensure they are designed and constructed in conformance with the SOI Standards as the project develops. The Preservation Guidelines have been prepared by a qualified preservation consultant and are supported by substantial available information on the history and condition of Dry Dock 4. The Preservation Guidelines include guiding principles outlined in Table 21 (Dry Dock 4 Preservation Guidelines) that would ensure conformance with the SOI Standards.

TABLE 21 DRY DOCK 4 PRESERVATION GUIDELINES

Secretary of the Interior's Standards for Preservation (Applicable Provisions)

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Dry Dock 4: Guiding Principles

- The proposed treatment of Dry Dock 4 shall follow the requirements outlined in the Memorandum of Agreement (MOA) between the United States Navy, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer regarding the interim leasing and disposal of historic properties on the former Hunters Point Naval Shipyard in San Francisco, California, under which the lease agreements require tenants to follow the recommended practices of the SOI Standards in maintaining or adapting these historic properties for use.
- Proposed treatment of Dry Dock 4 shall follow the treatment plan and methods developed for CP-HPS2 that has been previously found to conform to the SOI Standards (Lada Kocherovsky and Richard Sucre, Memorandum regarding Secretary of the Interior's Standards Evaluation of Proposed Treatments for Dry Docks 2, 3, and 4, October 5, 2009, prepared by Page & Turnbull for Therese A. Brekke, Lennar Urban) and are outlined by Moffatt & Nichol in a series of reports:
  - Moffatt & Nichol, *Candlestick Point/Hunter's Point Redevelopment Project, Proposed Shoreline Improvements* (September 2009);
  - Moffat & Nichol, *Hunter's Point Shoreline Structures Rapid Reconnaissance Investigation* (June 2009); and
  - Moffat & Nichol, *Hunters Point Shoreline Structures Assessment* (August 2009).
- Dry Dock 4 is identified in the National Register of Historic Places as a structural resource under the applicable criteria of "event: architecture engineering" and, more specifically, with an area of significance related to military engineering. The Standards for Preservation and Guidelines for Preserving Historic Buildings apply not only to historic buildings, but also to a variety of historic resource types eligible to be listed in the National Register of Historic Places, including buildings, sites, structures, objects, and districts. Accordingly, proposed modifications to Dry Dock 4 shall comply with the Standards for Preservation outlined in the

TABLE 21 DRY DOCK 4 PRESERVATION GUIDELINES

SOI's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*,[72] which require conformance with the above Standards for Preservation.

Dry Dock 4: Preservation Guidelines

Preservation Guidelines for Dry Dock 4 have been developed to guide the preliminary design of the improvements associated with Dry Dock 4. These guidelines may be refined as part of the final design provided the following occurs:

- All character-defining features, materials, finishes, and construction techniques or examples of craftsmanship of Dry Dock 4 would be permanently retained;
- The bridge and abutment design and construction process would not permanently and irreversibly remove character-defining features or materials of the dry dock or its setting;
- The two bridge spans would not permanently and irreversibly alter character-defining features of the dry dock;
- The open visual character of Dry Dock 4 and the spaces and spatial relationships between the water-filled dry dock and adjacent deck around the dry dock whose outer limits are defined by the location of the bollards that surround the dry dock would be permanently retained;
- Grading required to protect the site from sea level rise may require that the bollards surrounding the dry dock would be temporarily removed, but they would be returned to a location that retains the horizontal, spatial relationship between the bollards and the dry dock;
- The installation of seating around the dry dock would occur on top of the land surface and would be provided in a manner that integrates the seating with a gradual raise in the proposed grade of the surrounding dry dock to accommodate sea level rise and would not permanently and irreversibly remove any character-defining materials or features;
- The seating would preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting;
- While the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting would be preserved, the design would still allow for active and passive recreational uses;
- The design would be modern in character and differentiated from the historic structure, and no changes would be made that would create a false sense of historical development or add conjectural features;
- The design would be differentiated from the old and would be contemporary and industrial in aesthetic and utilitarian in the use of materials;
- The design would be compatible with the historic materials, features, size, scale and proportion, and massing protect the integrity of the dry dock and setting;
- The design would not obscure the character-defining features, spaces, spatial relationships, or views of the dry dock; and
- The design would be reversible to allow the new construction to be removed in the future, which would ensure that the integrity and significance of Dry Dock 4 would not be materially impaired.

With inclusion of the Preservation Guidelines as part of the 2018 Modified Project Variant, project conformance with the SOI Standards would be ensured, the historic significance of Dry Dock 4 would be protected, and the eligibility of the historical resource after project completion would remain unimpaired.

The 2018 Modified Project Variant was reviewed for conformance with the Standards for Rehabilitation (Department of Interior regulations, 36 CFR 67). Generally, a project that follows the SOI Standards shall be considered mitigated to a less-than-significant impact on the historical resource, pursuant to CEQA. With incorporation of the Preservation Guidelines as a Project Design Feature, the proposed modifications included in the 2018 Modified Project Variant were found to be in full conformance with the SOI Standards, as discussed in detail in Addendum 5 Appendix H. The impact would remain less than significant with implementation of mitigation measures MM CP-1b.1 and MM CP-1b.2 and conformance with the previously discussed SOI Standards.

[72] U.S. Department of the Interior, 2017.

Impact CP-2b: Construction at HPS Phase II would not result in a substantial adverse change in the significance of archaeological resources, including prehistoric Native American resources, Chinese fishing camps, and maritime related resources. ***[Criterion J.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, records indicate that three, and possibly four, prehistoric archaeological sites are located within HPS2, including CA-SFR-11, CA-SFR-12, CA-SFR-13, and CA-SFR-14. All of the sites are reported to be shellmounds or shell midden sites. In addition, previous archaeological investigations have shown that prehistoric archaeological sites in the HPS2 project area tend to be located along the original shoreline. Therefore, it was determined in the 2010 FEIR it was possible that project-related construction activities may encounter previously unknown prehistoric archaeological resources anywhere within the development footprint.

Research cited in the 2010 FEIR indicated that two possible locations for a Chinese fishing camp were identified at HP. By 1910, five of the nineteen remaining Chinese fishing camps were located at HP. At least eleven fishing camps were observed along HP shoreline in the 1930s. In addition to Chinese fishing camps, HP had numerous maritime-related industries, including dry docks and boarding houses. There were also several historically-documented large offshore "rocks" that presented navigational hazards before the land surrounding them was reclaimed. Therefore, it is possible that historic archaeological resources, including Chinese fishing camps, remains of maritime-related industries, and buried shipwrecks may occur within the HPS2 project area.

Mitigation measure MM CP-2a from the 2010 FEIR would reduce the potentially significant effects of construction-related activities to the archaeological resources in the HPS2 project area to a less-than-significant level by mitigating for the permanent loss of the adversely affected archaeological resources through implementation of the *Archaeological Research Design and Treatment Plan for the Bayview Waterfront Project, San Francisco, California*. This measure would reduce the impact to a less-than-significant level by ensuring that an archaeological testing program is performed and that any discovered resources are appropriately handled, and documented.

The 2018 Modified Project Variant includes a number of Project components described in detail in Section I (Project Description) that would result in ground disturbance that could potentially impact archaeological resources. These components include: adjusted locations for two high-rise towers; reconfiguration of the design and sizes of parks and open space areas; revisions to the number of housing units proposed by the Project Sponsor; revisions to the street network and roadway cross-section dimensions and alignments; the provision of water taxi infrastructure and two bridges; and revisions to the proposed utility network and systems. As with the 2010 FEIR Utilities Variant 4, the 2018 Modified Project Variant would include a solar system, a recycled water facility, and district heating and cooling plants; in addition, the 2018 Modified Project Variant would also include a geothermal heating and cooling system (as a component of the district heating and cooling plants)

and utility-scale and building-scale battery storage systems. Most of these Project changes are currently conceptual and their design is under development.

Analysis in the 2010 FEIR determined it was possible that any Project-related construction activities could encounter previously unknown archaeological resources anywhere within the development footprint. The 2010 FEIR mitigation measure MM CP-2a reduced the impact to archaeological resources to less than significant by requiring a comprehensive archaeological sensitivity analysis of the entire Project footprint and implementation of an archaeological testing program in archaeologically sensitive areas. Therefore, although 2018 Modified Project Variant components listed above would include extensive ground disturbance, there are no changes to the Project that would result in new significant impacts to archaeological resources because the 2010 FEIR already analyzed the entire Project footprint and determined that any Project-related construction activities could impact archaeological resources, and the 2010 FEIR included mitigation to reduce the potential impact to less than significant.

All of the proposed modifications in the 2018 Modified Project Variant were previously analyzed in the 2010 FEIR except for the ground source geothermal heating and cooling system. This system would include approximately 2,800 geothermal boreholes installed to a depth of approximately 600 feet, with diameters of up to 6 inches, and have the potential to impact archaeological resources. However, the 2,800 geothermal boreholes would be within the original CP-HPS2 Project footprint and are, therefore, within the area analyzed by the 2010 FEIR. Some of the geothermal borehole locations would be located within archaeologically sensitive areas, but mitigation measure MM CP-2a is sufficient to reduce the potential impact from the boreholes to archaeological resources to a less-than-significant level. Mitigation measure MM CP-2a requires a comprehensive archaeological testing program guided by an approved archaeological testing plan that identifies the property types of the expected archaeological resource(s) that could potentially be adversely affected by the Project, the testing method to be used, and the locations recommended for testing. The archaeological testing program would determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA. If the testing program identifies an archaeological resource that constitutes a historical resource under CEQA, mitigation measure MM CP-2a would ensure that such resource would be appropriately documented through data recovery and reporting. Mitigation measure MM CP-2 is a comprehensive requirement to mitigate impacts to significant archaeological resources, and as a result, there would be no changes to the Project that would result in new significant impacts to archaeological resources.

Fulfilling the requirements of mitigation measure MM CP-2a is already underway for the 2018 Modified Project Variant. An archaeological sensitivity assessment and testing plan has been prepared to address mitigation measure MM CP-2a from the 2010 FEIR and was approved by the San Francisco Planning Department Environmental Planning Division (EP) in June 2017. The document provides a detailed analysis of archaeological sensitivity in HPS2, including all areas incorporated within the 2018

Modified Project Variant, and it requires archaeological testing to identify both prehistoric and historic archaeological resources to be conducted in archaeologically sensitive areas. The archaeological testing plan includes a series of 142 archaeological cores to test areas determined sensitive for prehistoric archaeological resources, and up 32 test trenches to investigate areas of historic archaeological sensitivity. Fieldwork to implement the archaeological testing plan is scheduled to be conducted in 2018.

To assess the adequacy of the approved June 2017 archaeological testing plan to address potential impacts from the proposed geothermal boreholes proposed for the 2018 Modified Project Variant, the planned geothermal borehole locations were overlaid onto a map of archaeological sensitivity and planned archaeological core locations prepared for the 2018 Modified Project Variant. The results indicate that the planned geothermal borehole locations would straddle areas that range from highest to lowest archaeological sensitivity. The archaeological testing plan identifies a number of archaeological cores within the footprint of the geothermal boreholes that would overlap with areas of highest and high archaeological potential. There are several areas where the proposed geothermal boreholes would overlap with areas of highest and high archaeological potential where no archaeological cores are planned. However, additional archaeological cores may be necessary to augment the approved archaeological testing plan in the areas where geothermal boreholes may be installed to adequately test for the presence of buried archaeological resources. This assessment is reflected in revisions to 2010 FEIR mitigation measure MM CP-2a. The archaeological consultant shall prepare and submit to the ERO for review and approval an addendum to the approved HPS2 archaeological testing plan (ATP), which shall identify the archaeological resource(s) that potentially could be adversely affected by ground-disturbing components of the 2018 Modified Project Variant. The impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

MM CP-2a: Mitigation to Minimize Impacts to Archaeological Resources at Candlestick Point. Based on a reasonable presumption that archaeological resources may be present within the Project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the Project on buried or submerged historical resources.

Overview: The Project Applicant shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical ~~archeology~~ archaeology. The archaeological consultant shall ~~undertake an~~ augment the approved archaeological testing program as specified herein. In addition, the archaeological consultant shall be available to conduct an archaeological monitoring and/or data recovery program if required pursuant to this measure. The archaeological consultant's work shall be conducted in accordance with this measure and with the requirements of the Project Archaeological Research Design and Treatment Plan (Archeo-Tec~~.~~, *Archaeological Research Design and Treatment Plan for the Bayview Waterfront Project, San Francisco, California*, 2009) at the direction of the City's Environmental Review Officer (ERO). In instances of inconsistency between the

requirement of the Project Archaeological Research Design and Treatment Plan and of this archaeological mitigation measure, the requirement of this archaeological mitigation measure shall prevail. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archaeological monitoring and/or data recovery programs required by this measure could suspend construction of the Project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce potential effects on a significant archaeological resource as defined in CEQA Guidelines Section 15064.5(a)(c) to a less-than-significant level.

Archaeological Testing Program: The archaeological consultant shall prepare and submit to the ERO for review and approval an addendum to the approved HPS2 archaeological testing plan (ATP). The archaeological testing program shall be conducted in accordance with the approved ATP addendum. The ATP addendum shall identify the property types of the expected archaeological resource(s) that potentially could be adversely affected by ground-disturbing components of the 2018 Modified Project Variant, including ground source geothermal heating and cooling system geothermal boreholes~~,~~; the testing method to be used; and the locations recommended for testing. The purpose of the archaeological testing program will be to determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA.

At the completion of the archaeological testing program, the archaeological consultant shall submit a written report of the findings for submittal to the ERO. If, based on the archaeological testing program, the archaeological consultant finds that significant archaeological resources may be present, the ERO (in consultation with the archaeological consultant) shall determine if additional measures are warranted. Additional measures that may be undertaken include, but are not necessarily limited to, additional archaeological testing, archaeological monitoring, and/or an archaeological data recovery program. If the ERO determines that a significant archaeological resource is present and that the resource could be adversely affected by the Project, the Project Applicant shall either:

a. Re-design the Project so as to avoid any adverse effect on the significant archaeological resource; or

b. Implement a data recovery program, unless the ERO determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.

Archaeological Monitoring Program: If the ERO, in consultation with the archaeological consultant, determines that an Archaeological Monitoring Program (AMP) shall be implemented, the AMP shall include the following provisions, at a minimum:

- The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the AMP prior to the commencement of any Project-related soils~~-~~ disturbing activities. The ERO, in consultation with the archaeological consultant,

shall determine what Project activities shall be archaeologically monitored. In most cases, any soils-–disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), and site remediation, shall require archaeological monitoring because of the risk these activities pose to potential archaeological resources and to their depositional context.

- The archaeological consultant shall train all Project construction personnel who could reasonably be expected to encounter archaeological resources of the expected resource(s), how to identify the evidence of the expected resource(s), and the appropriate protocol in the event of apparent discovery of an archaeological resource.
- The archaeological monitor(s) shall be present on the Project site according to a schedule agreed upon by the archaeological consultant and the ERO until the ERO has, in consultation with the archaeological consultant, determined that Project construction activities could have no effects on significant archaeological deposits.
- The archaeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis.
- If an intact archaeological deposit is encountered, all soils-disturbing activities in the vicinity of the deposit shall cease. The archaeological monitor shall be authorized to temporarily halt demolition/excavation/pile driving/construction activities and equipment until the deposit is evaluated. If, in the case of pile driving activity (foundation, shoring, etc.), the archaeological monitor has cause to believe that the pile driving activity may affect an archaeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archaeological consultant shall immediately notify the ERO of any encountered archaeological deposit. The archaeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit and present the findings of this assessment to the ERO as expeditiously as possible.
- Whether or not significant archaeological resources are encountered, the archaeological consultant shall submit a written report of the findings of the monitoring program to the ERO.

Archaeological Data Recovery Program: The archaeological data recovery program shall be conducted in accord with an Archaeological Data Recovery Plan (ADRP). The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the ADRP prior to preparation of a draft ADRP. The archaeological consultant shall submit a draft ADRP to the ERO. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely

affected by the Project. Destructive data recovery methods shall not be pursued if nondestructive methods are practical.

The scope of the ADRP shall include the following elements:

- Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations.
- Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures.
- Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies.
- Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program.
- Security Measures. Recommended security measures to protect the archaeological resource from vandalism, looting, and other potentially damaging activities.
- Final Report. Description of proposed report format and distribution of results.
- Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.

Human Remains and Associated or Unassociated Funerary Objects: The treatment of human remains and of associated or unassociated funerary objects discovered during any soils-disturbing activity shall comply with applicable state and federal laws~~. This shall include~~ including immediate notification of the ~~Coroner~~ Office of the Chief Medical Examiner of the City and County of San Francisco and in the event of the ~~Coroner's~~ Medical Examiner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC), which shall appoint a Most Likely Descendant (MLD) (PRC Sec. 5097.98). The ERO shall also be immediately notified upon discovery of human remains. The archaeological consultant, Project ~~Applicant~~ Sponsor, ERO, and MLD shall have up to but not beyond six days after the discovery to make all reasonable efforts to develop an agreement for the treatment of human remains and associated or unassociated funerary objects with appropriate dignity (CEQA Guidelines Sec. 15064.5(d)). The agreement ~~shall~~ should take into consideration the appropriate excavation, removal, recordation, analysis, ~~custodianship,~~ curation, possession, and final disposition of the human remains and associated or unassociated funerary objects. Nothing in existing state regulations or in this mitigation measure compels the Project Sponsor and the ERO to accept recommendations of an MLD. The archeological consultant shall retain possession of any Native American human remains and associated or unassociated burial objects until completion of any scientific analyses of the human remains or objects as specified in the treatment agreement if such an agreement has been made or, otherwise, as determined by the archeological consultant and the ERO. If no agreement is reached, state regulations shall be followed including the reinternment of the human remains and

associated burial objects with appropriate dignity on the property in a location not subject to further subsurface disturbance (PRC Sec. 5097.98).

Final Archaeological Resources Report: The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s). Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report.

Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Major Environmental Analysis division of the Planning Department shall receive three copies of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than presented above.

Impact CP-3b: Construction at HPS Phase II would not result in a substantial adverse change in the significance of a paleontological resource. ***[Criterion J.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, sedimentary rocks of the Franciscan Complex have a low sensitivity to impacts from project-related construction because in the project vicinity they have been reported as nonfossiliferous. Sedimentary rocks of the Franciscan Complex have produced significant fossils important for understanding the age, depositional environments, and tectonic history of the San Francisco area and additional fossil remains discovered in rocks of the Franciscan Complex during Project construction could be scientifically important and significant. Although no fossils have been reported from the Project area, the presence of Franciscan sedimentary rocks (sandstone, shale, chert, and greenstone) on the flanks of HP in the Project area indicates the possibility of fossils being discovered during construction-related excavation.

Using SVP criteria, the colluvium (slope debris, minor landslides), serpentinite, and artificial fill located within the project area is not expected to have sensitivity to impacts from project construction because it is not likely that artificial fill would contain paleontological resources; however, the Bay mud underlying portions of the fill at depth is expected to have a high sensitivity because it is possible, and even likely, that those materials would contain paleontological resources. Fossil fragments from the Bay mud have been recovered near Islais Creek northwest of the Project area. The presence of the Bay mud under the fill around HP in the Project area indicates the possibility of fossils being discovered during construction-related excavation.

Mitigation measure MM CP-3a from the 2010 FEIR would reduce the effects of construction-related activities to paleontological resources at HPS2 to a less-than-significant level by mitigating for the permanent loss of the adversely affected resources through implementation of a Paleontological Resources Monitoring and Mitigation Program. The SVP considered scientific recovery, preparation, identification, determination of significance, and curation to mitigate impacts to paleontological resources adequately in most circumstances. Consequently, the implementation of this measure would reduce the potentially significant adverse environmental impact of Project-related ground disturbance on paleontological resources to a less-than-significant level.

The proposed modifications in the 2010 Modified Project Variant, including the ground source geothermal heating and cooling system, have the potential to impact paleontological resources. However, all proposed modifications, including the 2,800 geothermal boreholes, would be located within the original CP-HPS2 Project footprint and are, therefore, within the area analyzed by the 2010 FEIR. Mitigation measure MM CP-3a would be sufficient to reduce potential impacts from the proposed modifications, including the boreholes, to paleontological resources to a less-than-significant level. As such, the impact to paleontological resources would remain less than significant with implementation of the identified mitigation measure.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to cultural resources and paleontological resources impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to cultural resources and paleontological resources, either on a project-related or cumulative basis.

II.B.10 Hazards and Hazardous Materials

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
8.	**Hazards and Hazardous Materials.** Would the project:					
K.a	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	2010 FEIR p. III.K-108 (Impact HZ-20), p. III.K-111 (Impact HZ-22), p. III.K-113 (Impact HZ-23); Addendum 1 p. 40 Addendum 4 p. 44	No	No	No	None
K.b	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	2010 FEIR p. III.K-55 (Impact HZ-1b), p. III.K-59 (Impact HZ-2b), p. III.K-62 (Impact HZ-3b), p. III.K-64 (Impact HZ-4b), p. III.K-66 (Impact HZ-5b), p. III.K-68 (Impact HZ-6b), p. III.K-71 (Impact HZ-7b), p. III.K-72 (Impact HZ-8), p. III.K-81 (Impact HZ-10b), p. III.K-85 (Impact HZ-11), p. III.K-86 (Impact HZ-12), p. III.K-88 (Impact HZ-13), p. III.K-92 (Impact HZ-14b), p. III.K-96 (Impact HZ-15), p. III.K-102 (Impact HZ-16b), p. III.K-103 (Impact HZ-17b), p. III.K-107 (Impact HZ-19), p. III.K-110 (Impact HZ-21b); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-5a, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1
K.c	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	2010 FEIR p. III.K-105 (Impact HZ-18b), p. III.K-115 (Impact HZ-24); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	MM AQ-6.1, MM AQ-6.2, MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-15

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
K.d	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to *Government Code* Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	2010 FEIR p. III.K-55 (Impact HZ-1b), p. III.K-59 (Impact HZ-2b), p. III.K-62 (Impact HZ-3b), p. III.K-64 (Impact HZ-4b), p. III.K-66 (Impact HZ-5b), p. III.K-68 (Impact HZ-6b), p. III.K-71 (Impact HZ-7b), p. III.K-72 (Impact HZ-8), p. III.K-81 (Impact HZ-10b), p. III.K-85 (Impact HZ-11), p. III.K-86 (Impact HZ-12), p. III.K-92 (Impact HZ-14b), p. III.K-103 (Impact HZ-17b), p. III.K-107 (Impact HZ-19), p. III.K-110 (Impact HZ-21b); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-5a, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1
K.e	For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area?	2010 FEIR p. III.K-116 (Impact HZ-25); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	None
K.f	For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area?	2010 FEIR p. III.K-116 (Impact HZ-26); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	None
K.g	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	2010 FEIR p. III.K-116 (Impact HZ-27); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	None
K.h	Expose people or structures to a significant risk of loss, injury, or death involving fires?	2010 FEIR p. III.K-116 (Impact HZ-27); Addendum 1 p. 40; Addendum 4 p. 44	No	No	No	None

Changes to Project Related to Hazards and Hazardous Materials

The 2018 Modified Project Variant includes the following activities related to hazards and hazardous materials:

- For HPS2, the use of a proposed ground source geothermal heating and cooling system that would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. As described in Section I (Project Description), boreholes are anticipated to be drilled as deep as 600 feet and would typically be 4 to 6 inches in diameter and spaced at least 15 to 20 feet apart. The boreholes would be located in the Warehouse District (see Figure 2 [CP-HPS2 Land Use Districts], p. 8) in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited. Specifically, clusters of boreholes will be located below public parks and open space areas, playground or athletic fields, parking structures, and commercial buildings with ground floor or basement level parking. Generally, the environmental restrictions in these areas require regulators to approve workplans prior to disturbing existing fill soil and require maintenance of soil cover once work is completed. The borehole cluster locations would avoid other areas, as feasible, that have unsuitable administrative and/or sub-surface restrictions, such as beneath public roads, State Trust lands, radiological restricted areas, and other areas of additional soil or groundwater restrictions such as areas with groundwater monitoring wells or soil vapor mitigation beneath building foundations.
- Import of soil up to 2,546,300 cy of imported fill for raising grade due to sea-level rise (SLR) and for surcharge compaction to improve geotechnical conditions of the soil in the developed areas and open space areas. Approximately 10,600 cy (590 dump truck loads) of sand would be imported to use as fill at the base of the trenches. Import backfill sand would be screened for contaminants in accordance with the Soil Import criteria specified in the Risk Management Plan.
- The 2018 Modified Project Variant proposes modifications to the land use program and associated additional construction activity, including use of different geotechnical stabilization methods, specifically Deep Dynamic Compaction.
- As with the Project analyzed in the 2010 FEIR, HPS2 construction activities under the 2018 Modified Project Variant would be subject to land use and activity restrictions that are put in place by the United States Department of the Navy (Navy) and regulatory agencies as components of the remedy. The 2018 Modified Project Variant would be subject to the updated regulatory framework that has been developed through the recent conveyance of Parcels UC-1 and UC-2.

Updated Regulatory Framework

The Navy has conducted environmental investigations, feasibility studies, removal actions, and remedial actions at HPS2. These activities have been conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), the Clean Water Act (CWA), a 1992 Federal Facilities Agreement (FFA) (Navy 1992) between the Navy and federal and

state regulatory agencies, and state-specific environmental programs. The Navy work is being implemented in consultation with the United States Environmental Protection Agency (USEPA), California Department of Toxic Substances Control (DTSC), and the California Regional Water Quality Control Board (RWQCB), as specified in the FFA for HPS2. These federal and state regulatory agencies, along with the Navy are referred to as the FFA Signatories.

In accordance with the final Records of Decision (RODs) for HPS2, the Navy is responsible for implementing remedial actions to provide for protection of human health and the environment prior to transfer of the property to OCII. All necessary remedial actions required by CERCLA, the FFA, or other applicable law must be completed to the satisfaction of the relevant regulatory agencies, and those agencies must determine that the site is suitable for its intended use, whether those remedial activities take place before or after the Navy transfers ownership of the property. The remedy specified in the RODs includes land use controls and activity restrictions (collectively referred to as "environmental restrictions") to provide for long-term protectiveness of the site. The Navy has prepared Land Use Control Remedial Design documents (LUCRDs) and Operation and Maintenance (O&M) Plans, which specify requirements for all future landowners that are appropriate for complying with the land use controls and activity restrictions (collectively referred to as environmental restrictions). The environmental restrictions will be documented in a Covenant Restricting the Use of Property (CRUP), which is a legal instrument that is approved by the FFA Signatories and is recorded on the property deed.

The LUCRDs require preparation of a Risk Management Plan (RMP) and states, "An RMP will set forth certain requirements or protocols that, if followed, will allow certain activities that are otherwise restricted to be performed without additional approval by FFA signatories." The OCII, in conjunction with CP Development Company L.P. (CP DevCo), and in consultation with the FFA Signatories, will have prepared a RMP, for those areas where the LUCRDs require such.

Where required by the LUCRDs, the RMP will be submitted for approval by the FFA Signatories, prior to any development occurring on the site. The approved RMP authorizes the Owner to perform certain restricted activities on the site without further FFA Signatory approval, referred to as Restricted Activities Authorized with Conditions, provided that the Owner follows the environmental procedures and protocols set forth in the RMP. The RMP will provide criteria, protocols, and procedures that must be followed to preserve the integrity of the Navy's remedy. In general, the RMP addresses FFA Signatory notification requirements, worker health and safety, soil management protocol, groundwater management protocol, soil vapor mitigation, dust control protocol, asbestos dust management protocol, stormwater controls, specifications for destroying and installing groundwater monitoring wells, criteria for screening the quality of imported soil, protocol for responding to unexpected conditions that may be encountered in the field, and annual monitoring and reporting requirements.

A CRUP has been recorded and an RMP[73] has been prepared and approved by the FFA Signatories for already transferred Parcels UC-1 and UC-2. As more parcels transfer, the same RMP may be amended from time to time and will apply to the newly transferred parcels, as required. The RMP would be amended to incorporate environmental restrictions along with any additional provisions that might be needed to address unique environmental restrictions in those specific parcels. For parcels with radiological restrictions, before any development activities occur, the developer will prepare a separate activity-specific work plan for approval by the FFA Signatories.

Comparative Impact Discussions

Impact HZ-1b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with known contaminants from historic uses. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed in the 2010 FEIR, HPS2 construction activities under the 2018 Modified Project Variant would involve site preparation that would include ground improvements to support building foundations, raising the grade to accommodate SLR, deep excavations for large structures such as residential towers, installation of foundation piles, trenching for utility lines, and other earth-disturbing activities.

The 2018 Modified Project Variant proposes to implement DDC and static soil surcharging as the preferred ground improvement techniques beneath proposed building foundations. DDC is accomplished by repeatedly dropping a heavy weight onto the existing ground surface to pound the ground into a consolidated state. Surcharging is accomplished by importing soil and placing it on the footprint of a proposed building location in a tall pile (surcharge pile) and leaving the surcharge pile in place for an extended time period. The soil beneath the surcharge pile compresses under the weight of the pile and results in a stronger load-bearing soil profile. During DDC and surcharge activities, "wick drains" are typically installed that allow groundwater to redistribute within the soil beneath the surcharge piles or DDC impacts to allow adequate compaction. Soil vapor in the compaction zone may also redistribute within the soil or vent to the atmosphere through the ground surface.

To accommodate SLR and account for required cover over pipes as defined by the SFPUC and the CP-HP subdivision regulations, the 2018 Modified Project Variant would raise the site by an average of about 4.25 feet across the graded areas, compared to an average of approximately 3 feet as analyzed by the Project in the 2010 FEIR. The grade would be raised by importing fill soil, placing it on the existing ground surface, and grading to a final design elevation that is required to meet city requirements for SLR elevation. In areas where static soil surcharging is being implemented, the soil

[73] Geosyntec, *Risk Management Plan, Hunters Point Naval Shipyard, Parcels UC-1 and UC-2, San Francisco, California*, March 2015

pile will be removed and graded to the final design elevation. The removed soil will be relocated to another surcharge pile or used elsewhere for raising the grade.

To the extent that the soil, soil vapor, and groundwater in the areas that will be improved with DDC and surcharging contains hazardous materials at the time of development, potentially significant impacts could result from exposure to such hazardous materials by workers, occupants, and visitors if controls are not in place to manage the risks from such exposure. All ground improvement work conducted on HPS2 will be conducted in accordance with the RMP or site-specific work plan, where applicable. In addition to the protocol in the RMP, worker exposure as well as environmental impacts would be controlled through MM HZ-1b and MM HZ-2a (HASP requirement). Exposure to impacts from redistributed groundwater would also be controlled through MM HZ-1a.3 (GW dewatering plans). To the extent that groundwater may migrate to the ground surface, it will be captured, treated, if necessary, and discharged as allowed by local or state discharge permits. To the extent that soil vapors migrate to the ground surface and vent into the atmosphere, it will be monitored and controlled as allowed by Bay Area Air Quality Management District regulations for volatile organic compound emissions. Dust generated during ground improvement activities will be controlled as required in MM HZ-1b and San Francisco Health Code Article 22b.

The 2018 Modified Project Variant would require the import of up to 2,546,300 cy of imported fill for raising grade for SLR, surcharge compaction for geotechnical purposes, and trench backfill in utility trenches (up to 10,600 cy or 590 dump truck loads of sand) in the developed areas and open space areas. Import fill soil and backfill sand would be screened for contaminants in accordance with soil import criteria identified in the RMP that would be developed for the project to comply with the regulatory requirements that will be applicable to the site through the CERCLA process, RMP where applicable, and other federal, state, and local regulations.

In addition, development of a proposed HPS2 geothermal system could also result in impacts from construction worker exposure to contaminants in the soil. The geothermal system would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. The boreholes would be located in the Warehouse District in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited (see I.C.1 [HPS2 Proposed Modifications]). Installation of the 2,800 geothermal boreholes would require excavation of 12,250 cy of soil, which would be reused on site (for raising grade, surcharge compaction, or trench backfill), in accordance with the CERCLA land use controls, activity restrictions, and RMP requirements where applicable, that apply to the specific location where the soil is generated. Any soil that is not allowed to be reused on site would be disposed off site in a manner consistent with federal, state, and local soil disposal and handling requirements.

As described in the 2010 FEIR, the Navy is engaging in a remediation process at HPS2, which is independent of the 2010 and 2018 Projects (referred to as the “Project” for purposes of this hazardous materials discussion), and property could be permanently transferred after completion of remediation activities or temporarily leased or temporarily accessed for limited activities, such as

installation of infrastructure, before completion of remediation activities. As with the Project analyzed in the 2010 FEIR, to the extent that the property under development under the 2018 Modified Project Variant contains hazardous materials at the time of development, potentially significant impacts could result from exposure to such hazardous materials by workers, occupants, and visitors if controls are not in place to manage the risks from such exposure.

As discussed in the 2010 FEIR, the FFA Signatories would, independent of the Project, require that before any Project development activity occurs at HPS, appropriate and legally enforceable restrictions on uses and activities at the Project site be in place and applicable to that activity, whether in the form of a recorded covenant, deed provision, easement, lease term, or RMP, such as currently exists for Parcels UC-1 and UC-2, noted above. Although the restrictions and enforcement mechanisms would be established independent of the Project, as with the Project analyzed in the 2010 FEIR, mitigation measure MM HZ-1b, would provide redundant protection by requiring that all Project development activities and uses conducted after the completion of development be in compliance with the CRUP and the protocols specified in the approved RMP, where applicable.

Consequently, implementation of mitigation measure MM HZ-1b would reduce impacts related to exposure to known contaminants from construction activities, including the geothermal boreholes required for development of the geothermal heating and cooling system on the HPS2 site and the compaction surcharging for geotechnical purposes. The impact would remain less than significant with implementation of the identified mitigation measure and adherence to the CERCLA requirements, including the RMP, which includes soil import criteria where applicable, and other federal, state, and local regulations.

Impact HZ-2b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with previously unidentified subsurface contaminants from historic uses. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that the potential exists for unidentified, old, or abandoned subsurface structures (e.g., USTs, utility lines) to be present at sites to be developed in HPS2. As with the Project analyzed in the 2010 FEIR, if an unidentified UST were discovered during construction activities, including excavation of the approximately 2,800 geothermal boreholes required for development of the geothermal heating and cooling system on the HPS2 site, it would have to be closed in place or removed in accordance with federal, state, and local regulations. The RMP for Parcels UC-1 and UC-2 includes an Unexpected Conditions Response Plan, which specifies protocol in the event that such conditions are encountered during construction activities. The updated RMP for future transferred land will contain such a plan, where applicable, that will provide for the safe response to unexpected conditions that may be encountered. The installation of the geothermal boreholes would

be in areas subject to environmental restrictions and RMP protocol, including the Unexpected Condition Response Plan, where applicable.

Encountering unexpected conditions could pose both health and safety risks, such as the exposure of workers, tank handling personnel, and the public to tank contents or vapors. Similarly, the discovery of buried debris that could be hazardous could also present an increased risk of adverse health or environmental effects. The likelihood that significant adverse effects from the discovery of previously unidentified subsurface features would occur is minimal because there are multiple existing requirements in place to address such effects, such as the RMP for Parcels UC-1 and UC-2, and the SFDPH Article 31 requirements, implementation of contingency monitoring procedures and RWQCB notification (as necessary).

As with the Project analyzed in the 2010 FEIR, implementation of mitigation measure MM HZ-2a.1 would require the development of an Unknown Contaminant Contingency Plan to describe procedures to follow in the event unexpected contamination is encountered during construction activities, including procedures for ensuring compliance with the above laws and regulations, in conjunction with implementation of mitigation measure MM HZ-2a.2, which would require the preparation of a site-specific HASP prepared in accordance with federal and state OSHA and other applicable regulations. Implementation of those mitigation measures would ensure that potential adverse impact on human health and the environment from unidentified subsurface hazards would remain less than significant.

Impact HZ-3b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of off-site transport and disposal of contaminated soil and groundwater. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that construction activities in HPS2 could involve extensive construction to accommodate new development. Site preparation could include deep excavations for large structures such as residential towers; cut material may be used elsewhere as fill, subject to any restrictions on reuse of soil imposed by the FFA signatories; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities.

In addition, development of a proposed HPS2 geothermal system, which was not a component the Project analyzed in the 2010 FEIR, would require approximately 2,800 geothermal boreholes to meet heating and cooling demands.

As with the Project analyzed in the 2010 FEIR, for those locations within HPS2 where construction under the 2018 Modified Project Variant would require off-site transport of contaminated soil, the grading and earthwork contractor would be required, as necessary and where required, to follow state and federal regulations for manifesting (including transportation and disposal) the wastes, using

licensed hazardous waste haulers, and disposing the materials at a permitted disposal or recycling facility. The approved RMP would set forth the process for approval or specific approved methods for disposal of excavated soils during grading or removal of groundwater during dewatering.

Likewise, the approved RMP would establish a process for regulatory agency approval that would describe the procedure that must be followed to ensure that extraction of groundwater that may be necessary to accommodate trenching for utilities would not alter the physical or chemical characteristics of contaminant plumes. If dewatering were required, the groundwater could be discharged to the City's combined storm and sanitary sewer system provided the discharged water complied with the Industrial Waste Ordinance, *Public Works Code*, Article 4.1, and Order No. 158170 of the DPW (refer to Section III.M for a discussion of Article 4.1 and Order No. 158170 and with SFPUC discharge guidelines). The discharged water may be required to be sampled both prior to and during dewatering to demonstrate that discharge limitations in the ordinance are met. If the pumped groundwater would not meet discharge requirements, on-site pretreatment would be required before discharge to the sewer system. If standards could not be met with on-site treatment, the SFPUC may allow the discharger to pay a premium to discharge the wastewater to the system, or the discharger may need to transport the wastewater off site using a certified waste hauler. In addition, as with the Project analyzed in the 2010 FEIR mitigation, measure MM HY-1a.3 would require the Project Applicant to prepare and implement a dewatering plan and comply with applicable standards to protect receiving water quality and anticipated RWQCB permit compliance provisions. Thus, compliance with the protocols specified in the approved RMP, where applicable, the Industrial Waste Ordinance, and implementation of MM HZ-1b and would ensure that potential adverse impact on human health and the environment from disposal of dewatered groundwater would remain less than significant.

Impact HZ-4b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels hazardous materials as a result of improvements to existing and installation of new underground utilities. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed in the 2010 FEIR, utility trenches in HPS2 under the 2018 Modified Project Variant have the potential to create a horizontal conduit for chemical contaminants contained in soil vapors or shallow groundwater to migrate along the permeable soils that would be placed as trench backfill. As with the Project analyzed in the 2010 FEIR, the areas of the site that require vapor or groundwater utility cutoffs and the performance standard for these systems would be identified in the remedial design documents that must be prepared under the CERCLA process before these activities can be carried out. In addition, compliance with protocols specified in the approved RMP, where applicable, and implementation of mitigation measures MM HZ-1b, MM HZ-2a.1, and MM HZ-2a.2 would avoid or minimize the potential for horizontal migration of

contaminants in HPS2, which would reduce effects to less-than-significant levels. Those measures would ensure the safe handling of potentially contaminated materials encountered during improvement or installation of underground utilities. The impact would remain less than significant with implementation of the identified mitigation measures and adherence to the identified compliance measures.

Impact HZ-5b: Construction activities associated with the Project would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that piles installed in locations at HPS2 where contaminants have been identified could, under certain soil conditions, create a vertical conduit for chemicals occurring in shallow groundwater to move along the pile to deeper groundwater zones, causing degradation of the deeper groundwater. As with the Project analyzed in the 2010 FEIR, mitigation measure MM HZ-5a would be implemented under the 2018 Modified Project Variant to require pre-drilling pilot boreholes before pile driving in non-engineered fill material to avoid potential contaminant transport. In addition, as with the Project analyzed in the 2010 FEIR, restrictions that would apply upon transfer would dictate where pile driving would be permitted under the 2018 Modified Project Variant and under what circumstances. If permitted, all excess fill or native soil materials generated during pile driving would be managed consistent with the protocols specified in the approved RMP, where applicable, as described above. Compliance with those restrictions through mitigation measures MM HZ-1b and MM HZ-5a would reduce potential groundwater quality impacts. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-6b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of handling, stockpiling, and transport of soil that may contain contaminants. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that movement of soil (including grading, trenching, and excavating) that contains hazardous materials could result in impacts from human exposure to chemicals in the soil from dust and impacts to water quality and the environment if hazardous constituents were to migrate to the Bay. In addition, the 2010 FEIR determined that movement of nonhazardous soils also could result in impacts to air quality and water quality from the release of particulate matter to the air or sediment in storm water.

Development of a proposed HPS2 geothermal system, which was not a component the Project analyzed in the 2010 FEIR, could also result in impacts from human exposure to contaminants in the soil during construction.

As with the Project analyzed in the 2010 FEIR, restrictions on handling, stockpiling and transport of soil earthmoving activities at HPS2 under the 2018 Modified Project Variant would be a component of the legally-enforceable restrictions on uses and activities at the Project site, which the FFA Signatories would, independent of the Project, require to be in place before any Project development activity occurs at HPS2. Although these restrictions would be imposed independent of this EIR through independent environmental regulatory processes, to ensure compliance with these restrictions prior to development activities, mitigation measure MM HZ-1b would require SFDPH to verify, before any development activity at HPS2 occurs, that it would be done in compliance with all restrictions imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET or FOSL, or License Agreement, including restrictions imposed in deeds, covenants, leases, and LIFOCs, and requirements set forth in LUCRD documents, RMP, and health and safety plans applicable to the area of the work. Those legally enforceable environmental restrictions incorporate dust control measures to reduce the potential for spreading material from one area to another or requiring that soil be sufficiently moist to prevent dust generation during transport. Further, whenever workers could be exposed to hazardous levels of chemicals, a site-specific HASP would be prepared by the contractor prior to construction and would contain a section regarding decontamination of both personnel and equipment. The restrictions would also address the potential for trespassers or visitors to gain access to construction sites and come into direct contact with contaminated soils by specifying measures to prevent unauthorized entry into the construction site and provide appropriate monitoring/enforcement procedures to ensure the effectiveness of site security.

Soil handling, stockpiling, and transport activities have the potential to create erosion and potential migration of soils into the Bay during rainstorms, absent implementation of management measures. Soils could contain contaminants such as metals and organic compounds, which could degrade water quality in the Bay. Implementation of measures to control stormwater runoff during construction would also control discharge of potential chemicals adhered to soil in the runoff. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP would be required to identify the specific measures and BMPs that are applicable to HPS2 construction activities in the event of a spill of construction materials or exposure of hazardous materials. The SWPPP would identify the specific measures that are applicable to HPS2 construction.

As a result of these controls and mitigation measures, including mitigation measures MM HZ-1b, MM HY-1a.1, and MM HY-1a.2, impacts related to handling, stockpiling, and transport of contaminated soil would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-7b: Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that, with the implementation of mitigation measures, construction activities at HPS2, such as the compaction and installation of fill, grading, and other geotechnical work, would result in a less-than-significant impact.

Development of a proposed HPS2 geothermal system would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. The locations of boreholes would typically be located in the Warehouse District in areas where environmental restrictions are minimal and where interference with other subsurface infrastructure are limited (see I.C.1 [HPS2 Proposed Modifications]). With implementation of the 2010 Project mitigation measures, excavation of the approximately 2,800 geothermal boreholes would not result in erosion or movement of soils from the Project site and into surface waters during rain storms.

Static soil surcharge activities planned under the 2018 Modified Project Variant will result in large soil piles exposed to potential surface water erosion for extended periods of time, if not properly managed. Although not contaminated, erosion of soil from the surcharge piles could degrade surface water quality by increasing the suspended sediment load in the runoff water. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP to identify the specific measures and BMPs that are applicable to managing erosion of soil from surcharge piles. Implementation of mitigation measures MM HY-1a.1, MM HY-1a.2 would ensure that potential adverse effects on surface water quality would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

As with the Project analyzed in the 2010 FEIR, implementation of measures to control stormwater runoff during construction at HPS2 under the 2018 Modified Project Variant would also control discharge of potential chemicals if present in the runoff. Mitigation measures MM HY-1a.1 and MM HY-1a.2 would require preparation of a SWPPP to identify the specific measures and BMPs that are applicable to HPS2 construction activities in the event of a spill of construction materials or exposure of hazardous materials. The SWPPP would identify the specific measures that are applicable to HPS2 construction. Implementation of mitigation measures MM HY-1a.1, MM HY-1a.2, MM HZ-1b, and MM HZ-2a.1 would ensure that potential adverse effects on human health and the environment would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-8: Project occupants or visitors in or near portions of HPS Phase II where remediation has not been fully completed would not be exposed to unacceptable levels of hazardous materials. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, comprehensive basewide and parcel-specific investigations have shown that chemicals and radioactive materials are present in soil and groundwater in various locations throughout HPS2 at levels that require remediation. The Navy has completed substantial investigation and remediation of the site and the FFA Signatories overseeing the remediation program have required interim measures to be put in place in areas that still require remediation.

As with the Project analyzed in the 2010 FEIR, to the extent this impact could still be potentially significant despite the Navy's implementation of protective measures, it would be reduced to less than significant through implementation of Mitigation Measure MM HZ-1b, which requires compliance with restrictions in cleanup and transfer documents. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HZ-10b: Construction in the shoreline areas at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of sediment or soil that is radiologically affected or that may contain chemical contaminants. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, with implementation of the identified 2010 FEIR mitigation measures, construction of the shoreline improvements, including pile driving, construction of rock buttresses, dredging, riprap installation, marina construction and installation of natural-looking shoreline protection using fill and articulated concrete block (ACB) mats, would not disturb sediment or soil containing chemical contaminants at levels that could expose construction workers, the public, or the environment to hazardous materials.

The HPS2 proposed modifications include establishment of a water taxi service to and from HPS2 at Dry Dock 4. The establishment of the infrastructure associated with the water taxi would involve construction activities both in the water and on the landside of Dry Dock 4 related to the floating dock platform and castings, the access ramp and landing platform, guide piles, and safety rails.

Under the 2018 Modified Project Variant, construction of the shoreline improvements, including infrastructure associated with the water taxi, would be required to the 2010 FEIR mitigation measures and, thus, would not disturb sediment or soil containing chemical contaminants at levels that could expose construction workers, the public, or the environment to hazardous materials.

As with the Project analyzed in the 2010 FEIR, implementation of mitigation measures MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1, MM HY-1a.1, MM HY-1a.2, and MM HZ-10b, along with applicable regulations and permits, potential impacts related to exposure to hazardous materials releases from contaminated sediments that could be disturbed during proposed shoreline improvements in HPS2 would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-11: Construction activities associated with the Project on Navy-owned property, including improvements to existing utilities and installation of new underground utilities, would not expose occupants, construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, or groundwater that may contain contaminants from historic uses, including radiological contaminants. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, it is expected that development of properties the Navy has transferred would require underground utilities to be installed and geotechnical ground improvements initiated across land the Navy still owns that may still be undergoing remediation. Utility trenches have the potential to create a horizontal conduit for chemical contaminants contained in soil vapors or shallow groundwater to migrate along the permeable soils that would be placed as trench backfill. Ground improvement techniques such as DDC and static soil surcharging have the potential to alter subsurface conditions that could interfere with soil vapor and groundwater remediation being implemented by the Navy. The easement or other legal instrument providing a right to access the Navy property would require underground utility excavation and ground improvement activities to be conducted in accordance with a Navy-approved workplan that would require implementation of measures to prevent such impacts.

As with the Project analyzed in the 2010 FEIR, mitigation measure MM HZ-1b would apply to the 2018 Modified Project Variant development activities that take place before remediation is complete (e.g., if the property is subject to an early transfer or LIFOC) or accessed through a license or easement. MM HZ-1b requires the Project Applicant submit documentation to the SFDPH that the work would be undertaken in compliance with all restrictions imposed pursuant to the transfer documents, RMP, and any approved site-specific work plans, where applicable.

The general requirement of mitigation measure MM HZ-9 would also apply to underground utility construction and ground improvement activities by requiring that such activities be conducted only after approval of a workplan by the Navy, and if required, by the other FFA Signatories. This mitigation measure would also require such underground utility construction and ground improvement activities be conducted in accordance with applicable health and safety plans, DCPs, SWPPPs, or any other documents or plans required under applicable law or laws. As a result of these Project controls and mitigation measures, the potential for exposure to hazardous materials

during underground utility construction and ground improvement activities at HPS2 would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-12: Remediation activities conducted on behalf of the City or Project Applicant at the HPS Phase II parcels transferred prior to completion of remediation in an "early transfer" would not expose remediation and construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain contaminants from historic uses. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, although the ongoing remediation activities conducted by the Navy under the FFA are not part of the Project, if any of the parcels are transferred prior to completion of remediation in an "early transfer" as described in the Regulatory Framework, the Agency or the Project Applicant may instead implement the remaining remediation activities in conjunction with development activities with appropriate regulatory oversight. Such remediation activities conducted by or on behalf of the Agency or Project Applicant are considered part of the Project.

As with the Project analyzed in the 2010 FEIR, mitigation measure MM HZ-12 would require the Agency or the Project Applicant and their contractors to incorporate all applicable requirements into remedial design documents, work plans, health and safety plans, DCPs and any other document or plan required under the AOC or other applicable law, as a condition of development within HPS2. With the implementation of these mitigation measures, potential impacts from remediation activities conducted in conjunction with development activities at HPS2 early transfer parcels would be reduced. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HZ-13: Construction of off-site roadway improvements would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil or groundwater that may contain contaminants. ***[Criterion K.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, the Project would improve existing roadways to serve CP and HPS2 and surrounding Bayview and Hunters Point neighborhoods. The majority of the off-site roadway improvements are bayward of the mean high tide line and thus subject to the requirements of *San Francisco Health Code* Article 22A, including, if required, the preparation and implementation of a site mitigation plan. As with the Project analyzed in the 2010 FEIR, compliance with Article 22A would ensure that impacts from exposure to hazardous materials associated with off-site roadway

improvements for the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

Impact HZ-14b: Construction at HPS Phase II would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain with contaminants from historic uses. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, stockpiling and on-site soil movement during general site construction at HPS2 create potential pathways through which fish and wildlife species could be exposed contaminants in HPS2 site soils. As with the Project analyzed in the 2010 FEIR, with implementation of mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM BI-4a.1, MM BI-4a.2, and MM BI-12b.1, potential construction ecosystem impacts related to handling, stockpiling, and transport of contaminated soil (including shoreline sediments) and groundwater would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-15: Construction and grading activities associated with the Project would not disturb soil or rock that could be a source of naturally occurring asbestos in a manner that would present a human health hazard. ***[Criterion K.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, asbestos is a naturally occurring mineral found in serpentinite rocks. Naturally occurring asbestos is a potential health hazard. If large amounts are inhaled or swallowed over many years, it increases the risk that a person may develop cancer or other health problems. During grading in areas potentially containing naturally occurring asbestos, airborne asbestos could be released to the environment via air emissions that could present an inhalation or ingestion hazard to exposed populations.

As with the Project analyzed in the 2010 FEIR, the 2018 Modified Project Variant would include implementation of mitigation measure MM HZ-15, which would require the preparation of an ADMP approved by BAAQMD and a DCP approved by SFDPH before commencing grading activities and any other activity that could disturb potential sources of naturally-occurring asbestos (including Bay Fill areas with the potential to contain previously-disturbed serpentinite fragments). The mitigation measure would also require implementation of all the mitigation measures, and compliance with all the requirements, set forth in the ADMP and DCP. Implementation of this mitigation measure would reduce the impact related to naturally occurring asbestos exposure

during construction activities. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HZ-16b: Construction at HPS Phase II would not result in a health hazard to construction workers, the public, or the environment as a result of the demolition or renovation of existing structures that could include asbestos-containing materials, lead-based paint, PCBs, or fluorescent lights containing mercury. ***[Criterion K.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, existing buildings in HPS2 would be demolished to accommodate new development. Hazardous building materials are likely to be present in older structures. Building materials could include asbestos-containing materials, lead-based paint, PCBs, and fluorescent lights containing mercury vapors. Demolition or renovation of existing structures could result in potential exposure of workers or the community to hazardous building materials during construction, without proper abatement procedures, and future building occupants could be exposed if hazardous building materials are left in place and not properly contained. Soil around a structure could also become contaminated by hazardous building materials if these materials were inadvertently released to the environment.

As with the Project analyzed in the 2010 FEIR, implementation of applicable regulations and standards would ensure that potential health and environmental hazards associated with asbestos, lead, or PCBs in buildings and structures to be demolished under the 2018 Modified Project Variant would be minimized to the extent required by law. Therefore, the impact would remain less than significant, and no mitigation would be required.

Impact HZ-17b: Construction at HPS Phase II would not expose construction workers to unacceptable levels of hazardous materials in soil, sediment, or groundwater in a manner which would present a human health risk. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, potential worker health and safety impacts from exposure to hazardous materials could occur during excavation, dewatering, construction of improvements, site investigations, site remediation, and underground storage tank removal at HPS2. The potential for these impacts to occur would be minimized by implementing legally required health and safety precautions. For workers at sites where they would encounter hazardous waste, federal and Cal/OSHA regulations mandate an initial training course and subsequent annual training. Site-specific training may also be required for some workers.

Although existing worker safety regulations would require preparation and implementation of a HASP independent of the EIR and work would be conducted in accordance with site-specific work plans, and if applicable, any RMP requirements, to ensure compliance with these requirements, as with the Project analyzed in the 2010 FEIR mitigation measure MM HZ-2a.2 would be implemented under the 2018 Modified Project Variant and would require a permit applicant to prepare, submit to SFDPH, and implement a site-specific HASP for any affected location in compliance with applicable federal and state OSHA requirements and other applicable laws to minimize impacts to public health and the environment. The plan would include identification of chemicals of concern, potential hazards, personal protective equipment and devices, and emergency response procedures. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HZ-18b: Construction at HPS Phase II would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within one-quarter mile of an existing school. ***[Criterion K.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, Muhammad University of Islam, a year-round elementary school, is located adjacent to the Hillside portion of HPS1 development.

The 2010 FEIR determined that, with the implementation of the 2010 FEIR mitigation measures, construction activities would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within 0.25 mile of an existing school. As with the Project analyzed in the 2010 FEIR, the 2018 Modified Project Variant would be required to implement an enhanced dust control program in accordance with the City's Dust Ordinance in accordance with mitigation measure MM HZ-15. In addition, implementation of mitigation measures MM HZ-2a.1 and MM HZ-2a.2 for development in HPS2 would also control dust emissions at the HPS2 boundary, which would also ensure airborne asbestos emissions do not present a health risk to the off-site school.

Further, if any of the on-site schools are occupied at the time construction activities occur within 0.25 mile of those schools, the mitigation measures described above (MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, and MM HZ-15) would also be implemented. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-19: Simultaneous construction activities at the Project site would not pose a human health risk from the release of contaminants from historic uses or fill. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed in the 2010 FEIR, construction impacts associated with the potential to encounter hazardous materials or hazardous conditions during construction under the 2018 Modified Project Variant anywhere in the Project site, whether at CP or HPS2 would for the most part be site specific and not additive because development activities at one site would be localized and would not combine with activities at another site to create a greater, combined effect. In addition, development would be sequenced, so only portions of each area would be expected to be under development at the same time.

As described in the 2010 FEIR, one activity that could affect areas outside of the immediate work area is movement of soil from one location to another. As with the Project analyzed in the 2010 FEIR, mitigation measures MM HZ-1a, MM HZ-1b, MM HZ-9, and MM HZ-15 would ensure that before development occurs within the Project site and vicinity that appropriate soil management plans and DCPs have been developed to address both soil movement and reuse within the Project site and off-site reuse and disposal. In addition, it is expected that for soil in the HPS2 area, FFA-approved site specific work plans, and, if applicable, requirements in an RMP will further dictate how any excavated soil may be moved and reused on site. As with the Project analyzed in the 2010 FEIR, under the mitigation measures, compliance with the requirements of these plans is a condition of development. With the implementation of these mitigation measures, the impact from soil movements within and outside of the entire Project site under the 2018 Modified Project Variant would be reduced. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-20: Construction activities associated with the Project would not result in adverse impacts to construction workers, visitors, or the environment from the routine use, storage, transportation, and disposal of hazardous materials. ***[Criterion K.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, construction activities related to the proposed Project would require the use and transportation of hazardous materials (e.g., fuels, cement products, lubricants, paints, adhesives, and solvents). In addition, construction vehicles would be used on-site that could accidentally release hazardous materials such as oils, grease or fuels. These hazardous materials and vehicles would remain on the Project site during the period of construction activities. Accidental releases of hazardous materials during demolition and construction activities could impact soil and/or groundwater quality, which could result in adverse health effects to construction workers, the public, and the environment. As with the Project analyzed in the 2010 FEIR, the contractor's

compliance with requirements related to DPH's Hazardous Materials Unified Program Agency (HMUPA) certificate of storage for hazardous materials during construction under the 2018 Modified Project Variant would reduce these potential impacts related to inadvertent release of hazardous materials to less-than-significant levels. In addition, the Project contractors would be required to comply with the requirements of San Francisco Public Works Code Article 4.1, which requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) (described in the Hydrology and Water Quality section), which would further reduce potential impacts related to inadvertent release of hazardous materials during construction.

Compliance with the SWPPP and HMUPA requirements would ensure that the impact from potential releases from the transport and use or disposal of hazardous materials during project construction activities would be reduced. The impact would remain less than significant, and no mitigation would be required.

Impact HZ-21b: Implementation of the Project at HPS Phase II would not result in adverse impacts to residents, visitors, or the environment from periodic maintenance requiring excavation of site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. ***[Criteria K.b and K.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described in the 2010 FEIR, during occupancy, it is likely that the City or others would from time to time need to excavate site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs. Prior to occupancy, sites for which soil remediation would be necessary would either be remediated by excavation, in-situ treatment, capped with an impervious engineered system (as in the case of landfills), or covering with a durable cover, such as hardscape or layer of clean soil that is at least 2 feet thick. Based on transfers to date, it is anticipated that all subsurface activities after transfer would be regulated either under an FFA-approved RMP, or site-specific work plans, where applicable. Therefore, contact with unremediated soil by construction workers, or inhalation of soils by workers or the public, is not expected to pose a substantial human health risk. The requirement to do work in conformance with an approved RMP or site-specific work plans would be enforced through deed restrictions and restrictive covenants. These processes would ensure risks to human populations are minimized.

The proposed 300-slip marina along the east shoreline of HPS2, north of the Gun Mole Pier would require creation of a 34-acre basin. The current water depths of the proposed basin are adequate for recreation craft. The basins would not require initial dredging, but maintenance dredging would be required in the future. The proposed marina is in Parcel F, adjacent to Parcel C; however, this area is not identified as an investigation/remediation subarea in which sediments are known to be contaminated.

As with the 2010 Project, implementation of mitigation measures MM HZ-1b, MM HZ-2a.1, MM HZ-2a.2, MM HZ-9, and MM HZ-12 would require compliance with restrictions set forth in transfer documents that require the preparation and implementation of an Unknown Contaminant Contingency Plan and HASPs, as well as compliance with RMPs or site-specific work plans, where applicable, to ensure that impacts during occupancy from routine maintenance activities under the 2018 Modified Project Variant would be reduced to a less-than-significant level. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HZ-22: Implementation of the Project would not result in a significant impact involving the routine use, storage, transportation, and disposal of hazardous materials. ***[Criterion K.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, nearly all Project uses would involve the presence of hazardous materials (or products containing hazardous materials) at varying levels, and this would represent an increase in hazardous materials use compared to existing conditions. It would also increase the number of people who could be exposed to potential health and safety risks associated with routine use. The following summarizes the general types of hazardous materials that would be expected in the Project, based on the proposed land use designations.

As indicated in the 2010 FEIR, there is an established, comprehensive framework independent of the CEQA process, which is intended to reduce the risks associated with hazardous materials use (and generation of hazardous waste). The San Francisco Department of Public Health (DPH), HMUPA has been granted authority by the State to enforce most regulations pertaining to hazardous materials in the City, including permitting for hazardous materials storage, underground storage tanks, and hazardous waste generation under the DPH Certificate of Registration Program.

Facilities where hazardous materials would be used during Project operation would be constructed in accordance with current laws and regulations, which require storage that minimizes exposure to people or the environment, and the potential for inadvertent releases. In addition, these materials would be labeled to inform users of potential risks and to instruct them in appropriate storage, handling, and disposal procedures. Employers are required by law (Cal/OSHA) to ensure employee safety by properly identifying hazardous materials and adequately training workers. The use of hazardous materials and generation of wastes would continue to be regulated under the authority of the DPH HMUPA under a compliance certificate, with additional oversight by other agencies (RHB, CDHS). Transporters of hazardous materials and wastes are required to comply with federal laws and regulations that are monitored and enforced by the CHP.

As with the Project analyzed in the 2010 FEIR, under the 2018 Modified Project Variant, SFDPH HMUPA would continue to conduct periodic inspections to ensure that hazardous materials and wastes are being used and stored properly. For these reasons, hazardous materials uses and waste

generation for project operations would not pose a substantial public health or safety hazard to the surrounding area. The impact from the routine transport, use or disposal of hazardous materials (including radiological, hazardous and medical wastes) from operation of the proposed project would remain less than significant, and no mitigation would be required.

Impact HZ-23: Implementation of the Project would not pose a human health risk and/or result in an adverse effect on the environment from reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. ***[Criterion K.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, with increased routine use of hazardous materials compared to existing conditions, exposure of future occupants, visitors, and employees to hazardous materials could occur by improper handling or use of hazardous materials or hazardous wastes during operation of the Project, particularly by untrained personnel, environmentally unsound disposal methods, or fire, explosion, or other emergencies, all of which could result in adverse health effects. Accidents involving the transportation of hazardous materials to, from, or within the Project could also occur.

As with the Project analyzed in the 2010 FEIR, no industrial manufacturing or processing activities using large amounts of hazardous materials or acutely hazardous materials, which typically pose a greater accident or upset risk, are proposed under the 2018 Modified Project Variant. Major hazardous materials accidents associated with retail-commercial uses, including restaurants, theaters, and stores are extremely infrequent. The San Francisco Fire Department (SFFD) responds to hazardous materials incidents within the city, and additional emergency response capabilities are not anticipated to be necessary to respond to the potential incremental increase in the number of incidents that could result from operation of the Project.

As with the Project analyzed in the 2010 FEIR, potential impacts from upset and accident conditions involving the release of hazardous materials and wastes would also be less than significant, because the project would be required to comply with DPH requirements for hazardous materials and waste management.

As with the Project analyzed in the 2010 FEIR, the transportation of hazardous materials under the 2018 Modified Project Variant is required to comply with federal and state laws and regulations. These regulations identify proper labeling and packaging, transfer, and documentation requirements. State law prescribes requirements for through-transport of hazardous materials on roadways under state control.

As described in the 2010 FEIR, there is a comprehensive and ongoing hazardous materials emergency response program in the city. San Francisco has an Emergency Response Plan (ERP) that was developed to ensure allocation of and coordination of resources in the event of an emergency in the City and County of San Francisco. The ERP describes at a high level what the City's actions

would be during an emergency response. A separate Hazard Mitigation Plan (HMP) assesses risks posed by natural and human-caused hazards and set forth a mitigation strategy for reducing the City's risks. The specific departmental responsibilities for responding to hazardous materials incidents in the city are outlined in the "Emergency Support Function #10 Oil and Hazardous Materials Response Annex" to the ERP. San Francisco Fire Department (SFFD) is the first responder in responding to hazardous materials emergencies for the city and county. This impact would remain less than significant, and no mitigation would be required.

Impact HZ-24: Areas designated for research and development uses within HPS Phase II would not pose a human health risk as a result of hazardous air emissions within one-quarter mile of a school. ***[Criterion K.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR evaluated the health risk assessment for R&D uses using the excess lifetime cancer risk and chronic noncancer hazard index resulting from the combined TAC emissions from the R&D areas at any surrounding receptor location within HPS2. The estimated excess lifetime cancer risks and hazard indices within areas designated for residential use were found not to exceed the BAAQMD's current significance thresholds for carcinogenic and noncarcinogenic health risks with the Project with implementation of 2010 FEIR mitigation measures MM AQ-6.1 and MM AQ-6.2. These mitigation measures identify steps that would be taken to ensure numerical thresholds are not exceeded, and impacts were determined to be less than significant. Figure 3-1b of 2010 FEIR Appendix H1 Attachment III shows the areas analyzed to have TAC emissions from R&D uses associated with the 2010 FEIR. As shown in Figure 4-1a of 2010 FEIR Appendix H1 Attachment III, cancer risk from TAC emissions from R&D uses is below the threshold of 10 in a million at all proposed residential locations, except the northeastern portion of HP-05. Mitigation measure MM AQ-6.2 of the Development Agreement restricts land uses with TAC emissions within 300 feet of any residence. This mitigation measure reduced risk to below thresholds in this area.

As described in Impact AQ-6 of Addendum 5, the 2018 Modified Project Variant contains less R&D square footage as compared to R&D Variant 1, does not introduce new locations for R&D as compared to the R&D Variant 1 land use plan and does not place residences in any new areas that were not previously analyzed. Thus, the analysis in the 2010 FEIR would be inclusive of the 2018 Modified Project Variant. The evaluation and conclusion in the 2010 FEIR would still apply, and the 2018 Modified Project Variant would not pose a human health risk as a result of hazardous air emissions within 0.25 mile of a school. The impact would remain less than significant with implementation of the identified mitigation measures (MM AQ-6.1 and MM AQ-6.2).

Impact HZ-25: The Project site is not within the San Francisco Airport Land Use Policy Plan and the Project would not result in a safety hazard for people residing or working in the Project site. ***[Criterion K.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed in the 2010 FEIR, the Project site is approximately six miles north of the San Francisco International Airport. The Project site is not located within any of the "restricted zones." There would be no impact related to safety hazards for people residing or working in the Project site.

Impact HZ-26: Implementation of the Project would not occur within the vicinity of a private airstrip and would not result in a safety hazard for people residing or working in the Project site. ***[Criterion K.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed in the 2010 FEIR, no private airstrips exist in the Project site or vicinity. There would be no impact related to safety hazards for people residing or working in the Project site.

Impact HZ-27: Implementation of the Project would not expose people or structures to a significant risk of loss, injury, or death involving fires or conflict with emergency response or evacuation plans. ***[Criteria K.g and K.h]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As described in the 2010 FEIR, development of the Project would increase numbers of residents and employees in the Project site who, in turn, could result in congestion in the event of an emergency evacuation. San Francisco ensures fire safety primarily through provisions of the *San Francisco Building Code* and *San Francisco Fire Code*. Existing buildings are required to meet standards contained in these codes. In addition, the building plans for any new residential project greater than two units are reviewed by the SFFD and DBI in order to ensure conformance with these provisions. Project buildings and structures would be required to conform to these standards, which (depending on building type) may also include development of an emergency procedure manual and an exit drill plan.

In addition, hazardous materials are required to be stored in designated areas designed to prevent accidental release to the environment. And *Hazardous Materials Management Act* requires that businesses handling or storing certain amounts of hazardous materials prepare a Hazardous Materials Business Plan (HMBP), which includes an inventory of hazardous materials stored on site (above specified quantities), an emergency response plan, and an employee-training program. The

information required under the HMBP is available to fire and hazardous materials incident responders. Facilities where hazardous materials would be used during Project operation would be constructed in accordance with current laws and regulations, which require storage that minimizes exposure to people or the environment, and the potential for inadvertent releases that would require emergency response. The use of hazardous materials and generation of wastes would continue to be regulated under the authority of the DPH HMUPA under a compliance certificate, with additional oversight by other agencies (RHB, CDHS). Transporters of hazardous materials and wastes are required to comply with federal laws and regulations that are monitored and enforced by the CHP.

As with the Project analyzed in the 2010 FEIR, the existing street grid provides ample access for emergency responders and egress for residents and workers, and the Project would neither directly nor indirectly alter that situation to any substantial degree. All new development at would be built to *San Francisco Fire Code* standards, which would help to minimize demand for future fire protection services. All development, including high-rise residential buildings up to forty stories, would meet standards for emergency access, sprinkler and other water systems, and other requirements specified in the *San Francisco Fire Code*. Standards pertaining to equipment access would also be met. Plan review for structures at CP for compliance with *San Francisco Fire Code* requirements, to be completed by DBI and the SFFD, would minimize fire-related emergency dispatches, reducing the demand for fire protection services at the Project site. Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Finally, for the reasons just set forth, the Project would not directly or indirectly result in any additional exposure of residents or workers to fire risk, as the Project site is in a fully urbanized area that lacks the "urban-wildland interface" that tends to place new development at risk in undeveloped areas of California. The Project would also include expansion of the Auxiliary Water Supply System (AWSS), to provide water for firefighting services. Expansion of the AWSS would make the Project site more defensible against fire and reduce the need for fire protection services. Therefore, the Project would not expose people or structures to a significant risk of loss, injury, or death involving fires.

Compliance with the *San Francisco Building Code* and *San Francisco Fire Code* through the City's ongoing permit review process would ensure that potential fire hazards related to redevelopment activities (including those associated with hillside development, hydrant water pressure, and emergency access) would be minimized during the permit review process and that future projects would not interfere with an existing emergency response or emergency evacuation plan. Therefore, this impact would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to hazards and hazardous materials impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as

compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to hazards and hazardous materials, either on a project-related or cumulative basis.

II.B.11 Geology and Soils

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
6.	**Geology and Soils.** Would the project:					
L.a	Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to California Geological Survey Special Publication 42) ii. Strong seismic groundshaking? iii. Seismic-related ground failure, including liquefaction? iv. Landslides?	2010 FEIR p. III.L-39 (Impact GE-4b), p. III.L-44 (Impact GE-5b), p. III.L-48 (Impact GE-6b), p. III.L-61 (Impact GE-12); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	MM GE-4a.1, MM GE-5a
L.b	Result in substantial soil erosion or the loss of topsoil?	2010 FEIR p. III.L-32 (Impact GE-1b); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	MM HY-1a.1
L.c	Be located on a geologic or soil unit that is unstable, or that would become unstable as a result of the Project, and potentially result in on-site or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	2010 FEIR p. III.L-34 (Impact GE-2b), p. III.L-49 (Impact GE-7b), p. III.L-51 (Impact GE-8b), p. III.L-54 (Impact GE-9b), p. III.L-61 (Impact GE-11b); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	MM GE-2a, MM GE-5a, MM GE-6a, MM GE-11a, MM HY-12a.1, MM HY-12a.2
L.d	Be located on expansive soil, as defined in Section 1802.3.2 of the 2007 SFBC, creating substantial risks to life or property?	2010 FEIR p. III.L-58 (Impact GE-10b); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	MM GE-10a

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
L.e	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	2010 FEIR p. III.L-62 (Impact GE-13); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	None
L.f	Change substantially the topography or any unique geologic or physical features of the site?	2010 FEIR p. III.L-62 (Impact GE-14); Addendum 1 p. 42; Addendum 4 p. 45	No	No	No	None

Changes to Project Related to Geology and Soils

The 2018 Modified Project Variant includes the following activities related to geology and soils:

- In areas of the site containing loose artificial fill with a greater risk of liquefaction and settlement, a range of ground improvement techniques could be used to densify the fill and reduce seismically induced settlement risk, including, but not limited to, deep dynamic compaction (DDC),[74] vibro-compaction, and stone columns, as described in 2010 FEIR mitigation measure MM GE-5a, as well as drilled displacement columns, vibro-densification, deep soil mixing (DSM), and grout columns.
- The use of locally excavated and imported fill to add 5 to 10 feet of additional fill over existing ground surface, raising the site grade such that finished floor elevations would be 5.5 feet above the Base Flood Elevation (BFE) (as compared to 3.5 feet as analyzed by the Project in the 2010 FEIR), to complete surcharging and ground improvement, to elevate the site in compliance with new requirements for SLR planning, and to provide the SFPUC with required freeboard and cover for utility systems.
- For HPS2, the use of a proposed ground source geothermal heating and cooling system that would require approximately 2,800 geothermal boreholes to meet heating and cooling demands. The boreholes would be located below parks and open space areas in the Warehouse neighborhood and would avoid other areas, as feasible, such as beneath public roads, State Trust lands, RAD restricted areas, and other areas of soil and groundwater contamination.
- For the 2018 Modified Project Variant, total excavation needed at the HPS2 site is estimated to be approximately 100,000 cubic yards (as compared to 82,500 cubic yards (cy) assumed for 2010 Project), with the increase primarily due to additional utility trenching, installation of the boreholes, and more-refined information regarding construction activities. Excavation

[74] DDC utilizes impact energy from a large weight free falling from a significant height to densify the ground. The weight is repeatedly dropped in a specific grid pattern at a defined drop height. At impact with the ground, energy is transmitted at depth to densify loose material.

associated with the boreholes would result in approximately 12,250 cy of soil, which would be reused on site in a manner consistent with the Soil Import Plan and Risk Management Plan.

- As with the 2010 Project, the 2018 Modified Project Variant would require up to 2,546,300 cy of imported fill for the developed areas and open space areas. Of this, up to 10,600 cy (590 dump truck loads) of sand would be imported to use as fill at the base of the trenches. Imported backfill sand would be screened for contaminants in accordance with the soil import criteria specified in the Risk Management Plan.

Various site-specific design-level geotechnical studies[75] of the Project site have been completed by ENGEO to address the 2018 Modified Project Variant. These studies include previous site-specific geotechnical investigations, subsurface exploration, geological mapping, review of aerial photographs, observation of existing soil conditions behind existing shoreline structures, and review of published geologic reports and maps. Descriptions of geologic conditions and evaluations of geotechnical risks pertinent to the planned development at the Project site are also discussed in these reports.

New Regulations

The following new regulations would apply to the analysis of geology and soils impacts.

California Building Code and the San Francisco Building Code. The 2016 *California Building Code* CBC, effective January 1, 2017, is based on the (2015) International Building Code (IBC).[76] San Francisco adopted the 2016 CBC as the basis for its Building Code through Ordinance No. 53-17, on March 17, 2017. The full 2016 San Francisco Building Code (SFBC) consists of the 2015 IBC, as amended by the 2016 CBC, and as further modified by San Francisco amendments designed to be used in conjunction with the 2016 CBC. The SFBC amendments were adopted by the Board of Supervisors on December 22, 2016, through Ordinances 225-16 and 226-16, effective January 1, 2017.

Comparative Impact Discussions

Impact GE-1b: Construction at HPS Phase II would not result in the loss of topsoil caused by soil erosion. ***[Criterion L.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR described the potential for the loss of topsoil caused by soil erosion at the HPS2 site, which would be controlled during and after Project construction through the requirements of mitigation measure MM HY-1a.1. Adverse effects on the soil, such as soil loss from wind erosion and stormwater runoff, would be avoided or reduced to less-than-significant levels.

[75] ENGEO, Inc., *Preliminary Geotechnical Report, Hunters Point Shipyard Phase II Infrastructure Improvements, San Francisco, California*, April 2017.
ENGEO, Inc., *Geotechnical Exploration and Shoreline Conditions Report, Hunters Point Shipyard Redevelopment – Phase II, San Francisco*, May 2017.
[76] California Building Standards Commission, *2016 California Building Code*, California Code of Regulations, Title 24, Part 2, Volumes 1 and 2, effective January 1, 2017.

Nothing has changed with the 2018 Modified Project Variant that would change this conclusion. With implementation of mitigation measure MM HY-1a.1, construction of the 2018 Modified Project Variant would not result in the loss of topsoil caused by soil erosion. The impact would remain less than significant (or would be avoided) with implementation of the identified mitigation measure.

Impact GE-2b: Construction at HPS Phase II would not result in damage to structures caused by settlement from lowering of groundwater levels. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR described how Project construction activities, including potential dewatering procedures during excavation, construction, and operation of foundations and buried utilities, have the potential to affect groundwater levels, and could cause settlement of adjacent soil that could damage the overlying foundations of existing buildings. San Francisco Building Code (SFBC) Section 1803.1, which requires that excavations for any purpose not remove support from adjacent or nearby structures without first protecting them against settlement or lateral movement, would be applicable. Implementation of mitigation measure MM GE-2a would ensure protection during dewatering where adjacent or nearby structures exist, and settlement hazards related to dewatering would be less than significant.

For the 2018 Modified Project Variant, construction activities would be similar, and the requirements of SFBC Section 1803.1 would continue to apply to dewatering activities. Operation of the geothermal system would not affect groundwater levels because it is a closed system that uses its own fluid and does not use or have a hydrological connection with groundwater. With implementation mitigation measure MM GE-2a, settlement hazards related to dewatering would remain less than significant.

Impact GE-4b: Implementation of the Project at HPS Phase II would not expose people and structures to substantial adverse effects caused by seismically induced groundshaking. ***[Criterion L.a(ii)]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR acknowledged the potential for exposure to adverse effects caused by seismically induced groundshaking to the development at the HPS2 site, due to active faults near the Project site. To address groundshaking, required design-level geotechnical investigations include site-specific seismic analyses to evaluate the peak ground accelerations for design of Project components, as required by Chapter 16 (Structural Design) and Chapter 18 (Soils and Foundations) of the SFBC. Accordingly, mitigation measure MM GE-4a.1 would be implemented for development of HPS2. Based on the seismic analyses, structure designs would be modified or strengthened and

constructed to the highest feasible seismic safety standards, consistent with the requirements of the SFBC, as deemed appropriate by the Project engineer and verified by the San Francisco Department of Building Inspection (DBI), if the anticipated seismic forces (calculated peak vertical and horizontal ground accelerations caused by groundshaking) were found to be greater than anticipated. Implementation of this mitigation measure would ensure that potential impacts from groundshaking would be less than significant.

The 2018 Modified Project Variant would not result in changes to the overall location of the HPS2 development, the overall extent of construction or operational activities, or the nature of the Project land uses. For the 2018 Modified Project Variant, nothing has changed with respect to the potential exposure to seismically induced groundshaking, and with adherence to SFBC design requirements and implementation of mitigation measure MM GE-4a.1, the potential impacts from groundshaking would remain less than significant.

Impact GE-5b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by seismically induced ground failure such as liquefaction, lateral spreading, and settlement. ***[Criterion L.a(iii)]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR acknowledged the potential for exposure of HPS2 structures to seismically induced ground failure, including liquefaction hazards, due to the existing geology of the site. Design and construction of the structures and facilities in the HPS2 site would incorporate appropriate engineering practices to ensure seismic stability, as required by Chapter 16 (Structural Design) and Chapter 18 (Soils and Foundations) of the SFBC.

The 2018 Modified Project Variant would not result in changes to the overall location of the HPS2 development, the overall extent of construction or operational activities, or the general mixed-use urban nature of the Project land uses. With the 2018 Modified Project Variant, HPS2 structures would be exposed to potential seismically induced ground failure, including liquefaction hazards. As with the Project analyzed by the 2010 FEIR, mitigation measures MM GE-4a.1 and MM GE-5a would ensure that the design and construction of the structures and facilities in the 2018 Modified Project Variant incorporates appropriate engineering practices to ensure seismic stability.

Mitigation measure MM GE-4a.1 would reduce impacts from liquefaction, lateral spreading, and settlement. If liquefaction estimates were such that MM GE-4a.1 would not address liquefaction and settlement-related impacts adequately, further mitigation would include one or more of the additional structural and/or ground-improvement procedures identified in mitigation measure MM GE-5a. Selection of the appropriate procedures would be dependent on the land use, development type, soil profile, and estimated settlement. Together, mitigation measures MM GE-4a.1 and MM GE-5a would reduce or avoid impacts related to seismically induced ground

failure such as liquefaction, lateral spreading, and/or settlement, reducing the impact to a less-than-significant level.

The 2018 Modified Project Variant may utilize DDC as a ground improvement technique for densifying the artificial fill at the site to reduce liquefaction risks, and in particular to provide sufficient treatment of the fill to allow mid-rise construction to be founded on a shallow foundation system as an alternative to deep foundation systems deriving support on deeper competent material. A full-scale test program[77] has been performed at the adjacent CP site that demonstrates DDC is an appropriate method for densifying the upper 20 to 30 feet of artificial fill across portions of the site to minimize liquefaction risks; a subsequent technical memo[78] indicates that findings from the CP study could be used as reference, but similar site-specific studies should be performed to determine the efficacy of DDC in reducing liquefaction risks at HPS2. The primary environmental impact associated with the use of DDC would be vibration-related impacts, which are addressed in Section II.B.8 (Noise and Vibration). The primary impacts related to the use of other ground improvement techniques, such as stone columns, grout columns, or drilled displacement columns, are similar to the impacts related to the installation of geothermal boreholes, which are addressed in Addendum 5 Section II.B.9 (Cultural Resources), Section II.B.10 (Hazards and Hazardous Materials), and Section II.B.11 (Geology and Soils).

The Site-Specific Geotechnical Investigation required by mitigation measure MM GE-5a would ensure that the selected ground improvement technique is appropriate for the site and would effectively minimize the impact of liquefaction, lateral spreading and seismic settlement hazards at CP and HPS2. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM GE-5a: Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement. Prior to issuance of building permits for the Project site:

- The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC), the Seismic Hazards Mapping Act, and requirements contained in CGS Special Publication 117A "Guidelines for Evaluating and Mitigating Seismic Hazards in California." In addition, all engineering practices, and analyses of structural design

[77] ENGEO, Inc., *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017.
[78] ENGEO, Inc., *Technical Memorandum to Daniel Hansen from Leroy Chan: Potential Constraints on Implementation of Deep Dynamic Compaction (DDC)*, December 14, 2017; revised December 21, 2017.

shall be consistent with SFBC standards to ensure seismic stability, including reduction of potential liquefaction hazards.

- DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific geotechnical investigations and the site-specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods.
- All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations.
- The site-specific Project plans shall incorporate the mitigation measures contained in the approved site-specific geotechnical reports to reduce liquefaction hazards. The engineering design techniques to reduce liquefaction hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval, including, but not necessarily limited to:

<u>Structural Measures</u>

- Construction of deep foundations, which transfer loads to competent strata beneath the zone susceptible to liquefaction, for shallow foundations
- Structural mat foundations to distribute concentrated load to prevent damage to structures

<u>Ground Improvement Measures</u>

- Additional over-excavation and replacement of unstable soil with engineering-compacted fill
- Dynamic compaction, such as Deep Dynamic Compaction (DDC) or Rapid Impact Compaction (RIC), to densify loose soils below the groundwater table
- Vibro-compaction, sometimes referred to as vibro-floatation, to densify loose soils below the groundwater table
- Stone columns to provide pore pressure dissipation pathways for soil, compact loose soil between columns, and provide additional bearing support beneath foundations
- Soil-cement columns to densify loose soils and provide additional bearing support beneath foundations
- <u>Deep displacement grout columns to densify loose soil and provide additional bearing support beneath foundations</u>
- The Project CEG or GE shall be responsible for ensuring compliance with these requirements.

Impact GE-6b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by seismically induced landslides. ***[Criterion L.a(iv)]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR concluded that there are no potential landslide hazards within the HPS2 site boundaries. Therefore, there would be no impact caused by seismically induced landslides.

The 2018 Modified Project Variant would not result in changes to the overall location of the HPS2 development, nor to the site boundaries. There would be no impact to the Project from seismically induced landslides.

Impact GE-7b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by shoreline instability. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR outlines the various repairs, improvements, and modifications at HPS2 that would be required to stabilize the shoreline and protect structures and facilities at HPS2 from the adverse effects caused by shoreline instability. To reduce the potential for a future rise in sea level that could adversely affect the Project site, the Project includes modification of the land surface through grading and the importation of fill. These modifications would raise the surface elevation by 36 inches above the 100-year base flood elevation and building finish floor elevations would be 6 inches above that (total of 42 inches above Base Flood Elevation) per mitigation measure MM HY-12a.1 to account for future SLR and include an adaptive management strategy that would provide further protection for future SLR up to 55 inches if this should become necessary.

Revised SLR estimates published in 2012 by the National Research Council (NRC)[79] have become what is currently considered by the regulatory community as the "best available science" for California. The NRC projections include forecasts (most likely estimates) and high estimates (assumed worst case) for 2030, 2050, and 2050. As such, NRC projections have been incorporated into specific guidance relating to accommodating SLR on waterfront project by the agencies having jurisdiction over the Project. As discussed under Impact HY-12b in the Hydrology and Water Quality section, the City of San Francisco in 2014 adopted new guidance[80] for incorporating SLR into the design and construction of new development, and the Bay Conservation and Development Commission (BCDC), which has jurisdiction over the coastal zone along the San Francisco Bay,

[79] National Research Council (2012). *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. Committee on Sea Level Rise in California, Oregon, and Washington*. Board on Earth Sciences and Resources and Ocean Studies Board, Division on Earth and Life Studies. The National Academies Press, Washington, D.C., 2012.
[80] San Francisco Sea Level Rise Committee. 2014. *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco – Assessing Vulnerability and Risk to Support Adaptation*. September 2014.

updated its San Francisco Bay Plan in 2011[81] with specific recommendations regarding hazard mapping, adaptive management and other SLR adaptation strategies.

The 2018 Modified Project Variant would continue to require improvements and modifications at HPS2 to stabilize the shoreline and protect structures and facilities at HPS2 from the adverse effects caused by shoreline instability, including modification of the land surface through grading and ground improvement to reduce the potential for shoreline instability to adversely affect the Project site. The Site-Specific Geotechnical Investigation required by mitigation measure MM GE-5a would ensure that Project plans and shoreline engineering practices are consistent with SFBC standards to ensure seismic shoreline stability. Selected ground improvement technique is appropriate for the site and would effectively mitigate the shoreline instability at HPS2 to a less-than-significant level.

In addition to the structural improvements to shoreline features, the 2018 Modified Project Variant includes elevating the site using locally excavated and imported of fill to reduce the potential for a future rise in sea level to adversely affect the Project site. These modifications would raise the finished floor elevation by 5.5 feet above BFE per mitigation measure MM HY-12a.1 to account for future SLR. Mitigation measure MM HY-12a.2 includes an adaptive management strategy for the shoreline areas, which have higher adaptive capacity and resilience compared to development areas, requiring setbacks to accommodate future SLR-related improvements, and assurances that that the shoreline protection system, storm drain system, public facilities, and public access improvements would be protected should SLR exceed 2 feet. Therefore, the 2018 Modified Project Variant would not result in exposure of structures and facilities at HPS2 to substantial adverse effects caused by shoreline instability. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

> **MM GE-5a, Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement**, is provided in full on p. 253 under Impact GE-5b.

Impact GE-8b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by landslides. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR identified the potential for exposure to adverse effects caused by landslides in the HPS2 site, in the upland areas of the shoreline where serpentinite is abundant in the shear zone. Implementation of mitigation measure MM GE-6a would ensure that risks to structures in HPS2 from landslides would be avoided or reduced a less-than-significant level.

[81] San Francisco Bay Conservation and Development Commission, *Living with a Rising Bay. Vulnerability and Adaptation in San Francisco Bay and on its Shoreline*, October 2011.

The 2018 Modified Project Variant would not result in changes to the overall location of the HPS2 development, nor to the site boundaries. Thus, the potential for exposure to adverse effects caused by landslides in the HPS2 site remains in the upland areas of the shoreline where serpentinite is abundant in the shear zone. With implementation of mitigation measure MM GE-6a, the risks to structures in HPS2 from landslides would be avoided or reduced. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact GE-9b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by damage from settlement. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As identified in the 2010 FEIR, the potential for exposure to adverse effects caused by settlement in the HPS2 site exists. Poorly consolidated artificial fill deposits are abundant in the HPS2 site. Slight to severe damage to structures could occur caused by the settlement of poorly compacted fill or consolidation of very soft natural deposits. The 2010 FEIR found that implementation of mitigation measure MM GE 5a would ensure Project compliance with the requirements of the SFBC and would ensure that potential impacts from unstable subsurface soils would be less than significant.

With the 2018 Modified Project Variant, in areas of the site containing loose artificial fill with a greater risk of settlement, a range of ground improvement techniques may be used to densify the fill and reduce seismically induced settlement risk, including but not limited to Deep Dynamic Compaction (DDC), Drilled Displacement Columns, Vibro-Compaction, Vibro-Densification, Deep Soil Mixing (DSM), Stone Columns, and Grout Columns. A full-scale test program (ENGEO 2017)[82] has been performed that demonstrates DDC is an appropriate method for densifying the upper 20 to 30 feet of artificial fill across some portions of the adjacent CP site to minimize liquefaction risks, and in particular to provide sufficient treatment of the fill to allow mid-rise construction to be founded on a shallow foundation system as an alternative to deep foundation systems deriving support on deeper competent material. A subsequent technical memo[83] recommends that findings from the CP study could be used as reference, but that site-specific studies should be performed to determine the efficacy of DDC for mitigating liquefaction risks at CP or HPS2.

The Site-Specific Geotechnical Investigation required by Mitigation Measure MM GE-5a would ensure that the selected ground improvement technique is appropriate for the site and would effectively mitigate the settlement hazards at CP and HPS2. The impact would remain less than significant with implementation of the identified mitigation measure.

---

[82] ENGEO, Inc., *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, August 10, 2017.
[83] ENGEO, Inc., *Technical Memorandum to Daniel Hansen from Leroy Chan: Potential Constraints on Implementation of Deep Dynamic Compaction (DDC)*, December 14, 2017; revised December 21, 2017.

Mitigation Measure with Proposed 2018 Modifications

MM GE-5a, Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement, is provided in full on p. 253 under Impact GE-5b.

Impact GE-10b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by expansive soils. ***[Criterion L.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

According to the 2010 FEIR, the HPS2 site has the potential to expose Project improvements to adverse effects caused by expansive soil, which could include damage to structures, foundations, and buried utilities and could increase required maintenance.

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, impacts related to expansive soil would be avoided or reduced a less-than-significant level for structures and facilities in the HPS2 site through the implementation of standard engineering and geotechnical practices for the identification and remediation of expansive soil, as required by Chapter 18 (Soils and Foundations) of the SFBC. Implementation of mitigation measure MM GE-10a would avoid or reduce the impact to structures and facilities at HPS2 from expansive soil. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact GE-11b: Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by corrosive soils. ***[Criterion L.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

According to the 2010 FEIR, structures at HPS2 could be exposed to corrosive soil hazards.

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, impacts related to corrosive soil would be less than significant for structures and facilities in the HPS2 site through the implementation of standard engineering and geotechnical practices for the identification and protection against corrosive soil, as required by Chapter 18 (Soils and Foundations) of the SFBC. Implementation of mitigation measure MM GE-11a would ensure compliance with the requirements of the SFBC and would avoid or reduce the impact on structures and facilities in HPS2. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact GE-12: Implementation of the Project would not expose people or structures to substantial adverse effects caused by surface fault rupture. ***[Criterion L.a(i)]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, fault rupture hazards in the Project site are unlikely. No known active faults cross the Project site, making hazards from fault rupture unlikely. Therefore, there would be no impact caused by surface fault rupture.

Impact GE-13: Implementation of the Project would not result in the use of soils incapable of adequately supporting septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. ***[Criterion L.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, the Project would be connected to the City's existing wastewater treatment and disposal system. Development of the Project would not involve the use of septic tanks or alternative wastewater disposal systems. No impact would occur.

Impact GE-14: Implementation of the Project would not result in a substantial change of topography or destruction of unique geologic features. ***[Criterion L.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

The 2010 FEIR acknowledged that the Project would alter the surface topography of the site including adding 3 feet of fill in some areas and would alter the shoreline with new seawalls or other shoreline protection. The 2010 FEIR concluded that these changes would not substantially change the site topography or affect unique geological features. To accommodate SLR and account for required cover over pipes as defined by the SFPUC and the CP-HP subdivision regulations, the 2018 Modified Project Variant would add from 5 to 15 feet of fill in some areas to raise the site from current levels by an average of about 4.25 feet across the graded areas, but would generally remain relatively flat.[84] Similar to the 2010 Project, the 2018 Modified Project Variant would not substantially change site topography or affect unique geologic features, and would have no impact on such features.

---

[84] As described in Impact GE-7b, the site must be raised to account for future sea level rise. MM HY-12a.1 (as modified per new guidance and regulation) requires that finished floor elevations be 5.5 feet above BFE.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to geology and soils impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to geology and soils, either on a project-related or cumulative basis.

II.B.12 Hydrology and Water Quality

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
9.	**Hydrology and Water Quality.** Would the Project:					
M.a	Violate any water quality standards or waste discharge requirements?	2010 FEIR p. III.M-66 (Impact HY-1b), p. III.M-84 (Impact HY-6b); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HZ-1a, MM HZ-1b, MM HZ-2a.1, MM HZ-5a, MM HZ-9, MM HZ-10b, MM HZ-12, MM HZ-15, MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM HY-6a.1, MM HY-6a.2, MM HY-6b.1, MM HY-6b.2, MM HY-6b.3, MM BI-4a.1, MM BI-4a.2, MM BI-5b.4, MM BI-12b.1, MM BI-12b.2, MM BI-18b.1, MM BI-18b.2, MM BI-19b.1, MM BI-19b.2,
M.b	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	2010 FEIR p. III.M-74 (Impact HY-2), p. III.M-93 (Impact HY-8); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	None

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
M.c	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on site or off site?	2010 FEIR p. III.M-75 (Impact HY-3), p. III.M-93 (Impact HY-9); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-6a.1
M.d	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site?	2010 FEIR p. III.M-75 (Impact HY-4), p. III.M-94 (Impact HY-10); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-1a.1, MM HY-1a.2, MM HY-1a.3, MM HY-6a.1
M.e	Create or contribute runoff water that would exceed the capacity of existing or planned storm sewer systems or provide substantial additional sources of polluted runoff?	2010 FEIR p. III.M-76 (Impact HY-5), p. III.M-96 (Impact HY-11); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-1a.2, MM HY-6a.1
M.f	Otherwise substantially degrade water quality?	2010 FEIR p. III.M-91 (Impact HY-7); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-6a.1, MM HY-6a.2, MM HY-6b.1
M.g	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	2010 FEIR p. III.M-101 (Impact HY-12b); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-12a.1, MM HY-12a.2
M.h	Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	2010 FEIR p. III.M-102 (Impact HY-13b); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-12a.2

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
M.i	Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	2010 FEIR p. III.M-103 (Impact HY-14); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	MM HY-14
M.j	Expose people or structures to inundation by seiche, tsunami, or mudflow?	2010 FEIR p. III.M-104 (Impact HY-15); Addendum 1 p. 43; Addendum 4 p. 46	No	No	No	None

Changes to Project Related to Hydrology and Water Quality

The 2018 Modified Project Variant includes the following activities related to hydrology and water quality:

- The use of a ground source geothermal heating and cooling system at HPS2 that would require approximately 2,800 geothermal boreholes to meet heating and cooling demands.
- Raising the HPS2 site to a higher base elevation than what was proposed for the Project analyzed in the 2010 FEIR, to reflect the most recent science and thinking for SLR planning and to provide the SFPUC with increased freeboard and cover for utility systems based on that science. For the 2018 Modified Project Variant, finished floor elevations would be 5.5 feet above the Base Flood Elevation (BFE), as compared to 3.5 feet as analyzed by the Project in the 2010 FEIR, using locally excavated and imported fill.

New Regulations

The following new regulations would apply to the analysis of hydrology and water quality impacts.

New Sea Level Rise Policies and Guidance. In 2012, the National Research Council's (NRC) published *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (the NRC Report), which provides a scientific review of SLR for the West Coast and provides the most recent regional SLR predictions for 2030, 2050, and 2100, relative to the year 2000 sea level.[85] In March 2013, the California Ocean Protection Council updated its 2010 Statewide SLR guidance to adopt the NRC Report as the current, best available science on SLR for California. The California Coastal Commission supports the use of the NRC Report as the best science currently available in its *Sea Level*

[85] National Research Council, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. Washington, DC: The National Academies Press, 2012. Available at https://www.nap.edu/catalog/13389/sea-level-rise-for-the-coasts-of-california-oregon-and-washington, accessed November 30, 2017.

Rise Policy Guidance, which it adopted in 2015.[86] The California Coastal Commission guidance emphasizes the importance of regularly updating SLR projections as the science continues to advance.[87] The San Francisco Bay Conservation and Development Commission (BCDC), which has jurisdiction over the coastal zone along the San Francisco Bay, also considers the NRC Report to be the best available science-based prediction of SLR for San Francisco Bay. Accordingly, the City of San Francisco Planning Department considers the NRC Report to be the best science currently available on SLR affecting San Francisco for both CEQA and planning purposes. In 2011, the BCDC updated its San Francisco Bay Plan[88] with specific recommendations regarding hazard mapping, adaptive management and other seal level rise (SLR) adaptation strategies. In 2014, the City of San Francisco adopted new guidance[89] for incorporating SLR into the design and construction of new development.

Stormwater Management Ordinance. In 2010, the San Francisco Board of Supervisors passed San Francisco's first SMO, which requires the installation and maintenance of stormwater management controls for development and redevelopment projects meeting specific area and project type criteria. The SMO requires stormwater management controls for new and redevelopment projects in both the City's separate and combined sewer areas. The SMO was updated in 2016 to comply with the 2013 MS4 Permit and to reflect improvements made in the City's stormwater management review processes since enactment of the SMO in 2010. The SMO provides the SFPUC and Port with the legal authority to implement the post-construction program outlined in the City's Stormwater Management Requirements and Design Guidelines.

San Francisco Public Works Code, Article 4.2 – Stormwater Management Requirements and Design Guidelines. This update to the 2010 San Francisco Stormwater Design Guidelines became effective on May 27, 2016. Development projects discharging stormwater to either the combined sewer system or a separate stormwater system must comply with San Francisco Public Works Code Article 4.2, Section 147. The SFPUC and the Port have developed the San Francisco Stormwater Management Requirements and Design Guidelines provide regulatory requirements for post-construction stormwater management controls for new and redevelopment projects and help design teams implement these stormwater controls in accordance with the requirements of the Small MS4 General Stormwater Permit and Article 4.2, Section 147.[90]

---

[86] Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), *State of California Sea-Level Rise Guidance Document.* Developed by CO-CAT, with science support provided by the Ocean Protection Council's Science Advisory Team and the California Ocean Science Trust, March 2013 Update (hereinafter "*State of California Sea-Level Rise Guidance Document*"). Available at http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf, accessed November 30, 2017.

[87] California Coastal Commission, *Sea Level Rise Policy Guidance, Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits*, Unanimously Adopted August 12, 2015. Available at http://documents.coastal.ca.gov/assets/slr/guidance/August2015/0_Full_Adopted_Sea_Level_Rise_Policy_Guidance.pdf, accessed November 30, 2017.

[88] San Francisco Bay Conservation and Development Commission, *Living with a Rising Bay. Vulnerability and Adaptation in San Francisco Bay and on its Shoreline*, October 2011.

[89] San Francisco Sea Level Rise Committee, *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco – Assessing Vulnerability and Risk to Support Adaptation*, September 2014.

[90] SFPUC and Port of San Francisco, *San Francisco Stormwater Management Requirements and Design Guidelines*, April 2016.

Green Building Ordinance (City and County of San Francisco Building Code Chapter 13C). In November 2008, the City passed the San Francisco Green Building Ordinance (SFGBO), which is included as *San Francisco Building Code* Chapter 13C. In 2013, the SFGBO was amended to incorporate all mandatory elements of the 2013 CALGreen and Title 24 energy-efficiency standards and require green building practices and Leadership in Energy and Environmental Design (LEED) certification for all new residential and commercial construction in the city, unless otherwise indicated in the SFGBO, as well as alterations to existing buildings. The *Green Building Code* was last amended in April 2016, removing all references to LEED regarding stormwater management while incorporating new requirements established by the San Francisco Stormwater Management Requirements and Design Guidelines.

Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard. These regulations were adopted by the San Francisco Department of Public Works in June 2014 pursuant to the Subdivision Code Section 1611, together with Public Works Code Sections 147.2(b)(2) and 1204(b)(2) to serve as general guidelines for the planning, development, design and improvement of the Candlestick Point/Hunters Point Shipyard development. Specific requirements for SLR planning are included as Attachment 4.

Comparative Impact Discussions

Impact HY-1b: Construction at HPS Phase II would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements. ***[Criterion M.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that construction activities at HPS2 would not exceed water quality standards or contribute to or cause a violation of waste discharge requirements, with the implementation of mitigation measures MM HY-1a.1 (SWPPP—Combined Sewer System), MM HY-1a.2 (SWPPP—Separate Storm Sewer System), MM HZ-1a (Article 22 Site Mitigation Plan), MM HZ-2a.1 (Unknown Contaminant Contingency Plan), MM HY-1a.3 (Groundwater Dewatering Plan), MM HZ-5a (Foundation Support Piles Installation Plan), MM HZ-10b (Regulatory Agency Approved Workplans and Permits for Shoreline Improvements), MM HZ-12 (Compliance with Administrative Order of Consent at Early Transferred Parcels), MM HZ-15 (Asbestos Dust Mitigation and Control Plans), MM BI-4a.1 (Wetlands and Jurisdictional/Regulated Waters Mitigation for Temporary and/or Permanent Impacts), MM BI-4a.2 (Wetlands and Jurisdictional/Regulated Waters Impact Minimization for Construction-Related Impacts); MM BI-5b.4 (Eelgrass Water Quality BMPs); MM BI-12b.1 (Essential Fish Habitat Avoidance and Minimization Measures) and MM BI-12b.2 (Deconstruction/Construction Debris Recovery). All of the mitigation measures referenced in the hydrology section of the 2010 FEIR would ensure that water quality standards would not be exceeded nor would construction at HPS2 cause or contribute to a violation of the applicable waste discharge requirements (WDRs). A less-than-significant impact would result.

The 2018 Modified Project Variant would not result in any significant changes to the location of the Project and the extent of construction activities. Development would continue to occur on the same areas of the site analyzed for development in the 2010 FEIR. The installation of the geothermal wells using the mud rotary method would not require dewatering and would present little opportunity for impacting water quality. Once each borehole is completed, the drilling fluid would be removed and disposed of off site at a landfill. The drilling process would fall under the SWPPP measures but no groundwater dewatering plan would be required.

There are no changed circumstances or new information regarding the 2018 Modified Project Variant that would result in any different conclusions than those reached in the 2010 FEIR regarding the violation of water quality standards or waste discharge requirements. The 2010 FEIR mitigation measures and compliance with the regulatory requirements for water quality, runoff control, and stormwater management would continue to ensure that Project impacts are mitigated in accordance with the 2010 FEIR analysis and conclusions. Therefore, the 2018 Modified Project Variant would not result in new significant impacts or a substantial increase in the severity of previously identified impacts with respect to water quality standards or waste discharge requirements. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact HY-2: Construction activities associated with the Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.
[Criterion M.b]

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR noted that groundwater would not be used for any construction activities such as dust control or irrigation of vegetated erosion control features; no groundwater wells would be developed as part of the Project and no on-site groundwater wells would be used for water supplies. Short-term construction groundwater dewatering would perhaps be necessary at certain locations (e.g., for installation of building foundations or underground utilities), but dewatering would have only a minor temporary effect on the groundwater table elevation in the immediate vicinity of the activity, and would not measurably affect groundwater supplies. Further, the shallow groundwater underlying the Project site at HPS2 is not used for water supply. Construction activities would generally occur within areas that are already developed, and much of the existing open space would remain undeveloped and continue to contribute to groundwater recharge. Construction of the Project would include installation and operation of groundwater remediation and monitoring wells, as required by Navy transfer documents and regulatory requirements (as discussed in 2010 FEIR Section III.K). The 2010 FEIR concluded that construction at the Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, and this impact would be less than significant.

For the 2018 Modified Project Variant, the installation of the geothermal wells using the mud rotary method would not require dewatering and thus would not impact groundwater levels. The impact would remain less than significant, and no mitigation would be required.

Impact HY-3: Construction activities associated with the Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site. ***[Criterion M.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that construction at the Project site would not substantially alter the existing drainage pattern of the site or area such that on- or off-site erosion is substantially increased and this impact would be less than significant.

As with the Project analyzed in the 2010 FEIR, stormwater associated with the 2018 Modified Project Variant either drains to storm drains (which include both combined and separate systems), or drains directly to the Bay via surface runoff (generally only along the shoreline). The existing drainage patterns would be generally preserved, with locally modified drainage patterns within the affected area due to the raising of ground elevation to protect the area from a potential rise in sea level. As with the Project analyzed in the 2010 FEIR, most of the affected area is already drained by sewer systems (combined and separate), and would continue to drain to a newly constructed entirely separate storm sewer systems, this would not result in a substantial alteration of drainage patterns related to erosion potential. Construction at the Project site would not substantially alter the existing drainage pattern of the site or area such that on- or off-site erosion would substantially increase. The impact would remain less than significant, and no mitigation would be required.

Impact HY-4: Construction activities associated with the Project would not substantially alter the existing drainage pattern of the site, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site. ***[Criterion M.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR notes that no streams or rivers exist within the Project site, and thus, no streams or rivers would be altered by construction activity. The amount of impervious area would not increase; impervious areas would be removed and/or replaced and the Project site would generally be graded flat (0.1 to 0.5 percent grade), resulting in no increase in stormwater runoff during construction. As discussed in the 2010 FEIR under Impact HY-3, construction activities at the Project site would not substantially alter existing drainage patterns causing or contributing to increased stormwater runoff.

Construction would include clearance, grading, and excavation, and the subsequent construction of new buildings and infrastructure. With implementation of mitigation measures MM HY-1a.1 and MM HY-1a.2 (preparation of a SWPPP with BMPs to collect, retain as appropriate, and discharge stormwater runoff), and MM HY-1a.3 (Construction Dewatering Plan), construction of the Project would not substantially alter the existing drainage pattern of the site or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site, and this impact would remain less than significant.

With the 2018 Modified Project Variant nothing has changed with respect to construction that would alter the existing drainage pattern of the site or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site, and with implementation of mitigation measures MM HY-1a.1, MM HY-1a.2, and MM HY-1a.3, this impact would remain less than significant.

Impact HY-5: Construction activities associated with the Project would not create or contribute runoff water that would exceed the capacity of existing or planned storm sewer systems or provide substantial additional sources of polluted runoff. ***[Criterion M.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, management of runoff within portions of the Project site affected by construction activity discharging directly to the Bay or to a separate storm drain system would be governed by the conditions of a Stormwater Pollution Prevention Plan (SWPPP) developed per Construction General Permit requirements, as required by mitigation measure MM HY-1a.2, which would include measures to collect, retain, and discharge runoff in ways that do not overwhelm the capacity of existing downstream drainage facilities. Management of runoff from areas draining to the combined sewer system would be governed by conditions of a SWPPP with an Erosion and Sediment Control Plan (ESCP), developed per SFPUC requirements.

As described in the 2010 FEIR for Impact HY-1, dewatering to the combined sewer system would require a Batch Wastewater Discharge Permit from the SFPUC. This remains true for the 2018 Modified Project Variant. Permit conditions are specified by the SFPUC to prevent violation of the SFPUC's Wastewater Discharge Permit, including conveyance capacity constraints and effluent limits. Dewatering discharges to the separate sewer system would be governed by conditions of the Construction General Permits, other general permits, or an individual NPDES Permit/WDR, as specified by the SFRWQCB. This remains true for the 2018 Modified Project Variant.

As discussed in the 2010 FEIR for Impacts HY-3 and HY-4, construction of the Project would not be expected to greatly alter Project site drainage such that stormwater runoff is increased. This remains true for the 2018 Modified Project Variant. During construction, existing stormwater drainage facilities would be replaced by new, entirely separate sewer systems that would collect and treat site

stormwater flows. This new storm drain system would be designed and sized in accordance with the Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard and would also be sized to accommodate 5-year storm event flows from upstream contributing areas (HPS1). In accordance with City design criteria, the newly piped storm drain system would be sized to convey the 5-year storm event when flowing full or surcharged (overloaded/flooded) and runoff from the 5-year storm event up to the 100-year storm event would be contained within the streets and drainage channels rights-of-way.

Impacts associated with additional sources of polluted runoff are addressed by the 2010 FEIR in Impact HY-1. As discussed under Impact HY-1, implementation of mitigation measures would reduce potential for construction activities to generate additional sources of polluted runoff to a less-than-significant level. The impact would remain less than significant with implementation of the identified mitigation measure.

Impact HY-6b: Implementation of the Project at HPS Phase II would not contribute to violations of water quality standards or waste discharge requirements. ***[Criterion M.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that development at HPS2 would not exceed water quality standards or contribute to or cause a violation of waste discharge requirements, with the implementation of mitigation measures MM HY-6a.1 (Regulatory Stormwater Requirements as modified to reflect new regulations), MM HY-6a.2 (Recycled Water Irrigation Requirements), MM HY-6b.1 Limitations on Stormwater Infiltration), MM HY-6b.3 (Clean Marinas California Program), MM HZ-1b (Compliance with Requirements Imposed by Cleanup Decision Documents and Property Transfer Documents), MM HZ-2a.1 (Unknown Contaminant Contingency Plan), MM HZ-5a (Foundation Support Piles Installation Plan), MM HZ-9 (Navy-approved workplans for construction and remediation activities on Navy-owned property), MM HZ-10b (Regulatory Agency Approved Workplans and Permits for Shoreline Improvements), MM HZ-12 (Compliance with Administrative Order of Consent at Early Transferred Parcels), MM HZ-15 (Asbestos Dust Mitigation and Control Plans), MM BI-18b.1 (Maintenance Dredging and Turbidity Minimization Measures for the Operation of the Marina), MM BI-18b.2 (Implement BMPs to Reduce Impacts of Dredging to Water Quality), MM BI-19b.1 (Work Windows to Reduce Maintenance Dredging Impacts to Fish during Operation of the Marina), and MM BI-19b.2 (Implement BMPs to Reduce Impacts of Dredging to Water Quality). These mitigation measures would ensure that water quality standards would not be violated nor would development at HPS2 cause or contribute to a violation of the applicable waste discharge requirements (WDRs). A less-than-significant impact would result.

The Project analyzed by the 2010 FEIR would remove existing buildings and other improvements at HPS2 that contain approximately 327 acres of impervious surfaces and replace them with approximately 214 acres of impervious surfaces, thereby reducing the total area of impervious cover

at HPS2 by approximately 35 percent. The 2018 Modified Project Variant would include approximately 230 acres of impervious surfaces, reducing the total impervious area by approximately 30 percent. As with the original Project analyzed in the 2010 FEIR, the reduction of impervious surfaces with implementation of the 2018 Modified Project Variant would reduce the volume of stormwater runoff from the HPS2 area and the extent of impervious area that could contribute pollutants in runoff. In addition, as with the Project as analyzed by the 2010 FEIR in Table III.M-4 (Estimated Change in Annual Pollutant Loads from HPS Phase II without BMPs), the change in land use with the 2018 Modified Project Variant, combined with the reduction in impervious surface, would result in a net decrease in the total pollutants loads in stormwater runoff. The implementation of required stormwater treatment BMPs would further reduce pollutant loads in stormwater runoff.

Plans for the 2018 Modified Project Variant reflect the current regulations, including the San Francisco Stormwater Management Requirements and Design Guidelines (SMR) and the Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard that were issued since the 2010 FEIR was certified. MM HY-6a.1 has been modified by Addendum 5 to reflect the new regulations in the 2016 SMR. The rest of the 2010 FEIR mitigation measures would apply to the 2018 Modified Project Variant, to ensure that Project impacts are mitigated in accordance with the 2010 FEIR analysis and conclusions. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM HY-6a.1: Regulatory Stormwater Requirements. The Project Applicant shall comply with requirements of the Municipal Stormwater General Permit and associated City SWMP, appropriate performance standards established in the Green Building Ordinance, and performance standards established by the SFPUC in the San Francisco Stormwater Management Requirements and Design Guidelines (SMR).

The ~~Draft San Francisco Stormwater Design Guidelines have been developed to satisfy the Municipal Stormwater General Permit requirements for new development and redevelopment projects in areas served by separate storm sewers, and are expected to be adopted by December 2009~~ SMR includes regulatory requirements for post-construction stormwater management controls for new and redevelopment projects and helps design teams implement these stormwater controls. The Project Applicant shall comply with requirements of the ~~Draft San Francisco Stormwater Design Guidelines~~ SMR. ~~Upon adoption of the Final Stormwater Design Guidelines, the Project shall comply with the Final San Francisco Stormwater Design Guidelines unless discretionary permits have been approved.~~

Per the ~~Draft San Francisco Stormwater Design Guidelines~~ SMR, the Project Applicant shall submit a Stormwater Control Plan (SCP) to the SFPUC, as part of the development application submitted for approval. The SCP shall demonstrate how the following measures would be incorporated into the Project:

- Low impact development site design principles (e.g., preserving natural drainage channels, treating stormwater runoff at its source rather than in downstream centralized controls)
- Source control BMPs in the form of design standards and structural features for the following areas, as applicable:
  - Commercial areas
  - Restaurants
  - Retail gasoline outlets
  - Automotive repair shops
  - Parking lots
- Source control BMPs for landscaped areas shall be documented in the form of a Landscape Management Plan that relies on Integrated Pest Management[91] and also includes pesticide and fertilizer application guidelines.
- Treatment control measures (e.g., bioretention, porous pavement, vegetated swales) targeting the Project-specific COCs: sediment, pathogens, metals, nutrients (nitrogen and phosphorus compounds), oxygen-demanding substances, organic compounds (e.g., PCBs, pesticides), oil and grease, and trash and debris. The SCP shall demonstrate that the Project has the land area available to support the proposed BMP facilities sized per the required water quality design storm. Volume-based BMPs shall be sized to treat runoff resulting from 0.75 inch of rainfall ~~(LEED® SS6.2)~~, and flow-based BMPs shall be sized to treat runoff resulting from a rainfall intensity of 0.2~~1~~4 inch per hour. Treatment trains shall be used where feasible.

Additional requirements:

- ~~LEED® SS6.2: BMPs used to treat runoff shall be designed to remove 80 percent of the average annual post-development total suspended solids loads. BMPs are considered to meet these criteria if they are designed in accordance with SFPUC requirements.~~
- The SCP shall include an Operations and Maintenance Plan that demonstrates how the treatment control BMPs would be maintained in the long term, what entities would be responsible for BMP maintenance within the public and private rights-of-way, funding mechanisms, and what mechanisms would be used to formalize maintenance and access agreements.
- The Project Applicant shall also prepare a Stormwater Drainage Master Plan (SDMP) for approval by the SFPUC. The SDMP shall include plans for the storm drain infrastructure and plans for stormwater management controls (e.g., vegetated swales, dry wells). The storm drain infrastructure shall illustrate conveyance of the 5-year

[91] IPM is a strategy that focuses on long-term prevention or suppression of pest problems (i.e., insects, diseases and weeds) through a combination of techniques including: using pest-resistant plants; biological controls; cultural practices; habitat modification; and the judicious use of pesticides according to treatment thresholds, when monitoring indicates pesticides are needed because pest populations exceed established thresholds.

storm event in a separate storm drain piped system, and conveyance of the 100-year storm event in the street and drainage channel rights-of-way.

Impact HY-7: Implementation of the Project would not otherwise degrade water quality. ***[Criterion M.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

For the 2018 Modified Project Variant, as with the Project analyzed by the 2010 FEIR, implementation of mitigation measure MM HY-6a.1 (as modified to reflect new regulations including compliance with San Francisco Stormwater Management Requirements and Design Guidelines) would result in BMPs designed to treat stormwater runoff for nitrogen compounds. In addition, mitigation measure MM HY-6b.1 would prohibit infiltration BMPs at HPS2 and further reduce the potential for nitrate and TDS degradation of groundwater quality underlying HPS2. Implementation of mitigation measure MM HY-6a.2 would ensure compliance with the Recycled Water General Permit, resulting in application rates that do not exceed agronomic requirements. As such, the potential for recycled water, and associated nitrates and TDS, leaching to groundwater is minimized. Compliance with these mitigation measures would reduce the potential for nitrogen and salt migration to groundwater and Project degradation of groundwater quality. The impact would remain less than signification with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM HY-6a.1, Regulatory Stormwater Requirements, is provided in full on p. 270 under Impact HY-6b.

Impact HY-8: Implementation of the Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. ***[Criterion M.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed by the 2010 FEIR, the 2018 Modified Project Variant would not use groundwater as a source of water supply, and would, therefore, not deplete groundwater supplies. As described under Impact HY-6b, the 2018 Modified Project Variant would reduce the total impervious area at HPS2 by approximately 30 percent which could increase infiltration (via natural percolation of rainfall, as stormwater infiltration BMPs would be prohibited by mitigation measure HY-6b.1). Development associated with the 2018 Modified Project Variant would not interfere with groundwater recharge or substantially deplete groundwater supplies; thus, no impact would occur.

Impact HY-9: Implementation of the Project would not alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, and would not result in substantial erosion or siltation on site or off site. ***[Criterion M.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed above in constructions impacts (i.e., Impact HY-4), there are no streams or rivers within the Project site, and grading associated with the 2018 Modified Project Variant would not substantially alter the drainage pattern of the site. The Project site would discharge to a separated storm drain sewer system or the Lower Bay, rather than surface water bodies susceptible to erosion and siltation. In addition, implementation of mitigation measure MM HY-6a.1 (as modified to reflect new regulations) would require preparation of an SCP to control post-construction erosion that incorporates erosion and sediment transport control BMPs. The impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM HY-6a.1, Regulatory Stormwater Requirements**, is provided in full on p. 270 under Impact HY-6b.

Impact HY-10: Implementation of the Project would not alter the existing drainage pattern of the site, through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff, and would not result in flooding on site or off site. ***[Criterion M.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As described under Impact HY-6b, the 2018 Modified Project Variant would reduce the total impervious area at HPS2 by approximately 30 percent which could increase infiltration (via natural percolation of rainfall, as stormwater infiltration BMPs would be prohibited by mitigation measure MM HY-6b.1). Due to the increase in permeable surface area, infiltration would be expected to increase, resulting in a corresponding decrease in runoff volumes. As with the Project analyzed in the 2010 FEIR, grading would reduce slopes at HPS2, slowing runoff rates.

Table 22 (Estimated Stormwater Peak Flow Rates and Runoff Volumes without BMPs) lists the estimated Project site stormwater runoff flow rates for existing and 2018 Modified Project Variant conditions, calculated using the Rational Method and the same assumptions used in the 2010 FEIR.[92]

[92] City and County of San Francisco, Bureau of Engineering, Department of Public Works, Subdivision Regulations, for the Information and Guidance of all Subdividers, Engineers and Surveyors with reference to the Subdivision of Land within the City and County of San Francisco and to Supplement the Subdivision Code, January 6, 1982.

TABLE 22 ESTIMATED STORMWATER PEAK FLOW RATES AND RUNOFF VOLUMES WITHOUT BMPS

Storm Event	Existing (2010) (cfs)[b]	2010 Project (cfs)	2018 Modified Project Variant (cfs)[c]	Increase (Existing over 2018 Modified Project Variant)[a]		Increase (Existing over 2010 Project)	
				(cfs)	(%)	(cfs)	(%)
Hunters Point Shipyard[d]							
5-Year	644	448	360	-286	-44%	-196	-30%
10-Year	730	509	509	-221	-30%	-221	-30%
100-Year	1,052	733	676	-376	-36%	-319	-30%
2-year 24-hour (acre-feet)							
HPS2	64	39	39	-24	-38%	-24	-38%

SOURCE: PBS&J, 2009; BKF, 2017.

a. A negative number denotes a reduction in Project flow rates compared to existing conditions.

b. Existing flows are based on 72 percent impervious surfaces (505.3 acres).

c. Project flows are based on 54 percent impervious surfaces (379.1 acres).

d. Off-site flow from HPS1 is not included in these runoff calculations. Required HPS1 diversions into the HPS2 separate stormwater sewer system would be 108 cfs.

As demonstrated in Table 22, the runoff peak flow rates from the Project site would be reduced by 44 percent for a 5-year storm, 30 percent for a 10-year storm, and 36 percent for a 100-year storm. Although these calculations are based on estimated site characteristics, it is not likely that more detailed data would indicate a substantially lower peak flow rates. Table 22 also shows that runoff volumes from the 2-year 24-hour storm (i.e., frequently occurring storms) would be reduced by implementation of the Project, which would also reduce flooding impacts.

As discussed in Impact HY-6a, p. III.M-114, the Project Sponsor has developed an LID Study,[93] which identifies concepts for how the development could integrate stormwater volume reduction and treatment control measures. In addition, the SFPUC would require preparation of an SDMP and an SCP for the Project that would ensure that this impact would remain less than significant.

Mitigation Measure with Proposed 2018 Modifications

MM HY-6a.1, Regulatory Stormwater Requirements, is provided in full on p. 270 under Impact HY-6b.

Impact HY-11: Implementation of the Project would not create or contribute runoff water that would exceed the capacity of existing or planned storm sewer systems or provide substantial additional sources of polluted runoff. ***[Criterion M.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed by the 2010 FEIR, a new separate storm drainage system would be constructed for the 2018 Modified Project Variant in accordance with the design standards and

[93] Arup North America, Ltd. and Lennar Urban, *Candlestick Point/Hunters Point Shipyard LID Stormwater Opportunities Study*, June 2009. Copies of these documents are on file for public review at the San Francisco Redevelopment Agency, One South Van Ness Avenue, Fifth Floor as part of File No. ER06.05.07, or at the Planning Department, 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103 as part of File No. 2007.0946E.

criteria issued by the SFPUC and criteria in the 2014 CP-HP Subdivision Regulations.[94] As discussed in Impact HY-10, above, overall Project site development would result in a reduction in peak storm flows and would also reduce runoff volumes from frequently occurring storms. Implementation of mitigation measure MM HY-6a.1 and compliance with stormwater drainage capacity design criteria would ensure that impacts related to exceeding the capacity of the storm sewer system would remain less than significant.

Mitigation Measure with Proposed 2018 Modifications

MM HY-6a.1, Regulatory Stormwater Requirements, is provided in full on p. 270 under Impact HY-6b.

Impact HY-12b: Implementation of the Project at HPS Phase II would not place housing in a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. ***[Criterion M.g]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR indicated that portions of the Project would fall within a Special Flood Hazard Area (SFHA)[95] and that housing could be located in an area subject to flooding if the rate of SLR were to exceed the 36 inches that served at the time as the basis for Project grading plans and fill elevations, and no improvements were to be made along the shoreline.

For the 2010 FEIR, a project-specific SLR study was undertaken[96] to develop planning and design guidance through the various phases of the project, based on the then most current and relevant information and guidance available regarding SLR, and knowledge of coastal processes of San Francisco Bay. For building structures, a 36-inch SLR allowance plus a freeboard of 6 inches was selected as the design criteria to use for design and construction, based on a conservative rate of SLR of 36 inches over the next 50 years (Rahmstorf 2007,[97] which includes ice-cap melt estimate) that was not expected to occur until about 2080,[98] which would be approximately 50 years beyond the last phase of construction for the project.

Mitigation measure MM HY-12a.1 required that all finished grade elevations in development areas would be 3.5 feet above the Base Flood Elevation (BFE), and streets and pads would be 3 feet above BFE to allow for future SLR, thereby elevating all housing and structures above the existing and potential future flood hazard area. MM HY-12a.1 also required the Project Applicant to request revision of the

---

[94] City and County of San Francisco, Bureau of Engineering, Department of Public Works, January 6, 1982, op. cit.
[95] Term used by FEMA to refer to the portion of a floodplain or coastal area that is at risk from a 100-year flood
[96] Moffatt & Nichol, *Hunters Point Shoreline Structures Assessment*, October 2009.
[97] Rahmstorf, S., A. Cazenave, J.A. Church, J.E. Hansen, R.F. Keeling, D.E. Parker, and R.C.J. Somerville, 2007. Recent Climate Observations Compared to Projections. *Science* 316, p. 709.
[98] Moffatt & Nichol, *Candlestick Point/Hunters Point Development Project Initial Shoreline Assessment*, prepared for Lennar Urban, February 2009, op. cit.

San Francisco Interim Floodplain Maps (FIRMs), if adopted prior to Project implementation, to reflect new fill. Implementation of mitigation measure MM HY-12a.1 would ensure that impacts associated with construction of housing within a 100-year flood hazard area, as designated on a flood hazard delineation map, would be less than significant.

Mitigation measure MM HY-12a.2 required that shoreline and public access areas, which have higher adaptive capacity and resilience compared to development areas, be designed to incorporate setbacks to accommodate future SLR-related improvements. MM HY-12a.2 required that an interim SLR estimate for the year 2050 (16 inches, as put forth by BCDC and the State Coastal Conservancy[99]) be used as the design criteria for construction of shoreline areas, to ensure that adaptive management construction activities would not be triggered until the year 2050. The 2010 FEIR considered MM HY-12a.2 adequate in terms of ensuring that the storm drain system could function as a gravity-drained system up to at least the year 2050 and not require any management action until that point in time.

The 2010 FEIR found that with implementation of mitigation measure MM HY-12a.2, impacts pertaining to the placement of housing within a potential future mapped flood hazard area would be less than significant.

For the 2018 Modified Project Variant, portions of the Project would still fall within an SFHA, and housing could still be located in an area subject to flooding due to SLR based on the revised SLR estimates published in 2012 by the NRC that have become what is considered by the regulatory community as the "best available science" for California. As described above under "New Regulations," the NRC projections have been incorporated into specific requirements and guidance relating to accommodating SLR on waterfront projects by the agencies having jurisdiction over the Project.

The 2018 Modified Project Variant would still require improvements and modifications at HPS2 that protect against SLR, including raising the base elevation of the Project site. For development areas in the 2018 Modified Project Variant, mitigation measure MM HY-12a.1 has been modified by Addendum 5 to reflect the "worst-case" NRC SLR estimate for 2100 (66 inches) and the new requirements and guidance from the City of San Francisco and BCDC. For protecting the perimeter of the HPS2 site and adjacent open space (shoreline areas), which have higher adaptive capacity and resilience compared to development areas, mitigation measure MM HY-12a.2 has been modified by Addendum 5 to accommodate NRC's "worst-case" SLR forecast for 2050 (24 inches).

Mitigation measure MM HY-12a.1 requires Project finished grade elevations to be above the base flood elevation (BFE) accounting for future SLR. Mitigation measure MM HY-12a.2 requires that shoreline and public access improvements be designed to incorporate setbacks to accommodate SLR-related improvements. With implementation of these mitigation measures, impacts pertaining

[99] California State Coastal Conservancy. 2009. *Policy Statement on Climate Change*. Adopted at the June 4, 2009 Board Meeting. http://www.scc.ca.gov/index.php?p=75&more=1.

to the placement of housing within a potential future mapped flood hazard area would remain less than significant.

Mitigation Measures with Proposed 2018 Modifications

MM HY-12a.1: Finished Grade Elevations Above Base Flood Elevation. The Project site shall be graded such that finished floor elevations are a minimum of ~~3~~5.5 feet above the Base Flood Elevation (BFE)~~, and streets and pads are 3 feet above BFE~~ to ~~allow for~~ accommodate worst-case, future sea level rise projections for the end of the century, thereby elevating all housing and structures above the existing and potential future flood hazard area. If the FIRM for San Francisco is not finalized prior to implementation of the Project, the Project Applicant shall work with the City Surveyor or other applicable City department to revise the City's Interim Floodplain Map, as needed. If the FIRM for San Francisco is finalized prior to implementation of the Project, the Project Applicant shall request that the Office of the City Administrator (Floodplain Manager) request a Letter of Map Revision based on Fill (LOMR-F) from FEMA that places the Project outside a SFHA and requires that the FIRM is updated by FEMA to reflect revised regulatory floodplain designations.

MM HY-12a.2: Shoreline Improvements for Future Sea-Level Rise. Shoreline and public access improvements shall be designed to allow for future ~~increases in elevation~~ sea level rise above the Base Flood Elevation (BFE) that includes wave run-up (often called Total Water Level [TWL]) along the shoreline. In addition, adequate horizontal setback shall be provided to allow future increases in elevation along the shoreline edge to keep up with higher sea level rise values, should they occur. Design elements shall include providing adequate setbacks to allow for future elevation increases ~~of at least 3 feet from the existing elevation along the shoreline~~ in response to up to 5.5 feet of sea level rise above the TWL, which is projected as the worst-case estimate at the end of the century. Before the first Small Lot Final Map is approved, the Project Applicant must petition the appropriate governing body to form (or annex into if appropriate) and administer a special assessment district or other funding mechanism to finance and construct future improvements necessary to ensure that the shoreline protection system, storm drain system, public facilities, and public access improvements will be protected should sea level rise exceed ~~16 inches at the perimeter of the Project~~ 2 feet. Prior to the sale of the first residential unit within the Project, the legislative body shall have acted upon the petition to include the property within the district boundary. The newly formed district shall also administer a Monitoring and Adaptive Management Plan to monitor sea level and implement and maintain the protective improvements.

Impact HY-13b: Implementation of the Project at HPS Phase II would not place structures within a 100-year flood hazard area or impede or redirect flood flows. ***[Criterion M.h]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR indicated that development at HPS2 could place structures within a SFHA (Zone A) according to the Preliminary FIRM for the San Francisco, but that structures within Zone A that do

not fall within a designated floodway would not be expected to impede or redirect flood flows. The 2010 FEIR also indicated that development at HPS2 would place structures, including the marina and the shoreline improvements, within a Zone V SFHA, according to the preliminary FIRM for San Francisco. The 2010 FEIR identified shoreline improvements that would be initially designed and constructed to accommodate a 16-inch increase in SLR, with an adaptive management approach to accommodate greater SLR increases should they occur, as required by mitigation measure MM HY-12a.2. The shoreline design for SLR, as well as the development setback from the shoreline required by MM HY-12a.2, would protect the site against coastal flooding hazards including high-velocity wave forces that could impede flood flows or cause flood flows to be directed to any portions of the site including open space or developed areas. Implementation of MM HY-12a.2 would reduce the impacts of placing structures in a Zone V SFHA to a less-than-significant level.

For the 2018 Modified Project Variant, structures would still fall within a SFHA (Zone AE) according to the Preliminary FIRM for San Francisco. However, with the proposed shoreline improvements, existing structures to be retained would no longer be in a flood hazard area. With implementation of MM HY-12a.2, shoreline improvements with the 2018 Modified Project Variant would be initially designed and constructed to protect the perimeter of the HPS2 site and adjacent open space (shoreline areas) by accommodating NRC's "worst case" SLR forecast for 2050 (24 inches). Mitigation measure MM HY-12a.2 requires that shoreline and public access improvements be designed to incorporate setbacks to accommodate sea-level-rise-related improvements. With implementation of these mitigation measures, the impact pertaining to the placement of housing, and retaining some of the existing structures, within a potential future mapped flood hazard area would be reduced. The impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

> **MM HY-12a.2, Shoreline Improvements for Future Sea-Level Rise**, is provided in full on p. 277 under Impact HY-12b.

Impact HY-14: Implementation of the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam. ***[Criterion M.i]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As concluded in the 2010 FEIR, the Project site is adjacent to, but not within, the dam failure inundation zones from failure of the University Mound South Basin and/or North Basin reservoirs, based on evidence provided by ABAG[100] (refer to 2010 FEIR Figure III.M-3).

[100] ABAG, Interactive ABAG (GIS) Maps Showing Dam Failure Inundation, Available at http://www.abag.ca.gov/bayarea/eqmaps/damfailure/damfail.html, accessed on September 8, 2008.

With the 2018 Modified Project Variant, it remains that the Project shoreline includes various features, such as concrete debris, unprotected embankments, pile-supported wharves, seawalls, and bulkheads that serve to protect the Project from flooding. Several of these features lack structural integrity and could fail suddenly, as the result of a large storm event or an earthquake, or gradually, through continued deterioration. Failure of these features could expose people or structures to flood hazards.

The 2018 Modified Project Variant would implement mitigation measure MM HY-14, which requires implementation of improvements recommended in Moffatt and Nichol's Shoreline Improvement Report[101] (for the 2018 Modified Project Variant, MM HY-14 has been modified by Addendum 5 to reference potential updates to the 2009 shoreline evaluation). In accordance with these recommendations, areas along the shoreline would be developed as open space, which would allow for implementation of additional flood control improvements, if necessary, in the case of a higher-than-planned SLR. The shoreline improvements would also reinforce the structural integrity of the existing shoreline, reducing the risk of sudden structural failure of deteriorated shoreline features. Such improvements would provide added protection against Project site flooding, and the risk of harm associated with dam failure would remain less than significant.

Mitigation Measure with Proposed 2018 Modifications

> **MM HY-14: Shoreline Improvements to Reduce Flood Risk.** To reduce the flood impacts of failure of existing shoreline structures, the Project Applicant shall implement shoreline improvements for flood control protection, as identified in the Candlestick Point/Hunters Point Development Project Proposed Shoreline Improvements report.[102] (or updated Shoreline Improvements Reports). Where feasible, elements of living shorelines shall be incorporated into the shoreline protection improvement measures.

Impact HY-15: Implementation of the Project would not expose people or structures to inundation by seiche, tsunami, or mudflow. ***[Criterion M.j]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that finished grade elevations, which account for SLR and 100-year flood elevations, would be over 1 foot above the potential tsunami wave run-up elevation, and protect the Project site from a seiche. Therefore, the impacts from tsunami and seiche inundation would be less than significant.

With the 2018 Modified Project Variant, the HPS2 site would be raised higher than was proposed for the 2010 Project to complete surcharging and corresponding ground stabilization, to elevate the site

[101] Moffatt & Nichols, 2009, *Candlestick Point/Hunters Point Redevelopment Project Proposed Shoreline Improvements*, prepared for Lennar Urban, September 2009.
[102] Moffatt & Nichols, 2009, *Candlestick Point/Hunters Point Redevelopment Project Proposed Shoreline Improvements*, prepared for Lennar Urban, September 2009.

in response to anticipated SLR, and to provide the SFPUC with required freeboard and cover for utility systems. Thus, the impacts from tsunami and seiche inundation would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to hydrology and water quality impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to hydrology and water quality, either on a project-related or cumulative basis.

II.B.13 Biological Resources

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
4. Biological Resources. Would the project:					
N.a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?	2010 FEIR p. III.N-55 (Impact BI-3b), p. III.N-70 (Impact BI-6a), p. III.N-73 (Impact BI-6b), p. III.N-75 (Impact BI-7b), p. III.N-78 (Impact BI-8b), p. III.N-79 (Impact BI-9b), p. III.N-82 (Impact BI-10b), p. III.N-84 (Impact BI-11b), p. III.N-97 (Impact BI-15b), p. III.N-99 (Impact BI-16b), p. III.N-100 (Impact BI-17b), p. III.N-101 (Impact BI-18b), p. III.N-104 (Impact BI-19b), p. III.N-109 (Impact BI-22); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	MM HZ-10b, MM HY-1a.1, MM HY-1a.2, MM BI-4a.1, MM BI-4a.2, MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, MM BI-5b.4, MM BI-6a.1, MM BI-6a.2, MM BI-6b, MM BI-7b, MM BI-9b, MM BI-14a, MM BI-18b.1, MM BI-18b.2, MM BI-19b.1, MM BI-19b.2
N.b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS?	2010 FEIR p. III.N-55 (Impact BI-3b), p. III.N-68 (Impact BI-5b), p. III.N-88 (Impact BI-12b), p. III.N-97 (Impact BI-15b), p. III.N-101 (Impact BI-18b), p. III.N-104 (Impact BI-19b), p. III.N-111 (Impact BI-23); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	MM HZ-10b, MM HY-1a.1, MM HY-1a.2, MM BI-4a.1, MM BI-4a.2, MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, MM BI-5b.4, MM BI-12a.1, MM BI-12a.2, MM BI-12b.1, MM BI-12b.2, MM BI-18b.1, MM BI-18b.2, MM BI-19b.1, MM BI-19b.2
N.c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the *Clean Water Act* (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	2010 FEIR p. III.N-63 (Impact BI-4b), p. III.N-91 (Impact BI-13), p. III.N-112 (Impact BI-24); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	MM BI-4a.1, MM BI-4a.2,

Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
N.d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	2010 FEIR p. III.N-49 (Impact BI-2), p. III.N-55 (Impact BI-4), p. III.N-84 (Impact BI-11b), p. III.N-92 (Impact BI-13b), p. III.N-99 (Impact BI-16b), p. III.N-105 (Impact BI-20a), p. III.N-108 (Impact BI-20b), p. III.N-114 (Impact BI-25); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	MM BI-4a.1, MM BI-4a.2, MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, MM BI-5b.4, MM BI-7b, MM BI-19b.1, MM BI-20a.1, MM BI-20a.2
N.e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	2010 FEIR p. III.N-96 (Impact BI-14b), p. III.N-109 (Impact BI-21b), p. III.N-115 (Impact BI-26); Addendum 1 p. 44; Addendum 4 p. 47	No	No	Yes	MM BI-7b, MM BI-14a, MM BI-14b, MM BI-19b.1
N.f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	2010 FEIR p. III.N-49 (Impact BI-1); Addendum 1 p. 44; Addendum 4 p. 47	No	No	No	None

Changes to Project Related to Biological Resources

The 2018 Modified Project Variant includes the following activities related to biological resources:

- Implementation of a water taxi service would result in increased impacts on jurisdictional waters of San Francisco Bay through construction of the water taxi landing infrastructure at Dry Dock 4 and, potentially, a minor increase in disturbance of marine mammals and rafting waterbirds.
- Construction of two bridges over Dry Dock 4 would result in shading of a small area of jurisdictional waters in San Francisco Bay and, potentially, a minor increase in disturbance of waterbirds in the immediate vicinity of the bridges.
- Increase in new parks by approximately 34 acres at HPS2 would benefit the populations of a variety of plant and animal species, including raptors, by providing more habitat area within the Project site than was proposed in the 2010 FEIR.

Changes in Circumstances

Several changes in the environmental setting have occurred within the CP-HPS2 area since the certification of the 2010 FEIR.

In 2013, the first phase of the Yosemite Slough Wetland Restoration Project was completed. This project is located immediately adjacent to the CP-HPS2 project area. The first phase of the restoration project involved the removal of fill to convert areas that were dominated by ruderal (i.e., disturbed) upland grassland in 2010 to restore marsh and mudflat habitat on the northeast side of the slough, northwest of the CP-HPS2 project boundary. Currently, the restored areas are dominated by sparse pickleweed (*Salicornia pacifica*) and mudflat, and they now provide foraging and roosting habitat for ducks, shorebirds, and other waterbirds. However, the wetland vegetation is not dense/tall enough, nor sufficiently extensive, to support special-status species such as the California Ridgway's rail (*Rallus obsoletus obsoletus*) that are associated with more extensive, well-developed tidal marshes in other parts of San Francisco Bay. The 2010 FEIR included an analysis of impacts of future construction of the Yosemite Slough bridge on jurisdictional wetlands and other waters that would be restored by the Yosemite Slough Wetland Restoration Project. The Yosemite Slough bridge would impact only very limited areas of restored wetlands at the northeast (HPS2) end of the bridge, in the areas that have already been restored. The bridge's primary impacts on wetlands that are to be restored as part of the Yosemite Slough Wetland Restoration Project would occur on the southwest (CP) side of the slough, but restoration activities have not yet begun on the southwest side of the slough, where conditions are still as they were in 2010.

On HPS2, changes in biological conditions have resulted from continued remediation of contamination by the U.S. Navy, creation of wetlands to compensate for impacts of the Navy's remediation on wetlands, and stockpiling of soil for future development. The Navy has continued investigations and removal of contaminated soil from HPS2. In developed portions of HPS2, such activities have had limited effects on biological conditions. However, on Parcels E and E2, along the southern shoreline of HPS2, these remediation actions have resulted in extensive soil disturbance; removal of the majority of nontidal salt marsh; and removal of the majority of tidal salt marsh along the edge of South Basin. A sheet-pile wall has been installed along much of the shoreline of South Basin, where tidal salt marsh was present in 2010. In addition, the Navy has graded the South Basin shoreline to a more gradual slope, which would facilitate natural restoration of tidal wetland vegetation, and it has created nontidal depressions on Parcel E2 for the purpose of establishing new wetlands. At present, those "new" wetlands are still under construction. The 2010 FEIR anticipated these changes in the distribution of wetlands resulting from Navy remediation and restoration activities, and the 2018 Modified Project Variant does not include any new activities that would impact jurisdictional wetlands or other waters on Parcels E or E2 that were not analyzed in the 2010 FEIR. Therefore, although the Navy's ongoing remediation and restoration activities represent a change in the environmental setting since 2010, they do not result in any changes (relative to those analyzed in the 2010 FEIR) in impacts that would result from development activities on HPS2 as part of the 2018 Modified Project Variant.

Since the 2010 FEIR, a small wetland swale straddling the HPS1/HPS2 boundary has been partially filled. Regulatory agency permits are being obtained, and compensatory mitigation for the fill is being provided. In addition, a new drainage that may be considered jurisdictional waters by the U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) has been

created in the northwestern part of HPS2. This drainage is approximately 550 feet long by 3 to 4 feet wide, emanates from a culvert southwest of the intersection of Donahue Street and Lakewood Street, and flows primarily through an asphalt swale (with some small areas of wetlands where it flows over earthen substrate) before entering San Francisco Bay. This drainage was present in 2010, but there was no evidence that it contained water other than during or shortly after rain events, whereas it was flowing continuously during site visits in summer and early fall of 2017. It is possible that this drainage has been connected to a groundwater source since 2010, in which case it may now be considered jurisdictional (subject to USACE and RWQCB review).

Although no new special-status species have been recorded within the Project site since 2010, several locally scarce species have been documented recently. A pair of ospreys (*Pandion haliaetus*) has nested on structures in the northeastern portion of HPS2 each of the past several years.[103] This species has been increasing as a breeder in the San Francisco Bay area in recent decades, though the number of nesting pairs is still low. Also, monitoring of black oystercatchers (*Haematopus bachmani*) inside San Francisco Bay has documented nesting by a pair of oystercatchers on Double Rock, located in South Basin east of the proposed Yosemite Slough bridge.[104] This species breeds on rocky coastlines, and relatively few nest inside San Francisco Bay.

No new special-status species that may occur in the Project area have been listed since 2010, and no special-status species that were not known or expected to occur in the Project area in the 2010 FEIR have been newly recorded in the Project area since then.

Comparative Impact Discussions

Impact BI-1: Implementation of the Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. ***[Criterion N.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As was discussed in the 2010 FEIR, there are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that cover the Project area. Therefore, the Project would not conflict with a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Consequently, no conflict with such plans would result from the 2018 Modified Project Variant activities.

[103] Noreen Weeden, Golden Gate Audubon Society; pers. comm. to S. Rottenborn.
[104] Hart, J. T., San Francisco Bay Area Black Oystercatcher Project, 2017; Hart, J. T., Monitoring Territorial Pairs and Reproductive Success, 2017.

Impact BI-2: Implementation of the Project would not have a substantial adverse effect, either directly or through habitat modifications, on any common species or habitats through substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. ***[Criterion N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As discussed in the 2010 FEIR, the Project would impact a number of common plant and animal species through the demolition and construction of buildings, removal of trees, construction of shoreline improvements, installation of trails, roads, and other facilities, construction of the Yosemite Slough bridge, increased foot and vehicular traffic, installation of towers, and operation of all these facilities. Some common habitats would be reduced in extent, and some common species would decline in abundance as a result of the Project. However, the species that would be affected, as well as their habitats, are abundant throughout the San Francisco Bay region, and the Project site supports an extremely small proportion of the regional abundance of these resources. Further, the abundance of many of these species on the Project site itself is relatively low due to the extent of developed/urban land uses on the site, the long history of disturbance of the site, the intensive nature of such disturbance in some areas (e.g., where remediation activities on HPS2 are occurring or have recently occurred), and the site's isolation from more extensive areas of natural habitat by the Bay and by urban development in surrounding areas. Those species that are present on the site in higher numbers consist primarily of species that are well adapted to urban or heavily disturbed areas. Consequently, any impacts of the Project on common species and habitats would have a negligible effect on regional populations and would thus be less than significant.

The Project would result in improvements to habitat conditions in many areas owing to the creation of extensive parkland, planting of numerous trees, and improvement of habitat along the shoreline. With implementation of the Draft Parks, Open Space, and Habitat Concept Plan, many wildlife species would benefit from the removal of invasive species, enhancement, restoration, and management of habitats such as grasslands and wetlands, and the planting of numerous trees and shrubs in areas that are currently highly degraded or disturbed. In particular, invertebrates and birds would benefit from the habitat enhancements that would be implemented on the Project site.

The 2018 Modified Project Variant activities would have little effect on the overall impact analysis of the Project on common plants and animals because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in disturbance of plants and animals. Operation of a water taxi service and construction of two footbridges over Dry Dock 4 could potentially impact common waterbirds on San Francisco Bay, but as discussed under Impact BI-16b, below, these activities would not result in substantial impacts, nor in impacts substantially greater than were analyzed for the marina in the 2010 FEIR. Increases in

building heights could potentially result in somewhat greater impacts to migratory birds, although as discussed in Impacts BI-14b and BI-20b, such increases in impacts are expected to be minor. The 2018 Modified Project Variant would result in a net increase in the extent of new parks by approximately 34 acres at HPS2 relative to the 2010 FEIR (from 140.0 acres to 173.9 acres reflected in Addendum 5; refer to Addendum 5 Appendix A, Table A-5); this would reduce impacts to a variety of plant and animal species, including raptors, and benefit populations of these species. The net effect of the 2018 Modified Project Variant activities on common species and habitats would continue to be less than significant and, for many species, would be beneficial (due to the increase in parks) compared to the 2010 Project. This impact would remain less than significant, and no mitigation would be required.

Impact BI-3b: Construction at HPS Phase II and construction of the Yosemite Slough bridge would not have a substantial adverse effect, either directly or through habitat modifications, on any plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criteria N.a and N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No impact	No impact

As discussed in the 2010 FEIR, no special-status plants have been recorded at HPS2 during prior botanical and rare plant surveys,[105] and because of the long history of development and disturbance of the site, no suitable habitat for rare plants is present on the site. Therefore, no impact to rare plants would result from the Project.

Impact BI-4b: Construction at HPS Phase II would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the *Clean Water Act* (including, but not limited to, marsh, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. ***[Criterion N.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR analyzed impacts on jurisdictional wetlands and other waters (i.e., open water) that would result from proposed Project activities. The majority of such impacts were expected to result from shoreline enhancements for coastal flood protection and habitat improvement, and from Yosemite Slough bridge construction. The majority of wetlands in terrestrial areas where other development would occur were expected to be impacted by Navy remediation activities.

As discussed in the summary of changes to the environmental setting above, there have been several modifications of the extent and distribution of jurisdictional wetlands and other waters on the Project site. Navy remediation activities have removed the majority of tidal salt marsh from the

[105] Jones & Stokes, *Natural Environmental Study Report for the Bayview Transportation Improvements Project*, June 2009.

South Basin shoreline on HPS2 Parcels E and E2, and the majority of nontidal salt marsh from Parcel E2. The Navy is currently in the process of creating/restoring both tidal and nontidal wetland habitat on Parcel E2. A small wetland swale straddling the HPS1/HPS2 boundary has been partially filled. Regulatory agency permits to allow this wetland, which totals approximately 0.12 acre, to be filled are being obtained, and compensatory mitigation for the fill is being provided. In addition, a drainage approximately 550 feet long by 3 to 4 feet wide, emanating from a culvert southwest of the intersection of Donahue Street and Lakewood Street, represents approximately 0.05 acre of potentially jurisdictional wetlands and other waters, may be filled by future development activities (and would thus be subject to 2010 FEIR MM BI-4a.1 and MM BI-4a.2), although no specific 2018 Modified Project Variant activities propose to fill this feature.

Two new 2018 Modified Project Variant activities would result in impacts to jurisdictional habitats: the construction of two bridges over Dry Dock 4 and landings for the water taxi, both of which are described in detail in Project Description Section I.C.4 (Transportation Plan).

Neither of the bridges at Dry Dock 4 would involve placement of fill or structures within the water itself, and due to the height of the bridges above the water, little shading of the water would result from these bridges. However, there is some potential for shading to affect the biological functions and values of aquatic habitats under these bridges. The pedestrian and pedestrian/bicycles bridges over Dry Dock 4 would result in 0.22 acre of "shadow fill" of open bay waters. Shadow fill would not result in the complete loss of functions and values of the aquatic habitats below, however, and many fish and aquatic organisms would continue to use these areas following bridge construction.

All items of infrastructure for the water taxi landing within the water would be transportable. This infrastructure would not result in fill of waters, as it would all be floating or would be located above the water's surface (e.g., the access ramp). However, approximately 0.05 acre of Bay waters would be affected by the floating platform and shading from the access ramp. Fish and other aquatic organisms would still be able (and expected) to use the areas beneath these features after construction, though.

In total, the two bridges over Dry Dock 4 and the water taxi landing infrastructure would result in impacts to approximately 0.27 acre of Bay waters that were not analyzed in the 2010 FEIR. These impacts represent a very small addition to the approximately 28.48 acres of jurisdictional wetlands and other waters that were predicted to be impacted by the 2010 FEIR. Further, the 2010 FEIR analyzed impacts to the types of jurisdictional habitats (i.e., "other waters") that would be impacted by these 2018 Modified Project Variant activities, and from these same types of activities (e.g., from the Yosemite Slough bridge and from a marina at HPS2). Therefore, these 2018 Modified Project Variant activities do not represent a new significant impact or substantially more severe impact to jurisdictional wetlands and other waters.

Compensatory mitigation for these impacts on approximately 0.27 acre of Bay waters would be provided in accordance with 2010 FEIR MM BI-4a.1 and MM BI-4a.2. Implementation of these mitigation measures would reduce the impact to jurisdictional wetlands and other waters from the

2018 Modified Project Variant activities. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-5b: Construction at HPS Phase II and construction of the Yosemite Slough bridge would not have a substantial adverse effect on eelgrass beds, a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS. ***[Criterion N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR analyzed potential impacts of construction on eelgrass beds. At that time, eelgrass had been recorded along the north shore of the South Basin and on the north shore of HPS2, east of the northern end of Earl Street (refer to 2010 FEIR Figure III.N-2). The 2010 FEIR determined that in-water activities, such as the construction of the shoreline revetment improvements, had some potential to impact eelgrass, and it prescribed MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, and MM BI-5b.4 to reduce impacts to eelgrass to less-than-significant levels.

No 2018 Modified Project Variant activities have the potential to impact eelgrass. The 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in activities where eelgrass could occur. The only 2018 Modified Project Variant activities that would affect Bay waters, the bridges over Dry Dock 4 and the water taxi landing at Dry Dock 4, are in areas where the water is too deep to provide suitable habitat for eelgrass. Eelgrass is not typically found in waters deeper than 12 feet mean lower low water;[106] Dry Dock 4 was constructed to support large ships and is considerably deeper. Water taxi operation is expected to occur in deeper waters, and water taxis associated with the 2018 Modified Project Variant are, therefore, not expected to traverse patches of eelgrass. The impact would remain less than significant with implementation of the identified mitigation measures.

---

[106] NOAA Fisheries, *California Eelgrass Mitigation Policy and Implementing Guidelines*, October 2014.

Impact BI-6a: Construction at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on any bird species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS. ***[Criterion N.a]***

Impact BI-6b: Construction at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on any bird species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As analyzed in the 2010 FEIR, development at CP and HPS2 has some potential to result in impacts to special-status birds. Peregrine falcons (*Falco anatum*) nesting on the Re-gunning crane on Parcel D of HPS2 could potentially be disturbed by nearby construction activities, and MM BI-6b was prescribed to avoid such impacts. No 2018 Modified Project Variant activities would occur close enough to the Re-gunning crane to disturb the nesting peregrine falcons, and the 2018 Modified Project Variant activities would, therefore, have no impact on these birds.

Project demolition and construction activities have the potential to impact nests of non-special-status birds that are protected by the Migratory Bird Treaty Act and California Fish and Game Code; however, MM BI-6a.1 was prescribed to avoid those impacts. Because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in disturbance of nesting birds, the 2018 Modified Project Variant activities are not expected to result in increased disturbance of nesting birds, beyond what was analyzed in the 2010 FEIR. Nevertheless, Implementation of MM BI-6a and MM BI-6b would ensure that the potential impact from the 2018 Modified Project Variant activities on protected birds would remain less than significant. It is worth noting that implementation of these mitigation measures would also avoid disturbance of active nests of locally scarce, non-special-status birds that have been recorded nesting in the Project area only recently, such as the osprey and black oystercatcher (as noted in the discussion of changes in the environmental setting above).

Impact BI-7b: Implementation of the Project at HPS Phase II would not have a substantial adverse effect on the quantity and quality of suitable foraging habitat for raptors. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, landscaping associated with the creation of a Grasslands Ecology Park on the southern portion of HPS2 would alter approximately 43 acres of nonnative grasslands within the HPS2 that currently serve as raptor foraging areas. Because historical raptor foraging

areas within the City have been reduced due to the conversion of open space to urbanized environments, permanent loss of suitable foraging habitat would be considered a substantial adverse effect. However, ongoing Navy remediation activities are disturbing much of this raptor foraging habitat, reducing its present value to raptors. In addition, the Project's proposed ecological enhancements, which would be refined in the Project's Draft Parks, Open Space, and Habitat Concept Plan, include measures to restore and manage areas that would be highly suitable as raptor foraging habitat; the 2010 FEIR included MM BI-7b to ensure that restoration and management of grasslands reduced Project impacts on raptors to less-than-significant levels.

The 2018 Modified Project Variant activities would not result in any additional impacts to raptors because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in impacts to raptors or their habitats. Rather, the 2018 Modified Project Variant includes an increase in the extent of new parks by approximately 34 acres at HPS2, which would increase raptor foraging habitat even more than was envisioned by the 2010 FEIR. Therefore, the 2018 Modified Project Variant activities would actually benefit raptors. Thus, the impact would remain less than significant with implementation of the identified mitigation measure.

Impact BI-8b: Construction at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on the western red bat, a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR described that the western red bat (*Lasiurus blossevillii*) was the only special-status bat species with the potential to occur within the Project area. Potential roosting habitat for this species is present in more mature trees, where bats would roost in the foliage during migration and during the winter months (August–April). Construction activities that would remove these potential roosting sites could result in a small number of individuals being displaced, injured, or killed. However, due to the absence of mature trees from most areas, the lack of riparian habitat (its preferred habitat type), and the absence of this bat species as a breeder from the region, the number of bats that could potentially be impacted would be very small. Consequently, the loss or disturbance of western red bats and their habitats would not represent a substantial adverse effect as it would not substantially reduce the habitat of this species, cause its population to drop below self-sustaining levels, or reduce its range, and impacts would be less than significant. Rather, with implementation of MM BI-7b and MM BI-14a, the effect of Project activities on the western red bat would be expected to be beneficial.

No 2018 Modified Project Variant activities have the potential to result in greater impacts to western red bats than were analyzed in the 2010 FEIR because the 2018 Modified Project Variant activities

result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in impacts to western red bats or their habitats. Rather, the 2018 Modified Project Variant includes an increase in the extent of new parks by approximately 34 acres at HPS2. Planting of additional trees in this parkland could potentially increase western red bat roosting habitat beyond what was envisioned by the 2010 FEIR. Therefore, the 2018 Modified Project Variant activities could potentially benefit this species. Thus, the impact would remain less than significant, and no mitigation would be required.

Impact BI-9b: Pile driving associated with construction of the marina and the Yosemite Slough bridge would not have a substantial adverse effect at HPS Phase II, either directly or through habitat modifications, on marine mammals or fish identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. *[Criterion N.a]*

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As analyzed in the 2010 FEIR, in-water construction activities that involve pile driving could generate noise levels loud enough to disturb, injure, or kill fish and marine mammals, including special-status fish such as the green sturgeon (*Acipenser medirostris*), Chinook salmon (*Oncorhynchus tshawytscha*), steelhead (*Oncorhynchus mykiss*), and longfin smelt (*Spirinchus thaleichthys*) and marine mammals such as the harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*). The 2010 FEIR analysis focused on the need for pile driving for construction of the HPS2 marina and the Yosemite Slough bridge and prescribed MM BI-9b to reduce those impacts to less-than-significant levels.

The 2018 Modified Project Variant does not include any activities that would necessitate the driving of piles in water. Construction of the bridges and water taxi landing at Dry Dock 4 do not include pile driving within aquatic habitats. Therefore, no impacts on aquatic species from pile driving would result from the 2018 Modified Project Variant activities. Thus, the impact would remain less than significant with implementation of the identified mitigation measure.

Impact BI-10b: Construction at HPS Phase II would require removal of hard substrates (docks, riprap, seawalls, pilings, etc.) used by native oysters, but would not have a substantial adverse effect, either directly or through habitat modifications, on this species. *[Criterion N.a]*

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As analyzed in the 2010 FEIR, shoreline revetment improvements at CP and HPS2 would involve the removal of hard substrate that could potentially support native Olympia oysters (*Ostrea conchaphila*). However, installation of shoreline revetment features would replace any hard substrate that was lost, and the construction of two sections of breakwaters for the HPS2 marina would install

more suitable oyster habitat. As a result, impacts to native oysters would only be temporary, and overall effects of the Project on this species would be less than significant.

The 2018 Modified Project Variant does not include any activities that would involve the removal of hard substrate that could be used by native oysters. The edges of Dry Dock 4, which would be affected by construction of the bridges and water taxi landing, are vertical concrete walls that provide poor oyster habitat, and no hard substrate would be removed for the construction of these 2018 Modified Project Variant features. Any temporary impacts to hard substrate that could be used by native oysters would be minimal and temporary (during construction). Therefore, the impact from the 2018 Modified Project Variant activities on native oysters would remain less than significant.

Impact BI-11b: Construction at HPS Phase II would not have a substantial adverse effect on designated critical habitat for green sturgeon and Central California Coast steelhead, and would not result in impacts to individuals of these species as well as Chinook salmon and longfin smelt through temporary and permanent disturbance of aquatic and mudflat habitat during construction of shoreline revetments. ***[Criteria N.a and N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR discussed the potential for in-water activities to result in impacts to habitat for special-status fish such as the green sturgeon, Central California Coast steelhead, Chinook salmon, and longfin smelt, and potentially disturbance of individuals of these species during construction. Construction of the proposed marina (including breakwaters) and shoreline revetments would result in the loss of habitat for these special-status fish species, including the loss of designated critical habitat for the green sturgeon and Central California Coast steelhead. Because of the regional rarity of all these special-status fish, impacts to individuals or to habitat used by these fish were considered significant. However, mitigation measures MM BI-4a.1 and MM BI-4a.2 would reduce these impacts to less-than-significant levels by compensating for the loss of jurisdictional waters, and overall, the removal of debris and other materials from Bay waters was expected to result in a net increase in fish habitat.

The 2018 Modified Project Variant does not involve any activities that would result in the permanent loss of fish habitat. The two bridges over Dry Dock 4 would completely span Bay waters, and although they would shade approximately 0.22 acre of waters below to some extent (as described in Impact BI-4b above), fish would continue to use waters below these bridges. The water taxi landing would affect approximately 0.05 acre of Bay waters due to the presence of the floating platform and shading from the access ramp. However, fish would still be able (and expected) to use the areas beneath these features after construction. Implementation of mitigation measures MM BI-4a.1 and MM BI-4a.2 for the Dry Dock 4 bridges and water taxi landing would ensure that the potential impact to special-status fish would remain less than significant.

Impact BI-12b: Construction at HPS Phase II would not have a substantial adverse effect on designated essential fish habitat through (EFH) through placement of riprap and other fill, or through temporary water-quality impacts during construction. EFH is a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS. ***[Criterion N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR described the impacts to EFH that could potentially result from the placement of fill and water-quality effects during construction of features in and near the Bay. Such impacts included loss of fish habitat due to placement of rock along the shoreline to buttress bulkheads, improve the shoreline revetments, and construct breakwaters for the HPS2 marina, as well as impairment of fish health if water quality were adversely affected by construction. The 2010 FEIR determined that mitigation to compensate for the loss of jurisdictional wetlands and other waters and avoid water-quality impacts (MM BI-4a.1, MM BI-4a.2), avoid and compensate for impacts to eelgrass (MM BI-5b.1, MM BI-5b.2, MM BI-5b.3, MM BI-5b.4), and avoid and minimize impacts to EFH during construction, demolition, and debris removal (MM BI-12a.2, MM BI-12b.1, MM BI-12b.2) would reduce impacts to EFH to less-than-significant levels.

The 2018 Modified Project Variant does not involve any activities that would result in the permanent loss of EFH, and as discussed in Impact BI-5b above, the 2018 Modified Project Variant activities would not result in impacts to eelgrass. The two bridges over Dry Dock 4 would completely span Bay waters, and although they would shade 0.22 acre of the waters below to some extent (as described for Impact BI-4b above), fish would continue to use waters below these bridges. The water taxi landing would affect approximately 0.05 acre of Bay waters due to the presence of the floating platform and shading from the access ramp. However, fish would still be able (and expected) to use the areas beneath these features after construction. Implementation of mitigation measures MM BI-4a.1 and MM BI-4a.2 for the Dry Dock 4 bridges and water taxi landing would compensate for impacts to fish habitat resulting from the 2018 Modified Project Variant activities. Implementation of mitigation measures MM BI-12a.2, MM BI-12b.1, and MM BI-12b.2 would reduce impacts on water quality and EFH from construction in and near Bay waters. In total, implementation of mitigation measures MM BI-4a.1, MM BI-4a.2, MM BI-12a.2, MM BI-12b.1, and MM BI-12b.2 for construction of the Dry Dock 4 bridges and water taxi landing would reduce impacts on EFH. The impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-13b: Construction at HPS Phase II and construction of the Yosemite Slough bridge would not interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, but it could impede the use of native wildlife nursery sites. ***[Criterion N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, no regional wildlife corridors or migratory pathways are present on the CP-HPS2 Project site. Construction at CP and HPS2 would affect primarily terrestrial species that are well adapted to human disturbance in the area and move locally within the Project site and between the adjacent habitat patches. Construction would not substantially interfere with this local movement as the terrestrial wildlife would be able to continue their pre-Project activities in the areas not under construction, and construction would not permanently bar their movement through those portions of the site as the construction activities would be temporary. The Yosemite Slough bridge would separate the upper part of Yosemite Slough, including the proposed restoration site, from South Basin and San Francisco Bay, but it would not substantially reduce the ability of fish or wildlife that currently move in and out of Yosemite Slough to continue doing so. Therefore, Project impacts on wildlife movement were considered less than significant.

The 2010 FEIR determined that eelgrass beds provide nurseries for fish and other aquatic organisms, and that Project activities had the potential to impact eelgrass. As a result, the 2010 FEIR prescribed MM BI-5b.1 through MM BI-5b.4 to reduce impacts to native wildlife nursery sites (i.e., eelgrass) to less-than-significant levels.

As discussed in Impact BI-5b above, the 2018 Modified Project Variant activities would not result in impacts to eelgrass. Furthermore, no 2018 Modified Project Variant activities would affect wildlife movement or native wildlife nursery sites beyond what was analyzed in the 2010 FEIR because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in disturbance of plants and animals. Therefore, the potential impact to wildlife movement and native wildlife nursery sites would remain less than significant with implementation of the identified mitigation measures.

Impact BI-14b: Construction at HPS Phase II and Yosemite Slough bridge would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. ***[Criterion N.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR discussed the potential impacts of construction of the CP-HPS2 Project on trees that are protected by the City of San Francisco's Urban Forestry Ordinance. The Project has the potential

to remove a number of trees that meet the criteria for "street trees" or "significant trees", in addition to removing a number of trees that are not in or near the public right-of-way and that therefore do not meet the criteria for protected trees. The 2010 FEIR determined that MM BI-14a, requiring the preservation and replacement/planting of street trees and significant trees, would be implemented to reduce impacts to trees to less-than-significant levels. The 2010 FEIR also included MM BI-7b, which required the development of a Parks, Open Space, and Habitat Concept Plan that would result in a substantial increase in the number of trees on the Project site. With implementation of MM BI-7b, the number of trees would be substantially greater after Project implementation, resulting in a beneficial impact on trees.

The 2018 Modified Project Variant activities would not result in impacts on trees that are greater than were analyzed in the 2010 FEIR because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in impacts to trees. Rather, the 2018 Modified Project Variant includes an increase in the extent of new parks by approximately 34 acres at HPS2, and this new parkland would provide even greater opportunity for tree planting than was envisioned by the 2010 FEIR. Therefore, the 2018 Modified Project Variant activities could increase the number of trees. Nevertheless, MM BI-14a would still be implemented for the 2018 Modified Project Variant activities to ensure compliance with the City's Urban Forestry Ordinance.

Impact BI-15b: Construction within the shoreline or Bay at HPS Phase II would not result in the disturbance of contaminated soil or the re-suspension of contaminated sediments. ***[Criteria N.a and N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, chemicals and radioactive materials are present in soil and groundwater in various locations on HPS2 at levels that require remediation. Disturbance of fill or shoreline sediments, and associated stockpiling and on-site soil movement, during construction could provide potential pathways through which fish and wildlife species could be exposed to contaminants in fill material or Bay/shoreline sediments. Exposure of fish and wildlife to such contaminants could potentially impair the health or productivity of exposed individuals, or could have food-chain effects on species that prey upon exposed individuals through bioconcentration of contaminants. Although the Navy is responsible for remediation of contaminated areas, safeguards to prevent mobilization of contaminated materials are still necessary to reduce impacts of contaminants to less-than-significant levels, and the 2010 FEIR prescribed MM HZ-10b, MM HY-1a.1, and MM HY-1a.2 to ensure that appropriate procedures are implemented.

The 2018 Modified Project Variant activities would not result in impacts from mobilization of contaminated materials that are greater than were analyzed in the 2010 FEIR because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather

than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in mobilization of contaminants. Nevertheless, MM HZ-10b, MM HY-1a.1, and MM HY-1a.2 would still be implemented for the 2018 Modified Project Variant activities to reduce impacts from mobilization of contaminants. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-16b: Implementation of the Project at HPS Phase II, including operation of the proposed marina, would not have a substantial adverse effect, either directly or through habitat modifications, on aquatic species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS or interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. ***[Criteria N.a and N.d.]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As discussed in the 2010 FEIR, operation of the marina and marina-related watercraft at HPS2 would have the potential to disturb marine mammals and birds. The marine mammals most likely to be disturbed are locally foraging harbor seals, as there are no pupping sites or major haulout locations in the Project vicinity where animals would be subject to increased disturbance from vessel traffic from the Project. San Francisco Bay provides resting and foraging habitat for a variety of waterfowl migrating along the Pacific flyway. These birds often congregate into relatively large rafts of birds. Those rafts are subject to disturbance from noise, size, speed, and wakes generated by vessel traffic. The common response to disturbance is for the birds to fly off the water surface and fly some distance away and land. Therefore, the marina and marina-related (personal watercraft operations) activities would increase the disturbance of birds resting and foraging on Bay waters. The 2010 FEIR determined that such impacts on marine mammals and waterbirds would be less than significant because the few boats that at any one time are moving from the proposed marina into the Bay are not expected to generate substantial additional disturbance over current conditions, considering the size of the Bay, the number of boats currently on the bay at any one time, and the amount of disturbance currently generated by the existing boats on the Bay.

The 2018 Modified Project Variant includes several activities whose operation could result in increased disturbance of waterbirds on San Francisco Bay. Small numbers of waterbirds currently forage or roost on the waters within Dry Dock 4. Although they would be able to continue doing so after construction of the bridges and the water taxi landing, those waterbirds' aversion to human activity would reduce their use of areas very close to the bridges and water taxi landing. The net result would be the loss of use of a relatively limited area of open water. This effect would impact relatively few birds, compared to the Project impacts analyzed in the 2010 FEIR; however, as human

activity along the shoreline and boat activity associated with the marina would already have impacted waterbird use of the Dry Dock 4 area.

Operation of the water taxi would have impacts similar to those analyzed in the 2010 FEIR for the marina. Taxi boats could disturb marine mammals and rafting waterbirds using waters around HPS2 and along their taxi routes. However, the increase in boat use associated with the water taxi service, beyond that analyzed in the 2010 FEIR, would be very limited. The 2010 FEIR assumed the construction and operation of a 300-slip marina. The water taxi service would involve many fewer boats. Initially, water taxi service would occur during weekday morning and evening peak hours to accommodate commuter traffic. As the population at HPS2 increases, additional trips could occur throughout the day, as supported by demand. Destinations for outbound trips and origins of inbound trips would depend on passenger demand, but are expected to include any of the docking locations in the San Francisco Bay, including San Francisco, Marin County, the East Bay, and the South Bay.

As discussed in the 2010 FEIR, the boat traffic associated with HPS2, including the water taxi service, would represent a very small percentage of vessel traffic operating in San Francisco Bay, and thus water taxi operation would not contribute any substantial, new disturbance of marine mammals or rafting waterbirds. Also, the water taxi service would be operating along "routes" that are currently traversed by numerous vessels, and that would be traversed by vessels associated with the HPS2 marina analyzed in the 2010 FEIR. Therefore, the water taxi service is not expected to result in impacts to portions of the Bay that would be undisturbed by existing or previously analyzed boat traffic. For these reasons, the 2018 Modified Project Variant activities' impacts on marine mammals and rafting waterbirds are less than significant.

Otherwise, operation of the 2018 Modified Project Variant activities would have little effect on the overall impact analysis of the Project on plants and animals because the 2018 Modified Project Variant activities result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in disturbance of plants and animals. Rather, 2018 Modified Project Variant includes an increase in the extent of new parks by approximately 34 acres at HPS2. Application of MM BI-7b to this new parkland would result in an increase in habitat for a number of plants and animals, relative to the Project analyzed in the 2010 FEIR. This impact would remain less than significant, and no mitigation would be required.

Impact BI-17b: Implementation of the Project at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on nesting American peregrine falcons, identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As discussed in the 2010 FEIR, a pair of peregrine falcons' nests on the Re-gunning crane. However, operation of the Project would not result in substantial adverse effects to the falcons' nesting activities, as this nesting pair has persisted, and nested successfully, at this site for a number of years even while remediation activities have been ongoing in the vicinity of the nest site. The 2018 Modified Project Variant does not include any activities that would increase the potential for disturbance of the nesting falcons as compared to the activities that were analyzed in the 2010 FEIR; thus, the 2018 Modified Project Variant would not result in impacts on nesting peregrine falcons.

Impact BI-18b: Implementation of the marina in HPS Phase II would require routine maintenance dredging of the marina, which could remove habitat or generate substantial increases in turbidity within the marina, but would not have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the CDFW or USFWS, or have a substantial adverse effect on designated EFH, a sensitive natural community identified in local or regional plans, policies, and regulations or by the NMFS. ***[Criteria N.a and N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR discussed that routine dredging might be needed to maintain the operational depth of the HPS2 marina. Dredging could result in the loss of benthic organisms living in the sediment that is being removed. The mobilization of sediment during dredging could alter habitat for other benthic organisms as it settles out onto substrate (e.g., for native oysters or spawning Pacific herring [*Clupea pallasii*]) and could reduce water quality for fish and other estuarine organisms. The 2010 FEIR prescribed MM BI-18b.1 and MM BI-18b.2 to reduce such impacts to less-than-significant levels.

No dredging is anticipated to be necessary for the 2018 Modified Project Variant activities. The only 2018 Modified Project Variant activity that involves watercraft is the addition of a water taxi service and construction of infrastructure to support that service. However, water taxis are not large and do not induce substantial draft, and the water taxi landing infrastructure is mobile, so that it could be moved to new locations if sedimentation impairs the operation of the taxi service. As a result, no dredging to maintain conditions for the water taxi service is proposed. Therefore, the 2018 Modified Project Variant would have no impact resulting from maintenance dredging. The Project would continue to implement mitigation measures MM BI-18b.1 and MM BI-18b.2 to ensure that the impact from dredging of the marina would remain less than significant.

Impact BI-19b: Implementation of the marina in HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on sensitive aquatic species, identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS, or have a substantial adverse effect on designated EFH, a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFW or USFWS, or have a substantial effect on predators that prey on contaminated species or feed on contaminated substrates as a result of routine maintenance dredging or could generate routine increases in turbidity within the marina that would result in the re-suspension of contaminated sediments. ***[Criteria N.a and N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, much of the seafloor within the Project area is contaminated from decades of industrial use, and maintenance dredging of the HPS2 marina has the potential to mobilize contaminants in sediments. Contaminants in these sediments may be taken up by aquatic organisms, either within the marina or in other areas to which contaminated sediments are carried by tides or currents. The uptake of contaminated food sources or exposure to elevated levels of toxins could reduce reproductive success, alter blood chemistry, suppress a fish's immune systems, and result in an increased risk of disease and mortality. These effects may occur in aquatic organisms that take up contaminated substances directly, wildlife species (such as shorebirds) that forage in contaminated substrates, or predators that feed on prey that have taken up contaminants. Such impacts are potentially significant, and the 2010 FEIR prescribed MM BI-19b.1 and MM BI-19b.2 to reduce such impacts to less-than-significant levels.

However, as described in Impact BI-18b above, no dredging is anticipated to be necessary for the 2018 Modified Project Variant activities. Therefore, the 2018 Modified Project Variant would have no impact resulting from the mobilization of contaminants during maintenance dredging. The Project would continue to implement mitigation measures MM BI-19b.1 and MM BI-19b.2 to ensure that the impact from dredging of the marina would remain less than significant. MM BI-19b.1 has been modified, as indicated below, to reflect the correct spawning season for Pacific herring and the appropriate work window.

Mitigation Measure with Proposed 2018 Modifications

MM BI-19b.1: Work Windows to Reduce Maintenance Dredging Impacts to Fish during Operation of the Marina. According to the Long-Term Management Strategy (LTMS), dredging Projects that occur during the designated work windows do not need to consult with NMFS under the federal *Endangered Species Act* (FESA).[107] The window in which

[107] U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. *Long-Term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan*, 2001.

dredging is allowed for the protection of steelhead in the central Bay is June 1 to November 30. The spawning season for the Pacific herring is ~~March 1 to November 30~~ December 1 to February 28.[108] Therefore, the window that shall be applied to minimize impacts to sensitive fish species (during which dredging activities cannot occur) is ~~March~~ June 1 to November 30.

Impact BI-20a: Implementation of the Project at Candlestick Point would not interfere substantially with the movement of resident or migratory bird species by increasing collision hazards and the amount of artificial lighting. ***[Criterion N.d]***

Impact BI-20b: Implementation of the Project at HPS Phase II would not interfere substantially with the movement of resident or migratory bird species by increasing collision hazards and the amount of artificial lighting. ***[Criterion N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant

The 2010 FEIR analyzed impacts of the construction of new buildings on resident and migratory birds by increasing collision hazards and the amount of artificial lighting. Within CP, towers ranging from 200 to 420 feet in height were proposed, and at HPS2, towers ranging from 240 to 350 feet in height were proposed. The 2010 FEIR discussed how migrating birds such as songbirds could be affected by such human-built structures because of the birds' propensity to migrate at night, their low flight altitudes, and their tendency to be disoriented by artificial light, making them vulnerable to collision with obstructions. Both tall structures and residential windows provide collision hazards to migrating birds. A majority of bird strikes occur when birds do not recognize windows on buildings. Thus, operation of the towers would pose collision hazards to migratory birds as effects associated with the lighting of the towers could alter the flight patterns of migratory birds and substantially increase bird strike collisions with the structures. Large-scale avian injury or mortality due to bird strikes has not been documented at buildings on the West Coast as it has in eastern and Midwestern North America. Due to the potential for bird strikes at tall buildings on CP and HPS2, this impact was considered significant. The 2010 FEIR prescribed MM BI-20a.1 and MM BI-20a.2 to reduce the effects of operational activities related to buildings and increased lighting on migrating birds to less-than-significant levels.

Under the 2010 Project, MM BI-20a.1 and MM BI-20a.2 applied to buildings that were more than 100 feet tall, under the assumption that impacts to migratory birds would result primarily from collisions by high-flying migrants, whereas the current thinking is that most bird collisions occur within 60 feet of the ground, where birds engage in most of their activities. Various summaries have placed this primary collision zone between 0 feet and 40 to 60 feet above the ground.[109,110] Current

[108] U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. *Long-Term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan*, 2001; Appendix F.
[109] Sheppard, C. 2011. *Bird-Friendly Building Design*. American Bird Conservancy, The Plains, VA, 60 pages.
[110] San Francisco Planning Department. 2011. Standards for Bird-Safe Buildings.

practice is to concentrate bird-safe building design at lower elevations rather than higher elevations. Therefore, to be consistent with current practices, MM BI-20a.1 and MM BI-20a.2 have been revised to provide design recommendations for buildings that are lower in height. Compliance with these modified mitigation measures, which are included under Impact BI-20b, at both CP and HPS would reduce bird-collision impacts to less-than-significant levels.

Addendum 5 would allow increases in building heights by approximately 20 to 35 feet in many areas on HPS2 and would change the locations of some of the tallest towers. Increasing the heights of buildings could potentially result in an increase in collision risk for higher-flying birds. However, as discussed in the preceding paragraph, current practice in bird-safe design emphasizes the importance of reducing bird collision risk in the primary collision zone, closer to the ground, where birds engage in most of their activities. As a result, increasing the heights of buildings as part of Addendum 5 is not expected to result in a substantial increase in bird collision risk compared to the 2010 Project. Addendum 5 activities do not specifically include any new wind generators or lighting that would increase impacts to birds.

Mitigation Measures with Proposed 2018 Modifications

MM BI-20a.1 Lighting Measures to Reduce Impacts to Birds. During building design ~~of any building greater than 100 feet tall~~, the Project Applicant and architect shall consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify lighting-related measures to minimize the effects of the building's lighting on birds. Such measures, which may include the following and/or other measures, will be incorporated into the building's design and operation.

- Where lighting is necessary on rooftops, u~~U~~se strobe or flashing lights in place of continuously burning lights for obstruction lighting. Use flashing white lights rather than continuous light, red light, or rotating beams.
- Install shields onto light sources not necessary for air traffic to direct light towards the ground and away from areas that provide high-quality bird habitat.
- Extinguish all exterior lighting (i.e., rooftop floods, perimeter spots) not required for public safety.
- No uplighting will be installed.
- When interior or exterior lights must be left on at night, the developer and/or operator of the buildings shall examine and adopt alternatives to bright, all-night, floor-wide lighting, which may include:
    - Installing motion-sensitive lighting.
    - Using desk lamps and task lighting.
    - Reprogramming timers.
    - Use of lower-intensity lighting.

- Windows or window treatments that reduce transmission of light out of the building will be implemented to the extent feasible.
- Educational materials will be provided to building occupants encouraging them to minimize light transmission from windows, especially during peak spring and fall migratory periods, by turning off unnecessary lighting and/or closing drapes and blinds at night.
- A report of the lighting alternatives considered and adopted shall be provided to the City/Agency for review and approval prior to construction. The City/Agency shall ensure that lighting-related measures to reduce the risk of bird collisions have been incorporated into the design of such buildings to the extent practicable.

MM BI 20a.2 Building Design Measures to Minimize Bird Strike Risk. During design of any building ~~greater than 100 feet tall~~ within 300 feet of a potential "urban bird refuge" (an open space 2 acres and larger dominated by vegetation, including vegetated landscaping, forest, meadows, grassland, or wetlands, or open water) or any structure containing free-standing glass walls, wind barriers, skywalks, balconies, and greenhouses on rooftops that have unbroken glazed segments 24 square feet and larger in size, the Project Applicant and architect will consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify measures related to the external appearance of the building/structure to minimize the risk of bird strikes. Such measures, which may include the following and/or other measures, will be incorporated into the building's design.

- Minimize the use of glass, particularly within the portion of the building between ground level and 60 feet above the ground.
- Use non-reflective tinted glass.
- Use window films to make windows visible to birds from the outside.
- Use external surfaces/designs that "break up" reflective surfaces. These patterns should include vertical elements at least 0.25 inch wide at a maximum spacing of 4 inches or horizontal elements at least 0.125 inch wide at a maximum spacing of 2 inches.
- Place bird attractants, such as bird feeders and baths, at least 3 feet and preferably 30 feet or more from windows in order to reduce collision mortality.
- A report of the design measures considered and adopted shall be provided to the City/Agency for review and approval prior to construction. If, in the opinion of a qualified biologist, modification or waiver of these bird-safe design measures would not result in substantial increases in bird collision risk, the report should include the justification for such an opinion, for consideration by the City/Agency. The City/Agency shall ensure that building design-related measures to reduce the risk of bird collisions have been incorporated to the extent practicable.

Impact BI-21b: Implementation of the Project at HPS Phase II would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. ***[Criterion N.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant

Impacts from proposed Project construction activities on trees that are protected by the City of San Francisco's Urban Forestry Ordinance are discussed in Impact BI-14b. No additional impacts to trees would result from Project implementation. Impacts to resident and migratory birds by increasing collision hazards and the amount of artificial lighting, resulting from proposed Project construction activities, are discussed in Impact BI-20b. The CP-HPS2 Project would reduce bird-collision impacts to less-than-significant levels by complying with MM BI-20a.1 and MM BI-20a.2. No additional impacts to birds associated with collision hazards and artificial lighting would result from Project implementation.

Impact BI-22: Implementation of the Project would not have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, by the CDFW, USFWS, or NMFS. ***[Criterion N.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, the CP-HPS2 Project would involve removal and/or modification of areas that have the potential to contain special-status species, including seven potentially breeding avian species, one bat species, and four fish species (green sturgeon, Chinook, steelhead, and longfin smelt). The Project also has the potential to affect designated critical habitat of the green sturgeon and thus, directly impact threatened and/or endangered species through habitat conversion or unauthorized take. In addition, Project activities would occur within habitats of locally rare or sensitive species such as Pacific herring and Olympia oysters, as well as avian species protected by the MBTA and California Fish and Game Code.

No new special-status species that may occur in the Project area have been listed since 2010, and no special-status species that were not known or expected to occur in the Project area in the 2010 FEIR have been newly recorded in the Project area since then. The 2018 Modified Project Variant activities simply result in changes in the land-use development program, rather than increases in the amount of developed area or inclusion of new activities that would result in substantial increases in impacts on special-status species. As a result, the 2018 Modified Project Variant activities would not result in new impacts to special-status species or substantially greater impacts to such species compared to the analysis in the 2010 FEIR, and no additional analysis of impacts from the 2018 Modified Project Variant activities on special-status species is necessary. The Project would continue to implement the

mitigation measures described in 2010 FEIR (Impact BI-22) to ensure that the impact to special-status species would remain less than significant.

Impact BI-23: Implementation of the Project would not have a substantial adverse effect on sensitive natural communities identified in local or regional plans, policies, or regulations by the CDFW, USFWS, or NMFS. ***[Criterion N.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As discussed in the 2010 FEIR, no riparian habitat occurs in the Project area, and the only sensitive habitats other than wetlands and aquatic habitats (discussed in Impact BI-24 below) are eelgrass and areas designated as EFH. The 2010 FEIR prescribed mitigation measures to reduce impacts to eelgrass and EFH to less-than-significant levels.

Impacts from proposed Project construction activities on eelgrass are discussed in Impact BI-5b, and impacts from proposed Project construction activities on EFH are discussed in Impact BI-12b. No additional impacts to eelgrass or EFH would result from Project implementation. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-24: Implementation of the Project would not have a substantial adverse effect on federally protected wetlands and other waters as defined by Section 404 of the *Clean Water Act* (including, but not limited to, marsh, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. ***[Criterion N.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Impacts to jurisdictional wetlands and other waters (i.e., open water) that would result from proposed Project construction activities are discussed in Impact BI-4b. No additional impacts to these jurisdictional habitats would result from Project implementation. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-25: Implementation of the Project would not interfere substantially with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery site. ***[Criterion N.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Impacts to established native resident or migratory wildlife corridors and native wildlife nursery sites that would result from proposed Project construction activities are discussed in Impact BI-13b. Impacts from proposed Project construction activities on eelgrass, provide nurseries for fish and

other aquatic organisms, are discussed in Impact BI-5b. No additional impacts to these resources would result from Project implementation.

Impacts to resident and migratory birds by increasing collision hazards and the amount of artificial lighting, resulting from proposed Project construction activities, are discussed in Impact BI-14b. The CP-HPS2 Project would reduce bird-collision impacts to less-than-significant levels by complying with Planning Code Section 139 in lieu of MM BI-20a.1 and MM BI-20a.2. No additional impacts to birds associated with collision hazards and artificial lighting would result from Project implementation. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact BI-26: Implementation of the Project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. ***[Criterion N.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Impacts to jurisdictional wetlands and other waters (i.e., open water) that would result from proposed Project construction activities are discussed in Impact BI-4b. No additional impacts to these jurisdictional habitats would result from Project implementation.

Impacts from proposed Project construction activities on trees that are protected by the City of San Francisco's Urban Forestry Ordinance are discussed in Impact BI-14b. No additional impacts to trees would result from Project implementation. The 2018 Modified Project Variant activities would not result in impacts on trees that are greater than were analyzed in the 2010 FEIR.

Impacts to resident and migratory birds by increasing collision hazards and the amount of artificial lighting, resulting from proposed Project construction activities, are discussed in Impact BI-14b. The CP-HPS2 Project would reduce bird-collision impacts to less-than-significant levels by complying with Planning Code Section 139 in lieu of MM BI-20a.1 and MM BI-20a.2. No additional impacts to birds associated with collision hazards and artificial lighting would result from Project implementation. This impact would remain less than significant with implementation of the identified mitigation measures.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to biological resources impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to biological resources, either on a project-related or cumulative basis.

II.B.14 Public Services

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
14.	**Public Services.** Would the project:					
O.a	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, [or the] need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for police protection?	2010 FEIR p. III.O-7 (Impact PS-1), p. III.O-8 (Impact PS-2); Addendum 1 p. 45; Addendum 4 p. 49	No	No	No	MM TR-1, MM PS-1, Varies[111]
O.b	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, [or the] need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?	2010 FEIR p. III.O-17 (Impact PS-3), p. III.O-18 (Impact PS-4); Addendum 1 p. 45; Addendum 4 p. 49	No	No	No	MM TR-1, Varies[111]
O.c	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, [or the] need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives of the school district?	2010 FEIR p. III.O-28 (Impact PS-5), p. III.O-28 (Impact PS-6); Addendum 1 p. 45; Addendum 4 p. 49	No	No	No	None

[111] Refer to Sections II.B.3, II.B.7, II.B.8, II.B.9, II.B.10, and II.B.12 for the specific mitigation measures for construction-related effects.

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
O.d	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, [or the] need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives for library services?	2010 FEIR p. III.O-35 (Impact PS-7), p. III.O-35 (Impact PS-8); Addendum 1 p. 45; Addendum 4 p. 49	No	No	No	None

Changes to Project Related to Public Services

The elements of the land use program evaluated in Addendum 5 that relate to public services, including police protection, fire protection, schools, and libraries, are changes in population, employment, and development levels associated with the 2018 Modified Project Variant that would require new or expanded facilities to maintain acceptable service levels that were not identified and addressed in the 2010 FEIR. Refer to Section I (Project Description) and Section II.B (Population, Housing, and Employment) for information regarding the land use program (including schools) and projected population, housing, and employment at the site.

Comparative Impact Discussions

Impact PS-1: Construction activities associated with the Project would not result in a need for new or physically altered facilities in order to maintain acceptable service ratios, response times, or other performance objectives for police protection. ***[Criterion O.a]***

	2010 CP-HPS2 FEIR	2010 CP-HPS2 FEIR Addendum 5
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that construction activities could result in increased demand for police services if construction activities cause traffic conflicts requiring SFPD response. The 2010 FEIR determined that access to the Project site during construction would be maintained by implementation of a construction traffic management program (CTMP), as required by mitigation measure MM TR-1. The CTMP would provide necessary information to various contractors and agencies as to how to maximize the opportunities for complementing construction management measures and to minimize the possibility of conflicting impacts on the roadway system, while safely accommodating the traveling public in the area. The 2010 FEIR determined that the program would supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW or other City departments and agencies.

The 2010 FEIR determined that construction activities also could increase demand for SFPD services if the site is not adequately secured, providing increased opportunity for criminal activity. To ensure adequate site security, the 2010 FEIR determined that mitigation measure MM PS-1 would require the Project Applicant to provide security during project construction. The 2010 FEIR concluded that impacts to the SFPD would be considered less than significant with implementation of the security measures required by mitigation measure MM PS-1.

While the number of construction jobs created as a result of the Project has changed, as shown in Table 8 (Construction Employment) in Addendum 5 Section II.B.2 (Population, Housing, and Employment), the number of years of construction has been extended to 21 years, although the beginning date of construction is delayed by approximately 4 years. Construction began in 2014 and would extend to 2034, as compared to the 2010 FEIR, which showed construction beginning in 2010 and continuing to 2028.

As with the Project analyzed in the 2010 FEIR, access to the Project site during construction would be maintained by implementation of a CTMP, as required by mitigation measure MM TR-1, and mitigation measure MM PS-1 would require the Project Applicant to provide security during project construction. As with the Project analyzed in the 2010 FEIR, impacts to the SFPD would remain less than significant with implementation of the security measures required by mitigation measure MM PS-1.

Impact PS-2: Implementation of the Project would not result in a need for new or physically altered facilities beyond those included as part of this Project in order to maintain acceptable service ratios, response times, or other performance objectives for police protection.
[Criterion O.a]

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Varies	Varies (same as 2010 FEIR)

As identified in the 2010 FEIR, the Project site lies within the SFPD's Bayview District. Police services are provided from the Bayview Police Station, located at 201 Williams Avenue near Third Street. Police operating from this station provide service to the southeastern part of the city, extending along the eastern edge of McLaren Park to the Bay and south from Channel Street to the San Mateo County line.

The 2010 FEIR determined that impacts on police protection services are considered significant if an increase in population or development levels would result in inadequate staffing levels (as measured by the ability of the SFPD to respond to call loads) and/or increased demand for services that would require the construction or expansion of new or altered facilities that might have an adverse physical effect on the environment. To estimate personnel requirements for new projects, the SFPD considers the size of the incoming residential population and the expected or actual experience with calls for service from other potential uses of the site. Any potential increase in staffing at the SFPD Bayview Station would be expected to take place over time throughout the Project development period with the incremental addition of new housing and new nonresidential building space and their occupancy.

As discussed in the 2010 FEIR, while the City has no adopted staffing ratio, the existing "level of service" at the SFPD can be determined by comparing citywide police force staffing to total City population (including both residents and workers).

The 2010 FEIR identified a citywide ratio of 1 officer per 665 people. This ratio, when applied to the total projected resident and employee population of the Project site at build-out under the 2018 Modified Project Variant of 41,484 (consisting of 16,618 employees and 24,866 residents) results in the need for 63 police personnel to provide a comparable level of service in the Bayview District. Consequently, the 2018 Modified Project Variant would result in the demand for an additional 10 police personnel above the 53 police personnel identified in the 2010 FEIR. The increase in 10 police personnel under the 2018 Modified Project Variant is attributed to the 172 residential units that were transferred from HPS1 to HPS2 and an increase in R&D and retail land uses in HPS2.

As discussed in the 2010 FEIR, while staffing increases, in and of themselves, would not create a significant environmental impact, the construction of new facilities to serve additional police officers could create significant environmental impacts. Additional SFPD personnel needed to serve the Project would require a station from which to operate. Using an estimate of 110 sf per person, which was used in the 2010 FEIR, the additional 63 police officers would require approximately 6,930 sf of interior building space, an increase in 930 sf over the 6,000 sf[112] identified in the 2010 FEIR.

As with the project analyzed in the 2010 FEIR, up to 100,000 gross square feet (gsf) divided equally between CP and HPS2 would be designated for community-serving uses, such as fire, police, healthcare, day-care, places of worship, senior centers, library, recreation center, community center, and/or performance center uses. These uses have been anticipated as part of the Project, and the impacts of their construction were evaluated in the 2010 FEIR. Accordingly, the potential construction of a new police facility (counter, storefront, or other configuration) on the Project to accommodate development associated with the 2018 Modified Project Variant was addressed in the 2010 FEIR. With the construction of a new facility or a suitable retrofitting or expansion of the Bayview Station, the SFPD would have ample space to accommodate the additional police officers needed to maintain the SFPD's existing level of service.

As with the project analyzed in the 2010 FEIR, construction activities associated with the proposed public facilities, which could include a potential 6,820 sf building space for new police officers, are considered part of the overall Project. A discussion of project-related construction impacts, including those associated with the construction of public facilities, is provided in the applicable sections of the 2010 FEIR, including Section III.D (Transportation and Circulation), Section III.H (Air Quality), Section III.I (Noise and Vibration), Section III.J (Cultural Resources and Paleontological Resources), Section III.K (Hazards and Hazardous Materials), and Section III.M (Hydrology and Water Quality). Construction impacts would be temporary. While it is likely that construction of the various public

[112] The actual square footage identified in the 2010 FEIR is 53 officers multiplied by 110 sf per officer, which is 5,830 sf; but, it was rounded up to 6,000 sf.

facilities would not result in significant impacts (either individually or combined), construction of the entire development program, of which the public facilities are a part, would result in significant and unavoidable impacts related to construction noise and demolition of an historic resource; all other construction-related impacts would be less than significant (in some cases, with implementation of identified mitigation). Refer to 2010 FEIR Section III.D (Transportation and Circulation), Section III.H (Air Quality), Section III.I (Noise and Vibration), Section III.J (Cultural Resources and Paleontological Resources), Section III.K (Hazards and Hazardous Materials), and Section III.M (Hydrology and Water Quality) for the specific significance conclusions for construction-related effects.

Impact PS-3: Construction activities associated with the Project would not result in a need for new or physically altered facilities in order to maintain acceptable response times for fire protection and emergency medical services. ***[Criterion O.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR determined that during construction of the Project, emergency access to the Project site would be maintained through compliance with the CTMP prepared for the Project, as required by mitigation measure MM TR-1. Compliance with the CTMP would ensure that access to the Project site is not obstructed during construction activities. The CTMP would provide necessary information to various contractors and agencies as to how to maximize the opportunities for complementing construction management measures and to minimize the possibility of conflicting impacts on the roadway system, while safely accommodating the traveling public in the area. The program would supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW, or other City departments and agencies.

As with the Project analyzed in the 2010 FEIR, access to the Project site during construction would be maintained by implementation of a CTMP, as required by mitigation measure MM TR-1. As with the Project analyzed in the 2010 FEIR, impacts to the SFPD would be remain less than significant with implementation of the security measures required by mitigation measure MM PS-1.

Impact PS-4: Implementation of the Project would not result in a need for new or physically altered facilities beyond those included as part of this Project in order to maintain acceptable response times for fire protection and emergency medical services. ***[Criterion O.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Varies	Varies (same as 2010 FEIR)

The 2010 FEIR determined that the addition of 10,500 residential units (and a resulting residential population of 24,465) and an employment population of 10,730 (for a total population of 35,195) combined with an increase in the intensity of physical development on the Project site, would result in new demand for fire protection and emergency medical services. The 2010 FEIR concluded that

construction of 100,000 gsf of community uses, which could include a new SFFD facility, would allow the SFFD to maintain acceptable response times for fire protection and emergency medical services. The current proposal is that the fire station would be accommodated outside of the 100,000 gsf of community services, but would be accommodated within HPS2. Irrespective of the how the SFFD facility is accommodated in terms of the land use program, the provision of the facility would still allow the SFFD to maintain acceptable response times for fire protection and emergency medical services.

The 2010 FEIR concluded that, while the development of the Project may require new or physically altered SFFD facilities in order to maintain acceptable fire protection and emergency medical services, the potential impacts associated with the construction of a new facility had been addressed in the 2010 FEIR and would not require further environmental review.

In addition, the 2010 FEIR noted that all new buildings must meet standards for emergency access, sprinkler, and other water systems, as well as all other requirements specified in the *San Francisco Fire Code*, which would help to minimize demand for future fire protection services. In addition, the 2010 FEIR noted that all development, including high-rise residential buildings would be reviewed by DBI and the SFFD to ensure that structures are designed in compliance with the *San Francisco Fire Code*. *San Francisco Fire Code* Sections 511.1 and 511.2 outline specific requirements for high-rise buildings (i.e., buildings above 200 feet) and would apply to the Project's proposed high-rise structures.

As discussed above, the 2018 Modified Project Variant would not result in a net increase in population in the combined CP and HPS Project sites. While the 2018 Modified Project Variant would generate more jobs than the CP-HPS2 Project (by approximately 5,880 jobs), it would generate fewer jobs than the R&D Variant (Variant 1) (by approximately 17 jobs). Consequently, as with the Project analyzed in the 2010 FEIR, construction of a new SFFD facility would allow the SFFD to maintain acceptable response times for fire protection and emergency medical services. Therefore, while the development of the Project may require new or physically altered SFFD facilities in order to maintain acceptable fire protection and emergency medical services, the potential impacts associated with the construction of a new facility were addressed in the 2010 FEIR and would not require further environmental review.

Impact PS-5: Construction activities associated with the Project would not affect the provision of school services by decreasing access to school services. ***[Criterion O.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed in the 2010 FEIR, construction of the Project would not result in impacts to the SFUSD system, as construction of the Project would not itself create new residents or students. Also, no SFUSD facilities are located on the Project site. All school services would be

available to the community throughout the duration of project construction. As such, no impact to school services during construction of the project would occur.

Impact PS-6: New students associated with implementation of the Project would not require new or expanded school facilities, the construction of which could result in substantial adverse impacts. ***[Criterion O.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

For planning purposes, and using the SFUSD student generation rate of 0.203 student (including elementary, middle, and high school students) per new housing unit, the 2010 FEIR determined that approximately 2,131 school-age children would live within the Project site following full build-out of the Project, including approximately 1,593 school-age children living at CP and approximately 538 total students at the HPS2 site, as shown in 2010 FEIR Table III.O-8 (Project Buildout Public School Enrollment Compared to SFUSD Capacity) in Section III.O (Public Services).

As discussed above, the 2010 FEIR proposed 10,500 residential units over the entire Project site, including both CP and HPS. The current proposal includes 10,672 residential units. Accordingly, using the same generation rate of 0.203 student per new housing unit that was used in the 2010 FEIR, approximately 2,166 school-age children would live within the Project site following full build-out of the Project, including approximately 1,465 school-age children living at CP and approximately 700 students at the HPS2 site.

As discussed above, the 2010 FEIR did not analyze school uses at HPS2. The HPS2 proposed modifications would provide for one or more public or private elementary, secondary, or post-secondary schools. The public schools are expected to accommodate up to 700 students. The private school would accommodate approximately 1,000 students. Consequently, it is anticipated that sufficient school capacity would be provided between the schools provided at HPS2 and/or other public and private schools in the City to accommodate on-site student population. Construction-related impacts of these schools are addressed throughout Addendum 5.

Finally, as with the Project analyzed in the 2010 FEIR, school impact fees paid pursuant to SB 50 would go toward maintaining or improving school facilities to accommodate growth in school attendance. SB 50 would ensure that future facilities are provided. As such, this impact would remain less than significant, and no mitigation would be required.

Impact PS-7: Construction activities associated with the Project would not affect provision of school services by decreasing access to library services. ***[Criterion O.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	No Impact	No Impact

As with the Project analyzed in the 2010 FEIR, construction of the Project would not result in impacts to the San Francisco Public Library system, as the construction itself would not result in an increase in population requiring library services. Also, no library branches are located on the Project site. All library services would be available to the community throughout the duration of project construction. As such, no impact to library services during construction of the Project would occur.

Impact PS-8: Implementation of the Project would not result in an increase in demand for library services that is not met by existing library facilities in the vicinity that have been expanded or updated. ***[Criterion O.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the Project analyzed in the 2010 FEIR, residential and nonresidential development associated with the Project would increase demand for local library services in the Bayview neighborhood.

As discussed above, the 2018 Modified Project Variant would not result in a net increase in population in the combined CP and HPS Project sites. While the 2018 Modified Project Variant would generate more jobs than the CP-HPS2 Project (by approximately 5,880 jobs), it would generate fewer jobs than the R&D Variant (Variant 1) (by approximately 17 jobs).

Similar to the 2010 Project, the 2018 Modified Project Variant would result in a direct and indirect population increase within the Bayview neighborhood. Library branches serving the Project site, including the Portola branch (opened in 2009), the Visitacion Valley branch (opened in 2010), and expanded Bayview branch (opened in 2013), would continue to meet the demands of the community. The aforementioned SFPL branches would accommodate increased demand from the Project, and no additional library facilities would be required to accommodate development proposed in the Project. Impacts to libraries resulting from the 2018 Modified Project Variant would remain less than significant, and no mitigation would be required.

However, as with the Project analyzed in the 2010 FEIR, space within the Project site would also be dedicated to the provision of library services to supplement the expanded Bayview branch library. As part of the Project, a 1,500 gsf reading room and space for automated book-lending machines would be integrated into the community retail and public facilities uses that are proposed.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to public services impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to public services, either on a project-related or cumulative basis.

II.B.15 Recreation

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
15.	**Recreation.** Would the project:					
P.a	Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration or degradation of the facilities would occur or be accelerated?	2010 FEIR p. III.P-15 (Impact RE-2); Addendum 1 p. 46; Addendum 4 p. 50	No	No	No	MM RE-2
P.b	Result in substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered park or recreational facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives?	2010 FEIR p. III.P-15 (Impact RE-2); Addendum 1 p. 46; Addendum 4 p. 50	No	No	No	MM RE-2
P.c	Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	2010 FEIR p. III.P-12 (Impact RE-1); Addendum 1 p. 46; Addendum 4 p. 50	No	No	No	Varies[113]
P.d	Adversely affect existing recreational opportunities?	2010 FEIR p. III.P-32 (Impact RE-3); Addendum 1 p. 46; Addendum 4 p. 50	No	No	No	None

Changes to Project Related to Recreation

The 2018 Modified Project Variant at HPS2 includes a total of 232.0 acres of parks and recreation areas at HPS2, consisting of 173.9 acres of new parks and 58.1 acres of recreation areas, including sports fields and active urban recreation. In addition, the 17.3 acres of other parks and open space areas would be provided, but OCII would not consider these areas as creditable parkland. Appendix A Table A-5 (Comparison of 2018 Modified Project Variant to 2010 Project, R&D Variant [Variant 1], and Housing/R&D Variant [Variant 2A] [Parks and Open Space]) provides a detailed identification of new parks, new sports fields and active urban recreation areas, state park land, and other parks at both CP and HPS2 under the 2018 Modified Project Variant, as well as the same information for the 2010 Project, the R&D Variant (Variant 1), and the R&D/Housing Variant (Variant 2A). Overall, as compared to the 2010 Project, the parks and open space acreage would increase by 1.3 acres.

[113] Refer to Sections II.B.3, II.B.7, II.B.8, II.B.9, II.B.10, and II.B.12 for the specific mitigation measures for construction-related effects.

Comparative Impact Discussions

Impact RE-1: Construction of the parks, recreational uses, and open space proposed by the Project would not result in substantial adverse physical environmental impacts beyond those analyzed and disclosed in this EIR. (Refer to Sections III.D [Transportation and Circulation], III.H [Air Quality], III.I [Noise], III.J [Cultural Resources and Paleontological Resources], III.K [Hazards and Hazardous Materials], and III.M [Hydrology and Water Quality]) ***[Criterion P.c]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Varies	Varies (same as 2010 FEIR)

The 2010 FEIR found that impacts associated with construction of the proposed parks and recreational facilities would be considered part of the overall Project impacts. The construction impacts identified in 2010 FEIR Section III.D (Transportation and Circulation), Section III.H (Air Quality), Section III.I (Noise and Vibration), Section III.J (Cultural Resources and Paleontological Resources), Section III.K (Hazards and Hazardous Materials), Section III.M (Hydrology and Water Quality), and Section III.N (Biological Resources), and other relevant topics include impacts and mitigation measures associated with the construction of park and recreational facilities. The parks and recreation facilities would not be expected to have construction impacts separate from the overall Project. Additionally, because the Project would provide adequate parks and recreation facilities and open space to accommodate the increased demand from the Project, no additional park or recreation facility construction would be required.

Similarly, the 2018 Modified Project Variant construction related impact discussions, conclusions, and mitigation measures considered in the 2010 FEIR and Addendum 5 include construction of the parks and recreational facilities. The parks and recreation facilities would not be expected to have additional or separate impacts beyond those discussed for the overall Project. Consequently, no separate analysis of park and recreation facility construction impacts is required.

Impact RE-2: Implementation of the Project would not increase the use of existing parks and recreational facilities that would cause the substantial physical deterioration of the facilities to occur or to be accelerated, nor would it result in the need for, new or physically altered park or recreational facilities. ***[Criterion P.a]***[114]

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR found the Project would provide a total of 336.4 acres of new and or improved park land and recreational facilities with 104.8 acres at CP and 231.6 acres at HPS2. Based on the total number of new residents (24,465), the 2010 Project would provide 13.7 acres of parkland per 1,000 residents within the Project site, which exceeds the City General Plan ratio of 5.5 acres per 1,000 residents. The total number of new residents and new jobs (35,195) would result in a parks-to-

[114] The 2010 FEIR combined the discussion of Criterion P.a and Criterion P.b (2010 FEIR p. III.P-10, footnote 983).

population ratio of 9.5 acres per 1,000 employees/residents. Thus, the 2010 FEIR concluded that the Project would not have a significant impact.

The 2010 FEIR determined that the timing of Project development could result in a temporary increase in the use of parks and recreational facilities in a manner that would cause or accelerate the physical deterioration or degradation of those facilities if development of resident/employee generating uses occur in advance of the development of park and recreational facilities. To address this potential impact, the 2010 FEIR included mitigation measure MM RE-2, which would ensure that the potential impact would be reduced to a less-than-significant level.

The 2018 Modified Project Variant would modify the park and recreational facilities plan at HPS2 as described in Addendum 5 Section I (Project Description). The 2018 Modified Project Variant would provide a total (excluding "other" parks) of 232.0 acres of parks, sports fields, and active urban recreational areas at HPS2, which is approximately 0.4 acre more than for HPS2 in the 2010 Project. At CP, the 2018 Modified Project Variant would provide a total of 9.0 acres of new parks (there are no sports fields or active urban recreational areas proposed at CP), which is 0.9 acre more than provided at CP under the 2010 Project. The CP-HPS2 total parks and recreation acreage for the 2018 Modified Project Variant would be 337.7 acres, which is approximately 1.3 acres more than the CP-HPS2 total for the 2010 Project. Thus, the 2018 Modified Project Variant park and recreational acreage would be more than the park and recreation acreage considered in the 2010 FEIR impact analysis. Refer to Addendum 5 Appendix A, Table A-5, for a detailed identification of parks acreage for the 2018 Modified Project Variant, as well as the 2010 Project, the R&D Variant (Variant 1), and the Housing/R&D Variant (Variant 2A). The 2018 Modified Project Variant would also provide more parks, sports fields, and active urban recreational areas as compared to the R&D Variant (Variant 1) and the Housing/R&D Variant (Variant 2A). Further, because it is likely that residents or employees of HPS2 and CP would use parks or recreational facilities at either HPS2 or CP, this analysis considers both portions of the Project Site.

Under the 2018 Modified Project Variant, the total of 24,866 new residents would result in a parks-to-population ratio of 13.5 acres per 1,000 residents, which exceeds the City General Plan identified ratio of 5.5 acres per 1,000 residents. Further, including the 16,618 new jobs provided under the 2018 Modified Project Variant, a total of 8.1 acres per 1,000 employees/residents would be provided. As with the 2010 Project, the 2018 Modified Project Variant would also not have a significant impact related to the parks-per-resident ratio since the General Plan ratio of 5.5 acres per population would not be exceeded.

The 2018 Modified Project Variant construction phasing schedule would continue to meet or exceed the standard of 5.5 acres of parkland per 1,000 residents. Mitigation measure MM RE-2, which was adopted by the City, requires that parks and population are phased in a substantially concurrent manner, such that adequate parkland is constructed and operational when residential and employment-generating uses are occupied. The 2018 Modified Project Variant must comply with

this mitigation measure. This impact would remain less than significant with implementation of the identified mitigation measure.

Mitigation Measure with Proposed 2018 Modifications

MM RE-2: Phasing of parkland with respect to residential and/or employment-generating uses. Development of the Project and associated parkland shall ~~proceed in four phases, as illustrated by Figure II-16 (Proposed Site Preparation Schedule) of Chapter II (Project Description) of this EIR. To~~ ensure that within each phase or sub-phase, parks and population increase substantially concurrently~~,~~ and development shall be scheduled such that adequate parkland is constructed and operational when residential and employment-generating uses are occupied. The following standards shall be met:

- No project development shall be granted a temporary certificate of occupancy if the City determines that the new population associated with that development would result in a parkland-to-population ratio within the Project site lower than 5.5 acres per 1,000 residents/population, as calculated by the Agency.
- For the purposes of this mitigation measure, in order for a park to be considered in the parkland-to-population ratio, the Agency must determine that within 12 months of the issuance of the temporary certificate of occupancy, it will be fully constructed and operational, and, if applicable, operation and maintenance funding will be provided to the Agency.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to recreation impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to recreation, either on a project-related or cumulative basis.

II.B.16 Utilities

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
18.	**Utilities.** Would the project:					
Q.a	Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	2010 FEIR p. III.Q-17 (Impact UT-2); Addendum 1 p. 47 Addendum 4 p. 52	No	No	No	MM UT-2 (as modified by Addendum 5)
Q.b	Require new or expanded water entitlements and resources, if there are not sufficient water supplies available to serve the project from existing entitlements and resources?[115]	2010 FEIR p. III.Q-15 (Impact UT-1); Addendum 1 p. 47 Addendum 4 p. 52	No	No	No	None
Q.c	Require or result in the construction of new wastewater treatment or collection facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	2010 FEIR p. III.Q-31 (Impact UT-3b); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	None
Q.d	Result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	2010 FEIR p. III.Q-31 (Impact UT-3b); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	MM UT-3a
Q.e	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?[116]	2010 FEIR p. III.Q-34 (Impact UT-4); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	None
Q.f	Be served by a landfill with insufficient permitted capacity to accommodate Project-related solid waste disposal needs?	2010 FEIR p. III.Q-45 (Impact UT-5b), p. III.Q-47 (Impact UT-6b), p. III.Q-51 (Impact UT-7b), p. III.Q-53 (Impact UT-8b); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	MM UT-5a, MM UT-7a

[115] This standard has been slightly modified from the text found in CEQA Guidelines Appendix G for ease of comprehension.
[116] This standard has been slightly modified from the text found in CEQA Guidelines Appendix G for ease of comprehension.

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
Q.g	Fail to comply with federal, state, and local statutes and regulations related to solid waste?	2010 FEIR p. III.Q-55 (Impact UT-9); Addendum 1 p. 47 Addendum 4 p. 52	No	No	No	MM UT-5a, MM UT-7a
Q.h	Require or result in the construction of new or expansion of existing utility infrastructure, the construction of which could cause significant environmental effects?	2010 FEIR p. III.D-31 (Section III.D), p. III.H-18 (Section III.H), p. III.I-20 (Section III.I), p. III.J-31 (Section III.J), p. III.K-46 (Section III.K), p. III.L-22 (Section III.L), p. III.M-49 (Section III.M), p. III.O-7 (Section III.O), p. III.S-33 (Section III.S); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	Varies[117]
Q.i	Result in a determination by the utility service provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	2010 FEIR p. III.Q-59 (Impact UT-10); Addendum 1 p. 47; Addendum 4 p. 52	No	No	No	None

Changes to Project Related to Utilities

The elements of the land use program evaluated in Addendum 5 that relate to utilities are the change in the number of residential units and hotel rooms, and the change in square footage of buildings (used for commercial, industrial, and community purposes), office space, schools, and parks.

Water

The land use program that is evaluated in Addendum 5 is different than the land use program evaluated in the 2010 FEIR, as described in the Project Description. Accordingly, total water demand as a result of the project has also changed. Table 23 (Water Demand) shows a total water demand of 1.90 mgd, which is higher than the 1.67 mgd estimated for the 2010 Project but less than the 1.99 mgd estimated for the approved R&D Variant (Variant 1) (refer to 2010 FEIR Table III.Q-4 [Project Water Demands Adjusted for Plumbing Codes and SF Green Building Ordinance (mgd)] and Table IV-11 [R&D Variant Water Demands Adjusted for Plumbing Codes and SF Green Building Ordinance (mgd)], respectively). Compared to the R&D Variant (Variant 1), the 2018 Modified Project Variant represents an overall decrease in water demand of 0.09 mgd, with increased demand from residential, hotel, neighborhood retail, school, and community uses; and decreased demand from office, regional retail, and football stadium uses.

[117] Refer to Sections II.B.3, II.B.7, II.B.8, II.B.9, II.B.10, II.B.11, II.B.12, II.B.14, and II.B.18 for the specific mitigation measures for construction-related effects.

TABLE 23 WATER DEMAND

Land Use	Demand[a] (mgd) CP	Demand[a] (mgd) HPS2	2018 Modified Project Variant Total (mgd)	2010 Project Total (mgd)	R&D Variant (Variant 1) Total (mgd)
Residential	0.57	0.18	***0.75***	0.83	0.83
Regional Retail	0.09	0.01	***0.10***	0.08	0.08
Neighborhood Retail	0.02	0.05	***0.07***	0.04	0.03
Office	0.04	0.00	***0.04***	0.06	0.06
Research and Development	0.00	0.52	***0.52***	0.36	0.71
Hotel	0.02	0.04	***0.06***	0.05	0.05
Football Stadium	0.00	0.00	***0.00***	0.02	0.00
Arena	0.02	0.00	***0.02***	0.01	0.01
Schools	0.00	0.01	***0.01***	Not Applicable[b]	Not Applicable[b]
Water Taxi	0.00	0.00	***0.00***	Not Applicable[b]	Not Applicable[b]
Community Use (including artists' studios)	0.01	0.10	***0.11***	0.02	0.02
Public Parking	0.00	0.00	***0.00***	0.00[c]	0.00[c]
Parks and Open Space	0.07	0.15	***0.22***	0.21	0.19
Total Demand	***0.84***	***1.06***	***1.90***	***1.67***	***1.99***

SOURCE: ARUP, Candlestick Point – Hunters Point Shipyard Phase II Water Demand Memorandum, 2009; BKF, 2018.

a. Water demand was calculated using the land use program identified in Addendum 5 Table 2 (2018 Modified Project Variant Land Use Program) and applying the unit demand water values used by ARUP in 2010 and/or new unit demand water values for new land uses.

b. This value was not provided in the 2010 FEIR because the associated land uses were not a part of the 2010 Project or R&D Variant (Variant 1).

c. This value was not provided in the 2010 FEIR, although public parking was a part of the 2010 Project and R&D Variant (Variant 1). While the value was not provided in the 2010 FEIR, the water demand for public parking in 2010 would be consistent with the water demand for public parking under the 2018 Modified Project Variant (0.00 mgd).

The 2010 FEIR Utilities Variant 4 includes eleven decentralized wastewater treatment plants, each capable of treating 100,000 gallons per day (gpd), which would accommodate the estimated Project-generated wastewater flow of approximately 1.1 mgd. Under Utilities Variant 4, seven plants would be located within Candlestick Park and four within Hunters Point. The eleven decentralized plants would generate 1.05 mgd of reclaimed water. The 2018 Modified Project Variant would instead include a centralized recycled water system at HPS2, consisting of a dedicated 976,000 gpd central treatment that would serve both CP and HPS2 and require one full-time employee. Consistent with the Utilities Variant 4, the central treatment plant under the 2018 Modified Project Variant would divert wastewater to a sanitary sewer system for treatment using membrane bioreactor (MBR) technology to obtain a water quality appropriate for irrigation, toilet flushing and other nonpotable uses. If a connection would be provided to CP, recycled water would be transported from the HPS2 plant to CP via a pipe attached to the bottom of from the Yosemite Slough Bridge.

The 2010 FEIR analyzed the Auxiliary Water Supply System (AWSS) as being connected to the existing AWSS system at the intersection of Earl Street and Innes Avenue and at the Palou Avenue and Griffith Avenue intersection with looped service along Spear Avenue/Crisp Road. With the 2018 Modified Project Variant, the AWSS would be connected to the existing AWSS system at the Palou Avenue and Griffith Avenue intersection with a looped service along Spear Avenue/Crisp Road.

Off-site improvements to the University Mound AWSS storage tank and distribution system may also be implemented by the City of San Francisco to support HPS2. A second optional connection may be installed at a later date by the City of San Francisco at the intersection of Earl Street and Innes Avenue. If a connection would be provided to CP, recycled water would be transported from the HPS2 plant to Candlestick via a pipe attached to the bottom of the Yosemite Slough Bridge.

Wastewater

The land use program that is evaluated in Addendum 5 is different than the land use program evaluated in the 2010 FEIR, as described in the Project Description. Accordingly, total wastewater generation as a result of the project has also changed. Table 24 (Wastewater Generation) shows total wastewater generation of 1.25 mgd, which is higher than the 1.18 mgd estimated for the 2010 Project but less than the 1.35 mgd estimated for the approved R&D Variant (Variant 1) (refer to 2010 FEIR Table III.Q-5 [Project Wastewater Generation] and Table IV-12 [R&D Variant Wastewater Generation], respectively). Compared to R&D Variant (Variant 1), the 2018 Modified Project Variant represents an overall decrease in wastewater generation of 0.10 mgd, with decreased demand from office, regional retail, and football stadium uses, and increased generation from residential, neighborhood retail, school, and community uses.

TABLE 24 WASTEWATER GENERATION

Land Use	*Estimated Wastewater Generation Expressed as % of Water Demand (or as otherwise specified)*	*CP (mgd)*	*HPS2 (mgd)*	*2018 Modified Project Variant Total (mgd)*	*2010 Project Total (mgd)*	*R&D Variant (Variant 1) Total (mgd)*
Residential	95%	0.54	0.17	***0.71***	0.79	0.79
Regional Retail	57%	0.05	0.01	***0.06***	0.05	0.05
Neighborhood Retail	57%	0.01	0.03	***0.04***	0.02	0.02
Office	57%	0.02	0.00	***0.02***	0.03	0.03
Community Uses (includes Artist space)	57%	0.01	0.06	***0.07***	0.02	0.02
Research and Development	57%	0.00	0.30	***0.30***	0.21	0.40
Hotel	57%	0.01	0.02	***0.03***	0.03	0.03
Football Stadium	95%	0.00	0.00	***0.00***	0.02	0.00
Arena	95%	0.02	0.00	***0.02***	0.01	0.01
Schools	57%	0.00	0.00	***0.00***	Not Applicable[a]	Not Applicable[a]
Total		***0.66***	***0.59***	***1.25***	***1.18***	***1.35***

SOURCE: ARUP, 2009; BKF, 2018.

a. This value was not provided in the 2010 FEIR because the associated land uses were not a part of the 2010 Project or R&D Variant (Variant 1).

As directed by the SFPUC, wastewater from the HPS2 site would now be conveyed to the existing combined sewer main on the Innes Avenue tributary to the Central Basin, rather than the Hunters Point tunnel sewer system, as originally analyzed in the 2010 FEIR. With the changes to the land use program represented by the 2018 Modified Project Variant, projected maximum peak flows from HPS2 into the

Central Basin system, based on 0.59 mgd and peaking factor of 3.0 would be approximately 1,229 gpm (0.59 mgd/24 hours/60 minutes x 1,000,000 times 3.0). A peaking factor of less than 3.0 may be achieved, pursuant to the Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard, which would reduce the maximum peak flows from HPS2 into the Central Basin system.

For the 2010 FEIR, Hydroconsult Engineers (HCE) determined that the existing wastewater flow for the Project site was 0.206 mgd and that the total net increase in wastewater from the Project site would equal 0.754 mgd for the 2010 Project and 0.974 mgd for the R&D Variant (Variant 1),[118] and that there would be a decrease in CSO volume, frequency, and duration of CSO in the Yosemite Basin and a decrease in overall CSO volume for the entire Bayside Drainage Area because stormwater from the Project site would no longer flow into the Combined Sewer System. For the 2018 Modified Project Variant, the total net increase in wastewater would equal 1.044 mgd (1.25 minus 0.206).

Solid Waste

The land use program that is evaluated in Addendum 5 is different than the land use program evaluated in the 2010 FEIR, as described in the Project Description. Accordingly, total solid waste generation as a result of the project has also changed. Table 25 (Solid Waste Generation) shows total solid waste generation of 23,153 tons per year (tpy), which is higher than the 21,827 tpy estimated for the 2010 Project and the 22,225 tpy estimated for the approved R&D Variant (Variant 1) (refer to 2010 FEIR Table III.Q-8 [Project Solid Waste Generation] and Table IV-14 [R&D Variant Solid Waste Generation], respectively). Compared to R&D Variant 1, the 2018 Modified Project Variant represents an overall increase in solid waste generation of 928 tpy, with increased generation from residential, retail, hotel, and research and development, and decreased generation (zero) from office and football stadium uses. The proposed water taxi service is anticipated to result in the generation of nominal solid waste, if any; food and beverages are not assumed to be provided as part of the service. Furthermore, the implementation of proposed parking would not generate solid waste. There would be solid waste receptacles on site, but the solid waste would be generated as a result of the 2018 Modified Project Variant land uses, or as nominal waste generated off site that would be deposited at parking structures.

The Project Description estimates that the borings for the ground-source geothermal heating and cooling system would result in approximately 12,250 cubic yards of excavated soil that would be reused on site in a manner consistent with the Soil Import Plan and Risk Management Plan.

[118] 2010 FEIR Appendix Q3, Hydrologic Modeling to Determine Potential Water Quality Impacts, Hydroconsult Engineers, October 19, 2009.

TABLE 25 SOLID WASTE GENERATION

		Candlestick Point			*HPS2*			*2018 Modified Project Variant Total*			*2010 Project Total*		*R&D Variant (Variant 1) Total (mgd)*	
Use	*Generation Factor (per day or year)*	*Area or Units*	*Tons per Day or Event*	*Tons per Year[l]*	*Area or Units*	*Tons per Day or Event*	*Tons per Year[l]*	*Area or Units*	*Tons per Day or Event*	*Tons per Year or per Total Number of Events[a]*	*Tons per Day or Event*	*Tons per Year or per Total Number of Events*	*Tons per Day or Event*	*Tons per Year or per Total Number of Events*
Residential	5.653 lb/unit	7,218 units	20.4	7,446	3,454 units	9.8	3,577	***10,672 sf***	***30.2***	***11,023***	29.7	10,840.5	29.7	10,840.5
Neighborhood Retail/Maker Space/Regional Retail	0.02600411 lb/sf	760,000 sf	9.9	3,614	401,000 sf	5.2	1,898	***1,161,000 sf***	***15.1***	***5,512***	11.5	4,197.5	11.5	4,197.5
R&D/Office	0.006 lb/sf	150,000 sf	0.45	164.3	4,265,000 sf	12.8	4,672	***4,415,000 sf***	***13.3***	***4,836.3***	8.0	2,920	15.5	5,657.5
Hotel	0.0108 lb/sf	150,000 sf	0.81	296.0	120,000	0.65	237	***270,000 sf***	***1.5***	***533.0***	0.8	292.0	0.8	292.0
Arena	2.23 lb/seat	10,000 seats	5.6[b]	840[c]	0	0	0	***10,000 seats***	***5.6***	***840c***	5.6	836.3[c]	5.6	836.3[c]
Stadium	2.23 lb/seat	0	0	0	0	0	0	***0***	***0***	***0***	2,339.2	2,339.2[i]	0	0
Artist Studios/Art Center	0.006 lb/sf	0	0	0	255,000 sf	0.8	292	***255,000 sf***	***0.8***	***292.0***	0.8	292.0	0.8	292.0
Community Facilities	0.006 lb/sf	50,000 sf	0.15	54.8	50,000 sf	0.15	54.8	***100,000 sf***	***0.3***	***109.6***	0.3	109.6	0.3	109.6
Schools[d]	6.2 gallons/ acre/year	0	0	0	410,000 sf (9.4 acres)	0.0007	0.24[e]	***410,000***	***0.24***	***0.24***	Not Applicable[j]	Not Applicable[j]	Not Applicable[j]	Not Applicable[j]
Parks and Open Space[d]	5.0 gallons/ acre/year	105.7 acres	0.006	2.2[f]	232.0 acres	0.013	4.8[g]	***337.7 acres***	***0.020***	***7.0***	Not Available[k]	Not Available[k]	Not Available[k]	Not Available[k]
Total				***12,417***			***10,736[h]***			***23,153***		***21,827***		***22,225***

SOURCE: PBS&J 2009; Generation Factors from Arup, *Carbon Footprint Report*, March 24, 2009; FivePoint, 2018. City of Dublin, Long Term Trash Reduction Plan Table 1-1, February 1, 2014.

a. Calculated by adding the horizontal columns, rather than calculating total number of units by the generation rate.
b. The Performance venue is projected to be 50 percent attendance.
c. Assumes 150 events per year at 50 percent attendance.
d. City of Dublin, *Long Term Trash Reduction Plan*, February 1, 2014, Table 1-1 (San Francisco Bay Area trash generation rates by land use [gallons/acre/year]).
e. 9.41 acres x 6.2 gallons = 58.34 gallons per year x 8.35 lb. of water weight = 487.2 pounds per year, or 0.24 ton.
f. 105.7 acres x 5.0 gallons = 528.5 gallons per year x 8.35 lb. of water weight = 4,413 pounds per year, or 2.2 tons.
g. 232.0 acres x 5.0 gallons = 1,160 gallons per year x 8.35 lb. of water weight = 9,686 pounds per year, or 4.8 tons.
h. The recycled water facility is not assumed to generate measurable solid waste as only one employee would be at the site on a given day.
i. Assumes 12 sold-out games and 20 other sold-out stadium events per year.
j. This value is not provided in the 2010 FEIR because the associated land uses were not a part of the 2010 Project or R&D Variant (Variant 1).
k. The value for this land use category was not provided in the 2010 FEIR.
l. Tons per year is calculated by taking the tons per day or event value, which may have been rounded, and multiplying by 365.

Alternative Utility Infrastructure

The 2010 FEIR Utilities Variant 4 analyzed implementation of a district heating and cooling system, an on-site wastewater treatment, and the use of photovoltaic cells to reduce energy usage. The 2018 Modified Project Variant includes the following alternative utility systems: a ground source geothermal heating and cooling system as the primary source of heating and cooling for the development; extensive use of solar power (10.5- to 16.5-megawatt [MW] generating capacity); and expanded recycled water system. Each of these alternative utility systems are described in detail in Project Description Section I.C.5 (Infrastructure Plan).

New Regulations

The following new regulations would apply to the analysis of utilities impacts.

Water Efficient Irrigation Ordinance (Ordinance No. 301-10, *San Francisco Administrative Code* Chapter 63). To ensure the efficient use of water within all San Francisco landscapes, projects with 500 sf or more of new or modified landscape area are required to comply with the Water Efficient Irrigation Ordinance (effective January 1, 2011). To reduce landscape water use, projects must design, install, and maintain efficient irrigation systems, utilize low-water-use plantings, and set a maximum applied water allowance, also known as an annual water budget. The requirements of the Water Efficient Irrigation Ordinance apply to owners of residential, commercial, municipal, and mixed-use properties with a new construction or modified landscape project greater than or equal to 500 sf. The San Francisco Green Landscaping Ordinance has additional guidelines and recommendations related to reducing stormwater runoff, stormwater treatment strategies, and improving local and regional water quality.

Recycled Water Ordinance (Ordinance Nos. 390-91 and 391-91, *San Francisco Code of Public Works* Article 22). The City and County of San Francisco's Recycled Water Ordinance requires property owners to install recycled water systems in new construction, modified construction, or remodeling projects totaling 40,000 sf or more as well as new or existing landscapes totaling 10,000 sf or more that were not constructed in conjunction with a development project. The goal of the ordinance is to maximize the use of recycled water. Buildings and facilities that are located within the designated recycled water use areas are required to use recycled water for all uses authorized by California.

Mandatory Use of Alternate Water Supplies in New Construction Ordinance (Ordinance No. 109-15, *San Francisco Health Code* Article 12C). This ordinance amends *San Francisco Health Code* Article 12C to require new buildings larger than 250,000 sf to be constructed, operated, and maintained using available alternate water sources for toilet and urinal flushing as well as irrigation. In addition, new buildings larger than 40,000 sf are required to prepare water budget calculations. Approvals from the SFPUC and permits from both the Department of Public Health and

Department of Building Inspection would be needed for the proposed project to verify compliance with the requirements and local health and safety codes.

Subdivision Regulations for the Candlestick Point/Hunters Point Shipyard were adopted by the San Francisco Department of Public Works in June 2014 pursuant to the Subdivision Code Section 1611, together with Public Works Code Sections 147.2(b)(2) and 1204(b)(2) to serve as general guidelines for the planning, development, design and improvement of the Candlestick Point–Hunters Point Shipyard development. Specific requirements for SLR planning are included as Attachment 4.

Green Building Ordinance (*City and County of San Francisco Building Code*, Chapter 13C). In November 2008, the City passed the San Francisco Green Building Ordinance (SFGBO), which is included as *San Francisco Building Code* Chapter 13C. In 2013, the SFGBO was amended to incorporate all mandatory elements of the 2013 CALGreen and Title 24 energy-efficiency standards and require green building practices and Leadership in Energy and Environmental Design (LEED) certification for all new residential and commercial construction in the city, unless otherwise indicated in the SFGBO, as well as alterations to existing buildings. The *Green Building Code* was last amended in April 2016 to establish requirements for certain new building construction to include development of renewable energy facilities (*Green Building Code* Sections 4.201.2 and 5.201.1.2). The requirements include the installation of solar PV systems and/or solar thermal systems in the solar zone (i.e., an allocated space that is unshaded and free of obstructions, usually a roof). The renewable energy requirements are applicable to residential and nonresidential new construction projects of 10 occupied floors or less.

California Assembly Bill 341 (AB 341) (*Public Resources Code* Division 30, Part 3, Chapter 12.8). AB 341, which became law in 2011, establishes a new statewide goal of 75 percent recycling through source reduction, recycling, and composting by 2020, and changed the way that the state measures progress toward the 75 percent recycling goal, focusing on source reduction, recycling and composting. AB 341 also requires all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. The purpose of the law is to reduce GHG emissions by diverting commercial solid waste to recycling efforts and expand the opportunity for additional recycling services and recycling manufacturing facilities in California.[119]

California Assembly Bill 1826 (*Public Resources Code* Division 30, Part 3, Chapter 12.9, Commercial Organic Waste Recycling Law). AB 1826 became effective on January 1, 2016, and requires businesses and multi-family complexes (with 5 units or more) that generate specified amounts of organic waste (compost) to arrange for organics collection services. The law phases in the requirements on businesses with full implementation realized in 2019:

- **First Tier:** Commencing in April 2016, the first tier of affected businesses included those that generate eight or more cubic yards of organic materials per week.

[119] California Department of Resources Recycling and Recovery, *Mandatory Commercial Recycling*, 2015. Available at http://www.calrecycle.ca.gov/recycle/commercial/, accessed November 2, 2017.

- **Second Tier:** In January 2017, the affected businesses expanded to include those that generate four or more cubic yards of organic materials per week.
- **Third Tier:** In January 2019, the affected businesses are further expanded to include those that generate four or more cubic yards of commercial solid waste per week.

Comparative Impact Discussions

Impact UT-1: Implementation of the Project would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements. ***[Criterion Q.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Amendment 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that the Project would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements, based on a total water demand estimate of 1.99 mgd for R&D Variant (Variant 1), and determined the impact to be less than significant.

The 2018 Modified Project Variant would be subject to 2016 Title 24 building standards and the SFGBO, as amended in 2016, which together represent more stringent requirements for water efficiency than what was required by the building standards in effect at the time the 2010 FEIR was certified. This would help reduce the Project's use of water.

As shown in Table 23, total estimated water demand for the 2018 Modified Project Variant is 1.90 mgd. Since this is less that the 1.99 mgd estimated for R&D Variant (Variant 1), the conclusion is the same as that reached in the 2010 FEIR: the impact would remain less than significant and no mitigation would be required.

The project site is within a designated recycled water use area and therefore must comply with the Recycled Water Ordinance No. 109-15, *San Francisco Health Code* Article 12C. With its inclusion of an expanded on-site recycled water treatment and distribution system, the 2018 Modified Project Variant would be in compliance with the ordinance.

Impact UT-2: Implementation of the Project would not require or result in the construction of new or expanded water treatment facilities. The Project would require the expansion of an auxiliary water conveyance system to provide adequate water supply for firefighting to the Project site. ***[Criterion Q.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Amendment 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that Project would not require or result in the construction of new or expanded water treatment facilities, and this impact would be less than significant.

The 2010 FEIR concluded that the Project would require mitigation measure MM UT-2 (construction of an AWSS) to provide adequate water supply for firefighting to the Project site. The AWSS would ensure the provision of adequate water for on-site firefighting purposes, and the Project would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements for water to fight fires. The impact would be less than significant with implementation of this mitigation measure.

Because total water demand for the 2018 Modified Project Variant is 1.90 mgd and therefore is less than the water demand for R&D Variant (Variant 1), the conclusion remains the same as that reached in the 2010 FEIR: the impact would remain less than significant with implementation of mitigation measure MM UT-2.

Mitigation Measure with Proposed 2018 Modifications

> **MM UT-2: Auxiliary Water Supply System.** Prior to issuance of occupancy permits, as part of the Infrastructure Plan to be approved, the Project Applicant shall construct an Auxiliary Water Supply System (AWSS) within Candlestick Point to connect to the City's planned extension of the off-site system on Gilman Street from Ingalls Street to Candlestick Point. The Project Applicant shall construct an additional AWSS on HPS Phase II to connect to the existing system ~~at Earl Street and Innes Avenue and~~ at Palou and Griffith Avenues, with service along Spear Avenue/Crisp Road.

Impact UT-3b: Implementation of the Project at HPS Phase II would not require expansion of existing off-site wastewater conveyance facilities. ***[Criterion Q.d]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Amendment 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

For dry weather conditions, the 2010 FEIR concluded that the existing conveyance infrastructure could accommodate the additional flows from the HPS2 development in addition to existing flows even during periods of peak flow conditions, and that no expansion of the off-site wastewater conveyance lines would be required as a result of HPS2. The impact would be less than significant, based on a total wastewater generation estimate of 1.35 mgd for R&D Variant (Variant 1).

Because total wastewater generation for the 2018 Modified Project Variant is 1.25 mgd and therefore less than the wastewater generation estimate for R&D Variant (Variant 1), the conclusion would be the same as that reached in the 2010 FEIR: the impact would remain less than significant. However, wastewater flows from HPS2 are no longer tributary to the Hunters Point tunnel sewer system, as originally analyzed in the 2010 FEIR. As described above, and consistent with the 2014 Storm Sewer Master Utility Plan, SFPUC has requested that wastewater from HPS now be conveyed to the existing combined sewer main on Innes Avenue, which is tributary to the Central Basin, rather than the Hunters Point tunnel sewer system, as originally analyzed in the 2010 FEIR. As indicated above in "Changes to Project Related to Utilities", the 2018 Modified Project Variant represents a projected

maximum peak flow of approximately 1,229 gpm from HPS2 to the Central Basin system. No expansion of the existing off-site conveyance infrastructure would be required to accommodate flows to the Central Basin system from the 2018 Modified Project Variant in addition to existing flows even during periods of peak flow conditions. The impact would remain less than significant with implementation of the identified mitigation measures.

The total net increase in wastewater from the 2018 Modified Project Variant would equal 1.044 mgd. As with the Project analyzed in the 2010 FEIR, this is an increase in dry weather flows compared to the existing condition of 0.206 mgd, but the proposed diversion of wet-weather flows away from the combined system during storm events would offset the increase in dry-weather flows. The 2009 HCE study found that for both the 2010 Project and R&D Variant (Variant 1), the separate wastewater and stormwater systems would result in a *decrease* in CSO volume, frequency, and duration of CSO in the Yosemite Basin (less than one event per year lasting approximately 1.2 hours, resulting in 3.1 million gallons per year CSO, compared to the baseline condition of one 2-hour event per year resulting in 5.3 million gallons per year CSO) and decrease in overall CSO volume for the entire Bayside Drainage Area from 890 million gallons per year to 877 million gallons per year because stormwater from the Project site would no longer flow into the Combined Sewer System. The slight net increase in total wastewater from 0.974 mgd (R&D Variant [Variant 1]) to 1.044 mgd for the 2018 Modified Project Variant would not change this conclusion.[120] Though it remains possible that a temporary increase in CSO volume could occur during wet weather if structures are occupied and contribute wastewater to the Combined Sewer System prior to completion of the separate stormwater and wastewater infrastructure, mitigation measure MM UT-3a would reduce this impact. This impact would remain less than significant by providing temporary detention or retention of wastewater on site during such conditions.

Impact UT-4: Implementation of the Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. ***[Criterion Q.e]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that the Project would not exceed wastewater treatment requirements of the RWQCB. The impact would be less than significant, based on a total wastewater generation estimate of 1.35 mgd for R&D Variant (Variant 1), and determined the impact to be less than significant.

Because total wastewater generation for the 2018 Modified Project Variant is 1.25 mgd and therefore less than the wastewater generation estimate for R&D Variant (Variant 1), the conclusion is the same

[120] The 2018 Modified Project Variant represents an increase of about 0.008 million gallons over a 2-hour period compared to the R&D Variant (Variant 1), which is negligible compared to the 3.1 million gallons per year CSO result for the Project in the 2009 HCE study, and would not affect the conclusion when comparing the Project to the 5.3 million gallons per year CSO for existing conditions.

as that reached in the 2010 FEIR: the impact would remain less than significant, and no mitigation would be required.

Impact UT-5b: Construction at HPS Phase II, including demolition of existing facilities, would not generate construction-related solid waste that would exceed the capacity of landfills serving the City and County of San Francisco. ***[Criterion Q.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The estimates for construction and demolition debris from the 2018 Modified Project Variant remain unchanged from the estimates for the Project as analyzed in the 2010 FEIR. However, construction-related solid waste now goes to Recology's Hay Road Landfill, rather than the Altamont Landfill that was serving the City of San Francisco in 2010. As described above, the City's agreement with the Hay Road Landfill to accept up to 2,400 tpd of solid waste should extend for approximately 9 years from 2016, based on projected disposal volumes, with an option to renew the Agreement thereafter for an additional 6 years.

The 2010 FEIR estimated that 136,776 tons of construction debris (over the entire construction period) from HPS2 could not be recycled (based on a 75 percent diversion rate) and would be transported to the Altamont Landfill. It was estimated that the HPS2 construction waste represented approximately 0.3 percent of the remaining capacity of the Altamont Landfill as of August 2009 (45.7 million cubic yards).[121] The 2010 FEIR also noted that, at current disposal rates, the Altamont Landfill would be expected to reach capacity in January 2032, but could possibly close three years earlier, in January 2029. Most of the demolition activities, which generate construction debris, were expected to conclude in 2028 at HPS2, 4 years before the landfill was expected to close.

With respect to the Hay Road Landfill, which would now be used for solid waste generated by the 2018 Modified Project Variant, 136,776 tons of construction debris from HPS2 represents 0.45 percent of the remaining capacity of 30.4 million cubic yards. Although this is a slightly higher percentage of remaining capacity than if the Altamont Landfill were used (0.45 percent as compared to 0.3 percent), it similarly represents a nominal contribution to the remaining capacity of either landfill. Further, the projected closure date of the Hay Road Landfill extends to 2077, which is far beyond the projected 2032 (or 2029) closure date of the Altamont landfill. Thus, using Hay Road Landfill provides a long-term solution to accommodate the construction schedule represented by the 2018 Modified Project Variant, which proposes construction activities through 2034, which is when (or after) the Altamont Landfill is proposed to close. Accordingly, the fact that there is an identified landfill with adequate remaining capacity that is operational through 2077, combined with implementation of mitigation measure MM UT-5a, would ensure that construction at HPS2, including demolition of existing facilities, would not generate construction-related solid waste that would exceed the capacity of

[121] Assumes an average density of 1 ton per cubic yard.

landfills serving the City and County of San Francisco. As such, this impact would remain less than significant with implementation of the identified mitigation measure.

Impact UT-6b: Construction at HPS Phase II would not require the disposal of hazardous wastes such as lead-based paint, asbestos, and contaminated soils that would exceed the capacity of transport, storage, and disposal facilities permitted to treat such waste. ***[Criterion Q.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2010 FEIR concluded that Treatment, Storage, and Disposal (TSD) facilities in California and adjoining states have sufficient capacity to treat hazardous wastes, construction of Candlestick Point would not generate hazardous wastes (construction debris or contaminated soil) that would exceed the capacity of TSDs authorized to treat such waste. The 2010 FEIR concluded that this would be a less-than-significant impact.

For the 2018 Modified Project Variant, there is no change with respect to the generation of hazardous wastes, except for the potential of encountering contaminated soil when installing the borings associated with the ground source geothermal heating and cooling system. If contaminated soil is encountered it is expected to generate a relatively small volume of contaminated drill cuttings and fluids, since the borings would be located in areas of the site where the Navy has already completed its cleanup activities in areas that avoid known contamination zones. Further, the volume would be small relative to the contaminated soil generated during deep excavations for large structures such as residential towers; installation of foundation piles; trenching for utility lines; grading and compaction; and other earth-disturbing activities at the site. If encountered, the contaminated drill cuttings and fluid would be managed in a controlled manner as hazardous waste, in accordance with mitigation measures for hazardous waste identified in the 2010 FEIR and the Soil Import Plan and Risk Management Plan. Accordingly, excavated soil may be relocated on site to raise the ground surface elevation to account for future SLR impacts, as a substantial amount of fill soil is required to raise grade.

As with the project analyzed in the 2010 FEIR, contaminated soils generated by the 2018 Modified Project Variant may require transportation off site and treatment at authorized registered TSDs. Because the TSDs in California and adjoining states have sufficient capacity to treat hazardous wastes, construction of the 2018 Modified Project Variant would not generate hazardous wastes (construction debris or contaminated soil) that would exceed the capacity of TSDs authorized to treat such waste. This impact would remain less than significant, and no mitigation would be required.

Impact UT-7b: Implementation of the Project at HPS Phase II would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.
[Criterion Q.f]

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

The 2010 FEIR concluded that the impact of operational solid waste generated by the HPS2 on the capacity of the Altamont Landfill would be less than significant, with implementation of mitigation measure MM UT-7a.

The solid waste generated by the 2018 Modified Project Variant is estimated at 23,153tpy (equivalent to an average of 63.43 tpd), which is slightly higher than the 21,827 tpy estimated for the 2010 Project and the 22,225 tpy estimated for the approved R&D Variant (Variant 1). Compared to R&D Variant (Variant 1), the 2018 Modified Project Variant represents an overall increase in solid waste generation of 928 tpy, or an average of 2.54tpd.

San Francisco's municipal solid waste now goes to Recology's Hay Road Landfill rather than the Altamont Landfill that was serving the City of San Francisco in 2010. As described above, the City's agreement with the Hay Road Landfill to accept up to 2,400 tpd of solid waste should extend for approximately 9 years from 2016, based on projected disposal volumes, with an option to renew the Agreement thereafter for an additional 6 years (approximately 2031). The projected closure date of the Hay Road Landfill is 2077. By contrast, the 2010 FEIR estimated that the Altamont Landfill was due to reach capacity in January 2032 based on current disposal rates, and could possibly close three years earlier, in 2029.

The total solid waste generated by the 2018 Modified Project Variant (23,153 tons per year as shown in Table 25) represents approximately 0.08 percent of the remaining capacity of the Hay Road Landfill as of July 2010 (30.4 million cubic yards).[122] The 2018 Modified Project Variant's net increase in solid waste of 928 tpy compared to R&D Variant (Variant 1) analyzed by the 2010 FEIR would amount to approximately 928 tpy, or about 0.002 percent of the landfill's remaining capacity. The 2018 Modified Project Variant's estimated generation of 63.43 tpd represents approximately 2.6 percent of the maximum daily waste that could be accepted according to the agreement with Hay Road Landfill, only slightly higher than the 60.89 tpd estimated for R&D Variant (Variant 1) analyzed by the 2010 FEIR, which represents approximately 2.5 percent of the daily waste allowed by Hay Road Landfill.

Despite the small increase in municipal solid waste generation by the 2018 Modified Project Variant as compared to the Project analyzed by the 2010 FEIR and R&D Variant (Variant 1), Hay Road Landfill has a higher remaining capacity than Altamont Landfill, and a projected closure date well beyond that of the Altamont Landfill. Thus, using Hay Road Landfill provides a long-term solution to accommodate the operation of the 2018 Modified Project Variant. Accordingly, the fact that there

[122] Assumes an average density of 1 ton per cubic yard.

is an identified landfill with adequate remaining capacity that is operational through 2077, combined with implementation of mitigation measure MM UT-7a, which requires preparation of a Site Waste Management Plan, would ensure that implementation of the 2018 Modified Project Variant would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco. As such, this impact would remain less than significant with implementation of the identified mitigation measure.

Impact UT-8b: Implementation of the Project at HPS Phase II would not generate hazardous waste that would exceed the permitted capacity of transport, storage, and disposal facilities authorized to treat such waste. ***[Criterion Q.f]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

As with the Project analyzed in the 2010 FEIR, the specific businesses or activities that could operate under the 2018 Modified Project Variant are not known at this time, but since no industrial uses are proposed under the 2018 Modified Project Variant, the amount of hazardous wastes that would be generated would be minimal, consisting primarily of household hazardous waste and small amounts of inorganic wastes such as waste oil from commercial uses. New residents and businesses would be expected to comply with all hazardous waste regulations, including the disposal of household hazardous waste. Because the minimal amount of hazardous waste that would be generated by the Project could be accommodated by existing facilities, this impact would remain less than significant, and no mitigation would be required.

Impact UT-9: Implementation of the Project would comply with federal, state, and local statutes and regulations related to solid waste. ***[Criterion Q.g]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

Since approval of the 2010 FEIR, the California legislature passed AB 341, which all businesses and public entities that generate 4 cubic yards or more of waste per week to have a recycling program in place. San Francisco's existing (2009) Mandatory Recycling and Composting Ordinance is arguably more stringent than AB 341, because it already has in place its Mandatory Recycling and Composting Ordinance, which requires San Francisco residents and businesses to properly separate recyclables and compostable material and keep them out of the landfill. Owners of businesses and multifamily buildings could be fined if they were to fail to provide tenants with adequate bin service and information on their proper use.

Since approval of the 2010 FEIR, the California legislature passed California AB 1826, which requires businesses and multi-family complexes (with 5 units or more) that generate specified amounts of organic waste (compost) to arrange for organics collection services. San Francisco's existing (2009)

Mandatory Recycling and Composting Ordinance is arguably more stringent than AB 1826, because it already has in place its Mandatory Recycling and Composting Ordinance, which requires businesses and multi-family property owners to provide color-coded, labeled bins in convenient locations for tenants, employees, contractors, and customers to ensure separation of discards. Building owners could be fined if they were to fail to provide tenants with adequate bin service and information on their proper use.

On October 5, 2012, San Francisco Mayor Ed Lee announced that the city of San Francisco had reached an 80 percent landfill waste diversion rate, higher than any city in North America at the time.[123] The City has a goal to achieve zero waste by 2020 through continued implementation of the City's Zero Waste strategies and recent improvements to the efficiency of sorting and transfer facilities. Development within the Project site would meet or exceed all of the City's solid waste diversion requirements for new development. Mitigation measure MM UT-7a.1 requires the Project Applicant to provide a Site Waste Management Plan demonstrating the manner in which the Project would comply with these requirements. The Project Sponsor proposes to provide recycling facilities for residents and tenants of commercial and retail space. Implementation of mitigation measures MM UT-7a.1, MM UT-7a.2, and MM UT-5a would ensure compliance with applicable regulations pertaining to solid waste. Development of the Project would not conflict with regulatory policies pertaining to solid waste. This impact would remain less than significant with implementation of the identified mitigation measures.

Impact UT-10: Implementation of the Project would not require extension of dry utility infrastructure that would exceed the capacity of the services providing such utilities. ***[Criterion Q.i]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The 2018 Modified Project Variant includes infrastructure for solar power, recycled water, and a ground source geothermal heating and cooling system that would provide the primary source of heating and cooling for the development. A trench network located primarily beneath roadways would accommodate the utility systems including electrical, communications, gas, recycled water and sewerage.

Heating and cooling would be provided from centralized plants, instead of individual systems in each building or facility. Similar to the district heating and cooling systems proposed in the 2010 FEIR Utilities Variant 4, the 2018 Modified Project Variant utilizes a central heating and cooling

[123] San Francisco Office of the Mayor, Press Release: Recology & City Recycling & Compost Program Creates Jobs, Stimulates Growth of Green Economy & Supports City's 2020 Zero Waste Goal, October 5, 2012. Available at http://sfmayor.org/article/mayor-lee-announces-san-francisco-reaches-80-percent-landfill-waste-diversion-leads-all, accessed on November 9, 2017.

plant to serve HPS2, distributing hot water and chilled water from the district plant to individual buildings via the pipe distribution network located under the streets.

The 2018 Modified Project Variant would be subject to 2016 Title 24 building standards and the SFGBO, as amended in 2016, which together represent more stringent requirements for building energy efficiency than what was required by the building standards in effect at the time the 2010 FEIR was certified. This would reduce the Project's use of electricity and natural gas.

The 2018 Modified Project Variant includes a commitment to maximize the use of on-site solar PV panels along and provide an on-site battery storage system to store surplus energy generated from the solar PV systems, enabling better management of electricity loads during peak periods. This would reduce total electric power provided to HPS2 by SFPUC.

The 2018 Modified Project Variant would include an additional 576,000 gpd of recycled water capacity compared to the 2010 FEIR Utilities Variant 4, reducing the amount of retail potable water needed from SFPUC to satisfy HPS2 water demand.

As with the 2010 FEIR, the subdivision process would include submittal of detailed infrastructure plans to the Department of Public Works identifying how they would meet the infrastructure needs of the Project. Implementation of these plans would be a condition of subdivision approval. The subdivision process would ensure that adequate infrastructure is provided to accommodate the demands of the Project such that the capacity of the service providers to provide such utilities would not be exceeded. Moreover, the demands on locally serving utilities for natural gas, electricity and water should be less than the demands identified in the 2010 FEIR Utilities Variant 4. Therefore, the impact would remain less than significant, and no mitigation would be required.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to utilities impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to utilities, either on a project-related or cumulative basis.

II.B.17 Energy

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
11.	**Energy.** Would the project:					
R.a	Encourage activities that result in the use of large amounts of fuel or energy, or use such resources in a wasteful manner?	2010 FEIR p. III.R-16 (Impact ME-1), p. III.R-16 (Impact ME-2), p. III.R-21 (Impact ME-3), p. III.R-23 (Impact ME-4); Addendum 1 p. 48, Addendum 4 p. 52	No	No	No	MM GC-2, MM GC-3, MM GC-4, MM TR-1, MM TR-2, MM TR-4

Changes to Project Related to Energy

The 2018 Modified Project Variant includes the following activities related to energy:

- Modifications to the land use program;
- Modifications designed to increase energy efficiency and reduce the Project's reliance on imported natural gas and grid-supplied electricity. These modifications include renewable energy systems comprised of a ground source geothermal heating and cooling system and on-site solar photovoltaic (Solar PV) systems; and, in terms of assumptions;
- Given that the 2010 R&D Variant (Variant 1) includes comparable R&D/office uses (5,150,000 sf under the R&D Variant [Variant 1] as compared to 4,265,000 sf under the 2018 Modified Project Variant) and does not include a stadium (similar to the 2018 Modified Project Variant), this Variant is more comparable to the 2018 Modified Project Variant than the 2010 Project (which includes a stadium and less R&D uses); nonetheless, a comparison to the 2010 Project is made in terms of plug-in appliances, building envelopes, and natural gas use to ensure comparison to the 2010 FEIR.

Plug-in Electricity Demand

The 2010 Project would require approximately 60,652 MWh of electricity annually to supply plug-in appliances, based on plug-in electricity usage rates for each building type taken from the 2006 California Commercial End-Use Survey (CEUS), as shown by Table 26 (Electricity Demand from Plug-In Appliances).[124]

Table 26 also shows plug-in electricity estimates using an updated methodology based on non-Title 24 electricity use factors in CalEEMod 2016, which take into account the notable increase in the use of electronic devices since 2010 (e.g., televisions, cell phones, copiers, printers, computers, laptops, iPads, wireless hubs, battery chargers, electrical cars, etc.). If either the 2010 Project or any of its variants were developed today, they would similarly be subject to the plug-in energy use

[124] Itron, Incorporated. 2006. California Commercial End-Use Survey Results. CEC-400-2006-005. Available at http://www.energy.ca.gov/ceus/.

factors that have been used to determine energy use associated with the 2018 Modified Project Variant. Therefore, Table 26 shows the plug-in electrical uses for both the 2010 Project and the R&D Variant (Variant 1) using the 2018 energy use factors for plug-in appliances. In addition, Table 26 also shows the 2010 Project using the 2010 energy use factors for plug-in appliances, only for purposes of comparison with the 2010 FEIR.

Table 26 shows that total plug-in electricity usage by the 2018 Modified Project Variant would be approximately 84,607 MWh per year (using the 2018 energy use factor), an increase of about 39 percent over the 2010 FEIR estimate (for the 2010 land use plan and using the 2010 FEIR energy use factor). As previously mentioned, this increase in energy use for plug-in appliances is attributable to an increase in use of electronic devices since 2010 and the fact that the 2010 land use plan includes less R&D uses and a stadium). However, as also shown in Table 26, the projection of electricity consumption for plug-in appliances associated with the 2018 Modified Project Variant and the R&D Variant (Variant 1), with both using the 2018 energy use factors, are comparable, reflecting comparable land use plans and a comparable use of plug-in electronic devices.

Building Energy Demand

The quantitative analysis of energy usage in the 2010 FEIR relied on data from the Climate Change Technical Report (Appendix S)[125] to estimate the total building envelope energy use, using figures that represented the 2008 Title 24 building energy standards. The Title 24 standards have advanced considerably since 2008, with the 2013 and 2016 iterations requiring ever higher building energy efficiencies. Accordingly, building energy use estimates for the 2018 Modified Project Variant are much lower than the estimates for the Project analyzed in the 2010 FEIR, reflecting the energy efficiency improvements in the 2016 Title 24 standards.

Table 27 (Electricity Demand from Building Envelopes) shows that the energy demand from the 2010 Project, using the 2008 Title 24 Standards reflected in the 2010 FEIR, as compared to the 2018 Modified Project Variant using the same standards, would be about 64 percent more. However, Table 27 (Electricity Demand from Building Envelopes) also shows that the 2018 Modified Project Variant using 2018 standards (2016 Title 24 Standards), would result in building envelope electricity use of only 14,745 MWh per year, a decrease of approximately 63 percent from the 2010 Project estimate using the 2008 Title 24 Standards. This decrease reflects the benefit of a stricter energy code. However, assuming development the R&D Variant (Variant 1), as compared to the 2018 Modified Project Variant, and using the 2018 standards (2016 Title 24 Standards) for both projects in term of building energy demand, each would be comparable in terms of building energy usage.

[125] Environ International Corporation, *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October 2009 (2010 FEIR Appendix S), with data modified from the CEC's *Statewide Residential Appliance Saturation Survey, Volume 2, Study Results, Final Report*, June 2004.

TABLE 26 ELECTRICITY DEMAND FROM PLUG-IN APPLIANCES

		CP		*HPS2*		*2018 Modified Project Variant Site Total*					
Type of Use	*2018 Energy Use Factor (MWh/sf or unit)[a]*	*2018 Development Program[b]*	*MWh Consumed Annually[c]*	*2018 Development Program[b]*	*MWh Consumed Annually[c]*	*2018 Development Program*	*MWh Consumed Annually[d]*	*Percent of Total by Land Use[e]*	*2010 Project MWh Consumed Annually (using 2010 Energy Use Factors)*	*2010 Project MWh Consumed Annually (using 2018 Energy Use Factors)*	*R&D Variant (Variant 1) MWh Consumed Annually (using 2018 Energy Use Factors)*
Artist Studio	0.00838	—	—	255,000	2,137	***255,000***	***2,137***	***3%***	2,359	2,137	2,137
Community Use	0.00635	50,000	318	50,000	318	***100,000***	***636***	***1%***	926	635	635
Arena	0.00635	75,000	476	—	—	***75,000***	***476***	***1%***	548	476	476
Hotel	0.00598	150,000	897	120,000	718	***270,000***	***1,615***	***2%***	1,035[h]	897	897
R&D/Office	0.00635	150,000	953	4,265,000	27,083	***4,415,000***	***28,036***	***33%***	24,513	17,132	33,007
Regional Retail	0.00824	635,000	5,232	100,000	824	***735,000***	***6,056***	***7%***	6,077	5,232	5,232
Residential	3.79554	7,218	27,396	3,454	13,110	***10,672***	***40,506***	***48%***	18,722	39,853	39,853
Neighborhood Retail/ Maker Space	0.00824	125,000	1,030	301,000	2,480	***426,000***	***3,510***	***4%***	2,392	2,060	2,060
Stadium	N/A[i]	Not Applicable	—	Not Applicable	—	***Not Applicable***	***—***	***N/A***	4,080	4,080	0
School/Institution (High School)	0.00378	—	—	27,858	105	***27,858***	***105***	***0%***	Not Applicable[j]	Not Applicable	Not Applicable
School/Institution (Post-Secondary)	0.00608	—	—	37,142	226	***37,142***	***226***	***0%***	Not Applicable[j]	Not Applicable	Not Applicable
School/Institution (Elementary/Junior High School)	0.00378	—	—	345,000	1,304	***345,000***	***1,304***	***2%***	Not Applicable[j]	Not Applicable	Not Applicable
Total			***36,302***		***48,305***		***84,607***	***100%***	***60,652***	***72,502***	***84,298***
Percent of Total			***43%***		***57%***						

NOTES:

a. The electricity factors are based on non-Title 24 electricity and lighting factors from CalEEMod 2016. The factors were converted from kWh to MWh.

b. Based on build-out floor areas or number of units associated with the 2018 Modified Project Variant.

c. Calculated by multiplying energy use factor by number of units or square feet.

d. Calculated by adding the horizontal columns, rather than calculating total number of units by the generation rate.

e. Due to rounding, the totals may not add up to 100% when added individually.

h. In the 2010 FEIR, there was a typographical error for the hotel energy use. Electricity consumption should have been 1,035 MWh per year, rather than 2 MWh reported in Table III.R-7. However, Table 3-17 of 2010 FEIR Appendix S reflected the correct number. This would not alter the 2010 FEIR analysis or conclusions, as the project proponent committed to achieving 15% or better energy efficiency than required by Title 24 and would still not be using electricity in a wasteful manner.

i. The stadium is not part of the 2018 Modified Project Variant. In the 2010 FEIR, electricity use for the Candlestick Park stadium was estimated in City and County of San Francisco, *Climate Action Plan*, 2004, Table 2-4.

j. Energy consumption for this land use category was not provided in the 2010 FEIR because the associated land uses were not part of the 2010 Project.

TABLE 27 ELECTRICITY DEMAND FROM BUILDING ENVELOPES

		CP		HPS2		2018 Modified Project Variant Site Total						
Type of Use	*Electricity Use Factor, 2016 Title 24 Standards (MWh/gsf or unit)[a]*	*2018 Development Program[b]*	*MWh Consumed Annually, 2016 Title 24 Standards[c]*	*2018 Development Program[b]*	*MWh Consumed Annually, 2016 Title 24 Standards[c]*	*2018 Development Program*	*MWh Consumed Annually, 2016 Title 24 Standards[d]*	*Percent of Total Electricity by Land Use[e]*	*2010 Project MWh Consumed Annually, 2008 Title 24 Standards*	*2010 Project MWh Consumed Annually, 2016 Title 24 Standards*	*R&D Variant (Variant 1) MWh Consumed Annually, 2008 Title 24 Standards*	*R&D Variant (Variant 1) MWh Consumed Annually, 2016 Title 24 Standards*
Artist Studio	0.00410	—	—	255,000	1,046	***255,000***	***1,046***	***7%***	1,326	1,046	1,326	1,046
Community Use	0.00121	50,000	61	50,000	61	***100,000***	***122***	***1%***	520	122	520	122
Arena	0.00121	75,000	91	0	0	***75,000***	***91***	***1%***	113	91	113	91
Hotel	0.00219	150,000	329	120,000	263	***270,000***	***592***	***4%***	409[h]	329	409[f]	329
R&D/Office	0.00121	150,000	182	4,265,000	5,161	***4,415,000***	***5,343***	***36%***	13,780	3,207	26,780	6,232
Regional Retail	0.00224	635,000	1,422	100,000	224	***735,000***	***1,646***	***11%***	1,715	1,422	1,715	1,422
Residential	0.42645	7,218	3,078	3,454	1,473	***10,672***	***4,551***	***31%***	18,218	4,478	18,407	4,478
Neighborhood Retail/Maker Space	0.00224	125,000	280	301,000	674	***426,000***	***954***	***6%***	676	560	675	560
Stadium	N/A[i]	N/A	—	N/A	—	***N/A***	***—***	***N/A***	4,080	4,080	N/A	N/A
School/Institution (High School)	0.00066	—	—	27,858	18	***27,858***	***18***	***0%***	N/A[j]	N/A[j]	N/A[j]	N/A[j]
School/Institution (Post-Secondary)	0.00414	—	—	37,142	154	***37,142***	***154***	***1%***	N/A[j]	N/A[j]	N/A[j]	N/A[j]
School/Institution (Elementary/Junior High School)	0.00066	—	—	345,000	228	***345,000***	***228***	***2%***	N/A[j]	N/A[j]	N/A[j]	N/A[j]
Total			***5,443***		***9,302***		***14,745***	***100%***	***40,837***	***15,335***	***49,945***	***14,280***
Percent of Total			***37%***		***63%***							

NOTES:

a. The electricity factors are based on Title 24 electricity from CalEEMod 2016. The factors were converted from kWh to MWh.

b. Based on build-out floor areas or number of units associated with the 2018 Modified Project Variant.

c. Calculated by multiplying energy use factor by number of units or square feet.

d. Calculated by adding the horizontal columns, rather than calculating total number of units by the generation rate.

e. Due to rounding, the totals may not add up to 100% when added individually.

f. In the 2010 FEIR, there was a typographical error for the hotel energy use. Electricity consumption should have been 409 MWh per year, rather than 1 MWh reported in Table III.R-8. However, Table 3-17 of 2010 FEIR Appendix S reflected the correct number. This would not alter the 2010 FEIR analysis or conclusions, as the project proponent committed to achieving 15% or better energy efficiency than required by Title 24 and would still not be using electricity in a wasteful manner.

i. The stadium is not part of the 2018 Modified Project Variant. In the 2010 FEIR, electricity use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4. Based on comparable energy savings achieved by other recently constructed stadiums, a 20% reduction in electricity use is anticipated with construction of the replacement stadium.

j. Energy consumption for this land use category was not provided in the 2010 FEIR because the associated land uses were not part of the 2010 Project.

Natural Gas Demand

Table 28 (Natural Gas Demand, Baseline) shows that the 2018 Modified Project Variant would result in building natural gas use of 234,314 MMBtu per year, using the 2016 Title 24 standards, a decrease of approximately 40 percent from the 2010 Project estimate, using the 2008 Title 24 Standards.[126] Table 28 also shows the energy demand for the R&D Variant (Variant 1). The 2018 Modified Project Variant would be comparable to the R&D Variant (Variant 1) using the 2018 standards (2106 Title 24 Standards) in terms of natural gas useage.

Summary

In summary, the use of energy associated with plug-in appliances and buildings, as well as natural gas, would be comparable between R&D Variant and the 2018 Modified Project Variant.

Vehicle Fuel Use

Table 29 (2010 FEIR Petroleum Demand) shows Project diesel and gasoline consumption associated with operation of the Project as analyzed in the 2010 FEIR. VMT would likely be lower for the 2018 Modified Project Variant over time due to vehicle trip lengths being reduced as Project (and other surrounding projects, such as Indian Basin and Pier 70) build out occurs. This overall reduction in VMT is in line with the City of San Francisco's projections for reduced VMT levels by 2040 (see Appendix D). Implementation of the 2018 Modified Project Variant would result in a better mix of land uses in the area, and as a result, the distances that people would have to drive would be reduced. Fuel use per VMT for the 2018 Modified Project Variant would be expected to be lower than for the 2010 Project because of higher average fleet fuel efficiencies in California (due to the Pavley vehicle efficiency standards and CARB's Mobile Source Strategy (2016).

[126] During preparation of Addendum 5, it was discovered that the natural gas usage estimate for residential units in the 2010 FEIR was underestimated by a factor of 1,000 due to an error in transcribing the "use factor" units from Environ's 2009 Climate Change Technical Report. If the correct units are applied, the revised natural gas usage estimate for residential units would be approximately 321,000 MBtu per year rather than the 321 MBtu reported in 2010 FEIR Table III.R-9. The revised annual total for all uses would be approximately 384,000 MBtu per year, rather than the 63,262 MBtu reported in 2010 FEIR Table III.R-9.

TABLE 28 NATURAL GAS DEMAND, BASELINE

		CP		HPS2		2018 Modified Project Variant Site Total						
Type of Use	*Natural Gas Use Factor, 2016 Title 24 Standards (MMBtu/sf or unit)[a]*	*2018 Development Program[b]*	*MMBtu Consumed Annually, 2016 Title 24 Standards[c]*	*2018 Development Program[b]*	*MMBtu Consumed Annually, 2016 Title 24 Standards[c]*	*2018 Development Program*	*MMBtu Consumed Annually, 2016 Title 24 Standards[c]*	*Percent of Total by Land Use[e]*	*2010 Project MMBtu Consumed Annually, 2008 Title 24 Standards, with 15% Reduction*	*2010 Project MMBtu Consumed Annually, 2016 Title 24 Standards*	*R&D Variant (Variant 1) MMBtu Consumed Annually, 2008 Title 24 Standards, with 15% Reduction*	*R&D Variant (Variant 1) MMBtu Consumed Annually, 2016 Title 24 Standards*
Artist Studio	0.01933	—	—	255,000	4,929	255,000	4,929	2%	3,825	4,929	4,335	4,929
Community Use	0.02475	50,000	1,238	50,000	1,238	100,000	2,476	1%	1,700	2,475	1,700	2,475
Arena	0.02475	75,000	1,856	—	—	75,000	1,856	1%	1,549	1,856	1,549	1,856
Hotel	0.03651	150,000	5,477	120,000	4,381	270,000	9,858	4%	5,168[f]	5,477	4,399	5,477
R&D/Office	0.02475	150,000	3,713	4,265,000	105,559	4,415,000	109,272	47%	45,050	65,588	87,550	127,463
Regional Retail	0.00460	635,000	2,921	100,000	460	735,000	3,381	1%	2,591	2,921	2,591	2,921
Residential[g]	8.73043	7,218	63,016	3,454	30,155	10,672	93,171	40%	321,300	91,670	321,300	91,670
Neighborhood Retail/Maker Space	0.00460	125,000	575	301,000	1,385	426,000	1,960	1%	1,020	1,150	1,020	1,150
Stadium	N/A[h]	Not Applicable	—	Not Applicable	—	Not Applicable	—	N/A	7,200	7,200	N/A	N/A
School/Institution (High School)	0.01647	—	—	27,858	459	27,858	459	0%	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]
School/Institution (Post-Secondary)	0.03420	—	—	37,142	1,270	37,142	1,270	1%	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]
School/Institution (Elementary/Junior High School)	0.01647	—	—	345,000	5,682	345,000	5,682	2%	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]	Not Applicable[i]
Total			***78,796***		***155,518***		***234,314***	***100%***	***389,403***	***183,266***	***424,444***	***237,941***
Percent of Total			***34%***		***66%***							

NOTES:

a. Project natural gas demand was estimated based on land use and basic compliance with 2016 Title 24 standards. The factors were converted from kBtu to MMBtu (1 MMBtu = 1,000 kBtu).

b. Based on build-out floor areas or number of units associated with the 2018 Modified Project Variant.

c. Calculated by multiplying energy use factor by number of units or square feet.

d. Calculated by adding the horizontal columns, rather than calculating total number of units by the generation rate.

e. Due to rounding, the totals may not add up to 100% when added individually.

f. In the 2010 FEIR, there was a typographical error for the hotel energy use. Natural gas consumption should have been 5,168 MMBtu per year, rather than 8 MMBtu reported in Table III.R-9. However, Table 3-17 of 2010 FEIR Appendix S reflected the correct number. This would not alter the 2010 FEIR analysis or conclusions, as the project proponent committed to achieving 15% or better energy efficiency than required by Title 24 and would still not be using electricity in a wasteful manner.

g. In the 2010 FEIR, there was a typographical error in terms of the natural gas usage estimate for residential units. The revised natural gas usage estimate for residential units under the 2010 Project should have been approximately 321,000 MBtu per year, rather than the 321 MBtu reported (Table III.R-9). The correct natural gas usage for residential units is shown in Table 3-8 of 2010 FEIR Appendix S. The revised natural gas use under the 2010 Project would represent approximately 1.3% of the city's total natural gas usage, whereas the 2010 FEIR reported it was less than 1%; however, this would not alter the 2010 FEIR conclusions, as the project proponent committed to achieving 15% or better energy efficiency than required by Title 24 and would still not be using natural gas in a wasteful manner.

h. The stadium is not part of the 2018 Modified Project Variant. In the 2010 FEIR, natural gas use for the Candlestick Park stadium was estimated in: City and County of San Francisco, 2004. *Climate Action Plan*, Table 2-4. Based on comparable energy savings achieved by other recently constructed stadiums, a 20% reduction in natural gas use is anticipated with construction of the replacement stadium.

i. Energy consumption for this land use category was not provided in the 2010 FEIR because the associated land uses were not part of the 2010 Project.

TABLE 29 2010 FEIR PETROLEUM DEMAND

	Project Annual VMT (million miles travelled)[a]	*Average Countywide Vehicle Fuel Efficiency (2030)*[b]	*Project Total Fuel Consumption (million gallons)*	*Project Gasoline Consumption (million gallons)*[c]	*Project Diesel Consumption (million gallons)*[c]
Candlestick Point	223.67	21.15	10.58	9.92	0.66
Hunters Point Shipyard	92.36	21.15	4.37	4.09	0.27
Total	***316.03***		***14.95***	***14.01***	***0.93***

SOURCES:

a. Annual VMT was calculated by PBS&J based on trip generation information and average trip lengths reported in: CHS Consulting Group, Fehr and Peers, and LCW Consulting, *Candlestick Point–Hunters Point Shipyard Phase II Development Plan Transportation Study*, 2009.

b. Equals the projected Countywide 2030 VMT (3,495 million miles travelled) divided by the projected total transportation fuel consumed (171.27 million gallons) for San Francisco County, as reported in: California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf, accessed August 20, 2009. This factor does not take into account recently adopted fuel efficiency standards.

c. On average 94 percent of the transportation fuels consumed in San Francisco were gasoline fuels, while 6 percent were diesel fuels, as reported in: California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*, website: http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf, accessed August 20, 2009.

New Regulations

The following new regulations would apply to the analysis of energy impacts.

Federal fuel-efficiency standards for medium- and heavy-duty trucks have been jointly developed by the United States Environmental Protection Agency (USEPA) and the National Highway Traffic Safety Administration (NHTSA). The HPS1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018 and result in a reduction in fuel consumption from 6 to 23 percent over the 2010 baseline, depending on the vehicle type.[127] The USEPA and NHTSA also adopted the HPS2 heavy-duty truck standards, which cover model years 2021 through 2027 and require the phase-in of a 5 to 25 percent reduction in fuel consumption over the 2017 baseline depending on the compliance year and vehicle type.[128]

The Clean Energy and Pollution Reduction Act of 2015, Senate Bill (SB) 350 (Chapter 547, Statutes of 2015) was approved by Governor Brown on October 7, 2015. SB 350 will (1) increase the standards of the California RPS program by requiring that the amount of electricity generated and sold to retail customers per year from eligible renewable energy resources be increased to 50 percent by December 31, 2030; (2) require the State Energy Resources Conservation and Development Commission to establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030; (3) provide for the evolution of the Independent System Operator (ISO) into a regional organization; and (4) require the

[127] U.S. Environmental Protection Agency, Fact Sheet: EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles, August 2011. Available at https://nepis.epa.gov/Exe/ZyPDF.cgi/P100BOT1.PDF?Dockey=P100BOT1.PDF, accessed December 22, 2017.

[128] U.S. Environmental Protection Agency, Federal Register/Vol. 81, No. 206/Tuesday, Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2, October 25, 2016. Available at https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf. Accessed December 22, 2017.

state to reimburse local agencies and school districts for certain costs mandated by the state through procedures established by statutory provisions. Among other objectives, the Legislature intends to double the energy efficiency savings in electricity and natural gas final end uses of retail customers through energy efficiency and conservation.[129]

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development in 2008. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary tiers and measures that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code went into effect January 1, 2017.

The California Energy Code (Title 24, Section 6) was created as part of the California Building Standards Code (California Code of Regulations [CCR] Title 24) by the California Building Standards Commission in 1978 to establish statewide building energy efficiency standards to reduce California's energy consumption. Standards are updated on an approximately three-year cycle as technology and methods have evolved. The 2016 Standards, effective January 1, 2017, focus on several key areas to improve the energy efficiency of newly constructed buildings and additions and alterations to existing buildings, and include requirements that will enable both demand reductions during critical peak periods and future solar electric and thermal system installations.[130]

California Advanced Clean Cars/Zero Emission Vehicle Program. In January 2012, CARB approved the Advanced Clean Cars (ACC) program (13 CCR 19562.1 and 1962.2), which includes new GHG standards for model years 2017 through 2025 and requires greater numbers of zero emission vehicles (ZEVs) than previously anticipated by California Assembly Bill 1493 (Pavley). The ZEV Program is designed to achieve California's long-term GHG emission reduction goals by requiring manufacturers to offer for sale specific numbers of the cleanest cars available, including battery electric, fuel cell, and plug-in hybrid electric vehicles. The ACC/ZEV Program is expected to reduce considerably the statewide consumption of petroleum fuels used by vehicles.

San Francisco's *Strategies to Address Greenhouse Gas Emissions*[131] documents the City's actions to pursue cleaner energy, energy conservation, alternative transportation and solid waste policies. For instance, the City has implemented mandatory requirements and incentives that have measurably

---

[129] *SB-350 Clean Energy and Pollution Reduction Act of 2015*. https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350, Accessed December 14, 2017.

[130] California Energy Commission, 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings, June 2015. Available at http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf, accessed December 15, 2017.

[131] San Francisco Planning Department, *Strategies to Address Greenhouse Gas Emissions in San Francisco*, November 2010. Available at http://sfmea.sfplanning.org/GHG_Reduction_Strategy.pdf.

reduced GHG emissions including, but not limited to, increasing the energy efficiency of new and existing buildings, installing solar panels on building roofs, implementing a green building strategy, adopting a zero waste strategy, adopting a construction and demolition debris recovery ordinance, creating a solar energy generation subsidy, incorporating alternative fuel vehicles in the City's transportation fleet (including buses), and adopting a mandatory recycling and composting ordinance. The strategy also includes 30 specific regulations for new development that would reduce a project's GHG emissions, with eight geared toward energy efficiency and one toward renewable energy.

Green Building Ordinance (*City and County of San Francisco Building Code*, Chapter 13C). In November 2008, the City passed the San Francisco Green Building Ordinance (SFGBO), which is included as San Francisco Building Code Chapter 13C. In 2013, the SFGBO was amended to incorporate all mandatory elements of the 2013 CALGreen and Title 24 energy-efficiency standards and require green building practices and Leadership in Energy and Environmental Design (LEED) certification for all new residential and commercial construction in the city, unless otherwise indicated in the SFGBO, as well as alterations to existing buildings. The Green Building Code was last amended in April 2016.

Comparative Impact Discussions

Impact ME-1: Construction activities associated with the Project would not result in the use of large amounts of energy, or use energy in a wasteful manner. (Less than Significant) ***[Criterion R.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant	Less than Significant

The construction activities for the 2018 Modified Project Variant would not differ substantially from construction activities associated with the Project analyzed by the 2010 FEIR. Project construction equipment would be required to comply with the latest EPA and CARB engine emissions standards, which are more stringent than standards that were in place when the 2010 FEIR was certified. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption.

With the 2018 Modified Project Variant nothing has changed that would affect the 2010 FEIR's conclusions regarding construction energy use. The construction-related energy use associated with the 2018 Modified Project Variant would not wasteful. The impact would remain less than significant, and no mitigation would be required.

Impact ME-2: Buildings constructed by the Project would not use large amounts of electricity in a wasteful manner. (Less than Significant with Mitigation) ***[Criterion R.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

In 2015, California had the third-lowest statewide energy consumption in the country on a per-capita basis, behind New York and Rhode Island.[132] Californians consumed approximately 197 million Btu of total energy per capita in 2015. In comparison, the average annual U.S. per capita energy consumption was approximately 303 million Btu.[133] However, as was the case in 2010 when the 2010 FEIR was completed, California's overall energy consumption remains second only to that of Texas.[134]

As shown in Table 30 (Electricity Consumption in San Francisco, by Land Use, 2016), annual electricity consumption in San Francisco County was approximately 5,759 million kWh in 2016, an increase of 11.7 percent from the 2007 total electricity consumption figure of 5,155 million kWh provided in the 2010 FEIR.[135]

TABLE 30 ELECTRICITY CONSUMPTION IN SAN FRANCISCO, BY LAND USE, 2016

Land Use	*Total Consumption (million kWh)*	*Percent of Total Consumption*
Nonresidential	4,294.41	75%
Residential	1,464.78	25%
Total	***5,759.19***	***100%***

SOURCE: California Energy Commission, *Electricity Consumption by County: San Francisco County*. http://ecdms.energy.ca.gov/elecbycounty.aspx (accessed December 21, 2017).

According to the City of San Francisco Climate Action Strategy, 73 percent of the electricity used in San Francisco comes from PG&E and 16 percent from the SFPUC. The remaining 11 percent comes from independently contracted energy service providers used by some large commercial and industrial customers such as the Bay Area Rapid Transit district. Forty-one percent of the combined electricity mix for San Francisco (PG&E, SFPUC, and energy service providers) came from renewable sources in 2010.[136]

PG&E's electricity generation profile has changed significantly over time, with an increasing percentage of renewables in its power mix. The 2010 FEIR reported that in 2007, PG&E generated 12 percent of its total electricity through renewable sources, including biomass, small hydroelectric, geothermal, and wind. The remainder of PG&E's generation portfolio in 2007 included natural gas

[132] U.S. Energy Information Administration, *Total Energy Consumed per Capita*, 2015. Available at https://www.eia.gov/state/rankings/?sid=US, accessed December 21, 2017.
[133] Ibid.
[134] California Energy Commission, *U.S. Per Capita Electricity Use by State in 2005*. Available at http://energyalmanac.ca.gov/electricity/us_per_capita_electricity_2005.html, accessed August 17, 2009.
[135] Note that the current figure for 2007 total electricity use in San Francisco County provided on the CEC web site is 5,625 million kWh; Using that figure, annual total electricity use in San Francisco County increased approximately 2.4 percent from 2007 to 2016.
[136] San Francisco Department of the Environment, *San Francisco Climate Action* Strategy, 2013 update. Available at https://sfenvironment.org/sites/default/files/engagement_files/sfe_cc_ClimateActionStrategyUpdate2013.pdf.

combustion (47 percent), nuclear fission (23 percent), large-scale hydroelectric (13 percent), coal combustion (4 percent), and other sources (1 percent).[137] In 2016, PG&E generated 33 percent of its total electricity through renewable sources, while the statewide average was 25 percent.[138] The remainder of PG&E's generation portfolio in 2016 included natural gas combustion (17 percent), nuclear fission (24 percent), large-scale hydroelectric (12 percent), coal combustion (0 percent), and unspecified sources of power (14 percent).

For the Project analyzed in the 2010 FEIR, the Project Sponsor made a preliminary commitment to making all new residential units 15 percent more energy efficient than required under the 2008 Title 24 standards as a project design feature by employing high performance lighting, materials, and other energy efficiency measures. The current 2016 Title 24 standards go well beyond this commitment in terms of building energy efficiency, so electricity use by the 2018 Modified Project Variant is expected to be lower than the Project analyzed in the 2010 FEIR. Table 27 (Electricity Demand from Building Envelopes) above shows that the buildings in the 2018 Modified Project Variant would use approximately 63 percent less electricity than the Project analyzed by the 2010 FEIR and 70 percent less than the R&D Variant (Variant 1).

Table 26 (Electricity Demand from Plug-In Appliances) above indicates that total plug-in electricity usage by the 2018 Modified Project Variant would increase by about 39 percent over the 2010 FEIR estimate. This increase reflects a state (and global) trend of increased use of plug-in devices at homes and businesses with the proliferation of televisions, cell phones, copiers, printers, computers and battery chargers. The CPUC recently reported that plug load energy use in the residential and commercial sectors in California is growing rapidly, and that some estimates show that plug loads will exceed 50 percent of residential electric consumption by 2030.[139] Plug-in electricity use depends on the devices and appliances installed by future Project residents and employees, and would be difficult for the Project Sponsor to influence. However, the Project Sponsor's preliminary commitment to installing ENERGY STAR appliances into residential units for all builder-supplied appliances (mitigation measure MM GC-3) would result in a small decrease in plug-in electricity use from the numbers shown for the 2018 Modified Project Variant.

As noted above, the 2018 Modified Project Variant includes modifications designed to reduce the Project's reliance on grid-supplied electricity, through the use of renewable energy systems comprised of a ground source geothermal heating and cooling system and on-site solar PV systems. In addition, individual buildings would be required to meet or exceed the energy conservation requirements in the San Francisco Green Building Ordinance, which itself includes energy conservation requirements that exceed those in the California Building Code (i.e., Title 25, Part 6). Electricity would not be used in a wasteful, inefficient, or unnecessary manner.

---

[137] CEC, Sources of Electricity for Major Utilities in California. Available at http://www.pgecorp.com/corp_responsibility/reports/2007/environment/energy-future.html, accessed August 19, 2009.
[138] CEC, 2016 Power Content Label. Available at http://www.energy.ca.gov/pcl/, accessed December 21, 2017.
[139] California Public Utilities Commission (CPUC), *Research and Technology Action Plan 2012–2015*, for the California Energy Efficiency Strategic Plan.

With its modified energy systems and with implementation of mitigation measures MM GC-2, MM GC-3, and MM GC-4, the 2018 Modified Project Variant would not use large amounts of electricity in a wasteful manner. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM GC-2: ~~Exceed the 2008~~ Comply with the 2016 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses ~~would by at least 15 percent~~.

Impact ME-3: Buildings constructed by the Project would not use large amounts of natural gas in a wasteful manner. (Less than Significant with Mitigation) ***[Criterion R.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As was the case when the 2010 FEIR was certified, natural gas in San Francisco is supplied by PG&E. As shown in Table 31 (Natural Gas Consumption in San Francisco, by Land Use, 2016), annual natural gas consumption in San Francisco County was approximately 22,679,763 million Btu in 2016, a decrease of approximately 21.6 percent from the 2007 total natural gas consumption figure of 28,918,000 million Btu provided in the 2010 FEIR.[140]

TABLE 31 NATURAL GAS CONSUMPTION IN SAN FRANCISCO, BY LAND USE, 2016

Land Use	*Total Consumption (million British thermal units [Btu])*	*Percent of Total Consumption*
Nonresidential	12,966,831	57%
Residential	9,712,932	43%
Total	***22,679,763***	***100%***

SOURCE: California Energy Commission, *Natural Gas Consumption by County: San Francisco County*. http://ecdms.energy.ca.gov/gasbycounty.aspx (accessed December 21, 2017).

Approximately 158 million gallons of gasoline and 11 million gallons of diesel were consumed in San Francisco for transportation in 2007.[141] By 2030, consumption of transportation-related fossil fuels is expected to increase by about 57 percent citywide.

For the Project analyzed in the 2010 FEIR, the Project Sponsor made a preliminary commitment to making all new residential units 15 percent more energy efficient than required under the 2008 Title 24 standards as a project design feature by employing high performance lighting, materials, and other energy efficiency measures. The current 2016 Title 24 standards go well beyond this

[140] Note that the current figure for 2007 total natural gas use in San Francisco County provided on the CEC web site is 25,831,904 million Btu; Using that figure, annual total natural gas use in San Francisco County decreased by approximately 12.2 percent from 2007 to 2016.

[141] California Department of Transportation (Caltrans), *California Motor Vehicle Stock, Travel and Fuel Forecast*. Available at http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf, accessed August 20, 2009.

commitment in terms of building energy efficiency, so energy use by the 2018 Modified Project Variant is expected to be lower than the Project analyzed in the 2010 FEIR, for both electricity and natural gas. Table 28 (Natural Gas Demand, Baseline) above shows that the buildings in the 2018 Modified Project Variant would use approximately 40 percent less natural gas than the Project analyzed by the 2010 FEIR and 45 percent less than the R&D Variant (Variant 1).

As noted above, the 2018 Modified Project Variant includes the use of a ground source geothermal heating and cooling system, would reduce the Project's reliance on imported natural gas. In addition, individual buildings would be required to meet or exceed the energy conservation requirements in the San Francisco Green Building Ordinance, which itself includes energy conservation requirements that exceed those in the California Building Code (i.e., Title 25, Part 6). Natural gas would not be used in a wasteful, inefficient, or unnecessary manner.

With its modified energy systems and with implementation of mitigation measures MM GC-2 and MM GC-3, the 2018 Modified Project Variant would not use large amounts of natural gas in a wasteful manner. The impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure with Proposed 2018 Modifications

MM GC-2, is provided in full on p. 347 under Impact ME-2.

Impact ME-4: Vehicle trips associated with the Project would not use large amounts of energy in a wasteful manner. (Less than Significant with Mitigation) ***[Criterion R.a]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As with the Project analyzed in the 2010 FEIR, the 2018 Modified Project Variant would increase vehicle trips to and from the Project site, and result in a commensurate increase in the use of petroleum fuels, compared to existing conditions.

Table 29 (2010 FEIR Petroleum Demand) shows Project diesel and gasoline consumption associated with operation of the Project as analyzed in the 2010 FEIR. VMT would likely be lower for both the 2010 Project and the 2018 Modified Project Variant than what was analyzed in the 2010 FEIR due to vehicle trip lengths being reduced over time as the CP-HPS2 Project (and other surrounding projects, such as India Basin and Pier 70) build-out occurs. This overall reduction in VMT is in line with the City of San Francisco's projections for reduced VMT levels by 2040 (refer to Addendum 5 Appendix D). Under the 2018 Modified Project Variant, higher average fleet fuel efficiencies would be expected in California (due to the Pavley vehicle efficiency standards) as compared to the 2010 Project.

As with the Project analyzed in the 2010 FEIR, the 2018 Modified Project Variant would implement mitigation measures MM TR-1, MM TR-2, and MM TR-4 to minimize VMT by managing traffic flows and promoting transportation demand management (TDM). In addition, implementation of

California's Advanced Clean Cars/Zero Emission Vehicle (ACC/ZEV) Program would reduce average petroleum use by vehicles below levels assumed in the 2010 FEIR. With implementation of the ACC/ZEV Program and implementation of these mitigation measures, vehicle trips associated with the Project would not use large amounts of energy in a wasteful manner, and this impact would remain less than significant.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to energy impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to energy, either on a project-related or cumulative basis.

II.B.18 Greenhouse Gas Emissions

	Criterion	Where Impact Was Analyzed in Prior Environmental Documents (Beginning Page)	Do Proposed Changes Involve New Significant Impacts or Substantially More Severe Impacts?	Any New Circumstances Involving New Significant Impacts or Substantially More-Severe Impacts?	Any New Information of Substantial Importance?	Previously Approved Mitigation Measures That Would Also Address Impacts of the 2018 Modified Project Variant
7.	**Greenhouse Gas Emissions.** Would the project:					
S.a	Conflict with the state goal of reducing GHG emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32 (*California Global Warming Solutions Act of 2006*), such that the project's GHG emissions would result in a substantial contribution to global climate change?	2010 FEIR p. III.S-35 (Impact GC-1); Addendum 1 p. 49; Addendum 4 p. 53	No	No	No	MM GC-1, MM GC-2, MM GC-3, MM GC-4
S.b	Conflict with San Francisco's *Climate Action Plan* such that it would impede implementation of the local GHG reduction goals established by the 2008 Greenhouse Gas Reduction Ordinance?	2010 FEIR p. III.S-35 (Impact GC-1); Addendum 1 p. 49; Addendum 4 p. 53	No	No	No	MM GC-1, MM GC-2, MM GC-3, MM GC-4

Changes to Project Related to Greenhouse Gas Emissions

The 2018 Modified Project Variant includes the following activities related to greenhouse gas (GHG) emissions:

- Modifications to the land use program;
- The changes in traffic volumes;
- Inclusion of the central energy plants and recycled water facility; and
- The changes in construction activity.

New Regulations

San Francisco has developed a number of plans and programs to reduce the City's contribution to global climate change and to meet the goals of the City's Greenhouse Gas Reduction Ordinance. San Francisco's *Strategies to Address Greenhouse Gas Emissions*[142] documents the City's actions to pursue cleaner energy, energy conservation, alternative transportation, and solid waste policies. For instance, the City has implemented mandatory requirements and incentives that have measurably reduced GHG emissions including, but not limited to, increasing the energy efficiency of new and existing buildings, installing solar panels on building roofs, implementing a green building strategy,

[142] San Francisco Planning Department, *Strategies to Address Greenhouse Gas Emissions in San Francisco*, November 2010. Available at http://sfmea.sfplanning.org/GHG_Reduction_Strategy.pdf.

adopting a zero waste strategy, adopting a construction and demolition debris recovery ordinance, creating a solar energy generation subsidy, incorporating alternative fuel vehicles in the City's transportation fleet (including buses), and adopting a mandatory recycling and composting ordinance. The strategy also includes 30 specific regulations for new development that would reduce a project's GHG emissions. These GHG reduction actions have resulted in a 23.3 percent reduction in GHG emissions in 2012 compared to 1990 levels,[143] exceeding the year 2020 reduction goals in the BAAQMD's Clean Air Plan and AB 32, and putting the City on a path to meet the goals in the Governor's Executive Orders S-3-05 and B-30-15. These requirements were not incorporated into the numerical analysis because they were not considered in the 2010 FEIR.

The 2010 FEIR considered regulations, such as Title 24, Part 6, for building energy efficiency, as well as standards for vehicle efficiency. These are standards that the project or vehicles associated with the project would be subject to when the Project is implemented, regardless of the status of CEQA clearance. Thus, this 2018 analysis took into account the updates to the following regulations for the operational analysis related to Greenhouse Gases:

- California Air Resources Board (CARB) Advanced Clean Cars (ACC) program
- 2016 Standards for Title 24 Part 6 energy efficiency standards

Comparative Impact Discussions

Impact GC-1: The Project would not result in a substantial contribution to global climate change by increasing GHG emissions in a manner that conflicts with the state goal of reducing GHG emissions in California to 1990 levels by 2020 (e.g., a substantial contribution to global climate change) or conflicts with San Francisco's Climate Action Plan by impeding implementation of the local GHG reduction goals established by the San Francisco 2008 Greenhouse Gas Reduction Ordinance. ***[Criteria S.a and S.b]***

	2010 CP-HPS2 FEIR	*2010 CP-HPS2 FEIR Addendum 5*
Significance after Mitigation	Less than Significant with Mitigation	Less than Significant with Mitigation

As disclosed in the 2010 FEIR, the Project's construction and operational GHG emissions impacts would be less than significant after mitigation. Construction emissions were quantified from off-road equipment and on-road vehicles. These emissions averaged 6,600 MT CO_2e per year over the construction time period, which is 0.0014 percent of the total 2004 statewide GHG emissions inventory and less than 1 percent of the construction equipment emissions for the Bay Area 2007 GHG emissions projections. Construction of HPS alone would release 46,061 MT CO_2e total over the entire construction period. Since construction contractors would be subject to ARB regulations, emissions would be less than significant. The 2010 FEIR determined more vegetation would be added as a result of the Project than would be removed during construction. Thus, the 2010 Project

[143] ICF International, *Technical Review of the 2012 Community-wide Inventory for the City and County of San Francisco*, January 21, 2015. Available at http://sfenvironment.org/download/2012-community-greenhouse-gas-inventory-3rd-party-verification-memo-january-2015, accessed May 26, 2016.

was predicted to result in a net sequestration of carbon due to vegetation, so there is no impact from GHG emissions associated with vegetation changes. The 2010 Project's operational emissions were calculated as 154,639 MT CO_2e per year after mitigation, with 52,842 MT CO_2e per year from HPS and 101,798 MT CO_2e per year from CP. The Project emissions were 52 percent lower than the ARB Scoping Plan No Action Taken scenario, and the Project would comply with continued GHG reduction actions by the City and County of San Francisco to further reduce emissions.

Revised emissions were calculated for HPS for the 2018 Modified Project Variant. CP is not changing from what was analyzed in the 2010 FEIR. Construction emissions were calculated using the same methodology as was used in the 2010 FEIR. Construction emissions for HPS for the 2018 Modified Project Variant are 60,480 MT CO_2e, which is an increase of 31 percent of the HPS emissions in the 2010 FEIR. This increase is due to the change in equipment activity due to the change in land uses proposed at HPS. However, part of this increase is due to the construction of the geothermal plant, which would ultimately reduce CO_2e emissions from building energy use. HPS construction emissions were 0.0006 percent of the total statewide GHG emissions inventory in the 2010 FEIR and 0.0008 percent for the 2018 Modified Project Variant. HPS construction emissions from the 2018 Modified Project Variant also continue to make up less than 1 percent of the construction equipment portion of the Bay Area GHG emissions inventory. Construction equipment makes up 1.7 percent of the total Bay Area GHG emissions inventory as reported in the 2010 FEIR. The 2010 FEIR did not compare construction GHG emissions against a specific numeric threshold, as the BAAQMD has not adopted a numeric threshold for construction GHG emissions. However, given that the relative magnitude of Project emissions in the context of regional and statewide emissions did not change, conclusions from the 2010 FEIR also do not change.

As described further in Appendix I2.2 (Operational Emissions Data), calculations for operations followed the same general methodology as used in the 2010 FEIR, but with updated land use, traffic data, and the operational year associated with the 2018 Modified Project Variant. Current modeling techniques were used to incorporate updated information on building energy use and vehicular emissions to take in to account the effect of the delay in implementation of the Project. Thus, the 2016 Standards for Title 24 Part 6 energy efficiency standards were incorporated into this analysis, since the buildings must comply with that most recent standard.

The 2018 Modified Project Variant is expected to result in a total of 110,859 MT CO_2e per year, with 55,455 MT CO_2e per year from HPS and 55,405 MT CO_2e per year from CP. The GHG emissions for the 2018 Modified Project Variant are 28 percent lower than those disclosed in the 2010 FEIR. Thus, conclusions in the 2010 FEIR still apply and the Project would not conflict with the state's goals of reducing GHG emissions to 1990 levels by 2020. As discussed previously, the City and County of San Francisco has additional regulations and ordinances that would also help limit GHG emissions associated with Project-related operational emissions. As discussed in the 2010 FEIR, the Project design is a dense, infill mixed-use project, with a transit-oriented design. The 2010 FEIR also includes mitigation measures that align with the local GHG reduction ordinances. For example,

MM GC-1 aligns with San Francisco's *Strategies to Address Greenhouse Gas Emissions* Policy 3.9 that encourages and requires the planting of trees in conjunction with new development; and MM GC-3 aligns with Policy 13.4 that encourages the use of energy conserving appliances and lighting systems. Thus, the Project would not conflict with the City's GHG reduction goals established in the Greenhouse Gas Reduction Ordinance. The 2018 Modified Project Variant meets these same criteria, therefore, the impact would remain less than significant with implementation of the identified mitigation measures.

Mitigation Measure Modified by Addendum 5

> **MM GC-2:** ~~Exceed the 2008~~ Comply with the 2016 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses ~~would by at least 15 percent~~.

Conclusion

The 2018 Modified Project Variant would not change any of the 2010 FEIR's findings with respect to greenhouse gas emissions impacts. There is no new information of substantial importance, such as new regulations, a change of circumstances (e.g., physical changes to the environment as compared to 2010), or changes to the project that would give rise to new significant environmental effects or a substantial increase in the severity of previously identified significant effects. This analysis does not result in any different conclusions than those reached in the 2010 FEIR related to greenhouse gas emissions, either on a project-related or cumulative basis.

[THIS PAGE INTENTIONALLY LEFT BLANK]

III. CONCLUSION

Based on the foregoing, it is concluded that the analyses conducted and the conclusions reached in the 2010 FEIR certified on June 3, 2010, remain valid. The proposed revisions to the Project would not cause new significant impacts not identified in the 2010 FEIR, and no new mitigation measures would be necessary to reduce significant impacts. Other than as described in Addendum 5, no Project changes have occurred, and no changes have occurred with respect to circumstances surrounding the proposed Project that would cause significant environmental impacts to which the Project would contribute considerably, and no new information has become available that shows that the Project would cause significant environmental impacts. Therefore, no supplemental environmental review is required beyond Addendum 5.

Date of Determination: _____

I do hereby certify that the above determination has been made pursuant to State and local requirements.

_____

Jose Campos
OCII Environmental Review Officer

cc: Bulletin Board/Master Decision File Distribution List

[THIS PAGE INTENTIONALLY LEFT BLANK]

IV. REFERENCES

Arup North America, Ltd. and Lennar Urban. 2009. *Candlestick Point/Hunters Point Shipyard LID Stormwater Opportunities Study*, June.

Association of Bay Area Governments. 2013. *Projections 2013*.

———. Interactive ABAG (GIS) Maps Showing Dam Failure Inundation. Available at http://www.abag.ca.gov/bayarea/eqmaps/damfailure/damfail.html, accessed on September 8, 2008.

Bay Area Air Quality Management District (BAAQMD). 2009. *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October.

BAAQMD, San Francisco Department of Public Health, and San Francisco Planning Department. 2012. *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*, December.

California Building Standards Commission. 2017. *2016 California Building Code*, California Code of Regulations, Title 24, Part 2, Volumes 1 and 2, effective January 1.

California Coastal Commission. 2015. Sea Level Rise Policy Guidance, Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits, Unanimously Adopted August 12, 2015. Available at http://documents.coastal.ca.gov/assets/slr/guidance/August2015/0_Full_Adopted_Sea_Level_Rise_Policy_Guidance.pdf, accessed November 30, 2017.

California Department of Finance. 2009. *E-1 Population Estimates for Cities, Counties, and the State with Annual Percent Change—January 1, 2008 and 2009*. Available at http://www.dof.ca.gov/research/demographic/reports/estimates/e-1_2006-07 (accessed June 12, 2009).

California Department of Resources Recycling and Recovery. 2015. *Mandatory Commercial Recycling*. Available at http://www.calrecycle.ca.gov/recycle/commercial/, accessed November 2, 2017.

California Department of Transportation (Caltrans). 2009. *Technical Noise Supplement*, November. Available at http://www.dot.ca.gov/hq/env/noise/pub/tens_complete.pdf, accessed December 20, 2017.

———. n.d. *California Motor Vehicle Stock, Travel and Fuel Forecast*. Available at http://www.dot.ca.gov/hq/tsip/smb/documents/mvstaff/mvstaff08.pdf, accessed August 20, 2009.

California Energy Commission. 2004. *Statewide Residential Appliance Saturation Survey, Volume 2, Study Results, Final Report*, June.

———. 2005. *U.S. Per Capita Electricity Use by State in 2005*. Available at http://energyalmanac.ca.gov/electricity/us_per_capita_electricity_2005.html, accessed August 17, 2009.

———. 2007. Sources of Electricity for Major Utilities in California. Available at http://www.pgecorp.com/corp_responsibility/reports/2007/environment/energy-future.html, accessed August 19, 2009.

———. 2012. *Assessment of California's Low Temperature Geothermal Resources: Geothermal Heat Pump Efficiencies by Region*, CEC-500-2014-060, April.

———. 2015. 2016 Building Energy Efficiency Standards for Residential and Nonresidential Buildings, June. Available at http://www.energy.ca.gov/2015publications/CEC-400-2015-037/CEC-400-2015-037-CMF.pdf, accessed December 15, 2017.

———. n.d. 2016 Power Content Label. Available at http://www.energy.ca.gov/pcl/, accessed December 21, 2017.

California Public Utilities Commission. n.d. *Research and Technology Action Plan 2012–2015*, for the California Energy Efficiency Strategic Plan.

California State Coastal Conservancy. 2009. *Policy Statement on Climate Change*. Adopted at the June 4, 2009 Board Meeting. http://www.scc.ca.gov/index.php?p=75&more=1.

Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT). 2013. *State of California Sea-Level Rise Guidance Document*. Developed by CO-CAT, with science support provided by the Ocean Protection Council's Science Advisory Team and the California Ocean Science Trust, March 2013 Update. Available at http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf, accessed November 30, 2017.

Economic and Planning Systems, Inc.2009. *Fiscal Analysis of the Candlestick Point/Hunters Point Shipyard Redevelopment Project*.

ENGEO. 2017. *Evaluation of Deep Dynamic Compaction for Densification of Artificial Fill*, a report for FivePoint prepared by ENGEO Incorporated, August 10.

———. 2017. *Preliminary Geotechnical Report, Hunters Point Shipyard Phase II Infrastructure Improvements, San Francisco, California*, April.

———. 2017. *Geotechnical Exploration and Shoreline Conditions Report, Hunters Point Shipyard Redevelopment – Phase II, San Francisco*, May.

———. 2017. *Technical Memorandum to Daniel Hansen from Leroy Chan: Potential Constraints on Implementation of Deep Dynamic Compaction (DDC)*, December 14, 2017; revised December 21, 2017.

Environ International Corporation. 2009. *Climate Change Technical Report: Candlestick Point–Hunters Point Shipyard Phase II Development Plan*, October (2010 FEIR Appendix S).

Fehr & Peers. 2010. *Roadway and Transit Phasing Plan*, March 17.

Geosyntec. 2015. *Risk Management Plan, Hunters Point Naval Shipyard, Parcels UC-1 and UC-2, San Francisco, California*, March.

Hart, J. T. 2017. *Monitoring Territorial Pairs and Reproductive Success*.

———. 2017. *San Francisco Bay Area Black Oystercatcher Project*.

ICF International. 2015. *Technical Review of the 2012 Community-wide Inventory for the City and County of San Francisco*, January 21. Available at http://sfenvironment.org/download/2012-community-greenhouse-gas-inventory-3rd-party-verification-memo-january-2015, accessed May 26, 2016.

Itron, Incorporated. 2006. California Commercial End-Use Survey Results. CEC-400-2006-005. Available at http://www.energy.ca.gov/ceus/.

Jones & Stokes. 2009. *Natural Environmental Study Report for the Bayview Transportation Improvements Project*, June.

Moffatt & Nichol. 2009. *Hunters Point Shoreline Structures Assessment*, October.

———. 2009. *Candlestick Point/Hunters Point Development Project Initial Shoreline Assessment*, prepared for Lennar Urban, February.

———. 2009. *Candlestick Point/Hunters Point Redevelopment Project Proposed Shoreline Improvements*. Prepared for Lennar Urban, September.

———. 2017. *Memorandum: Sea Level Rise Supplement, Hunters Point Shipyard Development Project*, December 7.

National Research Council. 2012. *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, Washington, DC: The National Academies Press. Available at https://www.nap.edu/catalog/13389/sea-level-rise-for-the-coasts-of-california-oregon-and-washington, accessed November 30, 2017.

NOAA Fisheries. 2014. *California Eelgrass Mitigation Policy and Implementing Guidelines*, October.

Rahmstorf, S., A. Cazenave, J.A. Church, J.E. Hansen, R.F. Keeling, D.E. Parker, and R.C.J. Somerville. 2007. Recent Climate Observations Compared to Projections. *Science* 316, p. 709.

San Francisco, City and County of. 2000. *Hunters Point Shipyard Reuse Final Environmental Impact Report*, February 8.

———. 2015. *2014 San Francisco Housing Inventory*, April.

———. 2015. *2015 Housing Inventory*, April.

———. 2015. *San Francisco General Plan*. Housing Element, April 27.

———. 2017. *India Basin Mixed Use Draft Environmental Impact Report*, September 13.

———. 2017. *Pier 70 Mixed-Use District Project Final Environmental Impact Report*, August 24.

San Francisco Bay Conservation and Development Commission. 2011. *Living with a Rising Bay. Vulnerability and Adaptation in San Francisco Bay and on its Shoreline*, October.

San Francisco Department of the Environment. 2013. *San Francisco Climate Action* Strategy, 2013 update. Available at https://sfenvironment.org/sites/default/files/engagement_files/sfe_cc_ClimateActionStrategyUpdate2013.pdf.

San Francisco Municipal Transportation Agency. n.d. Muni System Map. Available at https://www.sfmta.com/maps/muni-system-map, accessed December 20, 2017.

San Francisco Office of the Mayor. 2012. Press Release: Recology & City Recycling & Compost Program Creates Jobs, Stimulates Growth of Green Economy & Supports City's 2020 Zero Waste Goal, October 5. Available at http://sfmayor.org/article/mayor-lee-announces-san-francisco-reaches-80-percent-landfill-waste-diversion-leads-all, accessed on November 9, 2017.

San Francisco Planning Department. 2008. *Downtown San Francisco Market Demand, Growth Projections and Capacity Analysis*, May.

———. 2009. Memorandum from Jon Rahaim, Director of Planning, to Michael Carlin, Deputy General Manager, San Francisco Public Utilities Commission, *Projections of Growth by 2030*, July 9.

———. 2010. *Final Environmental Impact Report (DEIR) for the Candlestick Point–Hunters Point Shipyard Phase II Project*, July 27, 2010.

———. 2010. *Strategies to Address Greenhouse Gas Emissions in San Francisco*, November. Available at http://sfmea.sfplanning.org/GHG_Reduction_Strategy.pdf.

———. 2011. Standards for Bird-Safe Buildings.

———. 2013. *Addendum 1 to Final Environmental Impact Report (FEIR) for the Candlestick Point–Hunters Point Shipyard Phase II Project*, December 11, 2013.

———. 2016. *Addendum 4 to Final Environmental Impact Report (FEIR) for the Candlestick Point–Hunters Point Shipyard Phase II Project*, February 22, 2016.

San Francisco Planning Department and San Francisco Department of Public Health. 2014. 2014 Air Pollutant Exposure Zone Map (Memo and Map), April 9.

San Francisco Public Utilities Commission and Port of San Francisco, *San Francisco Stormwater Management Requirements and Design Guidelines*, April 2016.

San Francisco Redevelopment Agency. 2010a. *Hunters Point Shipyard Design for Development*, June 3, 2010.

———. 2010b. *Disposition and Development Agreement: Candlestick Point and Phase 2 of the Hunters Point Shipyard*, June 2, 2010. Available at http://sfocii.org/candlestick-point-and-phase-2-dda.

———. 2010c. *Redevelopment Plan for the Bayview Hunters Point Redevelopment Project* (BVHP Redevelopment Plan), Adopted August 3, 2010.

———. 2010d. *Hunters Point Shipyard Redevelopment Plan*, July 14, 1997; amended August 3, 2010.

San Francisco Sea Level Rise Committee. 2014. *Guidance for Incorporating Sea Level Rise into Capital Planning in San Francisco – Assessing Vulnerability and Risk to Support Adaptation*, September.

Sheppard, C. 2011. *Bird-Friendly Building Design*. American Bird Conservancy, The Plains, VA

U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. 2001. *Long-Term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan*.

U.S. Department of Housing and Urban Development. 2016. *Comprehensive Housing Market Analysis, San Francisco-San Mateo-San Rafael*, as of January 1.

U.S. Department of the Interior, National Park Service, Technical Preservation Services. 2017. *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*.

U.S. Department of Transportation. 2006. *Census 2000 Transportation Planning Package*.

U.S. Energy Information Administration. 2015. *Total Energy Consumed per Capita*. Available at https://www.eia.gov/state/rankings/?sid=US, accessed December 21, 2017.

U.S. Environmental Protection Agency. 2011. Fact Sheet: EPA and NHTSA Adopt First-Ever Program to Reduce Greenhouse Gas Emissions and Improve Fuel Efficiency of Medium- and Heavy-Duty Vehicles, August. Available at https://nepis.epa.gov/Exe/ZyPDF.cgi/P100BOT1.PDF?Dockey=P100BOT1.PDF, accessed December 22, 2017.

———. 2016. Federal Register/Vol. 81, No. 206/Tuesday, Greenhouse Gas Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles—Phase 2, October 25. Available at https://www.gpo.gov/fdsys/pkg/FR-2016-10-25/pdf/2016-21203.pdf. Accessed December 22, 2017.

U.S. Federal Transit Authority. 2006. *Transit Noise and Vibration Impact Assessment*, May.

[THIS PAGE INTENTIONALLY LEFT BLANK]

Appendix A
Comparison Table

ESA

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
Revisions to Land Use Plan					
Land Use Plan	The 2010 Project consists of 10,500 residential units with an associated population of 24,465 residents; 885,000 gsf of retail; 150,000 gsf of office; 2.5 million gsf of Research & Development (R&D) uses; a 220-room, 150,000 gsf hotel; 255,000 gsf of artist studio space and an arts center; 100,000 gsf of community services; 240 acres of new parks, sports fields, and waterfront recreation areas, as well as 97 acres of new and improved State parkland; a 69,000-seat 49ers stadium; and a 10,000-seat performance arena. The permanent employee population associated with the Project is 10,730. In addition, a 300-slip marina is provided. Shoreline improvements are provided to stabilize the shoreline. The Project includes structured and on-street parking and various infrastructure improvements to support the development. Refer to Section II.E (Project Characteristics), pp. II-7 to II-49, and Table II-3 (Proposed Land Use), p. II-9. Refer also to Table A of the Findings, which is provided in this Addendum as Table 3 in the Project Description.	No changes implemented.	The Addendum 4 changes included tower relocation at CP, height increases at CP, conversion of office space to neighborhood retail space at CP, relocation of displaced on-street parking to the CP center garage, change in phasing of Harney Way off-site improvements, and revisions to the configuration of Gilman Avenue). Refer to Table 1, Candlestick Point Land Use—Approved vs. Proposed, p. 4. The text description of the Addendum 4 land use plan is provided on pp. 5 to 11.	The Addendum 5 changes[5] would primarily include land use changes at HPS. In addition, the phasing schedule for both CP and HPS would be changed. The HPS2 proposed land use modifications under this Variant generally include the following: 1. Provide for land use changes, including 3,454 residential units at HPS2 (including 172 units previously approved for HPS1), the addition of new uses, reallocation of the square footage of commercial uses to provide for a greater mix of uses at HPS2, and adjustment of the location and acreage of parks and open space, providing for more parks and open space; 2. Adjust two approved tower locations; 3. Allow building height and/or bulk changes, which will increase and decrease heights in various locations; 4. Accommodate transportation network changes associated with the street layout (including the extension of Donahue Street from LaSalle Avenue/Kirkwood Avenue to Crisp Road) and street geometrics, bicycles, and transit; 5. Addition of two pedestrian bridges over Dry Dock 4; 6. The number of parking spaces for residential and commercial garages and on-street parking would be based on approved parking ratios[6] and revised street layouts, respectively. The number of spaces analyzed in Addendum 5 corresponds to the number of residential units and the square footage of nonresidential uses identified as part of the 2018 Modified Project Variant; 7. Provision of water taxi service from Dry Dock 4; 8. Provide for previously identified alternative utility systems (as generally described under 2010 FEIR Alternative 4, including a solar system, a recycled water facility, and district heating and cooling plants) and provide for new alternative utility systems (including a geothermal heating and cooling system as a component of the district heating and cooling plants and utility and building-scale battery storage systems); 9. Include an updated phasing plan; and 10. Include updated construction information.	• 2010 FEIR: CP and HPS Design for Development (D4D), June 2010, approved by the SFRA and SFPC • 2010 FEIR: HPS and BVHP Redevelopment Plans, June 2010, approved by the SFRA and SFPC • 2010 FEIR: Infrastructure Plan, Transportation Plan, Parks, Open Space, and Habitat Conservation Plan, and Sustainability Plan • Addendum 1: Major Phase Application, and conforming amendments to the Transportation Plan, Infrastructure Plan, Streetscape and Signage Plans, January 7, 2014, approved by OCII. • Addendum 4: CP D4D, March 2016, approved by OCII and SFPC)

[1] The page numbers refer to location in the document where each particular project component was described. The environmental analysis of that project component also occurs in the referenced document, but in a different location. The purpose of this table is to describe how the project has changed since 2010, rather than to provide a summary of the environmental impacts of those changes.
[2] Refer to Table A-2 (Comparison of 2018 Modified Project Variant to 2010 FEIR Project), Table A-3 (Comparison of 2018 Modified Project Variant to 2010 R&D Variant 1), and Table A-4 (Comparison of 2018 Modified Project Variant to 2010 Housing/R&D Variant 2A) for a quantitative comparison of the various project elements of the 2018 Modified Project Variant against the 2010 Project, R&D Variant 1, and Housing/R&D Variant 2A (e.g., residential land uses, nonresidential land uses, parking, marina, water taxi, and parks and open space).
[3] The project components described in this table represent primary land uses or project features.
[4] Attachment A (CEQA Findings) of the 2010 FEIR included the following as approved project components: the stadium project (the "main" project evaluated in the EIR), two land use variants (R&D Variant 1 and Housing/R&D Variant 2A), Tower Variant 3D, Utilities Variant 4, and Sub-alternative 4A, which includes the preservation of four historic structures at HPS.
[5] In this table, "Addendum 5" and the "2018 Modified Project Variant" refer to the project described in Addendum 5, which is the 2018 Modified Project Variant. The previous two addenda (Addendum 1 and Addendum 4) did not have specific project or variant names; therefore, the revised land use program and project elements described in those addenda are referred to as "Addendum 1" and "Addendum 4," rather than by a specific project or variant name. The project evaluated in the 2010 FEIR is referred to as the "2010 Project."
[6] Each land use has a parking ratio identified in the 2010 FEIR, which will be maintained for the 2018 Modified Project Variant. Therefore, while the land use program has been modified, which will change the number of parking spaces required, the 2018 Modified Project Variant meets the same parking standards as provided in 2010 FEIR. Further, if any land uses change in the future, the number of parking spaces will be provided according to the established parking ratios identified in the 2010 FEIR and this addendum, unless different ratios are agreed upon between the Applicant, EP, OCII, and any other involved parties.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
				The CP proposed modifications generally include the following: 1. Provide for 7,218 housing units at CP; and 2. Include an updated phasing plan, which will re-order CP Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction; remove a parcel from the CP boundary (the Jamestown Parcel, in CP-02); and modify the boundary of CP-05. Refer specifically to Table 2 (2018 Modified Project Variant Land Use Program) p. 13, and Figure 5 (CP-HPS2 2010 Project Land Use Plan), p. 16 for a description and illustration of the land use program.	
Tower Locations	Under the 2010 Project, in CP, there are eleven residential towers ranging between 270 feet to 420 feet in height (pp. II-16 and II-17) in the Candlestick Point North and Candlestick Point South Districts. In addition, Variant 3 (Candlestick Point Tower Locations) provides an alternative arrangement of towers (pp. IV-173 to IV-180), ranging from a total of 10 to 12 towers. The Candlestick Point Tower Variants (A, B, C, and D) have different locations and heights and bulk of residential towers at Candlestick Point.; however, each has the same overall land use program as the Project.	No changes implemented.	Under the Addendum 4 changes, Tower G, located in CP Center (CP-02), was moved west from the middle of the block to a location on Arelious Walker Drive near Jamestown Avenue. Towers J and K were relocated in CP-04 immediately southeast of the approved locations; the heights would not change. Refer to pp. 5 to 6 and 30 to 31.	Under Addendum 5, in HPS2, Tower A would be located in the same location and on the same block as the encouraged tower location shown in the 2010 FEIR; however, a flexible tower zone would be added to the remainder of the block, allowing flexibility as to the ultimate location of this tower. Tower B would be located one block north from the approved location shown in the 2010 FEIR. A flexible tower location zone would also be created for the balance of this block, allowing flexibility for its ultimate location. The heights of both towers would remain the same. Refer to Project Description section "Tower Locations and Building Heights," p. 18, and Figure 7 (Tower Locations: Towers A and B), p. 19.	● CP and HPS Design for Development (D4D), June 2010 (associated with the 2010 FEIR, approved by the SFRA and SFPC) ● HPS and BVHP Redevelopment Plans, June 2010 (associated with the 2010 FEIR, approved by the SFRA and SFPC) ● CP D4D, March 2016 (associated with Addendum 4, approved by OCII and SFPC)
Building Heights and Bulk	The maximum building heights at HPS range from 40 feet to 105 feet, and the maximum building heights at CP range from 40 feet to 420 feet (refer to Figure II-5 [Proposed Maximum Building Heights], p. II-12).	No changes proposed.	Some maximum building heights were increased in the area in and adjacent to CP Center (within CP) and, while certain areas would increase in maximum height, CP would still have maximum heights from 40 feet to 420 feet, which is what was analyzed in the 2010 FEIR. The primary changes in building heights include the following: ● An increase in the maximum height at CP Center on the corner of West Harney Way and Ingerson Avenue from 85 feet to 120 feet to allow for a performance venue above a two-story anchor retail space (see Exhibit D, p. 1 Candlestick Center Mixed Use Height Visuals). ● An increase in the maximum height along Harney Way and Ingerson Avenue within and adjacent to the CP Center from 65 feet to 80 feet, while mandating a minimum floor-to-floor height of 20 feet for the ground floor retail, and restrict residential and commercial uses above the ground floor retail to a maximum of five floors (see Exhibit D, pp. 2 to 3). ● An increase in the maximum height of the building located at the corner of Arelious Walker Drive and Harney Way from 65 feet to 80 feet (See, Exhibit E, Candlestick Center Hotel Height Visuals). This building would accommodate the 220-room hotel, performance venue space, and office space and would ensure consistency in the built form along Harney Way and allow greater flexibility to design the building as an iconic entry statement to CP Center.	The proposed building heights would both increase and decrease in various locations in HPS2 on a block-by-block basis. In general, maximum heights would generally increase from 65 feet to 85 feet and from 105 feet to 120 feet, although a number of blocks would remain at a maximum of 85 feet. In addition, other blocks would decrease from a maximum of 65 feet to a maximum of 45 feet. Facade composition strategies include a greater range of examples of facade modulation, articulation, fenestration and transparency, and the use of materials and color to achieve urban form consistent with the shipyard vision. Buildings with large floor-plates would be required to apply additional strategies to reduce building massing. Refer to Project Description section "Tower Locations and Building Heights," p. 18, and Figure 8 (Building Heights), p. 21.	● CP and HPS Design for Development (D4D), June 2010 (associated with 2010 FEIR, approved by the SFRA and SFPC) ● HPS and BVHP Redevelopment Plans, June 2010 (associated with the 2010 FEIR, approved by the SFRA and SFPC) ● CP D4D, March 2016 (associated with Addendum 4, approved by OCII and SFPC)

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
Stadium Lighting	Under the 2010 Project, the top of the stadium light towers at the new HPS2 stadium (relocated from CP) are at an approximate elevation of 192 feet. The stadium lighting meets criteria for lighting for players, spectators and television broadcasts, and provides 250 footcandles to 300 foot-candles at the field level. The 192-foot tall lighting units allows the light to be angled downward and uses fixtures that focus light on the field and reduce glare. In addition, because the stadium height reaches 156 feet above the playing field, the illuminated portion of the playing field is not be visible from adjacent areas.	No changes proposed.	No changes proposed.	No changes proposed.	
Revisions to Phasing					
Project Phasing Schedule	Project phasing (or construction activities) begins in 2011 and ends in 2031 (for a total of 20 years). Refer to 2010 FEIR Table III.C-8 (Project Construction Employment), p. III.C-13.	Under Addendum 1, the project phasing changed because the Candlestick Park stadium site is available for development sooner than previously anticipated due to the 49ers football team's move to a new stadium in Santa Clara in 2014. In response to these changes, the project sponsor changed the Project Phasing Schedule as follows: ● Demolition of Candlestick Park stadium and construction of the Candlestick Point Regional Retail Center in Major Phase 1 instead of Major Phase 3 as shown in the 2010 Project Phasing Schedule. ● Development of all of the research and development blocks on Parcel C in HPS Phase II in Major Phase 3 instead of splitting this development between Major Phases 2 and 3 as shown in the 2010 Project Phasing Schedule. ● Development of all improvements in the HPS Phase II South area in Major Phase 4 instead of splitting this development among Major Phases 2, 3, and 4 as shown in the 2010 Project Phasing Schedule. Under the modified Phasing Schedule, construction activities at Candlestick Point will occur from 2014 through 2035. Refer to pp. 3 to 4 and Tables 1 to 3, pp. 7 to 8.	No changes proposed.	The Project phasing (or construction activities) under the 2018 Modified Project Variant would total 21 years, which is the same construction time period assumed in the 2010 FEIR. However, the beginning date of construction would be delayed by approximately 3 years (from 2011 to 2014) and the construction would end three years later (in 2034 rather than 2031). Refer to Table 8 (Construction Employment), p. 86. The HPS2 phasing plan under the 2018 Modified Project Variant would update the phasing and construction schedule for HPS2 by reducing the number of major phases from four to three, although it is anticipated the three Major Phase applications would be submitted at the same time. The CP phasing plan under the 2018 Modified Project Variant would update the phasing and construction schedule for CP by reducing the number of major phases from four to three, consolidating Sub-phases CP-05 and CP-09 to advance the development of the Alice Griffith neighborhood and renumbering and resequencing the rest of the CP sub-phases to allow development to advance towards the northeast, rather than to the north. Boundary changes would also occur in CP, including reordering CP Major Phase 2 construction sub-phases to proceed with development in an easterly rather than northern direction; removing a parcel from the CP boundary (the Jamestown Parcel, in CP-02); and modifying the boundary of CP-05.	● Phasing Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA)
Revisions to Utility Systems					
Auxiliary Water Supply System (AWSS)	The Project provided an AWSS loop within CP. At HPS2, the AWSS connects to the existing AWSS system at the intersection of Earl Street and Innes Avenue and at the Palou Avenue and Griffith Avenue intersection with a looped service along Spear Avenue/Crisp Road. Refer to p. II-46.	The modified Plan proposed a different piping layout than previously contemplated in the 2010 FEIR, as well as the addition of two Portable Water Supply Systems (PWSS), instead of loop systems; this also necessitated a revision to MM UT-2. Refer to pp. 4 to 5, 10, and 50 to 51.	No changes proposed.	No changes proposed.	● Infrastructure Plan (appendix to Disposition and Development Agreement), June 2010 (associated with the 2010 FEIR, approved by the SFRA) ● Infrastructure Plan, November 2014 (associated with Addendum 1, approved by the SFPUC)

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
EcoDistrict	The Utilities Variant assumes the implementation of additional on-site utility infrastructure, including (1) district heating and cooling, (2) on-site wastewater treatment, and (3) an automated trash collection system. All land uses at CP and HPS2 were constructed at the same locations and at the same intensities proposed with the Project, although some minor shifts in building locations can occur to accommodate some elements of the proposed utility systems, which requires some additional built space. Additionally, the 2010 FEIR acknowledges the Project Sponsor's intentions to use renewable energy strategies at HPS2, including the use of photovoltaic cells to reduce energy usage. Refer to pp. IV-231 to IV-237.	No changes proposed.	No changes proposed.	The 2018 Modified Project Variant would include a ground source geothermal heating and cooling system (a form of a district heating and cooling system, as proposed in the 2010 FEIR), solar power (as proposed in the 2010 FEIR as photovoltaic cells), and recycled water (as proposed in the 2010 FEIR [on-site wastewater treatment]). The specific components of the geothermal heating and cooling system include three small-scale central utility plants (CUPs), a vertical bore geothermal heat exchange system, a four-pipe chilled and hot water return and supply distribution system, and water-to-air and water-to-water heat exchangers that transfer heating and cooling to building HVAC systems.	• Infrastructure Plan (appendix to Disposition and Development Agreement), June 2010 (associated with the 2010 FEIR, approved by the SFRA)
Revisions to Transportation and Transit System					
Transportation System (Vehicular and/or Pedestrian)	The street network extended the existing grid of the adjacent Bayview Hunters Point (BVHP) neighborhood into the Project site. The internal street network is composed of seven types of streets consistent with and classified by the San Francisco Better Streets Plan (Draft for Public Review, June 2008), including: Commercial Throughway; Residential Throughway, Neighborhood Commercial Street, Neighborhood Residential Street, Parkway, Park Edge Street and Alley. The street network, including proposed off-site improvements, is illustrated in Figure II-11 (Proposed Street Network), p. II-36.	This project refinement proposed changes to roadway cross-section dimensions and alignments from those shown in the previously approved August 3, 2010, Transportation Plan. Refinements to roadway cross sections were proposed to continue to encourage slow-speed auto traffic, and better accommodate transit, bicyclists, and on-street parking based on recent San Francisco Municipal Transportation Agency (SFMTA) design guidance for travel lane widths. The refinements included (1) cross-section dimensions for various street components, such as width of parking lanes, width of travel lanes, and width of bicycle lanes; (2) converting the proposed Bus Rapid Transit (BRT) lanes from a two-way, side-running alignment to a center-running alignment, where possible, to be consistent with other priority transit corridors in San Francisco; (3) reorientation of some streets in CP; (4) provision of a new cycle track facility that closes a gap in the bicycle network near the project's CP retail center, extending west of the project site, along Harney Way toward US-101 and replacing the originally-proposed Class II bicycle lanes on both sides of the street; (5) Class II bicycle lanes would be removed from Earl Street to narrow the street and to maximize the space available for public parks on the west side of the street; (6) widen the Yosemite Slough Bridge by 4 feet, which was wider than the previously-approved non-stadium alternative, but substantially narrower than the approved stadium alternative, and accommodated bicycle and pedestrian circulation and maintenance vehicles on both sides of the bridge; (7) streets in the Hunters Point South neighborhood were re-oriented to allow for the BRT route to penetrate the center of the neighborhood at the intersection of Crisp Avenue/Fischer Street; and (8) narrow the	No changes proposed.	The 2018 Modified Project Variant would incorporate refinements to certain elements of the approved transportation plan related to roadway cross-section dimensions and alignments and phasing at HPS2. Refinements to roadway cross sections would encourage slow-speed auto traffic and better accommodate transit, bicyclists, and on-street parking based on recent San Francisco Municipal Transportation Agency (SFMTA) design guidance for travel lane widths.	• Transportation Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA) • Transportation Plan, August 2014 (associated with Addendum 1, approved by the SFMTA)

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
		ultimate cross section of Arelious Walker Drive to include only two travel lanes in each direction separated by a median and to eliminate the previously proposed on-street parking and Class II bicycle lanes, which were replaced by a two-way cycle track running through the heart of the project along Harney Way and two-way BRT lanes would be provided between Egbert Street and Carroll Avenue. Refer to pp. 11 to 18 and revised MM TR-16, which relates to the widening of Harney Way. Also, all roadway improvements were implemented at the same triggers or sooner (relative to development levels) as described in the 2010 FEIR.			
Transit Improvements	Supported by Project revenues and infrastructure, the San Francisco Municipal Transportation Agency implemented the following transit services: ● Extending existing Muni bus routes to better serve the Project site ● Increasing frequencies on existing routes to provide more capacity ● Complementing existing routes with new transit facilities and routes that would serve the Project's proposed land use program and transit demand Connecting to regional transit with BRT Bicycle routes provides connections within the Project site, to the surrounding neighborhoods, and to other parts of the City. Bicycle routes would be located along major roadways, consistent with City guidelines and adopted bicycle plans. As noted above, the Bay Trail, which accommodates bicycle travel, extends along the entire Project waterfront. Secure bicycle parking was provided in each commercial parking facility and residential garages. The Project pedestrian network, together with its land use design, encourages walking as a primary mode of transportation within the Project site. Refer to 2010 FEIR pp. II-39 to II-41.	At build out, the modified project's transit network was nearly identical to what was described in the 2010 FEIR, although two minor changes were proposed—specifically, changes to the routes for the 29 Sunset in CP and to all routes in HPS2 associated with a one-block shift of the planned Hunters Point Shipyard Transit Center. Changes to the transit phasing were expected to delay the provision of transit service to the Hunters Point Shipyard site in response to the corresponding delay in development of this site. In response to the acceleration of planned development in Candlestick Point, transit service at Candlestick Point was accelerated. In addition, there were minor refinements to the proposed bicycle network, minor changes to sidewalk widths, and a slight reduction in parking spaces. Refer to pp. 19 to 28.	No changes proposed.	In the approved transit network (refer to Figure 11 [HPS2 Transit Layover Detail], p. 31), the Hunters Point Transit Center was located on the south side of Spear Avenue near the intersection of Lockwood Street. Under the 2018 Modified Project Variant, the Hunters Point Transit Center would be located on the north side of Spear Avenue, near Dry Dock 2, as indicated on Figure 10 (HPS2 Transit Improvements), p. 30. The transit center would continue to serve the Shipyard North Residential and Shipyard Village Center Cultural Districts, but would have 14 bus bays (an increase of four bus bays). As shown on Figure 10 and Figure 11, in the HPS2 proposed modifications, four existing MUNI-bus lines servicing the Shipyard (Route 44-O'Shaughnessy, Route 48-Quintara, Route 28R-19th, and Route 24-Divisidero) would be extended to terminate and re-start at the Transit Center, and the proposed Hunters Point Express (HPX) bus service to Downtown San Francisco would also connect to the Transit Center. There would also be minor modifications to the bicycle network, as shown in Figure 26 (2018 Modified Project Variant Bicycle Network Plan), p. 129, as well as the provision of two new bridges over Dry Dock 4.	● Transportation Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA) ● Transportation Plan, August 2014 (associated with Addendum 1, approved by the SFMTA)
Bicycle Improvements	Bicycle routes provide connections within the Project site, to the surrounding neighborhoods, and to other parts of the City. Bicycle routes would be located along major roadways, consistent with City guidelines and adopted bicycle plans. As noted above, the Bay Trail, which accommodates bicycle travel, extends along the entire Project waterfront. Secure bicycle parking is provided in each commercial parking facility and residential garages. Refer to p. II-41.	No changes proposed.	No changes proposed.	The Bay Trail would remain the same, while the configuration and location of Class I to IV bike facilities would change, as shown in Figure 26 (2018 Modified Project Variant Bicycle Network Plan), p. 129.	● Transportation Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA)
Parking	Described in 2010 FEIR.	The modified Project resulted in slightly fewer parking spaces on-street than the maximum envelope anticipated in the 2010 FEIR.	● The modified project changed the number of on-street and off-street parking spaces.	Adjust the number of parking spaces for residential and commercial garages and on-street parking based on approved parking ratios and revised street layouts, respectively.	● Transportation Plan (Appendix to Disposition and Development Agreement), June 2010 (associated with 2010 FEIR, approved by the SFRA) ● Transportation Plan, August 2014 (associated with Addendum 1, approved by the SFMTA)

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
Pedestrian Bridges	None.	None.	None.	Addition of two pedestrian bridges over Dry Dock 4.	
Water Taxi Service	None.	None.	None.	Provision of water taxi service from Dry Dock 4.	
Revisions to Mitigation Measures					
MM TR-16	**MM TR-16** Widen Harney Way as shown in Figure 5 in the Transportation Study. Prior to issuance of the grading permit for Development Phase 2 of the Project, the Project Applicant shall widen Harney Way as shown in Figure 5 in the Transportation Study. Prior to the issuance of grading permits for Phases 2, 3 and 4, the Project Applicant shall fund a study to evaluate traffic conditions on Harney Way and determine whether additional traffic associated with the next phase of development would result in the need to modify Harney Way to its ultimate configuration, as shown in Figure 6 in the Transportation Study, unless this ultimate configuration has already been built. This study shall be conducted in collaboration with the SFMTA, which would be responsible for making final determinations regarding the ultimate configuration. The ultimate configuration would be linked to intersection performance, and it would be required when study results indicate intersection LOS at one or more of the three signalized intersection on Harney Way at mid-LOS D (i.e., at an average delay per vehicle of more than 45 seconds per vehicle). If the study and SFMTA conclude that reconfiguration would be necessary to accommodate traffic demands associated with the next phase of development, the Project Applicant shall be responsible to fund and complete construction of the improvements prior to occupancy of the next phase.	*The project sponsor revised mitigation measure MM TR-16 to provide that Harney Way would be widened prior to the issuance of occupancy permits for the second sub-phase of Major Phase 1 (CP-02), since the first sub-phase in Major Phase 1 in Candlestick Point (CP-01) would not connect to Harney Way and improvements to Harney Way would not affect auto capacity associated with CP-01:* **MM TR-16** Widen Harney Way as shown in Figure 5 in the Transportation Study. Prior to issuance of the ~~grading~~ occupancy permit for ~~Development Phase 1 of the Project,~~ Candlestick Point Sub-Phase CP-02, the Project Applicant shall widen Harney Way as shown in Figure 5 in the Transportation Study, with the modification to include a two-way cycle track, on the southern portion of the project right of way. Prior to the issuance of grading permits for Candlestick Point Major Phases 2, 3 and 4, the Project Applicant shall fund a study to evaluate traffic conditions on Harney Way and determine whether additional traffic associated with the next phase of development would result in the need to modify Harney Way to its ultimate configuration, as shown in Figure 6 in the Transportation Study, unless this ultimate configuration has already been built. This study shall be conducted in collaboration with the SFMTA, which would be responsible for making final determinations regarding the ultimate configuration. The ultimate configuration would be linked to intersection performance, and it would be required when study results indicate intersection LOS at one or more of the three signalized intersection on Harney Way at mid-LOS D (i.e., at an average delay per vehicle of more than 45 seconds per vehicle). If the study and SFMTA conclude that reconfiguration would be necessary to accommodate traffic demands associated with the next phase of development, the Project Applicant shall be responsible to fund and complete construction of the improvements prior to occupancy of the next phase.	*Delays associated with two nearby major transportation projects—the extension of Geneva Avenue and the replacement of the US 101/Harney Way interchange—delayed the final design of the BRT alignment. Given these delays, it is unlikely that the BRT alignment would be finalized by 2019. Consequently, the improvements anticipated in the initial configuration of Harney Way, which includes several BRT-related improvements, would be changed by this delay, which are proposed by further changes to MM TR-16:* **MM TR-16** Widen Harney Way as shown in Figure 5 in the Transportation Study. ~~Prior to the issuance of the occupancy permit for Candlestick Point Sub-Phase CP-02, t~~The The Project Applicant shall widen Harney Way as shown in figure 5 in the Transportation Study, with the modification to include a two-way cycle track, on the southern portion of the project right of way. The portion between Arelious Walker Drive and Executive Park East (Phase 1-A) shall be widened to include a two-way cycle track and two-way BRT lanes, prior to issuance of an occupancy permit for Candlestick Sub-Phase CP-02. The remaining portion, between Thomas Mellon Drive and Executive Park East (Phase 1-B), shall be widened prior to implementation of the planned BRT route which coincides with construction of CP-07 and HP-04 in 2023, as outlined in the transit improvement implementation schedule identified in Addendum 1, based on the alignment recommendations from an ongoing feasibility study conducted by the San Francisco County Transportation Agency. Prior to the issuance of grading permits for Candlestick Point Major Phases 2, 3, and 4, the Project Applicant shall fund a study to evaluate traffic conditions on Harney Way and determine whether additional traffic associated with the next phase of development would result in the need to modify Harney Way to its ultimate configuration, as shown in Figure 6 in the Transportation Study, unless this ultimate configuration has already been built. This study shall be conducted in collaboration with the SFMTA, which would be responsible for making final determinations regarding the ultimate configuration. The ultimate configuration would be linked to intersection performance, and it would be required when study results indicate intersection LOS at one or more of the three signalized intersections on Harney Way at mid-LOS D (i.e., at an average delay per vehicle	**MM TR-16** Widen Harney Way as shown in Figure 5 in the Transportation Study. The Project Applicant shall widen Harney Way as shown in Figure 5 in the Transportation Study with the modification to include a two-way cycle track, on the southern portion of the project right-of-way. The portion between Arelious Walker Drive and Executive Park East (Phase 1-A) shall be widened to include a two-way cycle track and two-way BRT lanes, prior to issuance of an occupancy permit for Candlestick Sub-phase CP-02. The remaining portion, between Thomas Mellon Drive and Executive Park East (Phase 1-B), shall be widened prior to implementation of the planned BRT route which coincides with construction of ~~CP-07 and~~ HP-04 ~~in 2023~~, as outlined in the transit improvement implementation schedule identified in Addendum 1, based on the alignment recommendations from an ongoing feasibility study conducted by the San Francisco County Transportation ~~Agency~~ Authority. Prior to the issuance of grading permits for Candlestick Point Major Phases 2~~,~~ and 3~~, and 4~~, the Project Applicant shall fund a study to evaluate traffic conditions on Harney Way and determine whether additional traffic associated with the next phase of development would result in the need to modify Harney Way to its ultimate configuration, as shown in Figure 6 in the Transportation Study, unless this ultimate configuration has already been built. This study shall be conducted in collaboration with the SFMTA, which would be responsible for making final determinations regarding the ultimate configuration. The ultimate configuration would be linked to intersection performance, and it would be required when study results indicate intersection LOS at one or more of the three signalized intersections on Harney Way at mid-LOS D (i.e., at an average delay per vehicle of more than 45 seconds per vehicle). If the study and SFMTA conclude that reconfiguration would be necessary to accommodate traffic demands associated with the next phase of development, the Project Applicant shall be responsible to fund and complete construction of the improvements prior to occupancy of the next phase.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
			of more than 45 seconds per vehicle). If the study and SFMTA conclude that reconfiguration would be necessary to accommodate traffic demands associated with the next phase of development, the Project Applicant shall be responsible to fund and complete construction of the improvements prior to occupancy of the next phase.		
MM TR-17	**MM TR-17** Implement the Project's Transit Operating Plan. The Project Applicant shall work with SFMTA to develop and implement the Project's Transit Operating Plan. Elements of the Project Transit Operating Plan shall include: ● Extension of the 24-Divisadero, the 44-O'Shaughnessy, and the 48-Quintara-24th Street into Hunters Point Shipyard. ● Increased frequency on the 24-Divisadero to 6 minutes in the AM and PM peak periods. Extension of the 29-Sunset from its current terminus near the Alice Griffith housing development, near Gilman Avenue and Giants Drive, into the proposed Candlestick Point retail area. The 29-Sunset would operate a short line between Candlestick Point and the Balboa Park BART station. This would increase frequencies on the 29-Sunset by reducing headways between buses from 10 minutes to 5 minutes during the AM and PM peak periods between Candlestick Point and the Balboa BART station. Every other bus would continue to serve the Sunset District (to the proposed terminus at Lincoln Drive and Pershing Drive in the Presidio) at 10-minute headways. ● Convert T-Third service between Bayview and Chinatown via the Central Subway from one-car to two-car trains or comparable service improvement. Extension of the 28L-19th Avenue Limited from its TEP-proposed terminus on Geneva Avenue, just east of Mission Street, into the Hunters Point Shipyard transit center. The 28L-19th Avenue Limited would travel along Geneva Avenue across US-101 via the proposed Geneva Avenue extension and new interchange with US-101, to Harney Way. East of Bayshore Boulevard, the 28L-19th Avenue Limited would operate as BRT, traveling in exclusive bus lanes into the Candlestick Point area. The BRT route would travel through the Candlestick Point retail corridor, and cross over Yosemite Slough into the Hunters Point Shipyard transit center. ● The 28L-19th Avenue Limited would operate a short line to the Balboa Park BART station. This would increase frequencies on the 28L-19th Avenue Limited by reducing headways between buses from 10 minutes to 5 minutes for the segment between Hunters Point Shipyard and the Balboa Park BART station. Every other bus would continue to the Sunset District (to the proposed terminus at North Point Street and Van Ness Avenue) at 10-minute headways. If the TEP-proposed extension of the 28L has not been implemented by the SFMTA by the time implementation of this measure is called for in the Transportation Study (Appendix D), the Project Applicant shall fund the extension of that line between its existing terminus and Bayshore Boulevard.	No changes proposed.	No changes proposed.	**MM TR-17** Implement the Project's Transit Operating Plan. The Project Applicant shall work with SFMTA to develop and implement the Project's Transit Operating Plan. Elements of the Project Transit Operating Plan shall include: ● Extension of the 24-Divisadero, the 44-O'Shaughnessy, and the 48-Quintara-24th Street into Hunters Point Shipyard. ● Increased frequency on the 24-Divisadero to ~~6~~10 minutes in the AM and PM peak periods. Extension of the 29-Sunset from its current terminus near the Alice Griffith housing development, near Gilman Avenue and Giants Drive, into the proposed Candlestick Point retail area. The 29-Sunset would operate a short line between Candlestick Point and the Balboa Park BART station. This would increase frequencies on the 29-Sunset by reducing headways between buses from 10 minutes to 5 minutes during the AM and PM peak periods between Candlestick Point and the Balboa BART station. Every other bus would continue to serve the Sunset District (to the proposed terminus at Lincoln Drive and Pershing Drive in the Presidio) at 10-minute headways. ● Convert T-Third service between Bayview and Chinatown via the Central Subway from one-car to two-car trains or comparable service improvement. Extension of the 28L-19th Avenue Limited from its TEP-proposed terminus on Geneva Avenue, just east of Mission Street, into the Hunters Point Shipyard transit center. The 28L-19th Avenue Limited would travel along Geneva Avenue across US-101 via the proposed Geneva Avenue extension and new interchange with US-101, to Harney Way. East of Bayshore Boulevard, the 28L-19th Avenue Limited would operate as BRT, traveling in exclusive bus lanes into the Candlestick Point area. The BRT route would travel through the Candlestick Point retail corridor, and cross over Yosemite Slough into the Hunters Point Shipyard transit center. ● The 28L-19th Avenue Limited would operate a short line to the Balboa Park BART station. This would increase frequencies on the 28L-19th Avenue Limited by reducing headways between buses from 10 minutes to 5 minutes for the segment between Hunters Point Shipyard and the Balboa Park BART station. Every other bus would continue to the Sunset District (to the proposed terminus at North Point Street and Van Ness Avenue) at 10-minute headways. If the TEP-proposed extension of the 28L has not been implemented by the SFMTA by the time implementation of this measure is called for in ~~the Transportation Study (Appendix D)~~ Addendum 5, based on the revised project phasing, the Project	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	● New CPX-Candlestick Express to downtown serving the Candlestick Point site, traveling along Harney Way (with potential stops at Executive Park), before traveling on US-101 toward downtown, terminating at the Transbay Terminal. ● New HPX-Hunters Point Shipyard Express to downtown serving the Hunters Point Shipyard site, traveling from the Hunters Point Shipyard Transit Center, along Innes Avenue, with stops at the India Basin and Hunters View areas, before continuing along Evans Avenue to Third Street, eventually entering I-280 northbound at 25th/Indiana. The HPX would continue non-stop to the Transbay Terminal in Downtown San Francisco.			Applicant shall fund the extension of that line between its existing terminus and Bayshore Boulevard. ● New CPX-Candlestick Express to downtown serving the Candlestick Point site, traveling along Harney Way (with potential stops at Executive Park), before traveling on US-101 toward downtown, terminating at the Transbay Terminal. ● New HPX-Hunters Point Shipyard Express to downtown serving the Hunters Point Shipyard site, traveling from the Hunters Point Shipyard Transit Center, along Innes Avenue, with stops at the India Basin and Hunters View areas, before continuing along Evans Avenue to Third Street, eventually entering I-280 northbound at 25th/Indiana. The HPX would continue non-stop to the Transbay Terminal in Downtown San Francisco.	
MM TR-23.1	**MM TR-23.1** Maintain the proposed headways of the 29-Sunset. To address Project impacts to the 29-Sunset, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Gilman Avenue and Paul Avenue corridor, generally between Arelious Walker Drive and Bayshore Boulevard. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 29-Sunset. ● For the five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, prohibit on-street parking on westbound Gilman Avenue during the AM and PM peak periods to provide for three westbound travel lanes. During the peak periods convert one of the three westbound travel lanes to transit-only. During off-peak periods, parking would be allowed, and buses would travel in one of the two mixed-flow lanes. The peak period transit lanes would impact 90 parking spaces. ● For the same five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, restripe the eastbound direction to provide two travel lanes, one of which would accommodate on-street parking and one of which would be a mixed-flow travel lane. During the AM and PM peak periods, prohibit on-street parking in the eastbound direction, and operate one of the two eastbound lanes as transit-only lanes. The peak period transit lanes would impact 80 parking spaces. ● As an alternative to the two bulleted measures above, convert one of the travel lanes in each direction on Gilman Avenue from Third Street to Griffith Street to transit-only. This would allow for the provision of a 7-foot-wide on-street parking lane, an 11-foot-wide transit-only lane, and a 10-foot-wide mixed-flow lane in each direction on Gilman Avenue. This would preserve on-street parking along the corridor and provide four-block transit-only lanes on Gilman Avenue between Griffith Street and Third Street. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic. Subsequent to publication of the Draft EIR, SFMTA and the Project Applicant conducted an	No changes proposed.	*Mitigation measure MM TR-23.1 would bring the transit travel times for the 29 Sunset to levels consistent with the mitigated EIR scenario (as necessitated due revisions of the configuration to Gilman Avenue):* **MM TR-23.1** Maintain the proposed headways of the 29-Sunset. To address project impacts to the 29-Sunset, prior to issuance of a grading permit for Phase I, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Gilman Avenue and Paul Avenue corridor, generally between Arelious Walker Drive and Bayshore Boulevard. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 29-Sunset. ~~● For the five block segment of Gilman Avenue between Arelious Walker Drive and Third Street, prohibit on street parking on westbound Gilman Avenue during the AM and PM peak periods to provide for three westbound travel lanes. During the peak periods convert one of the three westbound travel lanes to transit only. During off-peak periods, parking would be allowed, and buses would travel in one of the two mixed-flow lanes. The peak period transit lanes would impact 90 parking spaces.~~ ~~● For the same five-block segment of Gilman Avenue between Arelious Walker Drive and Third Street, restripe the eastbound direction to provide two travel lanes, one of which would accommodate onstreet parking and one of which would be a mixed-flow travel lane. During the AM and PM peak periods, prohibit on-street parking in the eastbound direction, and operate one of the two eastbound lanes as transit-only lanes. The peak period transit lanes would impact 80 parking spaces.~~ ~~● As an alternative to the two bulleted measures above, narrow the existing sidewalks on Gilman~~	No changes proposed.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	evaluation of this alternative measure and determined that is a feasible and viable alternative to the two bulleted items above, ● Prohibit on-street parking on the north side of Paul Avenue, between Third Street and Bayshore Boulevard to create two westbound through lanes. Convert one westbound through lane to transit-only in the AM and PM peak periods. The peak period transit-only lane would impact 40 parking spaces. At the intersection of Paul Avenue and Bayshore Avenue, provide transit signal priority treatment (i.e., queue jump) to allow transit vehicles to maneuver into the mixed flow left-hand lane, facilitating a left-turn movement immediately west of Bayshore Boulevard from westbound Paul Avenue to southbound San Bruno. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include transit priority treatments on San Bruno Avenue, on the portions where the 29-Sunset travels.		~~Avenue from Third Street to Griffith Street (four blocks) from 5 feet to 12 feet in width. The resulting 12-foot-wide sidewalks would be consistent with the Better Streets Plan guidelines. The reduction in sidewalk width would allow for the provision of a 7-foot-wide on-street parking lane, an 11-foot-wide transit-only lane, and a 10-foot-wide mixed-flow lane in each direction on Gilman Avenue. This would preserve on-street parking along the corridor and provide four-block transit-only lanes on Gilman Avenue between Griffith Street and Third Street. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic.~~ ● Prohibit on-street parking on the north side of Paul Avenue, between Third Street and Bayshore Boulevard to create two westbound through lanes. Convert one westbound through lane to transit-only in the AM and PM peak periods. The peak period transit-only lane would impact 40 parking spaces. At the intersection of Paul Avenue and Bayshore Avenue, provide transit signal priority treatment (i.e., queue jump) to allow transit vehicles to maneuver into the mixed flow left-hand lane, facilitating a left-turn movement immediately west of Bayshore Boulevard from westbound Paul Avenue to southbound San Bruno. ● Implement traffic signal priority (TSP), which modifies the timing at signalized intersections to prioritize the movement of transit vehicles, at the intersections of Arelious Walker/Gilman Avenue, San Bruno Avenue/Paul Avenue, and Bayshore Boulevard/Paul Avenue. ● Implement a far-side stop in the eastbound and westbound directions at the intersection of Third Street/Gilman Avenue and a far-side stop in the westbound direction at the intersection of San Bruno/Paul Avenue. ● Implement a peak period, transit-dedicated lane in the westbound direction along Paul Avenue between Third Street Bayshore Boulevard. The transit land would begin on Gilman Avenue and extend through the intersection to Paul Avenue. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include transit priority treatments on San Bruno Avenue, on the portions where the 29-Sunset travels.		

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
R&D Variant (Variant 1), /Housing/R&D Variant (Variant 2A)/2018 Modified Project Variant Mitigation Measure MM TR-VAR1	**R&D Variant Mitigation Measure:** (a) Under the R&D and Housing/R&D Variants, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated left-turn lane and a shared through/left-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues. Implementation of this mitigation would reduce impacts from these variants to a less-than-significant level. (b) Under the R&D Variant, the Project Applicant would be required to fund the installation of a traffic signal at the intersection of Innes and Earl when warranted by traffic conditions. Implementation of this mitigation would reduce impacts from this variant to a less-than-significant level.	No changes proposed.	No changes proposed.	**R&D Variant (Variant 1)/Housing/R&D Variant (Variant 2A)/2018 Modified Project Variant Mitigation Measure MM TR-VAR1:** (a) Under the R&D and Housing/R&D Variants, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated left-turn lane and a shared through/right-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues. Under the 2018 Modified Project Variant, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated right-turn lane and a shared through/left-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues, and constructing the westbound approach on Crisp Avenue to provide two dedicated left-turn lanes and one shared through/right-turn lane. Implementation of this mitigation would reduce impacts from these variants to a less-than-significant level. (b) Under the R&D Variant (Variant 1) and the 2018 Modified Project Variant, the Project Applicant would be required to fund the installation of a traffic signal at the intersection of Innes and Earl when warranted by traffic conditions. Implementation of this mitigation would reduce impacts from this variant to a less-than-significant level. _____ *The Board recognizes that these mitigation measures are partially within the jurisdiction of SFMTA and SFDPW. The Board urges SFMTA and SFDPW to assist in implementing these mitigation measures, and finds that SFMTA and SFDPW can and should participate in implementing these mitigation measures.*	
MM NO-2a	**MM NO-2a** Pre-construction Assessment to Minimize Pile Driving Impacts. The Project Applicant shall require its geotechnical engineering contractor to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby buildings subject to pile driving impacts prior to receiving a building permit. If recommended by the geotechnical engineer, for structures or facilities within 50 feet of pile driving, the Project Applicant shall require groundborne vibration monitoring of nearby structures. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the following: ● Pre-pile driving surveying of potentially affected structures. ● Underpinning of foundations of potentially affected structures, as necessary. ● The construction plan shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of an excavation. Monitoring results shall be submitted to DBI. In the event of unacceptable ground movement, as determined by DBI inspections, all pile driving work shall cease and corrective measures shall be implemented. The pile driving program	No changes proposed.	No changes proposed.	**MM NO-2a** Pre-construction Assessment to Minimize Pile Driving and Deep Dynamic Compaction Impacts. The Project Applicant shall require its geotechnical engineering contractor to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby buildings subject to pile driving and deep dynamic compaction (DDC) impacts prior to receiving a building permit. The building surveys will review existing conditions and confirm whether fractures in building footings or walls existed prior to pile driving and/or DDC activities. If recommended by the geotechnical engineer, for structures or facilities within 50 feet of pile driving, the Project Applicant shall require groundborne vibration monitoring of nearby structures. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the following: ● Pre-pile driving surveying of potentially affected structures. ● Underpinning of foundations of potentially affected structures, as necessary. ● The construction plan shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of an excavation.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	and ground stabilization measures shall be reevaluated and approved by DBI.			Monitoring results shall be submitted to DBI. In the event of unacceptable ground movement, as determined by DBI inspections, all pile driving work shall cease and corrective measures shall be implemented. The pile driving program and ground stabilization measures shall be ~~reevaluated~~ reviewed and approved by ~~DBI~~OCII. For DDC work, the Project Applicant shall prepare and implement a construction plan that includes a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of DDC activity. Structures in the vicinity of DDC work shall be defined as reinforced-concrete, steel, or timber structures within 125 feet, engineered concrete or masonry structures within 150 feet, non-engineered timber and masonry structures within 225 feet, or other structures that are extremely susceptible to vibration damage within 275 feet of DDC activities as determined by the Project Applicant's geotechnical engineer or structural engineer. The DDC program shall be evaluated and approved by DBI and results of the monitoring program shall be submitted to OCII. In the event of unacceptable ground movement, as determined by DBI inspection and review, all DDC work shall cease and corrective measures shall be implemented. A geotechnical engineer approved by OCII shall determine which of the following ground stabilization measures or alternate measures would be necessary to avoid structural impacts related to DDC activities: ● Underpinning of foundations of potentially affected structures, as necessary to avoid structural impacts ● If deemed necessary by the geotechnical engineer, based either on proximity of DDC to a structure and/or on potential for damage to a structure, a cutoff trench shall be installed between the DDC activity and the structure. The cutoff trench should be at least 10 feet deep and 2 feet wide.[7] The trench should be long enough to effectively shield the structure from DDC vibrations.	
MM CP-2a	**MM CP-2a** Mitigation to Minimize Impacts to Archaeological Resources at Candlestick Point. Based on a reasonable presumption that archaeological resources may be present within the Project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the Project on buried or submerged historical resources. Overview: The Project Applicant shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical archeology. The archaeological consultant shall undertake an archaeological testing program as specified herein. In addition, the archaeological consultant shall be available to conduct an archaeological monitoring and/or data recovery program if required pursuant to this measure. The archaeological consultant's work shall be conducted in accordance with this measure and with the requirements of the Project Archaeological Research Design and Treatment Plan (Archeo-Tec. Archaeological Research Design and Treatment Plan for	No changes proposed.	No changes proposed.	**MM CP-2a** Mitigation to Minimize Impacts to Archaeological Resources at Candlestick Point. Based on a reasonable presumption that archaeological resources may be present within the Project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the Project on buried or submerged historical resources. Overview: The Project Applicant shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical ~~archeology~~ archaeology. The archaeological consultant shall ~~undertake an~~ augment the approved archaeological testing program as specified herein. In addition, the archaeological consultant shall be available to conduct an archaeological monitoring and/or data recovery program if required pursuant to this measure. The archaeological consultant's work shall be conducted in accordance with this measure and with the requirements of the Project Archaeological Research Design and Treatment Plan (Archeo-Tec~~.~~,	

[7] ENGEO Incorporated, *Potential Constraints on Implementation of Deep Dynamic Compaction*, December 14, 2017, p. 1.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	the Bayview Waterfront Project, San Francisco, California, 2009) at the direction of the City's Environmental Review Officer (ERO). In instances of inconsistency between the requirement of the Project Archaeological Research Design and Treatment Plan and of this archaeological mitigation measure, the requirement of this archaeological mitigation measure shall prevail. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archaeological monitoring and/or data recovery programs required by this measure could suspend construction of the Project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce potential effects on a significant archaeological resource as defined in CEQA Guidelines Section 15064.5(a)(c) to a less-than-significant level. Archaeological Testing Program: The archaeological consultant shall prepare and submit to the ERO for review and approval an archaeological testing plan (ATP). The archaeological testing program shall be conducted in accordance with the approved ATP. The ATP shall identify the property types of the expected archaeological resource(s) that potentially could be adversely affected by the Project, the testing method to be used, and the locations recommended for testing. The purpose of the archaeological testing program will be to determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA. At the completion of the archaeological testing program, the archaeological consultant shall submit a written report of the findings for submittal to the ERO. If, based on the archaeological testing program, the archaeological consultant finds that significant archaeological resources may be present, the ERO (in consultation with the archaeological consultant) shall determine if additional measures are warranted. Additional measures that may be undertaken include, but are not necessarily limited to, additional archaeological testing, archaeological monitoring, and/or an archaeological data recovery program. If the ERO determines that a significant archaeological resource is present and that the resource could be adversely affected by the Project, the Project Applicant shall either: a. Re-design the Project so as to avoid any adverse effect on the significant archaeological resource; or b. Implement a data recovery program, unless the ERO determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible. Archaeological Monitoring Program: If the ERO, in consultation with the archaeological consultant, determines that an Archaeological Monitoring Program (AMP) shall be implemented, the AMP shall include the following provisions, at a minimum: ● The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the AMP prior to			*Archaeological Research Design and Treatment Plan for the Bayview Waterfront Project, San Francisco, California*, 2009) at the direction of the City's Environmental Review Officer (ERO). In instances of inconsistency between the requirement of the Project Archaeological Research Design and Treatment Plan and of this archaeological mitigation measure, the requirement of this archaeological mitigation measure shall prevail. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archaeological monitoring and/or data recovery programs required by this measure could suspend construction of the Project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce potential effects on a significant archaeological resource as defined in CEQA Guidelines Section 15064.5(a)(c) to a less-than-significant level. Archaeological Testing Program: The archaeological consultant shall prepare and submit to the ERO for review and approval an addendum to the approved HPS2 archaeological testing plan (ATP). The archaeological testing program shall be conducted in accordance with the approved ATP addendum. The ATP addendum shall identify the property types of the expected archaeological resource(s) that potentially could be adversely affected by ground-disturbing components of the 2018 Modified Project Variant, including ground source geothermal heating and cooling system geothermal boreholes~~,~~; the testing method to be used; and the locations recommended for testing. The purpose of the archaeological testing program will be to determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA. At the completion of the archaeological testing program, the archaeological consultant shall submit a written report of the findings for submittal to the ERO. If, based on the archaeological testing program, the archaeological consultant finds that significant archaeological resources may be present, the ERO (in consultation with the archaeological consultant) shall determine if additional measures are warranted. Additional measures that may be undertaken include, but are not necessarily limited to, additional archaeological testing, archaeological monitoring, and/or an archaeological data recovery program. If the ERO determines that a significant archaeological resource is present and that the resource could be adversely affected by the Project, the Project Applicant shall either: a. Re-design the Project so as to avoid any adverse effect on the significant archaeological resource; or b. Implement a data recovery program, unless the ERO determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	the commencement of any Project-related soils disturbing activities. The ERO, in consultation with the archaeological consultant, shall determine what Project activities shall be archaeologically monitored. In most cases, any soils-disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), and site remediation, shall require archaeological monitoring because of the risk these activities pose to potential archaeological resources and to their depositional context. ● The archaeological consultant shall train all Project construction personnel who could reasonably be expected to encounter archaeological resources of the expected resource(s), how to identify the evidence of the expected resource(s), and the appropriate protocol in the event of apparent discovery of an archaeological resource. ● The archaeological monitor(s) shall be present on the Project site according to a schedule agreed upon by the archaeological consultant and the ERO until the ERO has, in consultation with the archaeological consultant, determined that Project construction activities could have no effects on significant archaeological deposits. ● The archaeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. ● If an intact archaeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit shall cease. The archaeological monitor shall be authorized to temporarily halt demolition/excavation/pile driving/construction activities and equipment until the deposit is evaluated. If, in the case of pile driving activity (foundation, shoring, etc.), the archaeological monitor has cause to believe that the pile driving activity may affect an archaeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archaeological consultant shall immediately notify the ERO of any encountered archaeological deposit. The archaeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit and present the findings of this assessment to the ERO as expeditiously as possible. ● Whether or not significant archaeological resources are encountered, the archaeological consultant shall submit a written report of the findings of the monitoring program to the ERO. <u>Archaeological Data Recovery Program:</u> The archaeological data recovery program shall be conducted in accord with an Archaeological Data Recovery Plan (ADRP). The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the ADRP prior to preparation of a draft ADRP. The archaeological consultant shall submit a draft ADRP to the ERO. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data			<u>Archaeological Monitoring Program:</u> If the ERO, in consultation with the archaeological consultant, determines that an Archaeological Monitoring Program (AMP) shall be implemented, the AMP shall include the following provisions, at a minimum: ● The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the AMP prior to the commencement of any Project-related soils disturbing activities. The ERO, in consultation with the archaeological consultant, shall determine what Project activities shall be archaeologically monitored. In most cases, any soils- disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), and site remediation, shall require archaeological monitoring because of the risk these activities pose to potential archaeological resources and to their depositional context. ● The archaeological consultant shall train all Project construction personnel who could reasonably be expected to encounter archaeological resources of the expected resource(s), how to identify the evidence of the expected resource(s), and the appropriate protocol in the event of apparent discovery of an archaeological resource. ● The archaeological monitor(s) shall be present on the Project site according to a schedule agreed upon by the archaeological consultant and the ERO until the ERO has, in consultation with the archaeological consultant, determined that Project construction activities could have no effects on significant archaeological deposits. ● The archaeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. ● If an intact archaeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit shall cease. The archaeological monitor shall be authorized to temporarily halt demolition/excavation/pile driving/construction activities and equipment until the deposit is evaluated. If, in the case of pile driving activity (foundation, shoring, etc.), the archaeological monitor has cause to believe that the pile driving activity may affect an archaeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archaeological consultant shall immediately notify the ERO of any encountered archaeological deposit. The archaeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit and present the findings of this assessment to the ERO as expeditiously as possible. ● Whether or not significant archaeological resources are encountered, the archaeological consultant shall submit a written report of the findings of the monitoring program to the ERO. <u>Archaeological Data Recovery Program:</u> The archaeological data recovery program shall be conducted in accord with an	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the Project. Destructive data recovery methods shall not be pursued if nondestructive methods are practical. The scope of the ADRP shall include the following elements: ● Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations. ● Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures. ● Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies. ● Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program. ● Security Measures. Recommended security measures to protect the archaeological resource from vandalism, looting, and other potentially damaging activities. ● Final Report. Description of proposed report format and distribution of results. ● Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities. Human Remains and Associated or Unassociated Funerary Objects: The treatment of human remains and associated or unassociated funerary objects discovered during any soil-disturbing activity shall comply with applicable state and federal laws. This shall include immediate notification of the Coroner of the City and County of San Francisco and in the event of the Coroner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC), which shall appoint a Most Likely Descendant (MLD) (PRC Sec. 5097.98). The archaeological consultant, Project Applicant, and MLD shall make all reasonable efforts to develop an agreement for the treatment of human remains and associated or unassociated funerary objects with appropriate dignity (CEQA Guidelines Sec. 15064.5(d)). The agreement shall take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. Final Archaeological Resources Report: The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s). Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey			Archaeological Data Recovery Plan (ADRP). The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the ADRP prior to preparation of a draft ADRP. The archaeological consultant shall submit a draft ADRP to the ERO. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the Project. Destructive data recovery methods shall not be pursued if nondestructive methods are practical. The scope of the ADRP shall include the following elements: ● Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations. ● Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures. ● Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies. ● Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program. ● Security Measures. Recommended security measures to protect the archaeological resource from vandalism, looting, and other potentially damaging activities. ● Final Report. Description of proposed report format and distribution of results. ● Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities. Human Remains and Associated or Unassociated Funerary Objects: The treatment of human remains and of associated or unassociated funerary objects discovered during any soil~~s~~-disturbing activity shall comply with applicable state and federal laws~~. This shall include~~ including immediate notification of the ~~Coroner~~ Office of the Chief Medical Examiner of the City and County of San Francisco and in the event of the ~~Coroner's~~ Medical Examiner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC), which shall appoint a Most Likely Descendant (MLD) (PRC Sec. 5097.98). The ERO shall also be immediately notified upon discovery of human remains. The archaeological consultant, Project ~~Applicant~~ Sponsor, ERO, and MLD shall have up to but not beyond six days after the discovery to make all reasonable efforts to develop an agreement for the treatment of human remains	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Major Environmental Analysis division of the Planning Department shall receive three copies of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than presented above.			and associated or unassociated funerary objects with appropriate dignity (CEQA Guidelines Sec. 15064.5(d)). The agreement ~~shall~~ should take into consideration the appropriate excavation, removal, recordation, analysis, ~~custodianship,~~ curation, possession, and final disposition of the human remains and associated or unassociated funerary objects. Nothing in existing state regulations or in this mitigation measure compels the Project Sponsor and the ERO to accept recommendations of an MLD. The archeological consultant shall retain possession of any Native American human remains and associated or unassociated burial objects until completion of any scientific analyses of the human remains or objects as specified in the treatment agreement if such an agreement has been made or, otherwise, as determined by the archeological consultant and the ERO. If no agreement is reached, state regulations shall be followed including the reinternment of the human remains and associated burial objects with appropriate dignity on the property in a location not subject to further subsurface disturbance (PRC Sec. 5097.98). Final Archaeological Resources Report: The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s). Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Major Environmental Analysis division of the Planning Department shall receive three copies of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than presented above.	
MM GE-5a	**MM GE-5a** Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement. Prior to issuance of building permits for the Project site: ● The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC), the Seismic Hazards Mapping Act, and requirements contained in CGS Special Publication 117A "Guidelines for Evaluating and Mitigating Seismic Hazards in California." In addition, all engineering	No changes proposed.	No changes proposed.	**MM GE-5a** Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement. Prior to issuance of building permits for the Project site: ● The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC), the Seismic Hazards Mapping Act, and requirements contained in CGS Special Publication 117A "Guidelines for	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	practices, and analyses of structural design shall be consistent with SFBC standards to ensure seismic stability, including reduction of potential liquefaction hazards. ● DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific geotechnical investigations and the site-specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods. ● All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations. ● The site-specific Project plans shall incorporate the mitigation measures contained in the approved site-specific geotechnical reports to reduce liquefaction hazards. The engineering design techniques to reduce liquefaction hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval, including, but not necessarily limited to: ○ Structural Measures ■ Construction of deep foundations, which transfer loads to competent strata beneath the zone susceptible to liquefaction, for critical utilities and shallow foundations ■ Structural mat foundations to distribute concentrated load to prevent damage to structures ○ Ground Improvement Measures ■ Additional over-excavation and replacement of unstable soil with engineering-compacted fill ■ Dynamic compaction, such as Deep Dynamic Compaction (DDC) or Rapid Impact Compaction (RIC), to densify loose soils below the groundwater table ■ Vibro-compaction, sometimes referred to as vibro-floatation, to densify loose soils below the groundwater table ■ Stone columns to provide pore pressure dissipation pathways for soil, compact loose soil between columns, and provide additional bearing support beneath foundations ■ Soil-cement columns to densify loose soils and provide additional bearing support beneath foundations ● The Project CEG or GE shall be responsible for ensuring compliance with these requirements.			Evaluating and Mitigating Seismic Hazards in California." In addition, all engineering practices, and analyses of structural design shall be consistent with SFBC standards to ensure seismic stability, including reduction of potential liquefaction hazards. ● DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific geotechnical investigations and the site-specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods. ● All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations. ● The site-specific Project plans shall incorporate the mitigation measures contained in the approved site-specific geotechnical reports to reduce liquefaction hazards. The engineering design techniques to reduce liquefaction hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval, including, but not necessarily limited to: <u>Structural Measures</u> ● Construction of deep foundations, which transfer loads to competent strata beneath the zone susceptible to liquefaction, for shallow foundations ● Structural mat foundations to distribute concentrated load to prevent damage to structures <u>Ground Improvement Measures</u> ● Additional over-excavation and replacement of unstable soil with engineering-compacted fill ● Dynamic compaction, such as Deep Dynamic Compaction (DDC) or Rapid Impact Compaction (RIC), to densify loose soils below the groundwater table ● Vibro-compaction, sometimes referred to as vibro-floatation, to densify loose soils below the groundwater table ● Stone columns to provide pore pressure dissipation pathways for soil, compact loose soil between columns, and provide additional bearing support beneath foundations ● Soil-cement columns to densify loose soils and provide additional bearing support beneath foundations ● <u>Deep displacement grout columns to densify loose soil and provide additional bearing support beneath foundations</u> ● The Project CEG or GE shall be responsible for ensuring compliance with these requirements.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
MM HY-6a.1	**MM HY-6a.1** Regulatory Stormwater Requirements. The Project Applicant shall comply with requirements of the Municipal Stormwater General Permit and associated City SWMP, appropriate performance standards established in the Green Building Ordinance, and performance standards established by the SFPUC in the San Francisco Stormwater Design Guidelines. The Draft San Francisco Stormwater Design Guidelines have been developed to satisfy the Municipal Stormwater General Permit requirements for new development and redevelopment projects in areas served by separate storm sewers, and are expected to be adopted by December 2009. The Project Applicant shall comply with requirements of the Draft San Francisco Stormwater Design Guidelines. Upon adoption of the Final Stormwater Design Guidelines, the Project shall comply with the Final San Francisco Stormwater Design Guidelines unless discretionary permits have been approved. Per the Draft San Francisco Stormwater Design Guidelines, the Project Applicant shall submit a SCP to the SFPUC, as part of the development application submitted for approval. The SCP shall demonstrate how the following measures would be incorporated into the Project: ● Low impact development site design principles (e.g., preserving natural drainage channels, treating stormwater runoff at its source rather than in downstream centralized controls) ● Source control BMPs in the form of design standards and structural features for the following areas, as applicable: ○ Commercial areas ○ Restaurants ○ Retail gasoline outlets ○ Automotive repair shops ○ Parking lots ● Source control BMPs for landscaped areas shall be documented in the form of a Landscape Management Plan that relies on Integrated Pest Management[8] and also includes pesticide and fertilizer application guidelines. ● Treatment control measures (e.g., bioretention, porous pavement, vegetated swales) targeting the Project-specific COCs: sediment, pathogens, metals, nutrients (nitrogen and phosphorus compounds), oxygen-demanding substances, organic compounds (e.g., PCBs, pesticides), oil and grease, and trash and debris. The SCP shall demonstrate that the Project has the land area available to support the proposed BMP facilities sized per the required water quality design storm. Volume-based BMPs shall be sized to treat runoff resulting from 0.75 inches of rainfall (LEED® SS6.2), and flow-based BMPs shall be sized to treat runoff resulting from a rainfall intensity of 0.2 inches per hour. Treatment trains shall be used where feasible.	No changes proposed.	No changes proposed.	**MM HY-6a.1** Regulatory Stormwater Requirements. The Project Applicant shall comply with requirements of the Municipal Stormwater General Permit and associated City SWMP, appropriate performance standards established in the Green Building Ordinance, and performance standards established by the SFPUC in the San Francisco Stormwater Management Requirements and Design Guidelines (SMR). The ~~Draft San Francisco Stormwater Design Guidelines have been developed to satisfy the Municipal Stormwater General Permit requirements for new development and redevelopment projects in areas served by separate storm sewers, and are expected to be adopted by December 2009~~ SMR includes regulatory requirements for post-construction stormwater management controls for new and redevelopment projects and helps design teams implement these stormwater controls. The Project Applicant shall comply with requirements of the ~~Draft San Francisco Stormwater Design Guidelines~~ SMR. ~~Upon adoption of the Final Stormwater Design Guidelines, the Project shall comply with the Final San Francisco Stormwater Design Guidelines unless discretionary permits have been approved.~~ Per the ~~Draft San Francisco Stormwater Design Guidelines~~ SMR, the Project Applicant shall submit a Stormwater Control Plan (SCP) to the SFPUC, as part of the development application submitted for approval. The SCP shall demonstrate how the following measures would be incorporated into the Project: ● Low impact development site design principles (e.g., preserving natural drainage channels, treating stormwater runoff at its source rather than in downstream centralized controls) ● Source control BMPs in the form of design standards and structural features for the following areas, as applicable: ○ Commercial areas ○ Restaurants ○ Retail gasoline outlets ○ Automotive repair shops ○ Parking lots ● Source control BMPs for landscaped areas shall be documented in the form of a Landscape Management Plan that relies on Integrated Pest Management[9] and also includes pesticide and fertilizer application guidelines. ● Treatment control measures (e.g., bioretention, porous pavement, vegetated swales) targeting the Project-specific COCs: sediment, pathogens, metals, nutrients (nitrogen and phosphorus compounds), oxygen-demanding substances, organic compounds (e.g.,	

[8] IPM is a strategy that focuses on long-term prevention or suppression of pest problems (i.e., insects, diseases and weeds) through a combination of techniques including: using pest-resistant plants; biological controls; cultural practices; habitat modification; and the judicious use of pesticides according to treatment thresholds, when monitoring indicates pesticides are needed because pest populations exceed established thresholds.

[9] IPM is a strategy that focuses on long-term prevention or suppression of pest problems (i.e., insects, diseases and weeds) through a combination of techniques including: using pest-resistant plants; biological controls; cultural practices; habitat modification; and the judicious use of pesticides according to treatment thresholds, when monitoring indicates pesticides are needed because pest populations exceed established thresholds.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	Additional requirements: ● LEED® SS6.2: BMPs used to treat runoff shall be designed to remove 80 percent of the average annual post-development total suspended solids loads. BMPs are considered to meet these criteria if they are designed in accordance with SFPUC requirements. ● The SCP shall include an Operations and Maintenance Plan that demonstrates how the treatment control BMPs would be maintained in the long term, what entities would be responsible for BMP maintenance within the public and private rights-of-way, funding mechanisms, and what mechanisms would be used to formalize maintenance and access agreements. ● The Project Applicant shall also prepare a Stormwater Drainage Master Plan (SDMP) for approval by the SFPUC. The SDMP shall include plans for the storm drain infrastructure and plans for stormwater management controls (e.g., vegetated swales, dry wells). The storm drain infrastructure shall illustrate conveyance of the 5-year storm event in a separate storm drain piped system, and conveyance of the 100-year storm event in the street and drainage channel rights-of-way.			PCBs, pesticides), oil and grease, and trash and debris. The SCP shall demonstrate that the Project has the land area available to support the proposed BMP facilities sized per the required water quality design storm. Volume-based BMPs shall be sized to treat runoff resulting from 0.75 inch of rainfall ~~(LEED® SS6.2)~~, and flow-based BMPs shall be sized to treat runoff resulting from a rainfall intensity of 0.2~~1~~4 inch per hour. Treatment trains shall be used where feasible. Additional requirements: ● ~~LEED® SS6.2: BMPs used to treat runoff shall be designed to remove 80 percent of the average annual post-development total suspended solids loads. BMPs are considered to meet these criteria if they are designed in accordance with SFPUC requirements.~~ ● The SCP shall include an Operations and Maintenance Plan that demonstrates how the treatment control BMPs would be maintained in the long term, what entities would be responsible for BMP maintenance within the public and private rights-of-way, funding mechanisms, and what mechanisms would be used to formalize maintenance and access agreements. ● The Project Applicant shall also prepare a Stormwater Drainage Master Plan (SDMP) for approval by the SFPUC. The SDMP shall include plans for the storm drain infrastructure and plans for stormwater management controls (e.g., vegetated swales, dry wells). The storm drain infrastructure shall illustrate conveyance of the 5-year storm event in a separate storm drain piped system, and conveyance of the 100-year storm event in the street and drainage channel rights-of-way.	
MM HY-12a.1	**MM HY-12a.1** Finished Grade Elevations Above Base Flood Elevation. The Project site shall be graded such that finished floor elevations are 3.5 feet above the Base Flood Elevation (BFE), and streets and pads are 3 feet above BFE to allow for future sea level rise, thereby elevating all housing and structures above the existing and potential future flood hazard area. If the FIRM for San Francisco is not finalized prior to implementation of the Project, the Project Applicant shall work with the City Surveyor to revise the City's Interim Floodplain Map. If the FIRM for San Francisco is finalized prior to implementation of the Project, the Project Applicant shall request that the Office of the City Administrator (Floodplain Manager) request a Letter of Map Revision based on Fill (LOMR-F) from FEMA that places the Project outside SFHA and requires that the FIRM is updated by FEMA to reflect revised regulatory floodplain designations.	No changes proposed.	No changes proposed.	**MM HY-12a.1** Finished Grade Elevations Above Base Flood Elevation. The Project site shall be graded such that finished floor elevations are a minimum of ~~3~~5.5 feet above the Base Flood Elevation (BFE)~~, and streets and pads are 3 feet above BFE~~ to ~~allow for~~ accommodate worst-case, future sea level rise projections for the end of the century, thereby elevating all housing and structures above the existing and potential future flood hazard area. If the FIRM for San Francisco is not finalized prior to implementation of the Project, the Project Applicant shall work with the City Surveyor or other applicable City department to revise the City's Interim Floodplain Map, as needed. If the FIRM for San Francisco is finalized prior to implementation of the Project, the Project Applicant shall request that the Office of the City Administrator (Floodplain Manager) request a Letter of Map Revision based on Fill (LOMR-F) from FEMA that places the Project outside a SFHA and requires that the FIRM is updated by FEMA to reflect revised regulatory floodplain designations.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
MM HY-12a.2	**MM HY-12a.2** Shoreline Improvements for Future Sea-Level Rise. Shoreline and public access improvements shall be designed to allow future increases in elevation along the shoreline edge to keep up with higher sea level rise values, should they occur. Design elements shall include providing adequate setbacks to allow for future elevation increases of at least 3 feet from the existing elevation along the shoreline. Before the first Small Lot Final Map is approved, the Project Applicant must petition the appropriate governing body to form (or annex into if appropriate) and administer a special assessment district or other funding mechanism to finance and construct future improvements necessary to ensure that the shoreline, public facilities, and public access improvements will be protected should sea level rise exceed 16 inches at the perimeter of the Project. Prior to the sale of the first residential unit within the Project, the legislative body shall have acted upon the petition to include the property within the district boundary. The newly formed district shall also administer a Monitoring and Adaptive Management Plan to monitor sea level and implement and maintain the protective improvements.	No changes proposed.	No changes proposed.	**MM HY-12a.2** Shoreline Improvements for Future Sea-Level Rise**.** Shoreline and public access improvements shall be designed to allow for future ~~increases in elevation~~ sea level rise above the Base Flood Elevation (BFE) that includes wave run-up (often called Total Water Level [TWL]) along the shoreline. In addition, adequate horizontal setback shall be provided to allow future increases in elevation along the shoreline edge to keep up with higher sea level rise values, should they occur. Design elements shall include providing adequate setbacks to allow for future elevation increases ~~of at least 3 feet from the existing elevation along the shoreline~~ in response to up to 5.5 feet of sea level rise above the TWL, which is projected as the worst-case estimate at the end of the century. Before the first Small Lot Final Map is approved, the Project Applicant must petition the appropriate governing body to form (or annex into if appropriate) and administer a special assessment district or other funding mechanism to finance and construct future improvements necessary to ensure that the shoreline protection system, storm drain system, public facilities, and public access improvements will be protected should sea level rise exceed ~~16 inches at the perimeter of the Project~~ 2 feet. Prior to the sale of the first residential unit within the Project, the legislative body shall have acted upon the petition to include the property within the district boundary. The newly formed district shall also administer a Monitoring and Adaptive Management Plan to monitor sea level and implement and maintain the protective improvements.	
MM HY-14	**MM HY-14** Shoreline Improvements to Reduce Flood Risk. To reduce the flood impacts of failure of existing shoreline structures, the Project Applicant shall implement shoreline improvements for flood control protection, as identified in the Candlestick Point/Hunters Point Development Project Proposed Shoreline Improvements report.[10] Where feasible, elements of living shorelines shall be incorporated into the shoreline protection improvement measures.	No changes proposed.	No changes proposed.	**MM HY-14** Shoreline Improvements to Reduce Flood Risk. To reduce the flood impacts of failure of existing shoreline structures, the Project Applicant shall implement shoreline improvements for flood control protection, as identified in the Candlestick Point/Hunters Point Development Project Proposed Shoreline Improvements report~~.~~[11] (or updated Shoreline Improvements Reports). Where feasible, elements of living shorelines shall be incorporated into the shoreline protection improvement measures.	

[10] Moffatt & Nichols, 2009, Candlestick Point / Hunters Point Redevelopment Project Proposed Shoreline Improvements, prepared for Lennar Urban, September, 2009.
[11] Moffatt & Nichols, 2009, Candlestick Point / Hunters Point Redevelopment Project Proposed Shoreline Improvements, prepared for Lennar Urban, September, 2009.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
MM BI-19b	**MM BI-19b.1** Work Windows to Reduce Maintenance Dredging Impacts to Fish during Operation of the Marina. According to the Long-Term Management Strategy (LTMS), dredging Projects that occur during the designated work windows do not need to consult with NMFS under the federal *Endangered Species Act* (FESA).[12] The window in which dredging is allowed for the protection of steelhead in the central Bay is June 1 to November 30. The spawning season for the Pacific herring is March 1 to November 30.[13] Therefore, the window that shall be applied to minimize impacts to sensitive fish species (during which dredging activities cannot occur) is March 1 to November 30.	No changes proposed.	No changes proposed.	**MM BI-19b.1** Work Windows to Reduce Maintenance Dredging Impacts to Fish during Operation of the Marina. According to the Long-Term Management Strategy (LTMS), dredging Projects that occur during the designated work windows do not need to consult with NMFS under the federal *Endangered Species Act* (FESA).[14] The window in which dredging is allowed for the protection of steelhead in the central Bay is June 1 to November 30. The spawning season for the Pacific herring is ~~March 1 to November 30~~ December 1 to February 28.[15] Therefore, the window that shall be applied to minimize impacts to sensitive fish species (during which dredging activities cannot occur) is ~~March~~ June 1 to November 30.	
MM BI-20a.1	**MM BI-20a.1** Lighting Measures to Reduce Impacts to Birds. During design of any building greater than 100 feet tall, the Project Applicant and architect shall consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify lighting-related measures to minimize the effects of the building's lighting on birds. Such measures, which may include the following and/or other measures, will be incorporated into the building's design and operation. ● Use strobe or flashing lights in place of continuously burning lights for obstruction lighting. Use flashing white lights rather than continuous light, red light, or rotating beams. ● Install shields onto light sources not necessary for air traffic to direct light towards the ground. ● Extinguish all exterior lighting (i.e., rooftop floods, perimeter spots) not required for public safety. ● When interior or exterior lights must be left on at night, the developer and/or operator of the buildings shall examine and adopt alternatives to bright, all-night, floor-wide lighting, which may include: ○ Installing motion-sensitive lighting. ○ Using desk lamps and task lighting. ○ Reprogramming timers. ○ Use of lower-intensity lighting. ● Windows or window treatments that reduce transmission of light out of the building will be implemented to the extent feasible. ● Educational materials will be provided to building occupants encouraging them to minimize light transmission from windows, especially during peak spring and fall migratory periods, by turning off unnecessary lighting and/or closing drapes and blinds at night.	No changes proposed.	No changes proposed.	**MM BI-20a.1** Lighting Measures to Reduce Impacts to Birds. During building design ~~of any building greater than 100 feet tall~~, the Project Applicant and architect shall consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify lighting-related measures to minimize the effects of the building's lighting on birds. Such measures, which may include the following and/or other measures, will be incorporated into the building's design and operation. ● Where lighting is necessary on rooftops, u~~U~~se strobe or flashing lights in place of continuously burning lights for obstruction lighting. Use flashing white lights rather than continuous light, red light, or rotating beams. ● Install shields onto light sources not necessary for air traffic to direct light towards the ground and away from areas that provide high-quality bird habitat. ● Extinguish all exterior lighting (i.e., rooftop floods, perimeter spots) not required for public safety. ● No uplighting will be installed. ● When interior or exterior lights must be left on at night, the developer and/or operator of the buildings shall examine and adopt alternatives to bright, all-night, floor-wide lighting, which may include: ○ Installing motion-sensitive lighting. ○ Using desk lamps and task lighting. ○ Reprogramming timers. ○ Use of lower-intensity lighting. ● Windows or window treatments that reduce transmission of light out of the building will be implemented to the extent feasible. ● Educational materials will be provided to building occupants encouraging them to minimize light	

[12] US Army Corps of Engineers, US Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. Long-term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan 2001.
[13] US Army Corps of Engineers, US Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. Long-term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan 2001; Appendix F.
[14] US Army Corps of Engineers, US Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. Long-term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan 2001.
[15] US Army Corps of Engineers, US Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. Long-term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan 2001; Appendix F.

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
	● A report of the lighting alternatives considered and adopted shall be provided to the City/Agency for review and approval prior to construction. The City/Agency shall ensure that lighting-related measures to reduce the risk of bird collisions have been incorporated into the design of such buildings to the extent practicable.			transmission from windows, especially during peak spring and fall migratory periods, by turning off unnecessary lighting and/or closing drapes and blinds at night. ● A report of the lighting alternatives considered and adopted shall be provided to the City/Agency for review and approval prior to construction. The City/Agency shall ensure that lighting-related measures to reduce the risk of bird collisions have been incorporated into the design of such buildings to the extent practicable.	
MM BI-20a.2	**MM BI-20a.2** Building Design Measures to Minimize Bird Strike Risk. During design of any building greater than 100 feet tall, the Project Applicant and architect will consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify measures related to the external appearance of the building to minimize the risk of bird strikes. Such measures, which may include the following and/or other measures, will be incorporated into the building's design. ● Use non-reflective tinted glass. ● Use window films to make windows visible to birds from the outside. ● Use external surfaces/designs that "break up" reflective surfaces. ● Place bird attractants, such as bird feeders and baths, at least 3 feet and preferably 30 feet or more from windows in order to reduce collision mortality. A report of the design measures considered and adopted shall be provided to the City/Agency for review and approval prior to construction. The City/Agency shall ensure that building design-related measures to reduce the risk of bird collisions have been incorporated to the extent practicable.	No changes proposed.	No changes proposed.	**MM BI-20a.2** Building Design Measures to Minimize Bird Strike Risk. During design of any building ~~greater than 100 feet tall~~ within 300 feet of a potential "urban bird refuge" (an open space 2 acres and larger dominated by vegetation, including vegetated landscaping, forest, meadows, grassland, or wetlands, or open water) or any structure containing free-standing glass walls, wind barriers, skywalks, balconies, and greenhouses on rooftops that have unbroken glazed segments 24 square feet and larger in size, the Project Applicant and architect will consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify measures related to the external appearance of the building/structure to minimize the risk of bird strikes. Such measures, which may include the following and/or other measures, will be incorporated into the building's design. ● Minimize the use of glass, particularly within the portion of the building between ground level and 60 feet above the ground. ● Use non-reflective tinted glass. ● Use window films to make windows visible to birds from the outside. ● Use external surfaces/designs that "break up" reflective surfaces. These patterns should include vertical elements at least 0.25 inch wide at a maximum spacing of 4 inches or horizontal elements at least 0.125 inch wide at a maximum spacing of 2 inches. ● Place bird attractants, such as bird feeders and baths, at least 3 feet and preferably 30 feet or more from windows in order to reduce collision mortality. A report of the design measures considered and adopted shall be provided to the City/Agency for review and approval prior to construction. If, in the opinion of a qualified biologist, modification or waiver of these bird-safe design measures would not result in substantial increases in bird collision risk, the report should include the justification for such an opinion, for consideration by the City/Agency. The City/Agency shall ensure that building design-related measures to reduce the risk of bird collisions have been incorporated to the extent practicable.	

TABLE A-1 COMPARISON OF CP-HPS2 PROJECT CHANGES SINCE 2010[1,2,3]

Project Component	*2010 FEIR[4]*	*Addendum 1*	*Addendum 4*	*Addendum 5 (2018 Modified Project Variant)*	*Other Supporting Approval Documents for the 2010 FEIR, Addendum 1, Addendum 4, and/or Addendum 5*
MM RE-2	**MM RE-2** Phasing of parkland with respect to residential and/or employment generating uses. Development of the Project and associated parkland shall generally proceed in four phases, as illustrated by Figure II-16 (Proposed Site Preparation Schedule) of Chapter II (Project Description) of this EIR. To ensure that within each phase parks and population increase substantially concurrently, development shall be scheduled such that adequate parkland is constructed and operational when residential and employment-generating uses are occupied. The following standards shall be met: ● No project development shall be granted a temporary certificate of occupancy if the City determines that the new population associated with that development would result in a parkland-to-population ratio within the Project site lower than 5.5 acres per 1,000 residents/population, as calculated by the Agency. For the purposes of this mitigation measure, in order for a park to be considered in the parkland-to-population ratio, the Agency must determine that within 12 months of the issuance of the temporary certificate of occupancy, it will be fully constructed and operational, and, if applicable, operation and maintenance funding will be provided to the Agency.	No changes proposed.	No changes proposed.	**MM RE-2** Phasing of parkland with respect to residential and/or employment generating uses. Development of the Project and associated parkland shall ~~proceed in four phases, as illustrated by Figure II-16 (Proposed Site Preparation Schedule) of Chapter II (Project Description) of this EIR. To~~ ensure that within each phase or sub-phase, parks and population increase substantially concurrently~~,~~ and development shall be scheduled such that adequate parkland is constructed and operational when residential and employment-generating uses are occupied. The following standards shall be met: ● No project development shall be granted a temporary certificate of occupancy if the City determines that the new population associated with that development would result in a parkland-to-population ratio within the Project site lower than 5.5 acres per 1,000 residents/population, as calculated by the Agency. ● For the purposes of this mitigation measure, in order for a park to be considered in the parkland-to-population ratio, the Agency must determine that within 12 months of the issuance of the temporary certificate of occupancy, it will be fully constructed and operational, and, if applicable, operation and maintenance funding will be provided to the Agency.	
MM UT-2	**MM UT-2** Auxiliary Water Supply System. Prior to issuance of occupancy permits, as part of the Infrastructure Plan to be approved, the Project Applicant shall construct an Auxiliary Water Supply System (AWSS) loop within Candlestick Point to connect to the City's planned extension of the off-site system off-site on Gilman Street from Ingalls Street to Candlestick Point. The Project Applicant shall construct an additional AWSS loop on HPS Phase II to connect to the existing system at Earl Street and Innes Avenue and at Palou and Griffith Avenues, with looped service along Spear Avenue/Crisp Road.	*Revision to MM UT-2 would reflect a different piping layout and the addition of two Portable Water Supply Systems, as follows:* **MM UT-2** Auxiliary Water Supply System. Prior to issuance of occupancy permits, as part of the Infrastructure Plan to be approved, the Project Applicant shall construct an Auxiliary Water Supply System (AWSS) ~~loop~~ within Candlestick Point to connect to the City's planned extension of the offsite system off-site on Gilman Street from Ingalls Street to Candlestick Point. The Project Applicant shall construct an additional AWSS ~~loop~~ on HPS Phase II to connect to the existing system at Earl Street and Innes Avenue and at Palou and Griffith Avenues, with ~~looped~~ service along Spear Avenue/Crisp Road.	No changes proposed.	**MM UT-2** Auxiliary Water Supply System. Prior to issuance of occupancy permits, as part of the Infrastructure Plan to be approved, the Project Applicant shall construct an Auxiliary Water Supply System (AWSS) within Candlestick Point to connect to the City's planned extension of the off-site system on Gilman Street from Ingalls Street to Candlestick Point. The Project Applicant shall construct an additional AWSS on HPS Phase II to connect to the existing system ~~at Earl Street and Innes Avenue and~~ at Palou and Griffith Avenues, with service along Spear Avenue/Crisp Road.	
MM GC-2	**MM GC-2** Exceed the 2008 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses would by at least 15 percent.	No changes proposed.	No changes proposed.	**MM GC-2** ~~Exceed the 2008~~ Comply with the 2016 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses ~~would by at least 15 percent~~.	

Table A-2: Comparison of 2018 Modified Project Variant to 2010 Project

	2010 FEIR PROJECT			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	Hunters Point Phase II	Total	Candlestick	Hunters Point Phase II	Total	Candlestick	Hunters Point Phase II	Total
NONRESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	1,860,000 SF	**1,860,000** SF	0 SF	0 SF	**0** SF	0 SF	-1,860,000 SF	**-1,860,000** SF
	0 SEATS	69,000 SEATS	**69,000** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	-69,000 SEATS	**-69,000** SEATS
R&D/Office	150,000 SF	2,500,000 SF	**2,650,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	1,765,000 SF	**1,765,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000** SF	**4,790,000** SF	**5,975,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**711,000** SF	**711,000** SF
RESIDENTIAL	**7,850** UNITS	**2,650** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**-632** UNITS	**804** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	7,850 SPACES	2,650 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	-632 SPACES	804 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	4,028 SPACES	**6,374** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	3,124 SPACES	**3,514** SPACES
Parking Total	**10,196** SPACES	**6,678** SPACES	**16,874** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**-242** SPACES	**3,928** SPACES	**3,686** SPACES
± On-street Parking	1,360 SPACES	683 SPACES	**2,043** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	804 SPACES	**804** SPACES
Dedicated Stadium Parking	0 SPACES	12,665 SPACES	**12,665** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	-12,665 SPACES	**-12,665** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	140.0 AC	148.1 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	33.9 AC	34.8 AC
New Sports Fields & Active Urban Recreation	0.0 AC	91.6 AC	91.6 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-33.5 AC	-33.5 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**231.6** AC	**336.4** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**0.4** AC	**1.3** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table II-3 & Table II-6 of the FEIR.

[a] All infrastructure is excluded from the development program's square footage, with the exception of any associated office space, which is included in the R&D/Office category.

[b] Includes 400 high school students living on campus

[c] Includes 600 high school students and 400 college students. Half the high school students would be on site at any one time. One-third of the college students would be on site at any one time.

[d] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

[h] On-street parking is in addition to structured parking.

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-3: Comparison of 2018 Modified Project Variant to 2010 R&D Variant (Variant 1)

	2010 R&D VARIANT (VARIANT 1)			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NONRESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF
	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS
R&D/Office	150,000 SF	5,000,000 SF	**5,150,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	-735,000 SF	**-735,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000** SF	**5,430,000** SF	**6,615,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**71,000** SF	**71,000** SF
RESIDENTIAL	**7,850** UNITS	**2,650** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**-632** UNITS	**804** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	7,850 SPACES	2,650 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	-632 SPACES	804 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	7,028 SPACES	**9,374** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	124 SPACES	**514** SPACES
Parking Total	**10,196** SPACES	**9,678** SPACES	**19,874** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**-242** SPACES	**928** SPACES	**686** SPACES
± On-street Parking	1,360 SPACES	1,678 SPACES	**3,038** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	-191 SPACES	**-191** SPACES
Dedicated Stadium Parking	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	152.4 AC	160.5 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	21.5 AC	22.4 AC
New Sports Fields & Active Urban Recreation	0.0 AC	69.8 AC	69.8 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-11.7 AC	-11.7 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**222.2** AC	**327.0** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**9.8** AC	**10.7** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table IV-3 & Table II-5 of the FEIR.

[a] All infrastructure is excluded from the development program's square footage, with the exception of any associated office space, which is included in the R&D/Office category.

[b] Includes 400 high school students living on campus

[c] Includes 600 high school students and 400 college students. Half the high school students would be on site at any one time. One-third of the college students would be on site at any one time.

[d] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

[h] On-street parking is in addition to structured parking.

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-4: Comparison of 2018 Modified Project Variant to 2010 Housing/R&D Variant (Variant 2A)

	2010 HOUSING/R&D VARIANT 2A			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NONRESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF
	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS
R&D/Office	150,000 SF	3,000,000 SF	**3,150,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	1,265,000 SF	**1,265,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF[e]	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000**	**3,430,000** SF	**4,615,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**2,071,000** SF	**2,071,000** SF
RESIDENTIAL	**6,225** UNITS	**4,275** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**993** UNITS	**-821** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	6,225 SPACES	4,275 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	993 SPACES	-821 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	4,428 SPACES	**6,774** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	2,724 SPACES	**3,114** SPACES
Parking Total	**8,571** SPACES	**8,703** SPACES	**17,274** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**1,383** SPACES	**1,903** SPACES	**3,286** SPACES
± On-street Parking	1,360 SPACES	1,428 SPACES	**2,788** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	59 SPACES	**59** SPACES
Dedicated Stadium Parking	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	150.9 AC	159.0 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	23.0 AC	23.9 AC
New Sports Fields & Active Urban Recreation	0.0 AC	70.9 AC	70.9 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-12.8 AC	-12.8 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**221.8** AC	**326.6** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**10.2** AC	**11.1** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table IV-19a & Table IV-21a of the FEIR.

[a] All infrastructure is excluded from the development program's square footage, with the exception of any associated office space, which is included in the R&D/Office category.

[b] Includes 400 high school students living on campus

[c] Includes 600 high school students and 400 college students. Half the high school students would be on site at any one time. One-third of the college students would be on site at any one time.

[d] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

[h] On-street parking is in addition to structured parking.

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-5: Comparison of 2018 Modified Project Variant to 2010 Project, R&D Variant (Variant 1), and Housing/R&D Variant (Variant 2A) (Parks and Open Space)

	2010 PROJECT	2010 R&D VARIANT (VARIANT 1)	2010 HOUSING/R&D VARIANT (VARIANT 2A)	2018 MODIFIED PROJECT VARIANT
Hunters Point Shipyard Phase II (HPS2)				
NEW PARKS				
Grassland Ecology Park	82.1	82.7	83.4	106.8
Heritage Park	15.6	15.6	15.6	15.5
Hunters Point Mini Park	0.0	0.0	0.7	0
Hunters Point Neighborhood Park	0.0	0.0	0.9	0
Hunters Point Park Blocks	0.0	4.5	0.0	0
Hunters Point South Park	0.0	0.0	2.0	0
Hunters Point Wedge Park	0.0	2.8	3.1	0
Northside Park	12.8	12.8	12.8	12.8
R&D Plaza	0.0	2.1	0.0	0
Shipyard Hillside Open Space	0.0	0.0	0.0	2.4
Water Room/Dry Dock 4	0.0	0.0	0.0	7.3
Waterfront Promenade	29.5	31.9	32.4	29.1
Subtotal	**140.0**	**152.4**	**150.9**	**173.9**
NEW SPORTS FIELDS & ACTIVE URBAN RECREATION				
Maintenance Yard	0.0	0.0	0.0	5.5
Multi-Use Lawn/Fields	25.2	22.4	25.2	20.5
Sports Field Complex	59.7	40.7	39.0	28.7
Waterfront Recreation & Event Pier	6.7	6.7	6.7	3.4
Subtotal	**91.6**	**69.8**	**70.9**	**58.1**
HPS2 POSH Total	**231.6**	**222.2**	**221.8**	**232.0**
OTHER PARKS				
Green Room	0.0	0.0	0.0	8.1
Gunning Crane Pier Habitats	9.5	9.5	9.5	9.2
Shipyard Hillside Open Space	2.6	2.6	2.6	0.0
Horne Boulevard Park	0.6	0.6	0.6	0.0
Subtotal	**12.7**	**12.7**	**12.7**	**17.3**
HPS2 Total	**244.3**	**234.9**	**234.5**	**249.3**
Candlestick Point				
NEW PARKS				
Alice Griffith Neighborhood Park	1.4	1.4	1.4	1.4
Bayview Gardens/Wedge Park	2.5	2.5	2.5	3.7
Candlestick Point Neighborhood Park	3.1	3.1	3.1	3.1
Mini Wedge Park	1.1	1.1	1.1	0.8
Subtotal	**8.1**	**8.1**	**8.1**	**9.0**
STATE PARK LAND				
Bayview Gardens North	9.5	9.5	9.5	9.5
Grasslands South	10.3	10.3	10.3	10.3
The Heart of the Park (Includes new State Park)	15.4	15.4	15.4	15.4
Last Port (includes new State Park)	14.6	14.6	14.6	14.6
The Last Rubble	24.5	24.5	24.5	24.5
The Neck (includes new State Park)	4.9	4.9	4.9	4.9
The Point	6.1	6.1	6.1	6.1
Wind Meadow	11.4	11.4	11.4	11.4
Subtotal	**96.7**	**96.7**	**96.7**	**96.7**
CP POSH Total	**104.8**	**104.8**	**104.8**	**105.7**
OTHER PARKS				
Bayview Hillside Open Space	2.9	2.9	2.9	3.5
Earl Boulevard Park	0.4	0.4	0.4	0.0
Jamestown Walker Slope	3.9	3.9	3.9	3.6
Subtotal	**7.1**	**7.1**	**7.1**	**7.1**
CP Total	**111.9**	**111.9**	**111.9**	**112.8**
CP-HPS2 TOTAL	**356.2**	**346.8**	**346.4**	**362.1**
NEW PARKS	148.1	160.5	159.0	182.9
NEW SPORTS FIELDS & ACTIVE URBAN RECREATION	91.6	69.8	70.9	58.1
STATE PARK LAND	96.7	96.7	96.7	96.7
	336.4	327.0	326.6	337.7
OTHER PARKS	19.8	19.8	19.8	24.4

Appendix B
MMRP

ESA

Mitigation Monitoring and Reporting Program

SECTION 1: AUTHORITY

This Environmental Mitigation Monitoring and Reporting Program (MMRP) has been prepared pursuant to *California Environmental Quality Act* (known as CEQA [Public Resources Code Sections 21000 et seq.]) Section 21081.6 to provide for the monitoring of mitigation measures required of the Candlestick Point–Hunters Point Shipyard Phase II Development Plan (Project), as set forth in the Final Environmental Impact Report (Final EIR) prepared for the Project. This report will be kept on file in the offices of the San Francisco Redevelopment Agency (Agency), One South Van Ness Avenue, Fifth Floor, San Francisco, CA, 94103, and at the City Planning Department (City), 1650 Mission Street, Fourth Floor, San Francisco, CA, 94103.

SECTION 2: MONITORING SCHEDULE

Prior to the issuance of building permits, while detailed development plans are being prepared for approval by Agency and/or City staff, Agency and/or City staff will be responsible for ensuring compliance with mitigation monitoring applicable to the project construction, development, and design phases. Agency and/or City staff will prepare or cause to be prepared reports identifying compliance with mitigation measures. Once construction has begun and is underway, monitoring of the mitigation measures associated with construction will be included in the responsibilities of designated Agency and/or City staff, who shall prepare or cause to be prepared reports of such monitoring no less than once a month until construction has been completed. Once construction has been completed, the Agency and/or City will monitor the project as deemed necessary.

SECTION 3: CHANGES TO MITIGATION MEASURES

Any substantive change in the monitoring and reporting plan made by Agency and/or City staff shall be reported in writing to the City Environmental Review Officer. Reference to such changes shall be made in the monthly/yearly Environmental Mitigation Monitoring Report prepared by City staff. Modifications to the mitigation measures may be made by City staff subject to one of the following findings, documented by evidence included in the record:

a. The mitigation measure included in the Final EIR and the Mitigation Monitoring and Reporting Program is no longer required because the significant environmental impact identified in the Final EIR has been found not to exist, or to occur at a level which makes the impact less than significant as a result of changes in the project, changes in conditions of the environment, or other factors.

OR

b. The modified or substitute mitigation measure to be included in the Mitigation Monitoring and Reporting Program either provides corrections to text without any substantive change in the intention or meaning of the original mitigation measure, or provides a level of environmental protection equal to or greater than that afforded by the mitigation measure included in the Final EIR and the Mitigation Monitoring and Reporting Program; and

The modified or substitute mitigation measures do not have significant adverse effects on the environment in addition to or greater than those which were considered by the responsible hearing bodies in their decisions on the Final EIR and the proposed project; and

The modified or substitute mitigation measures are feasible, and the City, through measures included in the Mitigation Monitoring and Reporting Program or other City procedures, can assure their implementation.

SECTION 4: SUPPORT DOCUMENTATION

Findings and related documentation supporting the findings involving modifications to mitigation measures shall be maintained in the project file with the MMRP and shall be made available to the public upon request.

SECTION 5: FORMAT OF MITIGATION MONITORING MATRIX

The mitigation monitoring matrix on the following pages identifies the environmental issue areas for which monitoring is required, the required mitigation measures, the timeframe for monitoring, and the responsible implementing and monitoring agencies. Mitigation measures include revisions from Addenda 1, 4, and 5.

If any mitigation measures are not being implemented, the Agency and/or City may pursue corrective action. Penalties that may be applied include, but are not limited to, the following: (1) a written notification and request for compliance; (2) withholding of permits; (3) administrative fines; (4) a stop-work order; (5) criminal prosecution and/or administrative fines; (6) forfeiture of security bonds or other guarantees; and (7) revocation of permits or other entitlements.

SECTION 6: DEFINITIONS

For purposes of this MMRP, the following definitions are used:

- **Arena Operator**—An individual who or business that operates the retail business constructed at the Arena site.
- **City's Environmental Review Officer**—The Environmental Review Officer at the San Francisco Planning Department, referred to herein as "ERO."
- **Developer**—An individual who or business that prepares raw land for the construction of buildings or causes to be built physical building space for use primarily by others. This includes contractors of an individual or business that is a developer.
- **Development/Construction Phases**—During construction, three major phases of activities would be expected: abatement and demolition, site preparation and earthwork/grading, and building construction. Within each of these phases are sub-phases generally identified by area. For each parcel, a lot application would be required and individual building permits.
- **Project Applicant**—A Developer or Vertical Developer.
- **Stadium Operator**—An individual who or business that enters into an agreement with the Agency to operate the Stadium constructed at the Stadium site.
- **SFRA**—San Francisco Redevelopment Agency, referred to herein as "Agency" or "SFRA."

- **Vertical Developer**—An individual who or business that constructs urban land uses. This term shall be construed to mean the subsequent developer(s) who constructs or extends urban land uses through subdivision of land and construction or alteration of structures. Vertical developer includes contractors of an individual or business that is a vertical developer.

Ordering and Pagination of Mitigation Measures in Table

Mitigation Measures	*Starts on Page Number*
Section III.D (Transportation and Circulation) MM TR-1 through MM TR-51	MMRP-4
Section III.E (Aesthetics) MM AE-2 through MM AE-7b.2	MMRP-33
Section III.G (Wind) MM W-1a	MMRP-36
Section III.H (Air Quality) MM AQ-2.1 through MM AQ-6.2	MMRP-37
Section III.I (Noise and Vibration) MM NO-1a.1 through MM NO-7.2	MMRP-38
Section III.J (Cultural Resources and Paleontological Resources) MM CP-1b.1 through MM CP-3a	MMRP-44
Section III.K (Hazards and Hazardous Materials) MM HZ-1a through MM HZ-15	MMRP-55
Section III.L (Geology and Soils) MM GE-2a through MM GE-11a	MMRP-69
Section III.M (Hydrology and Water Quality) MM HY-1a.1 through MM HY-14	MMRP-82
Section III.N (Biological Resources) MM BI-4a.1 through MM BI-19b.2	MMRP-103
Section III.O (Public Services) MM PS-1	MMRP-139
Section III.P (Recreation) MM RE-2	MMRP-139
Section III.Q (Utilities) MM UT-2 through MM UT-7a	MMRP-140
Section III.S (Greenhouse Gas Emissions) MM GC-1 through MM GC-4	MMRP-142

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.D (TRANSPORTATION AND CIRCULATION)					
MM TR-1 Candlestick Point–Hunters Point Shipyard Phase II Construction Traffic Management Program. The Project Applicant shall develop and implement a Candlestick Point–Hunters Point Shipyard Phase II Construction Traffic Management Program to minimize impacts of the Project and its contribution to cumulative impacts related to construction activities and construction traffic. The program shall provide necessary information to various contractors and agencies as to how to maximize the opportunities for complementing construction management measures and to minimize the possibility of conflicting impacts on the roadway system, while safely accommodating the traveling public in the area. The program shall supplement and expand, rather than modify or supersede any manual, regulations, or provisions set forth by SFMTA, DPW or other City departments and agencies. Preparation of the Construction Management Program shall be the responsibility of the Project Applicant, and shall be reviewed and approved by SFMTA and DPW prior to initiation of construction. The Project Applicant shall update the program prior to approval of development plans for Phase 2, Phase 3, and Phase 4 of construction to reflect any change to Project development schedule, reflect transportation network changes, to update status of other development construction activities, and to reflect any changes to City requirements. The program shall: ■ Identify construction traffic management practices in San Francisco, as well as other jurisdictions that although not being implemented in the City could provide useful	Project Applicant	Program shall be implemented at first sub-phase application and updated with each subsequent sub-phase application	San Francisco Municipal Transportation Agency (SFMTA)/ Department of Public Works (DPW)/SFRA/ DBI	SFRA/DBI	Confirm establishment as part of Phase 1 approval; Project Applicant shall update the program prior to approval of development plans for Phase 1, Phase 3, and Phase 4 SFMTA and DPW to approve program prior to each sub-phase approval; SFMTA and DPW to undertake ongoing enforcement during construction.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
guidance for a project of this size and characteristics. ■ Describe procedures required by different departments and/or agencies in the City for implementation of a construction management plan, such as reviewing agencies, approval process, and estimated timelines. ■ Describe coordination efforts associated with the Navy remediation efforts and scheduling regarding construction vehicle routing via the Crisp gate. ■ Identify construction traffic management strategies and other elements for the Project, and present a cohesive program of operational and demand management strategies designed to maintain acceptable levels of traffic flow during periods of construction activities in the Bayview Hunters Point area. These could include construction strategies, demand management strategies, alternate route strategies, and public information strategies. ■ Coordinate with other projects in construction in the immediate vicinity, so that they can take an integrated approach to construction-related traffic impacts. ■ Present guidelines for selection of construction traffic management strategies.					
MM TR-2 TDM Plan. The Project Applicant shall prepare and implement a final TDM plan, which shall include the following elements: ■ Visitor Variable, Market-Rate Parking Pricing ■ Maximum Permitted Parking Ratios ■ Flexible Parking Management Strategies ■ Unbundled Residential Parking	Project Applicant	TDM approval as part of DDA; Timing of mitigation components to be specified within TDM plan.	SFRA	SFRA/CP-HPS Transportation Management Association (TMA)	Confirm establishment of the TDM as part of the Disposition and Development Agreement. Agency to consult with TMA to submit periodic status reports to Agency as specified in the TDM Plan.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Transit Strategies and Support Strategies ■ Central Transit Hub ■ Enhanced Transit Service and Bicycle Facilities ■ Bicycle Support Facilities ■ Wayfinding Signs ■ EcoPass for Residents ■ Carshare Services ■ Employee TDM Programs > Information Boards/Kiosks > In-building Real-Time transit monitors with sightlines of transit hubs > Commuter Benefits > Employee EcoPass > Carpool/Vanpools > Guaranteed Ride Home Program > Compressed Work Weeks, Flex Time, and Telecommuting ■ CP-HPS Transportation Management Association ■ On-site Transportation Coordinator and Website ■ Targeted Marketing ■ Monitoring of Transportation Demand ■ Monitoring Effectiveness of Congestion-Reducing and Traffic-Calming Efforts The final TDM plan shall be approved as part of the Disposition and Development Agreement (DDA).					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-4 Restripe the northbound and southbound approaches of the intersection of Tunnel/Blanken to provide dedicated left-turn lanes adjacent to shared through/right-turn lanes. The restriping would require prohibition of parking for 160 feet in the southbound approach (loss of eight parking spaces) and for 100 feet in the northbound approach (loss of five parking spaces). Implementation of the intersection restriping shall be the responsibility of SFMTA, and shall be implemented when intersection improvements associated with the Visitacion Valley Redevelopment Plan (i.e., signalization) are no longer sufficient to maintain acceptable intersection level of service conditions.	Project Applicant/ SFMTA	Monitor the Tunnel/Blanken intersection biannually by undertaking traffic counts after implementation of the intersection improvements associated with the Visitacion Valley Redevelopment Plan (i.e., signalization). When LOS degrades to unacceptable levels, restripe intersection as indicated.	SFRA/SFMTA	SFRA/SFMTA/ Planning Department	Completed upon implementation of restriping of intersection If not needed by completion of Project buildout, MM TR-4 will not be required.
MM TR-6 Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts. The City of Brisbane and Caltrans, as part of the Harney Interchange Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) shall coordinate with the City of Brisbane and Caltrans to ensure Project-generated vehicle trips are accounted for in the Harney Interchange analyses and design. Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts, including freeway segment impacts, shall be formulated through the current interjurisdictional Bi-County Transportation Study effort being led by the SFCTA or its equivalent. The Project Applicant shall contribute its fair share to the Harney Interchange Project.	Project Applicant/ San Francisco County Transportation Authority (SFCTA)/ SFMTA/SFDPW/ Caltrans/City of Brisbane	Ongoing as part of the Harney Interchange Project	SFRA	SFRA	Completed upon payment of fair-share contribution to the Harney Interchange Project.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-7 Feasibility study of reconfiguring the southbound approach on Illinois Street to provide a dedicated southbound left turn lane and a dedicated right-turn lane. SFMTA shall conduct a feasibility study with the Port of San Francisco to determine the feasibility of reconfiguring the southbound approach on Illinois Street to provide a dedicated southbound left turn lane and a dedicated right-turn lane. Sufficient right-of-way is available to implement this improvement; however, provision of two southbound lanes would require narrowing a portion of the island to the west of the southbound approach to Cargo Way. Implementation of the intersection improvements shall be the responsibility of SFMTA and the Port of San Francisco, and shall be implemented when traffic operating conditions with the existing intersection configuration worsens to unacceptable levels. If determined feasible, the Project Applicant shall contribute its fair share to the intersection improvements.	Project Applicant/ SFMTA/The Port of San Francisco	Monitor the Amador/Cargo/ Illinois intersection biannually by undertaking traffic counts five years after occupancy of HPS begins. When LOS degrades to LOS D, SFMTA and the Port of San Francisco shall undertake the feasibility study. Improvements shall be implemented when LOS reaches mid-range LOS D.	SFRA/SFMTA	SFRA/SFMTA/Port of San Francisco	Upon completion of the feasibility study, the applicant shall contribute its fair share to the intersection improvements.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-8 Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts. The City of Brisbane, as part of the Geneva Avenue Extension Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) and SFMTA shall coordinate with the City of Brisbane to ensure projected traffic volumes are accounted for in the design of the Geneva Avenue Extension. Mitigations and associated fair-share funding measures for cumulative regional roadway system impacts, including freeway segment impacts, shall be formulated through the current interjurisdictional Bi-County Transportation Study effort being led by the SFCTA or its equivalent. The Project Applicant shall contribute its fair share to the Geneva Avenue Extension Project.	Project Applicant/ San Francisco County Transportation Authority (SFCTA)/ SFMTA/SFDPW/ Caltrans/City of Brisbane	Ongoing as part of the Geneva Avenue Extension Project	SFRA	SFRA	Completed upon payment of fair-share contribution to the Geneva Avenue Extension Project
MM TR-16 Widen Harney Way as shown in Figure 5 in the Transportation Study. The Project Applicant shall widen Harney Way as shown in Figure 5 in the Transportation Study with the modification to include a two-way cycle track, on the southern portion of the project right-of-way. The portion between Arelious Walker Drive and Executive Park East (Phase 1-A) shall be widened to include a two-way cycle track and two-way BRT lanes, prior to issuance of an occupancy permit for Candlestick Sub-phase CP-02. The remaining portion, between Thomas Mellon Drive and Executive Park East (Phase 1-B), shall be widened prior to implementation of the planned BRT route which coincides with construction of HP-04, as outlined in	Project Applicant/ SFDPW	Prior to issuance of Grading Permits for Phase 1 of the Project	SFMTA	SFMTA	Completed when improvements to Harney Way as Shown in Figure 5 of the Transportation Study are final.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
the transit improvement implementation schedule identified in Addendum 1, based on the alignment recommendations from an ongoing feasibility study conducted by the San Francisco County Transportation Authority.					
Prior to the issuance of grading permits for Candlestick Point Major Phases 2 and 3, the Project Applicant shall fund a study to evaluate traffic conditions on Harney Way and determine whether additional traffic associated with the next phase of development would result in the need to modify Harney Way to its ultimate configuration, as shown in Figure 6 in the Transportation Study, unless this ultimate configuration has already been built. This study shall be conducted in collaboration with the SFMTA, which would be responsible for making final determinations regarding the ultimate configuration. The ultimate configuration would be linked to intersection performance, and it would be required when study results indicate intersection LOS at one or more of the three signalized intersection on Harney Way at mid-LOS D (i.e., at an average delay per vehicle of more than 45 seconds per vehicle). If the study and SFMTA conclude that reconfiguration would be necessary to accommodate traffic demands associated with the next phase of development, the Project Applicant shall be responsible to fund and complete construction of the improvements prior to occupancy of the next phase.	Project Applicant/ SFMTA	Prior to the issuance of grading permits for Phases 2 and 3 of the Project, monitor traffic conditions on Harney Way by undertaking traffic counts and performing traffic study.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of the traffic study as directed by the SFMTA
	Project Applicant/ SFMTA	Upon completion of the traffic study as determined by the SFMTA, reconfigure Harney consistent with Figure 6, if deemed necessary by SFMTA	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements to Harney Way as Shown in Figure 6 of the Transportation Study are final as required by the SFMTA.
MM TR-17 Implement the Project's Transit Operating Plan. The Project Applicant shall work with SFMTA to develop and implement the Project's Transit Operating Plan. Elements of the Project Transit Operating Plan shall include:	Project Applicant/ SFMTA	The Project Transit Operating Plan shall be submitted as part of the Disposition and Development Agreement prior to project approval. Implementation of roadway improvements and transit service as specified in	SFRA/SFMTA	SFRA/SFMTA	Upon approval of DDA containing Project Transit Operating Plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Extension of the 24-Divisadero, the 44-O'Shaughnessy, and the 48-Quintara-24th Street into Hunters Point Shipyard.		Transit Operating Plan and Transportation Plan			
■ Increased frequency on the 24-Divisadero to 10 minutes in the AM and PM peak periods. Extension of the 29-Sunset from its current terminus near the Alice Griffith housing development, near Gilman Avenue and Giants Drive, into the proposed Candlestick Point retail area. The 29-Sunset would operate a short line between Candlestick Point and the Balboa Park BART station. This would increase frequencies on the 29-Sunset by reducing headways between buses from 10 minutes to 5 minutes during the AM and PM peak periods between Candlestick Point and the Balboa BART station. Every other bus would continue to serve the Sunset District (to the proposed terminus at Lincoln Drive and Pershing Drive in the Presidio) at 10-minute headways.					
■ Convert T-Third service between Bayview and Chinatown via the Central Subway from one-car to two-car trains or comparable service improvement. Extension of the 28L-19th Avenue Limited from its TEP-proposed terminus on Geneva Avenue, just east of Mission Street, into the Hunters Point Shipyard transit center. The 28L-19th Avenue Limited would travel along Geneva Avenue across US-101 via the proposed Geneva Avenue extension and new interchange with US-101, to Harney Way. East of Bayshore Boulevard, the 28L-19th Avenue Limited would operate as BRT, traveling in exclusive bus lanes into the Candlestick Point area. The BRT route would travel through the Candlestick Point retail corridor, and cross					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
over Yosemite Slough into the Hunters Point Shipyard transit center.					
■ The 28L-19th Avenue Limited would operate a short line to the Balboa Park BART station. This would increase frequencies on the 28L-19th Avenue Limited by reducing headways between buses from 10 minutes to 5 minutes for the segment between Hunters Point Shipyard and the Balboa Park BART station. Every other bus would continue to the Sunset District (to the proposed terminus at North Point Street and Van Ness Avenue) at 10-minute headways. If the TEP-proposed extension of the 28L has not been implemented by the SFMTA by the time implementation of this measure is called for in Addendum 5, based on the revised project phasing, the Project Applicant shall fund the extension of that line between its existing terminus and Bayshore Boulevard.					
■ New CPX-Candlestick Express to downtown serving the Candlestick Point site, traveling along Harney Way (with potential stops at Executive Park), before traveling on US-101 toward downtown, terminating at the Transbay Terminal.					
■ New HPX-Hunters Point Shipyard Express to downtown serving the Hunters Point Shipyard site, traveling from the Hunters Point Shipyard Transit Center, along Innes Avenue, with stops at the India Basin and Hunters View areas, before continuing along Evans Avenue to Third Street, eventually entering I-280 northbound at 25th/Indiana. The HPX would continue non-stop to the Transbay Terminal in Downtown San Francisco.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-21.1 Maintain the proposed headways of the 9-San Bruno. To address Project impacts to the 9-San Bruno, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the San Bruno Avenue corridor, generally between Campbell Avenue and Silver Avenue. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 9-San Bruno.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 9-San Bruno prior to issuance of a grading permit for Phase I. As directed by monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by the SFMTA. Feasibility study submitted and approved by SFMTA
■ Install a transit-only lane on northbound San Bruno Avenue for the one-block section (400 feet) between Silliman Street and Silver Avenue. This would involve removal of five metered spaces on the east side of San Bruno Avenue, just south of Silver Avenue. Treatment for transit-only lanes can range from striping to physical elevation changes or barriers to protect transit right-of-way from mixed-flow traffic. ■ Install a transit-only lane on southbound San Bruno Avenue at the approach to Dwight Street/Paul Avenue. This lane would function as a so-called "queue-jump" lane, allowing buses to bypass queues on southbound San Bruno Avenue at the intersection. The lane should begin approximately 200 feet north of Dwight Street and extend one block (about 300 feet) south of Paul Avenue to Olmstead Street. This would involve the removal of up to 20 on-street parking spaces on the west side of San Bruno Avenue. This treatment could be limited to peak hours only, which would minimize the impact of the parking		Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in feasibility study are implemented.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
loss. The segment of San Bruno Avenue between Dwight Street and Olmstead Street is designated as Bicycle Routes #705 and 5 (Class III signed routes). ■ At the intersection of San Bruno/Silver install signal priority treatments on westbound Silver Avenue, where buses waiting to turn left from Silver Avenue onto southbound San Bruno Avenue must currently wait through almost an entire signal cycle due to the heavy oncoming traffic on eastbound Silver Avenue. Installation of a transit signal pre-emption at this location that provides a "green" signal for westbound vehicles but holds eastbound vehicles when buses are present would allow transit vehicles to turn left onto San Bruno Avenue without having to wait for opposing eastbound through traffic to clear. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include comprehensive replacement of stop-controlled intersections with interconnected traffic signals equipped with transit priority elements.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-21.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 9-San Bruno. Should mitigation measure MM TR-21.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 9-San Bruno. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.
MM TR-22.1 Maintain the proposed headways of the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy. To address Project impacts to the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Palou Avenue corridor, generally between Griffith Street and Newhall Street. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 23-Monterey, 24-Divisidero and the 44-O'Shaughnessy.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 23-Monterey, 24-Divisadero, and the 44-O'Shaughnessy prior to issuance of a grading permit for Phase 1. As directed by the monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by the SFMTA. Feasibility study submitted and approved by SFMTA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Convert one of the two westbound travel lanes on Palou Avenue between Keith Street and Newhall Street (three blocks) to a transit-only lane at all times. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic. Because the westbound lanes between Third Street and Newhall Street are relatively narrow, parking would likely need to be prohibited on the north side of Palou Avenue between Third Street and Newhall Street (approximately 600 feet) during peak periods to maximize the effectiveness of the transit-only lane. ■ Convert one of the two eastbound travel lanes on Palou Avenue between Newhall Street and Third Street (one block) to a transit-only lane at all times. Because the eastbound travel lanes between Newhall Street are relatively narrow, parking would likely need to be prohibited on the south side of Palou Avenue between Newhall Street and Third Street (approximately 600 feet) during peak periods to maximize the effectiveness of the transit-only lane. In the eastbound direction, east of Third Street, buses would re-enter the single mixed-flow traffic lane at the bus stop on the far (east) side of Third Street. ■ There are currently pedestrian corner bulbs on the northwest and southwest corners of the intersection of Palou Avenue and Third Street. In order to accommodate the transit-only lanes west of Third Street, these bulbouts would be reconfigured or removed. Although removing pedestrian bulb-outs may increase pedestrian crossing distances and is generally inconsistent with the City's desire to	Project Applicant/ SFMTA/SFDPW	Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in feasibility study are implemented.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
prioritize pedestrian activity, in this case, the improvement would offer substantial benefits to transit travel times by allowing a transit-only lane through a congested intersection. This would be consistent with the City's transit-first policy.					
■ During the PM peak period only, prohibit parking on westbound Palou Avenue for the four-block segment between Griffith Street/Crisp Avenue and Keith Street, to provide for a PM peak period curb transit-only lane along this segment. This would create a continuous westbound transit-only lane on Palou Avenue between Griffith Street/Crisp Avenue and Newhall Street during the PM peak period.					
■ As an alternative to the bulleted measures above, narrow the existing sidewalks on Palou Avenue from Third Street to Crisp Avenue (seven blocks) from 15 feet to 12 feet in width. The pedestrian bulb-outs on the west side of Third Street would be removed. The resulting 12-foot-wide sidewalks would be consistent with the Better Streets Plan guidelines. The reduction in sidewalk width would allow for the provision of a 7-foot-wide on-street parking lane, an 11-foot-wide transit-only lane, and a 10-foot-wide mixed-flow lane in each direction on Palou Avenue. This would preserve on-street parking along the corridor and provide a seven-block transit-only lane on Palou Avenue between Griffith Street/Crisp Avenue and Newhall Street. Treatment for transit-only lanes can range from striping to physical elevation changes to protect right-of-way from mixed-flow traffic. Subsequent to publication of the Draft EIR, SFMTA and the Project Applicant					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
conducted an evaluation of this alternative measure and determined that it is a feasible and viable alternative to the four bulleted items above.					
The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include signal priority treatments at other signalized intersections including at Bayshore/Cortland, Bayshore/Industrial, and Bayshore/Oakdale.					
MM TR-22.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 23-Monterey, the 24-Divisadero and the 44-O'Shaughnessy. Should mitigation measure MM TR-22.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 23-Monterey, the 24-Divisadero and the 44-O'Shaughnessy. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional vehicles is funded as determined by the feasibility study.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-23.1 Maintain the proposed headways of the 29-Sunset. To address Project impacts to the 29-Sunset, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Gilman Avenue and Paul Avenue corridor, generally between Arelious Walker Drive and Bayshore Boulevard. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 29-Sunset.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 29-Sunset prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA
	Project Applicant/ SFMTA	As directed by the monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule.	SFRA/SFMTA	SFRA/SFMTA	Feasibility study submitted and approved by SFMTA
■ Prohibit on-street parking on the north side of Paul Avenue, between Third Street and Bayshore Boulevard to create two westbound through lanes. Convert one westbound through lane to transit-only in the AM and PM peak periods. The peak period transit-only lane would impact 40 parking spaces. At the intersection of Paul Avenue and Bayshore Avenue, provide transit signal priority treatment (i.e., queue jump) to allow transit vehicles to maneuver into the mixed flow left-hand lane, facilitating a left-turn movement immediately west of Bayshore Boulevard from westbound Paul Avenue to southbound San Bruno. ■ Implement traffic signal priority (TSP), which modifies the timing at signalized intersections to prioritize the movement of transit vehicles, at the intersections of Arelious Walker/Gilman Avenue, San Bruno Avenue/Paul Avenue, and Bayshore Boulevard/Paul Avenue. ■ Implement a far-side stop in the eastbound and westbound directions at the intersection	Project Applicant/ SFMTA/SFDPW	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in feasibility study are implemented.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
of Third Street/Gilman Avenue and a far-side stop in the westbound direction at the intersection of San Bruno/Paul Avenue. ■ Implement a peak period, transit-dedicated lane in the westbound direction along Paul Avenue between Third Street Bayshore Boulevard. The transit land would begin on Gilman Avenue and extend through the intersection to Paul Avenue. The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include transit priority treatments on San Bruno Avenue, on the portions where the 29-Sunset travels.					
MM TR-23.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 29-Sunset. Should mitigation measure MM TR-23.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 29-Sunset. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study.	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-24.1 Maintain the proposed headways of the 48-Quintara-24th Street. To address Project impacts to the 48-Quintara-24th Street, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvements which could reduce Project impacts on transit operations along the Evans Avenue corridor, generally between Hunters Point Boulevard and Napoleon Street. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the 48-Quintara-24th Street.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 48-Quintara-24th Street prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA
	Project Applicant/ SFMTA	As directed by the monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule.	SFRA/SFMTA	SFRA/SFMTA	Feasibility study submitted and approved by SFMTA
■ On Evans Avenue, between Jennings Street and Napoleon Street (a nine-block segment—about 6,000 feet), convert one of the two travel lanes in each direction to a transit-only lane at all times. Treatment for transit-only lanes can range from striping to physical elevation changes or barriers to protect transit right-of-way from mixed-flow traffic.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in feasibility study are implemented.
The Project Applicant shall fully fund the costs of implementing the transit priority improvements (either the improvements identified above, or alternative improvements of equal or greater effectiveness and comparable cost) as determined by the study and the monitoring program. Other options to be evaluated in the study could include extension of transit only lanes in one or both directions between Napoleon Street and Cesar Chavez Street or onto Hunters Point Boulevard and Innes Avenue.					
Or:					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-24.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 48-Quintara-24th Street. Should mitigation measure MM TR-24.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 48-Quintara-24th Street. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study
MM TR-25 Purchase additional transit vehicles to mitigate the Project impacts and Project contribution to cumulative impacts to headways on 54-Felton. SFMTA shall purchase additional transit vehicles to mitigate the Project impacts and Project contribution to cumulative impacts to headways on 54-Felton. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 54-Felton prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA.
	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-26.1 Maintain the proposed headways of the T-Third. To address Project impacts to the T-Third, prior to issuance of a grading permit for Development Phase 1, the Project Applicant in cooperation with SFMTA shall conduct a study to evaluate the effectiveness and feasibility of the following improvement that could reduce Project impacts on transit operations along Third Street between Thomas Avenue and Kirkwood Avenue. The study shall create a monitoring program to determine the implementation extent and schedule (as identified below) to maintain the proposed headways of the T-Third.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the T-Third prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA.
	Project Applicant/ SFMTA	As directed by the monitoring program, prepare traffic and transit improvement feasibility study to define improvements and schedule	SFRA/SFMTA	SFRA/SFMTA	Feasibility study submitted and approved by SFMTA
■ Reconfigure the section of Third Street between Thomas Avenue and Kirkwood Avenue (9 blocks) where the light rail vehicles currently share the travel lane with auto traffic to provide a dedicated transit right-of-way, consistent with the rest of the route. This would require either removal of one travel lane in each direction on Third Street, or removal of on-street parking and some sidewalk bulbouts. In addition, left-turns from Third Street in this segment would be restricted in both directions. Treatment for transit-only lanes can range from striping to physical elevation or barriers to protect transit right-of-way from mixed-flow traffic.	Project Applicant/ SFMTA/SFDPW	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when improvements identified in the feasibility study are implemented.
Implementation of the roadway reconfiguration shall be the responsibility of SFMTA, and shall be implemented when the results of the study described above indicate transit improvements are necessary. The Project Applicant shall fully fund the costs of implementing the transit priority improvements prior to approval of subsequent phases of development.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-26.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the T-Third. Should mitigation measure MM TR-26.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the T-Third. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFRA/SFMTA	SFRA/SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.
MM TR-27.1 Ensure transit preferential treatment is accounted for in the design of the Geneva Avenue Extension. The City of Brisbane, as part of the Geneva Avenue Extension Project, shall account for existing traffic, background traffic growth, and the most recent forecasts of traffic expected to be associated with each of several adjacent development projects, including the Project. The San Francisco County Transportation Authority (SFCTA) and SFMTA shall coordinate with the City of Brisbane to ensure transit preferential treatment is accounted for in the design of the Geneva Avenue Extension.	Project Applicant/ SFMTA/SFCTA	Ongoing as part of the Geneva Avenue Extension Project	SFRA/SFMTA/SFCTA	SFRA/SFMTA/SFCTA	Upon completion of the Geneva Avenue Extension Project

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-27.2 Purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 28L-19th Avenue/Geneva Limited. Should mitigation measure MM TR-27.1 not be feasible or effective, the Project Applicant shall work with SFMTA to purchase additional transit vehicles as necessary to mitigate the Project impacts and Project contribution to cumulative impacts to headways on the 28L-19th Avenue/Geneva Limited. Funds for the implementation of this mitigation measure are expected to be generated from a combination of Project revenues that accrue to the City, and other funding sources.	Project Applicant/ SFMTA	Develop monitoring program for traffic and transit operations related to the 28L-29th Avenue/ Geneva Limited prior to issuance of a grading permit for Phase 1.	SFRA/SFMTA	SFRA/SFMTA	Upon completion of a monitoring program as directed and approved by SFMTA.
	Project Applicant/ SFMTA	Based on the schedule/ thresholds set forth in the feasibility study	SFMTA	SFMTA	Completed when the purchase of additional transit vehicles is funded as determined by the feasibility study.
MM TR-32 Determine the feasibility of relocating Bicycle Routes #70 and #170. Prior to issuance of the grading permit for Development Phase 1, the Project Applicant shall fund a study to determine the feasibility of relocating Bicycle Routes #70 and #170. The study of the bicycle route relocation, necessary environmental clearance documentation, and implementation shall be the responsibility of SFMTA.	Project Applicant/ SFMTA	Prior to issuance of the grading permit for Phase 1	SFRA/SFMTA	SFMTA	Upon completion of the feasibility study.
MM TR-38 Transportation Management Plan (TMP) for the stadium. The stadium operators shall develop and maintain a Transportation Management Plan (TMP) for the stadium. The stadium operator shall work with representatives from the SFMTA, the State Highway Patrol, the Police Department, private charter operators, Caltrain and others on a continuing basis to develop and refine the TMP, as determined appropriate by SFMTA. The final stadium TMP shall be approved by SFMTA. Preparation of the TMP shall be fully funded by the stadium operator, and shall be completed in time for implementation on opening day of the stadium.	Stadium Operator/ SFMTA	Prior to opening day of the stadium	SFRA/SFMTA	SFRA/SFMTA	Approval of the Transportation Management Plan (TMP) by the SFMTA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
The following actions shall be included in the TMP: ■ Information on transportation options to the stadium, including game day service by the various regional service providers shall be distributed to season ticket holders, employees, and other patrons if possible. ■ A brochure, information packet, and/or web page providing full information on transit access to the stadium, similar to that currently offered at the 49ers website, shall be updated and maintained. ■ The use of charter buses to the stadium shall be encouraged and expanded. A number of measures shall be considered that could be implemented at low-cost to expand the use of group charters, including reduced parking costs, publicize the groups in 49ers publications and mailings, provide priority parking, provide lounges for bus drivers and provide support services for rooter clubs. ■ Residential Permit Parking Program and/or additional parking restrictions, such as time limits, during game days, particularly in the Bayview Hunters Point areas, shall be explored with residents to reduce potential for intrusion of stadium vehicles into the adjacent neighborhood during a football game or secondary event. ■ The stadium operator shall implement measures to encourage carpools of 4-plus persons per vehicle. ■ The stadium operator shall charge a higher parking cost for low occupancy vehicles. ■ The stadium operator shall develop a separate TDM plan for employees of the stadium and concessionaires. The plan shall consider measures such as providing					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
employees and concessionaires with free or subsidized transit passes to encourage transit use and reduce vehicular travel to the stadium. Employees shall not receive preferential parking. ■ The stadium operator shall develop measures with CPSRA to ensure that game day spectators do not park in CPSRA day use parking lots. Strategies to be explored include limiting parking in CPSRA lots to a limited duration during game days (e.g., to a two-hour period), or an increase in parking fees equivalent to game day parking, and ticketing and enforcement. ■ The TMP shall ensure that regular transit routes operate acceptably near the stadium. The plan should consider providing alternate routes for those transit lines that do not have exclusive right-of-way on game days (48-Quintara-24th Street, 44-O'Shaughnessy, 29-Sunset) onto transit-only facilities such as the BRT right-of-way to the south and Palou Avenue to the north (which would be a transit-only facility on game days).					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-39 *Transit Service during Game Days.* SFMTA shall increase frequency on regularly scheduled Muni routes serving the stadium area on game days. In addition, the stadium operator shall fund additional Muni shuttle service between the stadium and regional transit service, including BART (Balboa Park and/or Glen Park Station) and Caltrain (Bayshore Station). Although the specific frequencies of individual routes should be determined based on patron characteristics that may evolve over time, the increased transit service, taken as an aggregate, should generally compensate for the projected shortfall of 3,600 passengers per hour on the existing and proposed transit lines. Prior to opening day at the new stadium, the City and stadium operator shall determine costs associated with the increased service and determine funding sources. Examples of funding sources that shall be considered include a surcharge on game tickets or other such revenue mechanism. Implementation of increased transit service would be the responsibility of SFMTA and the stadium operator, and would be implemented when projected attendance warrants additional service.	Stadium Operator/ SFMTA	Prior to opening day of the stadium	SFRA/SFMTA	SFRA/SFMTA	Approval of gameday transit operating plan by SFMTA.
MM TR-46 Traffic Control Officers. The stadium operator shall develop as part of a stadium Transportation Management Plan (TMP), a strategy for coordinating with representatives of SFMTA and the SF Police Department for deploying traffic control officers in the Project vicinity to increase efficiency of pre- and post-event traffic, similar to what would be in place for football game days. The secondary event component of the stadium TMP shall be approved by SFMTA. The stadium operator shall fully fund implementation of the secondary event (i.e., non-49ers football events) measures.	Stadium Operator/ SFMTA	Prior to opening day of the stadium	SFRA/SFMTA	SFRA/SFMTA	Approval of the Transportation Management Plan (TMP) by the SFMTA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-47 Transit Service during Secondary Events. SFMTA shall increase frequency on regularly scheduled Muni routes serving the stadium area prior to large special events. In addition, the stadium operator shall fund additional Muni shuttle service between the stadium and regional transit service, including BART (Balboa Park and/or Glen Park stations) and Caltrain (Bayshore station). ■ Routes 24-Divisadero, 28L-19th Avenue Limited, and 44-O'Shaughnessey would already be operating near their maximum frequency. Therefore, this mitigation measure primarily applies to the 48-Quintara-24th Street route and the new HPX service. If each of these routes were increased to have five-minute frequencies (typically considered the maximum frequency that can be regularly maintained), the transit capacity toward the stadium would increase by 828 passengers per hour, for a total of 3,928 passengers. Even with the additional service on these two lines, there would be a shortfall of 1,797 passengers per hour in transit capacity. ■ Additional express service to key regional transit destinations and regional charter express service, similar to what is offered on football game days, would offset a portion of the shortfall in transit capacity. The amount and nature of special service to special stadium events would depend on the type and size of the special event. Generally, the capacity of the express service should compensate for the shortfall of 1,797 passengers per hour for a 37,500-person event (transit supply, would of course, be designed on a case-by-case basis depending on the expected size of the secondary event).	Stadium Operator/ SFMTA	Prior to opening day of the stadium	SFRA/SFMTA	SFRA/SFMTA	Approval of special-event transit operating plan by SFMTA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ SFMTA and the stadium operator shall implement a stadium transportation systems plan similar to that developed for game-day operations (except that the Yosemite Slough bridge shall not be available for private automobiles), on a case-by-case basis depending on the expected size of the secondary event. Prior to opening day at the new stadium, the City and the stadium operator shall determine costs associated with the increased service and determine funding requirements. Examples of funding sources that shall be considered include a surcharge on game tickets, parking or admission surcharge, or other such revenue mechanism. Implementation of increased transit service would be the responsibility of SFMTA and the stadium operator, and would be implemented when projected attendance warrants additional service.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM TR-51 Transportation Management Plan (TMP). The arena operator shall develop a Transportation Management Plan (TMP) for coordinating with representatives of SFMTA and the SF Police Department for deploying traffic control officers in the Project vicinity to increase efficiency of pre- and post- event traffic, and for developing incentives to increase transit ridership to the arena. If Variants 1, 2, or 2A are implemented the TMP shall provide for SFMTA to increase the frequency on regularly scheduled Muni routes (primarily the CPX-Candlestick Express) serving the arena area prior to large events at the arena and for the arena operator to provide additional shuttle service to key regional transit destinations, such as BART, Caltrain, and the T-Third light-rail route. Implementation of this mitigation measure would likely speed vehicle entrance and exit to the arena site as well as maintain orderly traffic and transit operations and reduce intrusion onto minor routes to and from the arena. Traffic control officers would facilitate traffic flow at the intersection of Harney/Jamestown which would operate at LOS F conditions with a sell-out arena event. The final arena TMP shall be approved by SFMTA. Preparation of the TMP Plan shall be fully funded by the arena operator, and shall be completed in time for implementation on opening day of the arena.	Arena Operators/ SFMTA	Prior to opening day of the Arena	SFRA/SFMTA	SFRA/SFMTA	Approval of the Transportation Management Plan (TMP) by the SFMTA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
R&D Variant (Variant 1)/Housing/R&D Variant (Variant 2A)/2018 Modified Project Variant Mitigation Measure MM TR-VAR1: (a) Under the R&D and Housing/R&D Variants, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated left-turn lane and a shared through/right-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues. Under the 2018 Modified Project Variant, the Project Applicant would be required to contribute its fair share to striping the southbound approach at Crisp and Palou to provide a dedicated right-turn lane and a shared through/left-turn lane and prohibiting on-street parking on Griffith Street between Palou and Oakdale Avenues, and constructing the westbound approach on Crisp Avenue to provide two dedicated left-turn lanes and one shared through/right-turn lane. Implementation of this mitigation would reduce impacts from these variants to a less-than-significant level. (b) Under the R&D Variant (Variant 1) and the 2018 Modified Project Variant, the Project Applicant would be required to fund the installation of a traffic signal at the intersection of Innes and Earl when warranted by traffic conditions. Implementation of this mitigation would reduce impacts from this variant to a less-than-significant level.	Project Applicant/ SFMTA	(a) Construction of intersection per phasing identified in Addendum 6. (b) Construction of Innes Avenue improvements per phasing identified in Addendum 6.	OCII/SFMTA	OCII/SFMTA	Upon completion of the improvements.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.E (AESTHETICS)					
MM AE-2 Mitigation for Visual Character/Quality Impacts During Construction. Construction documents shall require all construction contractors to strictly control the staging of construction equipment and the cleanliness of construction equipment stored or driven beyond the limits of the construction work area. Construction equipment shall be parked and staged on the Project site. Staging areas shall be screened from view at street level with solid wood fencing or green fence. Prior to the issuance of building permits, the Project Applicant (through the construction contractor[s]) shall submit a construction staging, access, and parking plan to the San Francisco Department of Building Inspection for review and approval. On-street parking of construction worker vehicles shall be prohibited. Vehicles shall be kept clean and free of mud and dust before leaving the Project site. Project contractors shall sweep surrounding streets used for construction access daily and maintain them free of dirt and debris.	Project Applicant	Requirements in construction documents: Prior to issuance of first permit for each phase of construction. Implementation of requirements: Ongoing through the construction process	SFRA/DBI	Construction Contractor	SFRA and DBI to review construction documents and construction staging, access, and parking plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM AE-7a.1 Lighting Direction/Fixtures and Screening Walls to Minimize Glare and Light Spill. The Project Applicant shall ensure that all parking lot and other security lighting shall be directed away from surrounding land uses and towards the specific location intended for illumination. State-of-the-art fixtures shall be used, and all lighting shall be shielded to minimize the production of glare and light spill onto surrounding use. All parking structures shall be constructed with screening walls of sufficient height to block spill light from vehicle headlights.	Project Applicant	Submission of lighting plan subject to lot application or open space design document review; prior to issuance of building permit	SFRA/DBI/DPW	SFRA/DBI/DPW	SFRA to review designs and specifications as part of lot application or open space design document review. DBI/DPW to issue permits and approve construction completion

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM AE-7a.2 Low-level/Unobtrusive Light Fixtures. The Project Applicant shall ensure that landscape illumination and exterior sign lighting shall be accomplished with low-level, unobtrusive fixtures.	Project Applicant	Submission of lighting plan subject to lot application or open space design document review; prior to issuance of building permit	SFRA/DBI/DPW	SFRA/DBI/DPW	SFRA to review designs and specifications as part of lot application or open space design document review. DBI/DPW to issue permits and approve construction completion
MM AE-7a.3 Lighting Plan. The Project Applicant shall prepare a lighting plan for each phase of the Project and submit it for review and approval to the San Francisco Police Department and the Agency prior to the issuance of building permits. Outdoor lighting shall maintain a minimum required illumination, as determined appropriate by the San Francisco Police Department and the Planning Department, for all parking and pedestrian areas. In addition, the plan shall include details such as beam spreads and/or photometric calculation, location and type of fixtures, exterior colors, details on foundations, and arrangement of exterior lighting such that it does not create glare, hazardous interference on adjacent streets, or properties or result in spill light that would adversely impact sensitive receptors in the project area.	Project Applicant	Submission of lighting plan prior to sub- Phase approval	SFRA	SFRA	SFRA to review design as part of sub-Phase application; DBI to issue permits and approve construction completion
MM AE-7a.4 Non-reflective Exterior Surfaces to Minimize Glare Impacts. The Project Applicant shall ensure that design of the proposed structures shall include the use of textured or other nonreflective exterior surfaces and nonreflective glass.	Project Applicant	At schematic lot application or open space design review and plan check; prior to issuance of building permit	SFRA/DBI	SFRA/DBI	SFRA to review designs and specifications as part of lot application or open space design application

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM AE-7b.1 Testing of the Field-Lighting System. Prior to opening the stadium, the Stadium Operator shall test the installed field-lighting system to ensure that lighting meets operating requirements in the stadium and minimizes obtrusive spill lighting in the ballpark facility. Testing shall include light-meter measurements at selected locations in the vicinity to measure spill lighting from stadium field-lighting fixtures, permit adjustment of lighting fixtures, and confirm that spill-lighting effects shall be within an acceptable range and compatible with typical street lighting fixtures.	Stadium Operator	Prior to opening day of the Stadium	SFRA/DBI	SFRA/DBI	SFRA to review designs and specifications as part of lot application review; DBI to issue schematic permits and approve construction completion
MM AE-7b.2 Stadium Lighting Orientation and Cut-Off Shields. Prior to opening the stadium, the Stadium Operator shall ensure that stadium lighting is oriented in such a manner to reduce the amount of light shed onto sensitive receptors and incorporate "cut-off" shields as appropriate to minimize any increase in lighting at adjacent properties, providing that it still meets the standard of lighting for football operations.	Stadium Operator	At lot application/schematic design documents submitted for approval	SFRA/DBI	SFRA/DBI	SFRA to review designs and specifications as part of lot application review; DBI to issue permits and approve construction completion

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.G (WIND)					
MM W-1a Building Design Wind Analysis. Prior to design approval of Project buildings, for high-rise structures above 100 feet, the Project Applicant shall retain a qualified wind consultant to provide a wind review to determine if the exposure, massing, and orientation of the building would result in wind impacts that could exceed the threshold of 26-mph-equivalent wind speed for a single hour during the year. The wind analysis shall be conducted to assess wind conditions for the proposed building(s) in conjunction with the anticipated pattern of development on surrounding blocks to determine if the Project building(s) would cause an exceedance of the wind hazard standard. The analysis shall be conducted as directed by the City's wind study guidelines, including, if required, wind tunnel modeling of potential adverse effects relating to hazardous wind conditions. The Agency shall require the Project Applicant to identify design changes that would mitigate the adverse wind conditions to below the threshold of 26-mph-equivalent wind speed for a single hour of the year. These design changes could include, but are not limited to, wind-mitigating features, such as placing towers on podiums with a minimum 15-foot setback from street edges, placement of awnings on building frontages, street and frontage plantings, articulation of building facades, or the use of a variety of architectural materials.	Project Applicant	At lot application schematic design review and plan check; prior to issuance of building permit.	SFRA/DBI	SFRA	SFRA to review design and specification as part of lot application schematic design review; DBI to issue permits and approve construction completion

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.H (AIR QUALITY)					
MM AQ-2.1 Implement Emission Control Device Installation on Construction. To reduce DPM emissions during Project construction, the Project Applicant shall require construction equipment used for the Project to utilize emission control technology such that 50% of the fleet will meet USEPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) during the first two years of construction activities, increasing to 75% of the fleet in the third year and 100% of the fleet starting in the fourth year and for the duration of the Project.	Project Applicant	Prior to issuance of construction site permit	SFRA/DBI	SFRA/DBI	SFRA and DBI to review construction documents; Construction contractor to submit quarterly report and compliance of activity through fourth year of construction, and annually thereafter, until deemed complete by SFRA.
MM AQ-2.2 Implement Accelerated Emission Control Device Installation on Construction Equipment Used for Alice Griffith Parcels. In addition to mitigation measure MM AQ-2.1, in order to minimize the potential impacts to residents living in Alice Griffith from the construction activities in that area, the Project Applicant will require that all construction equipment used in the Alice Griffith parcels (CP01 though CP06) utilize equipment which meets the USEPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) throughout the entire duration of construction activities on those parcels.	Project Applicant	Prior to issuance of construction site permit	SFRA/DBI	SFRA/DBI	SFRA and DBI to review construction documents; Construction contractor to submit quarterly report and compliance of activity through duration, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM AQ-6.1 If a facility with sources of TAC emission wishes to locate on a plot size smaller than 1 acre, an analysis will be required to show the facility, in conjunction with all other TAC emitting facilities in the R&D areas, will not cause these thresholds of a residential cancer risk of 10 in one million and a chronic noncancer HI of 1.0 to be exceeded at the nearest residential locations.	Project Applicant	Lot size submitted at time of sub-phase application; if lot size is less than 1 acre, TAC analysis required prior to building occupancy	SFRA/DBI	SFRA/DBI	SFRA and DBI to review sub-phase application; for lots under once acre SFRA and DBI to review TAC analysis prior to building occupancy. ,
MM AQ-6.2 Each facility with sources of TAC emissions on a plot of 1 acre or larger will limit their emissions such that residential cancer risk and chronic non-cancer hazard index evaluated at the facility boundary does not exceed 10 in one million or 1.0, respectively. If these thresholds are exceeded at the boundary, an analysis will be required to show the facility, in conjunction with all other TAC emitting facilities in the R&D areas, will not cause these thresholds to be exceeded at the nearest residential locations.	Project Applicant	Lot size submitted at time of sub-phase application; if lot size is equal to or greater than 1 acre, TAC analysis required annually. If thresholds exceeded, additional analysis required at direction of SFRA	SFRA/DBI	SFRA/DBI	Ongoing requirement
SECTION III.I (NOISE AND VIBRATION)					
MM NO-1a.1 Construction Document Mitigation to Reduce Noise Levels during Construction. The Project Applicant shall incorporate the following practices into the construction documents to be implemented by the Project contractor: ■ Provide enclosures and mufflers for stationary equipment, shrouding or shielding for impact tools, and barriers around particularly noisy operations on the site ■ Use construction equipment with lower noise emission ratings whenever possible, particularly air compressors ■ Provide sound-control devices on equipment no less effective than those provided by the manufacturer	Project Applicant	Prior to issuance of construction site permit	SFRA/DBI/DPW	SFRA/DBI/DPW	Review and approve contract specifications; Project Applicant to submit quarterly report to SFRA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Locate stationary equipment, material stockpiles, and vehicle staging areas as far as practicable from sensitive receptors ■ Prohibit unnecessary idling of internal combustion engines ■ Require applicable construction-related vehicles and equipment to use designated truck routes to access the Project site ■ Implement noise attenuation measures to the extent feasible, which may include, but are not limited to, noise barriers or noise blankets. The placement of such attenuation measures will be reviewed and approved by the Director of Public Works prior to issuance of development permits for construction activities. ■ Designate a Noise Disturbance Coordinator who shall be responsible for responding to complaints about noise during construction. The telephone number of the Noise Disturbance Coordinator shall be conspicuously posted at the construction site and shall be provided to the City. Copies of the construction schedule shall also be posted at nearby noise-sensitive areas.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM NO-1a.2 Noise-reducing Pile Driving Techniques and Muffling Devices. The Project Applicant shall require its construction contractor to use noise-reducing pile driving techniques if nearby structures are subject to pile driving noise and vibration. These techniques include pre-drilling pile holes (if feasible, based on soils) to the maximum feasible depth, installing intake and exhaust mufflers on pile driving equipment, vibrating piles into place when feasible, and installing shrouds around the pile driving hammer where feasible. Contractors shall be required to use construction equipment with state-of-the-art noise shielding and muffling devices. In addition, at least 48 hours prior to pile-driving activities, the Project Applicant shall notify building owners and occupants within 500 feet of the Project site of the dates, hours, and expected duration of such activities.	Project Applicant	Prior to issuance of construction site permit	SFRA/DBI/DPW	SFRA/DBI/DPW	Review and approve contract specifications; Project Applicant to submit quarterly report to SFRA
MM NO-2a Pre-construction Assessment to Minimize Pile Driving and Deep Dynamic Compaction Impacts. The Project Applicant shall require its geotechnical engineering contractor to conduct a pre-construction assessment of existing subsurface conditions and the structural integrity of nearby buildings subject to pile driving and deep dynamic compaction (DDC) impacts prior to receiving a building permit. The building surveys will review existing conditions and confirm whether fractures in building footings or walls existed prior to pile driving and/or DDC activities. If recommended by the geotechnical engineer, for structures or facilities within 50 feet of pile driving, the Project Applicant shall require groundborne vibration monitoring of nearby structures. Such methods and technologies shall be based on the	Project Applicant	Assessment prior to issuance of construction site permit; Monitoring: Ongoing through construction process	SFRA/DBI	SFRA/DBI/DPW	Review and approve corrective measures as identified throughout construction process quarterly report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
specific conditions at the construction site such as, but not limited to, the following: ■ Pre-pile driving surveying of potentially affected structures. ■ Underpinning of foundations of potentially affected structures, as necessary. ■ The construction plan shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of an excavation. Monitoring results shall be submitted to DBI. In the event of unacceptable ground movement, as determined by DBI inspections, all pile driving work shall cease and corrective measures shall be implemented. The pile driving program and ground stabilization measures shall be reviewed and approved by OCII. For DDC work, the Project Applicant shall prepare and implement a construction plan that includes a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of DDC activity. Structures in the vicinity of DDC work shall be defined as reinforced-concrete, steel, or timber structures within 125 feet, engineered concrete or masonry structures within 150 feet, non-engineered timber and masonry structures within 225 feet, or other structures that are extremely susceptible to vibration damage within 275 feet of DDC activities as determined by the Project Applicant's geotechnical engineer or structural engineer. The DDC program shall be evaluated and approved by DBI and results of the monitoring program shall be submitted to OCII. In the event of unacceptable ground movement, as determined by DBI inspection and review, all DDC work shall cease and corrective measures shall be implemented. A geotechnical engineer approved					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
by OCII shall determine which of the following ground stabilization measures or alternate measures would be necessary to avoid structural impacts related to DDC activities: ■ Underpinning of foundations of potentially affected structures, as necessary to avoid structural impacts ■ If deemed necessary by the geotechnical engineer, based either on proximity of DDC to a structure and/or on potential for damage to a structure, a cutoff trench shall be installed between the DDC activity and the structure. The cutoff trench should be at least 10 feet deep and 2 feet wide.[1] The trench should be long enough to effectively shield the structure from DDC vibrations.					
MM NO-7.1 Mitigation to Minimize Game/Concert-related Temporary Increases in Ambient Noise Levels at Nearby Residences. To ensure that stadium game-and event-induced interior L_{max} noise levels do not exceed an interior noise level of 60 dBA and interfere with speech and other indoor activities in the existing Hunters Point Hill residential community closest to and north of the proposed Stadium (i.e., as identified by the R3 stadium noise model receiver), the Stadium Operator shall: ■ After Stadium Operator enters into lease agreement with Agency, send notification of the establishment of a stadium noise mitigation program (SNMP) to the residential property owners in the identified neighborhood potentially affected by noise from the proposed Stadium	Stadium Operator	After stadium operator enters lease agreement with SFRA	SFRA	SFRA	Complete upon payment of qualified property owners as identified by the acoustical survey. Stadium operator to report to SFRA upon establishment SNMP and yearly threshold until SNMP is completely implemented; continue monitoring through creation of ad hoc community working group.

[1] ENGEO Incorporated, *Potential Constraints on Implementation of Deep Dynamic Compaction*, December 14, 2017, p. 1.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Allow property owners an appropriate time after the date of notification about the SNMP to apply for the program, with a reminder sent to the owners before the end of the application period ■ Determine if responding property owners meet qualifications ■ Compile for property-owners reference and send to them a summary of standard types of structural acoustical mitigations ■ Choose a qualified acoustical consultant to survey the potentially affected residential units and recommend sound reduction measures appropriate to offset the modeled stadium noise impacts, which may include: > Acoustical upgrades to windows and doors > Acoustical stripping around doors and other openings > Ventilation improvements ■ Estimates cost of recommended sound reduction measures, which shall include labor and materials, permit fees, and City inspections; material costs will, as much as possible, be based on “like-for-like”, that is, for replacement of existing materials similar in quality or appearance ■ Pay each qualifying property owner the amount of this estimate after obtaining a release from future claims for stadium event noise impacts at each property with each property owner responsible for implementing the sound reduction improvements ■ Establish an ad hoc community working group of neighbors to develop a mediation process should any future disputes arise over					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
the effectiveness of the SNMP in eliminating stadium noise intrusions					
MM NO-7.2 Residential Use Plan Review by Qualified Acoustical Consultant. To ensure that stadium game-and event-induced interior L_{max} noise levels do not exceed an interior noise level of 60 dBA and interfere with speech and other indoor activities in the proposed on-site residential uses closest to the proposed Stadium, the Project Applicant shall choose a qualified acoustical consultant to review plans for the new residential uses planned for areas closest to the proposed Stadium and follow their recommendations to provide acoustic insulation or other equivalent measures to ensure that interior peak noise events would not exceed 60 dBA L_{max}.	Project Applicant	Design review lot application	SFRA/DBI	SFRA/DBI	Review in all design documents
SECTION III.J (CULTURAL RESOURCES AND PALEONTOLOGICAL RESOURCES)					
MM CP-1b.1 Mitigation to Minimize Impacts on Historic Resources at HPS Phase II. To reduce the adverse effect on historical resources, prior to any structural demolition and removal activities, the Project Applicant shall retain a professional who meets the Secretary of the of the Interior's Professional Qualifications Standards for Architectural History to prepare written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District, as identified in the report titled *Bayview Waterfront Plan Historic Resources Evaluation, Volume II: Draft Historic Resources Survey and Technical Report*, July 2009, prepared by Circa Historic Property Development. The documentation for the property shall be prepared based on the National Park Services' (NPS) Historic American Building Survey (HABS) / Historic American Engineering Record (HAER) Historical Report Guidelines. This type of	Project Applicant	Prior to issuance of any demolition and removal activities of historic resources	SFRA/Planning Department	SFRA	All written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District shall be approved by the SFRA prior to issuance and permits for any demolition and removal activities.

Mitigation Monitoring & Reporting Program

Mitigation Measure	Responsibility for Implementation	Mitigation Timing	Enforcement Responsibility	Monitoring Responsibility	Monitoring Actions/ Verification of Compliance
documentation is based on a combination of both HABS/HAER standards (Levels II and III) and NPS new policy for NR-NHL photographic documentation as outlined in the National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion (March 2005). The written historical data for this documentation shall follow HABS / HAER Level I standards. The written data shall be accompanied by a sketch plan of the property. Efforts should also be made to locate original construction drawings or plans of the property during the period of significance. If located, these drawings should be photographed, reproduced, and included in the dataset. If construction drawings or plans cannot be located as-built drawings shall be produced. Either HABS / HAER standard large format or digital photography shall be used. If digital photography is used, the ink and paper combinations for printing photographs must be in compliance with NR-NHL photo expansion policy and have a permanency rating of approximately 115 years. Digital photographs will be taken as uncompressed .TIF file format. The size of each image will be 1600x1200 pixels at 300 ppi (pixels per inch) or larger, color format, and printed in black and white. The file name for each electronic image shall correspond with the index of photographs and photograph label. Photograph views for the dataset shall include *(a)* contextual views; *(b)* views of each side of each building and interior views, where possible; *(c)* oblique views of buildings; and *(d)* detail views of character-defining features, including features on the interiors of some buildings. All views shall be referenced on a photographic key. This photograph key shall be on a map of the property and shall show the photograph number with an					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
arrow indicate the direction of the view. Historic photographs shall also be collected, reproduced, and included in the dataset. All written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District shall be approved by the SFRA, in consultation with the ERO, prior to any demolition and removal activities.					
MM CP-1b.2 Interpretive Displays Depicting History of HPS. Interpretive displays related to the history of HPS shall be installed at Heritage Park at Dry Dock Nos. 2 and 3. The number and type of displays shall be approved by the SFRA, in consultation with the ERO.	Project Applicant	Schematic design review for Heritage Park	SFRA/Planning Department	SFRA	Displays approved by SFRA; Project Applicant to provide report to SFRA once installed
MM CP-2a Mitigation to Minimize Impacts to Archaeological Resources at Candlestick Point. Based on a reasonable presumption that archaeological resources may be present within the Project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the Project on buried or submerged historical resources. Overview: The Project Applicant shall retain the services of a qualified archaeological consultant having expertise in California prehistoric and urban historical archaeology. The archaeological consultant shall augment the approved archaeological testing program as specified herein. In addition, the archaeological consultant shall be available to conduct an archaeological monitoring and/or data recovery program if required pursuant to this measure. The archaeological consultant's work shall be conducted in accordance with this measure and with the requirements of the Project Archaeological Research Design and Treatment Plan (Archeo-Tec. Archaeological Research					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Design and Treatment Plan for the Bayview Waterfront Project, San Francisco, California, 2009) at the direction of the City's Environmental Review Officer (ERO). In instances of inconsistency between the requirement of the Project Archaeological Research Design and Treatment Plan and of this archaeological mitigation measure, the requirement of this archaeological mitigation measure shall prevail. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archaeological monitoring and/or data recovery programs required by this measure could suspend construction of the Project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce potential effects on a significant archaeological resource as defined in CEQA Guidelines Section 15064.5(a)(c) to a less-than-significant level.					
Archaeological Testing Program: The archaeological consultant shall prepare and submit to the ERO for review and approval an addendum to the approved HPS2 archaeological testing plan (ATP). The archaeological testing program shall be conducted in accordance with the approved ATP addendum. The ATP addendum shall identify the property types of the expected archaeological resource(s) that potentially could be adversely affected by ground-disturbing components of the 2018 Modified Project Variant, including ground source geothermal heating and cooling system geothermal boreholes; the testing method to be	Project Applicant	Testing Plan: Completed prior to issuance of any permit authorizing soils disturbance Testing program: Completed Prior to commencement of any soils disturbing construction activity Testing Report: Completed prior to commencement of any soils disturbing activity	SFRA, ERO	SFRA, ERO	Quarterly MMRP reports to SFRA, to include reporting on any Archeo Mitigation Measure tasks completed Testing Plan complete upon approval by ERO of Final Testing Plan Testing Program and Report deemed complete upon approval by ERO Final Testing Report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
used, and the locations recommended for testing. The purpose of the archaeological testing program will be to determine to the extent possible the presence or absence of archaeological resources and to identify and to evaluate whether any archaeological resource encountered on the site constitutes an historical resource under CEQA.					
At the completion of the archaeological testing program, the archaeological consultant shall submit a written report of the findings for submittal to the ERO. If, based on the archaeological testing program, the archaeological consultant finds that significant archaeological resources may be present, the ERO (in consultation with the archaeological consultant) shall determine if additional measures are warranted. Additional measures that may be undertaken include, but are not necessarily limited to, additional archaeological testing, archaeological monitoring, and/or an archaeological data recovery program. If the ERO determines that a significant archaeological resource is present and that the resource could be adversely affected by the Project, the Project Applicant shall either: a. Re-design the Project so as to avoid any adverse effect on the significant archaeological resource; or b. Implement a data recovery program, unless the ERO determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.					Prior to project construction demolition and remediation
Archaeological Monitoring Program: If the ERO, in consultation with the archaeological consultant, determines that an Archaeological Monitoring Program (AMP) shall be implemented, the AMP	Project Applicant	Monitoring Program: Development of program work scope prior to commencement of soils disturbing construction activity; monitoring activity to	SFRA; ERO	SFRA; ERO	Quarterly MMRP reports to SFRA, to include reporting on any Archeo Mitigation Measure tasks completed

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
shall include the following provisions, at a minimum: ■ The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the AMP prior to the commencement of any Project-related soils disturbing activities. The ERO, in consultation with the archaeological consultant, shall determine what Project activities shall be archaeologically monitored. In most cases, any soils- disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), and site remediation, shall require archaeological monitoring because of the risk these activities pose to potential archaeological resources and to their depositional context. ■ The archaeological consultant shall train all Project construction personnel who could reasonably be expected to encounter archaeological resources of the expected resource(s), how to identify the evidence of the expected resource(s), and the appropriate protocol in the event of apparent discovery of an archaeological resource. ■ The archaeological monitor(s) shall be present on the Project site according to a schedule agreed upon by the archaeological consultant and the ERO until the ERO has, in consultation with the archaeological consultant, determined that Project construction activities could have no effects on significant archaeological deposits.		occur during site excavation and construction, as per monitoring program Monitoring Report: Report submitted to ERO upon completion of monitoring Program			Monitoring program and Report deemed Complete upon approval by ERO of Final Monitoring Report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ The archaeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. ■ If an intact archaeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit shall cease. The archaeological monitor shall be authorized to temporarily halt demolition/excavation/pile driving/construction activities and equipment until the deposit is evaluated. If, in the case of pile driving activity (foundation, shoring, etc.), the archaeological monitor has cause to believe that the pile driving activity may affect an archaeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archaeological consultant shall immediately notify the ERO of any encountered archaeological deposit. The archaeological consultant shall make a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit and present the findings of this assessment to the ERO as expeditiously as possible. ■ Whether or not significant archaeological resources are encountered, the archaeological consultant shall submit a written report of the findings of the monitoring program to the ERO.					
Archaeological Data Recovery Program: The archaeological data recovery program shall be conducted in accord with an Archaeological Data Recovery Plan (ADRP). The archaeological consultant, Project Applicant, and ERO shall meet and consult on the scope of the ADRP prior to	Project Applicant	Data Recovery Plan: Development of Program work scope, in conjunction with work scope for Archeo Monitoring Program prior to commencement of soils	SFRA; ERO	SFRA; ERO	Quarterly MMRP reports to SFRA, to include reporting on any Archeological Mitigation Measure tasks completed Data Recovery Plan and Program deemed complete upon approval by ERO

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
preparation of a draft ADRP. The archaeological consultant shall submit a draft ADRP to the ERO. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archaeological resource is expected to contain. That is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the Project. Destructive data recovery methods shall not be pursued if nondestructive methods are practical. The scope of the ADRP shall include the following elements: ■ Field Methods and Procedures. Descriptions of proposed field strategies, procedures, and operations. ■ Cataloguing and Laboratory Analysis. Description of selected cataloguing system and artifact analysis procedures. ■ Discard and Deaccession Policy. Description of and rationale for field and post-field discard and deaccession policies. ■ Interpretive Program. Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program. ■ Security Measures. Recommended security measures to protect the archaeological resource from vandalism, looting, and other potentially damaging activities. ■ Final Report. Description of proposed report format and distribution of results.		disturbance construction activity. More specific or detailed subsequent work scope may be required by ERO upon completion of Archeo Monitoring Program and Report Data Recovery program: Activity to occur during and subsequent to construction activity, as per Data Recovery Program			of Final report indicating completion of data recovery program.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Curation. Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.					
Human Remains and Associated or Unassociated Funerary Objects: The treatment of human remains and of associated or unassociated funerary objects discovered during any soil-disturbing activity shall comply with applicable state and federal laws including immediate notification of the Office of the Chief Medical Examiner of the City and County of San Francisco and in the event of the Medical Examiner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC), which shall appoint a Most Likely Descendant (MLD) (PRC Sec. 5097.98). The ERO shall also be immediately notified upon discovery of human remains. The archaeological consultant, Project Sponsor, ERO, and MLD shall have up to but not beyond six days after the discovery to make all reasonable efforts to develop an agreement for the treatment of human remains and associated or unassociated funerary objects with appropriate dignity (CEQA Guidelines Sec. 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, curation, possession, and final disposition of the human remains and associated or unassociated funerary objects. Nothing in existing state regulations or in this mitigation measure compels the Project Sponsor and the ERO to accept recommendations of an MLD. The archeological consultant shall retain possession of any Native American human remains and associated or unassociated burial objects until	Project Applicant	Upon discovery, if applicable	Coroner; SFRA	Applicant to notify SFRA, Coroner, and, if applicable, California State Native American Heritage Commission	Upon approval by ERO of Final Archaeological Resources Report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
completion of any scientific analyses of the human remains or objects as specified in the treatment agreement if such an agreement has been made or, otherwise, as determined by the archeological consultant and the ERO. If no agreement is reached, state regulations shall be followed including the reinternment of the human remains and associated burial objects with appropriate dignity on the property in a location not subject to further subsurface disturbance (PRC Sec. 5097.98).					
Final Archaeological Resources Report: The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s). Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Major Environmental Analysis division of the Planning Department shall receive three copies of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest in or the high interpretive value of the resource, the ERO may require a different final report content, format, and distribution than presented above.	Project Applicant	Upon completion of testing, monitoring and data recovery programs: For Horizontal Developer – prior to determination of substantial completion of infrastructure @ each sub-phase; For Vertical Developer – Prior to issuance of Certificate of Temporary or Final Occupancy, whichever occurs first	SFRA; ERO	SFRA; ERO	Upon approval by ERO of Final Archaeological Resources Report

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM CP-3a Paleontological Resources Monitoring and Mitigation Program: The Project Applicant shall retain the services of a qualified paleontological consultant having expertise in California paleontology to design and implement a Paleontological Resources Monitoring and Mitigation Program (PRMMP). The PRMMP shall include a description of when and where construction monitoring would be required; emergency discovery procedures; sampling and data recovery procedures; procedures for the preparation, identification, analysis, and curation of fossil specimens and data recovered; preconstruction coordination procedures; and procedures for reporting the results of the monitoring program.	Project Applicant	Design of Paleo Resources Monitoring and Mitigation Program (PRMMP) prior to soils disturbing activity	SFRA; ERO	SFRA; ERO	Approval by ERO of final design for PRMMP
		Monitoring of site for paleo resources pursuant to PRMMP, to occur throughout soils disturbing activity			Quarterly MMRP reports to SFRA, to include reporting on any Paleo Mitigation Measure tasks completed
The PRMMP shall be consistent with the Society for Vertebrate Paleontology (SVP) Standard Guidelines for the mitigation of construction-related adverse impacts to paleontological resources and the requirements of the designated repository for any fossils collected. During construction, earth-moving activities shall be monitored by a qualified paleontological consultant having expertise in California paleontology in the areas where these activities have the potential to disturb previously undisturbed native sediment or sedimentary rocks. Monitoring need not be conducted in areas where the ground has been previously disturbed, in areas of artificial fill, in areas underlain by nonsedimentary rocks (serpentinite, greenstone), or in areas where exposed sediment would be buried, but otherwise undisturbed.	Project Paleontologist	During project soils disturbing activities	SFRA, ERO	SFRA, ERO	During project soil disturbing activities. ERO to review and approve PRMMP and determine whether suspension of work is required.
The consultant's work shall be conducted in accordance with this measure and at the direction of the City's Environmental Review Officer (ERO).					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Plans and reports prepared by the consultant shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Paleontological monitoring and/or data recovery programs required by this measure could suspend construction of the Project for up to a maximum of four weeks. At the direction of the ERO, the suspension of construction can be extended beyond four weeks only if such a suspension is the only feasible means to reduce potential effects on a significant paleontological resource as previously defined to a less-than-significant level.					
SECTION III.K (HAZARDS AND HAZARDOUS MATERIALS)					
MM HZ-1a Article 22A Site Mitigation Plans. (Applies only to Candlestick Point.) Prior to obtaining a site, building or other permit from the City for development activities involving subsurface disturbance at portions of Candlestick Point bayward of the high tide line, the Project Applicant shall comply with the requirements of San Francisco Health Code Article 22A. If the site investigation required by Article 22A (or, in the case of development activity in CPSRA, which is not subject to Article 22A, a comparable site investigation that is carried out to comply with this measure, and which involves notification to California State Parks if a site mitigation plan is prepared), indicates the presence of a hazardous materials release, a site mitigation plan must be prepared. The site mitigation plan must specify the actions that will be implemented to mitigate the significant environmental or health and safety risks caused or likely to be caused by the presence of the identified release of hazardous materials. The site mitigation plan shall identify, as appropriate, such measures as excavation, containment, or	Project Applicant/ SFRA	Prior to obtaining a site, building or other permit from the City for development activities involving subsurface disturbance at portions of Candlestick Point bayward of the high tide line	SFRA/DPH/California Department of Parks and Recreation if CDPR implements improvements	SFRA/DPH/California Department of Parks and Recreation if CDPR implements improvements	Approval of the site mitigation plan consistent with Article 22A

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
treatment of the hazardous materials, monitoring and follow-up testing, and procedures for safe handling and transportation of the excavated materials, or for protecting the integrity of the cover or for addressing emissions from remedial activities, consistent with the requirements set forth in Article 22A. To the extent that Article 22A does not apply to state-owned land at CPSRA, prior to undertaking subsurface disturbance activities at CPSRA, the Agency and the California Department of Parks and Recreation shall enter into an agreement to follow procedures equivalent to those set forth in Article 22A for construction and development activities conducted at Candlestick Point State Recreation Area.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-1b Compliance with Requirements Imposed by Cleanup Decision Documents and Property Transfer Documents. (Applies only to HPS Phase II) Prior to obtaining a grading, excavation, site, building or other permit from the City for development activity at HPS Phase II involving subsurface disturbance, the Project Applicant shall submit documentation acceptable to the San Francisco Department of Public Health that the work will be undertaken in compliance with all notices, restrictions, and requirements imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOST, FOSET or FOSL, including notices, restrictions, and requirements imposed in deeds, covenants, leases, easements, and LIFOCs, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans, Community Involvement Plans, and health and safety plans. Such restrictions, imposed by federal and state regulatory agencies as a condition on the Navy transfer of the property to the Agency, will ensure that the property after transfer will be used in a manner that is protective of the environment and human health. The City/Agency may choose to implement this measure by requiring these actions as part of amendments to San Francisco Health Code Article 31, which currently sets forth procedural requirements for development in HPS Phase I, or through an equivalent process established by the City or Agency.	Project Applicant	Prior to obtaining a grading, excavation, site, building or other permit from the City for development activity at HPS Phase 2 involving subsurface disturbance	SFRA/DPH	SFRA/DPH	DPH to determine Project Applicant's compliance with Cleanup Decision Documents and Property Transfer Documents

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-2a.1 Unknown Contaminant Contingency Plan. (Applies to Candlestick Point, HPS Phase II, and off-site improvements.) Prior to obtaining the first site, building or other permit for development activities involving subsurface disturbance, the Project Applicant shall prepare and the San Francisco Department of Public Health shall approve a contingency plan to address unknown contaminants encountered during development activities. This plan, the conditions of which shall be incorporated into the first permit and any applicable permit thereafter, shall establish and describe procedures for implementing a contingency plan, including appropriate notification to nearby property owners, schools, and residents and appropriate site control procedures, in the event unanticipated subsurface hazards or hazardous material releases are discovered during construction. Control procedures would include, but would not be limited to, further investigation and, if necessary remediation of such hazards or releases, including off-site removal and disposal, containment or treatment. In the event unanticipated subsurface hazards or hazardous material releases are discovered during construction, the requirements of this unknown contaminant contingency plan shall be followed. The contingency plan shall be amended, as necessary, in the event new information becomes available that could affect the implementation of the plan. This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.	Project Applicant	Prior to obtaining the first site, building or other permit for development activities involving subsurface disturbance	SFRA/DPH	SFRA/DPH	DPH to approve contingency plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-2a.2 Site-Specific Health and Safety Plans. (Applies to Candlestick Point, HPS Phase II, and off-site improvements.) Prior to obtaining the first site, building or other permit for the Project from the City for development activities involving subsurface disturbance, the Project Applicant shall prepare and submit to SFDPH a site-specific health and safety plan (HASP) in compliance with applicable federal and state OSHA requirements and other applicable laws to minimize impacts to public health and the environment. development of the plan shall be required as a condition of any applicable permit. The plan shall include identification of chemicals of concern, potential hazards, personal protective equipment and devices, and emergency response procedures. The HASP shall be amended, as necessary, in the event new information becomes available that could affect the implementation of the plan. This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.	Project Applicant	Prior to obtaining the first site, building or other permit for the Project from the City for development activities involving subsurface disturbance	SFRA/DPH	SFRA/DPH	DPH to approve HASP.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-5a Foundation Support Piles Installation Plan. (Applies to Candlestick Point and HPS Phase II.) Prior to obtaining a permit from the City that authorizes installation of deep foundation piles, the Project Applicant shall prepare and submit a plan acceptable to the City stating that pilot boreholes for each pile would be drilled through the artificial fill materials so the piles can be installed without damage or misalignment and to prevent potentially contaminated fill materials from being pushed into the underlying sediments or groundwater. This measure shall be implemented for Candlestick Point through implementation of mitigation measure MM HZ-1a. This measure shall be implemented for HPS Phase II through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.	Project Applicant/ SFRA/DBI	Prior to obtaining a permit from the City that authorizes installation of deep foundation piles	SFRA/DBI/DPH	SFRA/DBI/DPH	DPH/DBI to approve plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HZ-9 Navy-approved workplans for construction and remediation activities on Navy-owned property. (Applies only to the portions of HPS Phase II on Navy-owned property). Construction activities and remediation activities conducted on behalf of the Agency or the Project Applicant, on Navy-owned property shall be conducted in compliance with all required notices, restrictions, or other requirements set forth in the applicable lease, easement, or license or other form of right of entry and in accordance with a Navy-approved workplan. This mitigation measure also requires that such activities be conducted in accordance with applicable health and safety plans, dust control plans, stormwater pollution prevention plans, community involvement plans, or any other documents or plans required under applicable law. The City/Agency will access Navy property through a lease, license, or easement. The City/Agency shall not undertake any activity or approve any Project Applicant activity on Navy-owned property until the Navy and other agencies with approval authority have approved a workplan for the activity. The requirement to comply with the approved work plans shall be incorporated into and made a condition of any City/Agency approvals related to activities on Navy property. This measure shall be implemented for HPS Phase II through a process established by the City or Agency as explained in MM HZ-1b.	Project Applicant/ SFRA/City	Prior to construction and remediation activities on Navy-owned property.	City/SFRA	City/SFRA	Navy to approve construction and remediation activities workplan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM HZ-10b Regulatory Agency–Approved Workplans and Permits for Shoreline Improvements. Prior to undertaking any shoreline improvement activities that would affect sediment at HPS Phase II, the Agency or its contractor or Project Applicant shall prepare appropriate design documents and submit to USEPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH	Project Applicant/ Construction Contractor/SFRA	Prior to undertaking any shoreline improvement activities that would affect sediment at HPS Phase II	SFRA	US EPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH	Appropriate regulatory agencies to approve f design documents.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
for approval. A Dredged Material Management Office (DMMO) permit shall be obtained. The design documents shall incorporate the necessary shoreline improvements required for each specific area (e.g., including, but not limited to, rock buttressing, pile replacement, backfilling, riprap, or installation of natural-looking shoreline protection using fill and ACB mats) such that remediation (removal of sediment and any necessary dredging) and structural improvements are performed under the same regulatory approvals and permits.					
Prior to undertaking any shoreline improvement activities that could affect contaminated sediments left in place and covered or capped with a Navy-installed remedial measure, or that would involve pile replacement in such areas, the Agency or its contractor or Project Applicant shall prepare appropriate design documents that: (1) describes how the cover or cap would be inspected to determine whether proposed shoreline improvements would adversely affect the cover or cap; and (2) describes how construction activities would be performed to mitigate environmental risk and to restore the cover or cap. The design documents shall be submitted to USEPA, DTSC, RWQCB, and, if necessary, the Navy and CDPH for approval. A DMMO permit shall be obtained, as applicable.					
Prior to undertaking any shoreline improvements that could encounter contaminated sediments, the Agency or its contractor or Project Applicant shall comply with all requirements incorporated into the design documents, work plans, health and safety plans, dust control plans, and any other document or plan required under the Administrative Order of Consent. This includes all restrictions imposed pursuant to a CERCLA ROD, Petroleum					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Corrective Action Plan, FOSET, including restrictions imposed in deeds, covenants, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans and health and safety plans. Prior to obtaining a grading, excavation, site, building, or other permit from the City that authorizes remedial activities, SFDPH shall confirm that the work proposed complies with the applicable plans required by the Administrative Order of Consent. This measure shall be implemented through additions to Article 31 or through an equivalent process established by the City or Agency as explained in MM HZ-1b.					
MM HZ-12 Compliance with Administrative Order on Consent at Early Transferred Parcels. (Applies only at HPS Phase II.) Prior to undertaking any remediation activities at HPS Phase II on property that the Navy has transferred to the Agency as part of an early-transfer, the Agency or its contractor or Project Applicant shall comply with all requirements incorporated into remedial design documents, work plans, health and safety plans, dust control plans, community involvement plans, and any other document or plan required under the Administrative Order of Consent. This includes all notices, restrictions, and requirements imposed pursuant to a CERCLA ROD, Petroleum Corrective Action Plan, FOSET, including restrictions imposed in deeds, covenants, and requirements set forth in Land Use Control Remedial Design Documents, Risk Management Plans, community involvement plans, and health and safety plans. Prior to obtaining a grading, excavation, site, building, or other permit from the City that authorizes remedial activities, SFDPH shall confirm that the work proposed complies with the applicable plans	Project Applicant/ SFRA	Prior to obtaining a grading, excavation, site, building, or other permit from the City that authorizes remedial activities	SFRA/DPH	SFRA/DPH	DPH to determine compliance with Administrative Order on Consent.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
required by the Administrative Order on Consent. This measure shall be implemented through a requirement in the potential additions to Article 31 imposing requirements to parcels other than Parcel A or through an equivalent process established by the City or Agency.					
MM HZ-15 Asbestos Dust Mitigation Plans and Dust Control Plans. Prior to obtaining a grading, excavation, site, building or other permit from the City that includes soil disturbance activities, the Project Applicant shall obtain approval of an Asbestos Dust Mitigation Plan (ADMP) from BAAQMD for areas over 1 acre that potentially contain naturally occurring asbestos and approval of a Dust Control Plan (DCP) from SFDPH for all areas at HPS Phase II and for areas over 0.5 acre at Candlestick Point. Compliance with the ADMP and DCP shall be required as a condition of the permit. The ADMP shall be submitted to and approved by the BAAQMD prior to the beginning of construction, and the Project Applicant must ensure the implementation of all specified dust control measures throughout the construction Project. The ADMP shall require compliance with the following specific control measures to the extent deemed necessary by the BAAQMD to meet its standard: ■ For construction activities disturbing less than one acre of rock containing naturally occurring asbestos, the following specific dust control measures must be implemented in accordance with the asbestos ATCM before construction begins and each measure must be maintained throughout the duration of the construction Project:	Project Applicant	Prior to obtaining a grading, excavation, site, building or other permit from the City that includes soil disturbance activities. Ongoing throughout construction activity	BAAQMD/DPH	BAAQMD/DPH	BAAQMD and DPH to approve site specific DCP and ADMP and to monitor compliance throughout construction activity

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Limit construction vehicle speed at the work site to 15 miles per hour					
> Sufficiently wet all ground surfaces prior to disturbance to prevent visible dust emissions from crossing the property line					
> Keep all graded and excavated areas around soil improvement operations, visibly dry unpaved roads, parking and staging areas wetted at least three times per shift daily with reclaimed water during construction to prevent visible dust emissions from crossing the property line. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour					
> Adequately wet all storage piles, treat with chemical dust suppressants, or cover piles when material is not being added to or removed from the pile					
> Wash down all equipment before moving from the property onto a paved public road					
> Clean all visible track out from the paved public road by street sweeping or a HEPA filter equipped vacuum device within 24 hours					
■ For construction activities disturbing greater than one acre of rock containing naturally occurring asbestos, construction contractors are required to prepare an ADMP specifying measures that will be taken to ensure that no visible dust crosses the property boundary during construction. The plan must specify the following measures, to the extent deemed necessary by the BAAQMD to meet its standard:					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Prevent and control visible track out from the property onto adjacent paved roads. Sweep with reclaimed water at the end of each day if visible soil material is carried out from property > Ensure adequate wetting or covering of active storage piles > Hydroseed or apply non-toxic soil stabilizers to disturbed surface areas and storage piles greater than ten cubic yards or 500 square feet of excavated materials, backfill material, import material, gravel, sand, road base, and soil that will remain inactive for seven days or more. > Control traffic on on-site unpaved roads, parking lots, and staging areas—including a maximum vehicle speed of 15 miles per hour or less > Control earth moving activities > Provide as much water as necessary to control dust (without creating run-off) in any area of land clearing, earth movement, excavation, drillings, and other dust-generating activity > Control dust emissions from off-site transport of naturally occurring asbestos containing materials > Stabilize disturbed areas following construction If required by the BAAQMD, air monitoring shall be implemented to monitor for off-site migration of asbestos dust during construction activities, and appropriate protocols shall be established and implemented for notification of nearby schools, property owners, and residents when monitoring					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
results indicate asbestos levels that have exceeded the standards set forth in the plan. The DCP shall be submitted to and approved by the SFDPH prior to the beginning of construction, and the site operator must ensure the implementation of all specified dust control measures throughout the construction Project. The DCP shall require compliance with the following specific mitigation measures to the extent deemed necessary by the SFDPH to achieve no visible dust at the property boundary: ■ Submission of a map to the Director of Health showing all sensitive receptors within 1,000 feet of the site. ■ Keep all graded and excavated areas, areas around soil improvement operations, visibly dry unpaved roads, parking and staging areas wetted at least three times per shift daily with reclaimed water during construction to prevent visible dust emissions from crossing the property line. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour ■ Analysis of wind direction and placement of upwind and downwind particulate dust monitors. ■ Record keeping for particulate monitoring results. ■ Requirements for shutdown conditions based on wind, dust migration, or if dust is contained within the property boundary but not controlled after a specified number of minutes. ■ Establishing a hotline for surrounding community members who may be potentially affected by Project-related dust. Contact person shall respond and take corrective					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
action within 48 hours. Post publicly visible signs around the site with the hotline number as well as the phone number of the BAAQMD and make sure the numbers are given to adjacent residents, schools, and businesses. ■ Limiting the area subject to construction activities at any one time. ■ Installing dust curtains and windbreaks on windward and downwind sides of the property lines, as necessary. Windbreaks on windward side should have no more than 50% air porosity. ■ Limiting the amount of soil in trucks hauling soil around the job site to the size of the truck bed and securing with a tarpaulin or ensuring the soil contains adequate moisture to minimize or prevent dust generation during transportation. ■ Enforcing a 15 mph speed limit for vehicles entering and exiting construction areas. ■ Sweeping affected streets with water sweepers at the end of the day. ■ Hiring an independent third party to conduct inspections for visible dust and keeping records of those inspections. ■ Minimizing the amount of excavated material or waste materials stored at the site. ■ Prevent visible track out from the property onto adjacent paved roads. Sweep with reclaimed water at the end of each day if visible soil material is carried out from property For all areas, this measure shall be implemented through Article 22B (areas over one half acre) or for HPS Phase II through a requirement in the potential additions to Article 31 imposing requirements to parcels other than Parcel A or through an equivalent process established by the City or Agency.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.L (GEOLOGY AND SOILS)					
MM GE-2a Mitigation to Minimize Dewatering Impacts during Construction. Prior to the issuance of any permit for a construction activity that would involve dewatering that could affect structures on adjacent or nearby properties, the Applicant shall, in compliance with Section 1803.1 of the *San Francisco Building Code* (SFBC), include in the permit application methods and techniques to ensure that dewatering would not lower the water table such that unacceptable settlement (as determined by a California Certified Engineering Geologist [CEG] or California Registered Geotechnical Engineer [GE]) at adjacent or nearby properties would occur. Such methods and technologies shall be based on the specific conditions at the construction site and could include, but are not necessarily limited to, the following: ■ Excavating below the groundwater table in confined areas with steel sheet piling driven below the base elevation of the proposed excavation, installation of bracing to support the excavation walls as required and, if necessary, underpinning the foundations of adjacent structures. Subsequently, the excavation would be carried out and seepage that enters the dammed area would be pumped out. ■ Perform dewatering using methods such as wellpoint systems, drainage ditches, and sump pumps.	Project Applicant	Prior to the issuance of any permit for a construction activity that would involve dewatering that could affect structures on adjacent or nearby properties	DBI	DBI	Approval of permit applications
The excavation or dewatering methods shall be monitored to detect ground settlement and to monitor individual dewatering activities in the vicinity of an excavation. Monitoring results shall be submitted to the San Francisco Department of	Project Applicant	During excavation and dewatering activities	DBI	DBI	Approval of corrective measures. Ongoing throughout construction activity

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Building Inspection (DBI). In the event of unacceptable ground movement, as determined by DBI inspections and/or the review of monitoring results, all excavation work shall cease and corrective measures (including, for example, different dewatering methods and/or ground stabilization methods) shall be determined by the Project CEG or GE and reviewed and approved by DBI. No construction permit involving dewatering would be issued until the Project CEG or GE and DBI have approved dewatering and/or ground stabilization methods. The Project CEG or GE shall implement the corrective measures and continue monitoring activities.					
MM GE-3 Mitigation to Minimize Rock Fragmentation Impacts during Construction. Prior to the issuance of any permit for a construction activity that would involve controlled rock fragmentation that could cause settlement or lateral movement of structures on adjacent or nearby properties, the Applicant shall, in compliance with Section 1803.1 of the *San Francisco Building Code* (SFBC), include in the permit application methods and techniques to ensure that controlled rock fragmentation would not cause unacceptable vibration and/or settlement or lateral movement of structures at adjacent or nearby properties. Such methods and technologies shall be based on the specific conditions at the construction site such as, but not limited to, the following: ■ Pre-excavation surveying of potentially affected structures. ■ Underpinning of foundations of potentially affected structures, as necessary.	Project Applicant	Prior to the issuance of any permit for a construction activity that would involve controlled rock fragmentation	DBI	DBI	Approval of permit applications

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
The excavation plan shall include a monitoring program to detect ground settlement or lateral movement of structures in the vicinity of an excavation. Monitoring results shall be submitted to DBI. In the event of unacceptable ground movement, as determined by DBI inspections, all excavation work shall cease and corrective measures shall be implemented. The controlled rock fragmentation program and ground stabilization measures shall be reevaluated and approved by the DBI.		During controlled rock fragmentation activities	DBI	DBI	Approval of corrective measures. Ongoing throughout controlled rock fragmentation activities
MM GE-4a.1 Site-Specific Geotechnical Investigation with Seismic Analyses. Prior to the issuance of any building permits for the Project site: ■ The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC), the Seismic Hazards Mapping Act, and requirements contained in CGS Special Publication 117A "Guidelines for Evaluating and Mitigating Seismic Hazards in California." In addition, all engineering practices and analyses of peak ground accelerations and structural design shall be consistent with SFBC standards to ensure that structures can withstand expected ground accelerations. The CEG or GE shall determine and DBI shall approve design requirements for foundations and all other improvements associated with the permit application.	Project Applicant	Prior to issuance of construction site permit	DBI	DBI	Approval of design requirements for foundations and all other improvements associated with the permit application. Ongoing throughout construction activity

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific geotechnical investigations and the site-specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods. ■ All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations. ■ The Project CEG or GE shall be responsible for ensuring compliance with these requirements.	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI	Approval of site-specific geotechnical investigations. Ongoing throughout construction activity.
MM GE-4a.2 Seismic Design Compliance Documentation. Prior to the issuance of building permits for the replacement of the Alice Griffith Public Housing site, the Applicant shall submit any and all seismic design compliance documentation to the HUD, as required by that agency. The Project Developer shall confirm, by copy of all documents submitted, including transmittal, compliance with this requirement to DBI. The Project California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE) shall be responsible for verifying Project compliance with this requirement.	Project Applicant	Prior to the issuance of building permits for the replacement of the Alice Griffith Public Housing site	DBI/HUD	DBI	Approval of site-specific geotechnical investigations for the replacement of the Alice Griffith Public Housing site.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM GE-4a.3 Site-specific Seismic Analyses to Ensure Safety of Bridge Design. Prior to the issuance of any building permits for the Project site, the California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE) for the Project shall confirm that the design-level geotechnical investigation for the Yosemite Slough bridge is based on Caltrans specifications (*Bridge Design Specifications*, Section 20 of *Bridge Memos to Designers*, *Seismic Design Criteria* as previously described) and meets the San Francisco Department of Public Works Bureau of Engineering (BOE) requirements. The Project CEG or GE and California Registered Structural Engineer (SE) shall approve bridge design. No building permits shall be issued until the CEG or GE and SE verify that the Project's bridge design complies with all Caltrans specifications and BOE requirements.	Project Applicant	Prior to the issuance of building permits for the Yosemite Slough bridge	DPW	DPW	Approval of site-specific geotechnical investigations for the Yosemite Slough bridge
MM GE-5a Site-Specific Geotechnical Investigation with Analyses of Liquefaction, Lateral Spreading and/or Settlement. Prior to issuance of building permits for the Project site: ■ The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC), the Seismic Hazards Mapping Act, and requirements contained in CGS Special Publication 117A "Guidelines for Evaluating and Mitigating Seismic Hazards in California." In addition, all engineering practices, and analyses of structural design	Project Applicant/ Project Geologist	Prior to issuance of building permits for the Project site	DBI	DBI	Approval of site-specific geotechnical investigations

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
shall be consistent with SFBC standards to ensure seismic stability, including reduction of potential liquefaction hazards.					
■ DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific geotechnical investigations and the site-specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods.	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations
■ All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations.					
■ The site-specific Project plans shall incorporate the mitigation measures contained in the approved site-specific geotechnical reports to reduce liquefaction hazards. The engineering design techniques to reduce liquefaction hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval, including, but not necessarily limited to: <u>Structural Measures</u> > Construction of deep foundations, which transfer loads to competent strata beneath the zone susceptible to					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
liquefaction, for critical utilities and shallow foundations > Structural mat foundations to distribute concentrated load to prevent damage to structures <u>Ground Improvement Measures</u> > Additional over-excavation and replacement of unstable soil with engineering-compacted fill > Dynamic compaction, such as Deep Dynamic Compaction (DDC) or Rapid Impact Compaction (RIC), to densify loose soils below the groundwater table > Vibro-compaction, sometimes referred to as vibro-floatation, to densify loose soils below the groundwater table > Stone columns to provide pore pressure dissipation pathways for soil, compact loose soil between columns, and provide additional bearing support beneath foundations > Soil-cement columns to densify loose soils and provide additional bearing support beneath foundations > Deep displacement grout columns to densify loose soil and provide additional bearing support beneath foundations > The Project CEG or GE shall be responsible for ensuring compliance with these requirements.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM GE-6a Site-Specific Geotechnical Investigation with Landslide Risk Analyses. Prior to issuance of building permits for the Project site:	Project Applicant	Prior to issuance of building permits for the Project site	DBI	DBI	Approval of site-specific geotechnical investigations
■ The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC), the Seismic Hazards Mapping Act, and requirements contained in CGS Special Publication 117A "Guidelines for Evaluating and Mitigating Seismic Hazards in California." In addition, all engineering practices, and analyses of structural design shall be consistent with SFBC standards to ensure seismic stability, including reduction of potential landslide hazards.					
■ DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific geotechnical investigations and the site-specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods.	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations. ■ The site-specific Project plans shall incorporate the mitigation measures contained in the approved site-specific geotechnical reports to reduce landslide hazards. The engineering design techniques to reduce landslide hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval. The design-level geologic and geotechnical studies shall identify the presence of landslides and potentially unstable slopes and shall identify means to avoid the hazard or support the design of engineering procedures to stabilize the slopes, as required by Chapter 18 (Soils and Foundations) of the SFBC, as well as the procedures outlined in CGS Special Publication 117A. SFBC Sections 1803 through 1812 contain the formulae, tables, and graphs by which the Project engineer shall develop the Project's slope-stability specifications, including the appropriate foundation designs for structures on slopes and which would be used by DBI to verify the applicability of the specifications. If the presence of unstable slopes is identified, appropriate support and protection procedures shall be designed and implemented to maintain the stability of slopes adjacent to newly graded or re-graded access roads, work areas, and structures during and after construction, and to minimize potential for damage to structures and facilities at the Project site. These					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
stabilization procedures, including, but not necessarily limited to, the following: > Retaining walls, rock buttresses, screw anchors, or concrete piers > Slope drainage or removal of unstable materials > Rockfall catch fences, rockfall mesh netting, or deflection walls > Setbacks at the toe of slopes > Avoidance of highly unstable areas ■ The Project CEG or GE shall be responsible for ensuring compliance with these requirements.					
MM GE-10a Site-Specific Geotechnical Investigation with Expansive Soils Analyses. Prior to issuance of building permits for the Project site: ■ The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC). In addition, all engineering practices, and analyses of structural design shall be consistent with SFBC standards to ensure soils stability, including reduction of potential soil expansion hazards.	Project Applicant	Prior to issuance of building permits for the Project site	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations
■ DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
geotechnical investigations and the site-specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods. ■ All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations. ■ The site-specific Project plans shall incorporate the mitigation measures contained in the approved site-specific geotechnical reports to reduce expansive soils hazards. The engineering design techniques to reduce expansive soils hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval. The design-level geologic and geotechnical studies shall identify the presence of expansive soils and potentially unstable soils and shall identify means to avoid the hazard or support the design of engineering procedures to stabilize the soils, as required by Chapter 18 (Soils and Foundations) of the SFBC. SFBC Sections 1803 through 1812 contain the formulae, tables, and graphs by which the Project engineer shall develop the Project's soil-stability specifications, including the appropriate foundation designs for structures on expansive soils and which would be used by DBI to verify the applicability of the					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
specifications. If the presence of expansive soils is identified, appropriate support and protection procedures shall be designed and implemented to maintain the stability of soils adjacent to newly graded or re-graded access roads, work areas, and structures during and after construction, and to minimize potential for damage to structures and facilities at the Project site. ■ The Project CEG or GE shall be responsible for ensuring compliance with these requirements.					
MM GE-11a Site-Specific Geotechnical Investigation with Corrosive Soils Analyses. Prior to issuance of building permits for the Project site: ■ The Applicant shall submit to the San Francisco Department of Building Inspection (DBI) for review and approval a site-specific, design-level geotechnical investigation prepared by a California Certified Engineering Geologist (CEG) or California Registered Geotechnical Engineer (GE), as well as project plans prepared in compliance with the requirements of the San Francisco Building Code (SFBC). In addition, all engineering practices, and analyses of structural design shall be consistent with SFBC standards to ensure soils stability, including reduction of potential hazards from corrosive soils.	Project Applicant	Prior to issuance of building permits for the Project site	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations
■ DBI shall employ a third-party CEG and California Registered Professional Engineer (Civil) (PE) to form a Geotechnical Peer Review Committee (GPRC), consisting of DBI and these third-party reviewers. The GPRC shall review the site-specific geotechnical investigations and the site-	DBI	Prior to approval of site-specific geotechnical investigations	DBI	DBI/GPRC	Approval of site-specific geotechnical investigations

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
specific structural, foundation, infrastructure, and other relevant plans to ensure that these plans incorporate all necessary geotechnical mitigation measures. No permits shall be issued by DBI until the GPRC has approved the geotechnical investigation and the Project plans, including the factual determinations and the proposed engineering designs and construction methods. ■ All Project structural designs shall incorporate and conform to the requirements in the site-specific geotechnical investigations. ■ The site-specific Project plans shall incorporate the mitigation measures contained in the approved site-specific geotechnical reports to reduce potential hazards from corrosive soils. The engineering design techniques to reduce corrosive soils hazards shall include proven methods generally accepted by California Certified Engineering Geologists, subject to DBI and GPRC review and approval. The design-level geologic and geotechnical studies shall identify the presence of corrosive soils and shall identify means to avoid the hazard, as required by Chapter 18 (Soils and Foundations) of the SFBC. SFBC Sections 1803 through 1812 contain the formulae, tables, and graphs by which the Project engineer shall develop the Project's structural design specifications, including the appropriate foundation designs for structures on corrosive soils and which would be used by DBI to verify the applicability of the specifications. If the presence of corrosive soils is identified, appropriate protection procedures shall be designed and					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
implemented to minimize potential for damage from corrosive soils to structures and facilities at the Project site. ■ The Project CEG or GE shall be responsible for ensuring compliance with these requirements.					
SECTION III.M (HYDROLOGY AND WATER QUALITY)					
MM HY-1a.1 Storm Water Pollution Prevention Plan: Combined Storm Sewer System. In compliance with the Article 4.1 of the Public Works Code and the City's Construction Site Water Pollution Prevention Program, the Project Applicant shall submit a site-specific Storm Water Pollution Prevention Plan (SWPPP) to the SFPUC for approval, prior to initiating construction activities in areas draining to the combined sewer system. The SFPUC requires implementation of appropriate Best Management Practices (BMPs) from the California Stormwater Quality Association Stormwater BMP Handbook- Construction or the Caltrans Construction Site BMPs Manual. In accordance with SFPUC's requirements, the SWPPP shall include: ■ An Erosion and Sediment Control Plan that includes a site map illustrating the BMPs that will be used to minimize on-site erosion and the sediment discharge into the combined sewer system, and a narrative description of those BMPs. Appropriate BMPs for Erosion and Sediment Control Plan may include: > Scheduling—Develop a schedule that includes sequencing of construction activities with the implementation of appropriate BMPs. Perform construction activities and control practices in accordance with the planned schedule. Schedule work to minimize soil-disturbing activities during the rainy season.	Project Applicant	Submit site-specific SWPPP to SFPUC for approval prior to initiating construction activity in any area draining to *combined* sewer system	SFPUC	SFPUC	SWPPP for each site undergoing construction in areas draining to combined sewer system to be approved by SFPUC
		Inspection before and after storm event, and once per 24-hour period during storm event	SFPUC	SFPUC	Quarterly MMRP reports to SFPUC, to include reporting on compliance with this measure, until completion of construction

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Schedule major grading operations for the dry season when practical. Monitor the weather forecast for rainfall and adjust the schedule as appropriate. > Erosion Control BMPs—Preserve existing vegetation where feasible, apply mulch or hydroseed areas with native, non-invasive species, until permanent stabilization is established, and use soil binders, geotextiles and mats, earth dikes and drainage swales, velocity dissipation devices, slope drains, or polyacrylamide to protect soil from erosion. > Wind Erosion BMPs—Apply water or other dust palliatives to prevent dust nuisance; prevent overwatering which can cause erosion. Alternatively, cover small stockpiles or areas that remain inactive for seven or more days. > Sediment Control BMPs—Install silt fences, sediment basins, sediment traps, check dams, fiber rolls, sand or gravel bag barriers, straw bale barriers, approved chemical treatment, and storm drain inlet protection to minimize the discharge of sediment. Employ street sweeping to remove sediment from streets. > Tracking Controls—Stabilize the construction site entrance to prevent tracking of sediment onto public roads by construction vehicles. Stabilize on-site vehicle transportation routes immediately after grading to prevent erosion and control dust. Install a tire wash area to remove sediment from tires and under carriages. ■ Non-Stormwater Management BMPs that may include water conservation practices; dewatering practices that minimize sediment					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
discharges; and BMPs for: paving and grinding activities; identifying illicit connections and illegal dumping; irrigation and other planned or unplanned discharges of potable water; vehicle and equipment cleaning, fueling, and maintenance; concrete curing and finishing; temporary batch plants; implementing shoreline improvements and working over water. Discharges from dewatering activities shall comply with the SFPUC's Batch Wastewater Discharge Requirements that regulate influent concentrations for various constituents.					
■ Waste Management BMPs shall be implemented for material delivery, use, and storage; stockpile management; spill prevention and control; solid and liquid waste management; hazardous waste management; contaminated soil management; concrete waste management; and septic/sanitary waste management.					
■ SWPPP Training Requirements—Construction personnel will receive training on the SWPPP and BMP implementation.					
■ Site Inspections and BMP Maintenance—An inspector identified in the SWPPP will inspect the site on a regular basis, before and after a storm event, and once each 24-hour period during extended storms to identify BMP effectiveness and implement corrective actions if required. The SWPPP shall include checklists that document when the inspections occurred, the results of the inspection, required corrective measures, and when corrective measures were implemented. Required BMP maintenance related to a storm event shall be completed within 48 hours of the storm event.	SFPUC	Before and after a storm event, and once each 24-hour period during extended storms	SFPUC	SFPUC	Ongoing throughout construction activity

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HY-1a.2 Stormwater Pollution Prevention Plan: Separate Storm Sewer System. Consistent with the requirements of the SWRCB General Permit for Storm Water Discharges Associated with Construction and Land Disturbing Activities (Construction General Permit), the Project Applicant shall undertake the proposed Project in accordance with a project-specific Storm Water Pollution Prevention Plan (SWPPP) prepared by Qualified SWPPP Developer, who shall consult with California State Parks on those elements of the SWPPP that cover the Candlestick Park State Recreation Area, including selection of best management practices and other SWPPP improvements. The SFRWQCB, the primary agency responsible for protecting water quality within the project area, is responsible for reviewing and ensuring compliance with the SWPPP. This review is based on the Construction General Permit issued by the SWRCB.	Project Applicant	Submit site-specific SWPPP to SFRWQCB for approval prior to initiating construction activity in any area draining to *separate* storm sewer system (see also MM HY-1a.3 for more specific requirements related to groundwater dewatering)	SFRWQCB	SFRWQCB; SFRA	SWPPP for each site undergoing construction in areas draining to separate storm sewer system to be approved by SFRWQCB
		Construction monitoring and reporting ongoing throughout construction period			Quarterly reporting to SFRWQCB and SFRA, to include reporting on compliance with this measure, until completion of construction
The SWPPP shall include, as applicable, all Best Management Practices (BMPs) required in Attachment C of the Construction General Permit for Risk Level 1 dischargers, Attachment D for Risk Level 2 dischargers, or Attachment E for Risk Level 3 dischargers. In addition, recommended BMPs, subject to review and approval by the SFRWQCB, include the measures listed below. However, the measures themselves may be altered, supplemented, or deleted during the SFRWQCB's review process, since the SFRWQCB has final authority over the terms of the SWPPP. ■ Scheduling: > To reduce the potential for erosion and sediment discharge, schedule construction to minimize ground disturbance during the rainy season.		Post construction BMPs monitoring and maintenance in accordance with SWPPP			Annual post-construction period reporting to SFRWQCB and SFRA, to include reporting on compliance with this measure

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Schedule major grading operations during the dry season when practical, and allow enough time before rainfall begins to stabilize the soil with vegetation or to install sediment-trapping devices.					
> Sequence construction activities to minimize the amount of time that soils remain disturbed.					
> Stabilize all disturbed soils as soon as possible following the completion of ground disturbing work.					
> Install erosion and sediment control BMPs prior to the start of any ground-disturbing activities.					
■ Erosion and Sedimentation:					
> Preserve existing vegetation in areas where no construction activity is planned or where construction activity will occur at a later date.					
> Stabilize and re-vegetate disturbed areas as soon as possible after construction with planting, seeding, and/or mulch (e.g., straw or hay, erosion control blankets, hydromulch, or other similar material) except in actively cultivated areas. Planting and seeding shall use native, non-invasive species.					
> Install silt fences, coir rolls, and other suitable measures around the perimeter of the areas affected by construction and staging areas and around riparian buffers, storm drains, temporary stockpiles, spoil areas, stream channels, swales, down-slope of all exposed soil areas, and in other locations determined necessary to prevent off-site sedimentation.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Install temporary slope breakers during the rainy season on slopes greater than 5 percent where the base of the slope is less than 50 feet from a water body, wetland, or road crossing at spacing intervals required by the SFRWQCB.					
> Use filter fabric or other appropriate measures to prevent sediment from entering storm drain inlets.					
> Detain and treat stormwater using sedimentation basins, sediment traps, baker tanks, or other measures to ensure that discharges to receiving waters meet applicable water quality objectives.					
> Install check dams, where applicable, to reduce flow velocities. Check dams reduce erosion and allow sediment to settle out of runoff.					
> Install outlet protection/energy dissipation, where applicable, to prevent scour of the soil caused by concentrated high velocity flows.					
> Implement control measures such as spraying water or other dust palliatives to alleviate nuisance caused by dust.					
■ Groundwater/Dewatering:					
> Prepare a dewatering plan prior to excavation specifying methods of water collection, transport, treatment, and discharge of all water produced by construction site dewatering.					
> Impound water produced by dewatering in sediment retention basins or other holding facilities to settle the solids and provide other treatment as necessary prior to discharge to receiving waters. Locate sedimentation basins and other					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
retention and treatment facilities away from waterways to prevent sediment-laden water from reaching streams. > Control discharges of water produced by dewatering to prevent erosion. > If contaminated groundwater is encountered, contact the SFRWQCB for appropriate disposal options. Depending on the constituents of concern, such discharges may be disallowed altogether, or require regulation under a separate general or individual permit that would impose appropriate treatment requirements prior to discharge to the stormwater drainage system. ■ Tracking Controls: > Grade and stabilize construction site entrances and exits to prevent runoff from the site and to prevent erosion. > Install a tire washing facility at the site access to allow for tire washing when vehicles exit the site. > Remove any soil or sediment tracked off paved roads during construction by street sweeping. ■ Non-stormwater Controls: > Place drip pans under construction vehicles and all parked equipment. > Check construction equipment for leaks regularly. > Wash construction equipment in a designated enclosed area regularly. > Contain vehicle and equipment wash water for percolation or evaporative drying away from storm drain inlets.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Refuel vehicles and equipment away from receiving waters and storm drain inlets, contain the area to prevent run-on and run-off, and promptly cleanup spills.					
> Cover all storm drain inlets when paving or applying seals or similar materials to prevent the discharge of these materials.					
■ Waste Management and Hazardous Materials Pollution Control:					
> Remove trash and construction debris from the project area daily.					
> Locate sanitary facilities a minimum of 300 feet from receiving waters. Maintain sanitary facilities regularly.					
> Store all hazardous materials in an area protected from rainfall and stormwater run-on and prevent the off-site discharge of hazardous materials.					
> Minimize the potential for contamination of receiving waters by maintaining spill containment and cleanup equipment on site, and by properly labeling and disposing of hazardous wastes.					
> Locate waste collection areas close to construction entrances and away from roadways, storm drains, and receiving waters.					
> Inspect dumpsters and other waste and debris containers regularly for leaks and remove and properly dispose of any hazardous materials and liquid wastes placed in these containers.					
> Train construction personnel in proper material delivery, handling, storage, cleanup, and disposal procedures.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Implement construction materials management BMPs for:					
> Road paving, surfacing and asphalt removal activities.					
> Handling and disposal of concrete and cement.					
■ BMP Inspection, Maintenance, and Repair:					
> Inspect all BMPs on a regular basis to confirm proper installation and function. Inspect BMPs daily during storms.					
> Immediately repair or replace BMPs that have failed. Provide sufficient devices and materials (e.g., silt fence, coir rolls, erosion blankets, etc.) throughout project construction to enable immediate corrective action for failed BMPs.					
■ Monitoring and Reporting:					
> Provide the required documentation for SWPPP inspections, maintenance, and repair requirements. Personnel that will perform monitoring and inspection activities shall be identified in the SWPPP.					
> Maintain written records of inspections, spills, BMP-related maintenance activities, corrective actions, and visual observations of off-site discharges of sediment or other pollutants, as required by the SFRWQCB.					
> Monitor the water quality of discharges from the site to assess the effectiveness of control measures.					
■ Implement Shoreline Improvements and work over water BMPs to minimize the potential transport of sediment, debris, and construction materials to the Lower Bay					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
during construction of shoreline improvements. ■ Post-construction BMPs: > Re-vegetate all temporarily disturbed areas as required after construction activities are completed. Re-vegetation shall use native, non-invasive species. > Remove any remaining construction debris and trash from the project site and area upon project completion. > Phase the removal of temporary BMPs as necessary to ensure stabilization of the site. > Maintain post-construction site conditions to avoid formation of unintended drainage channels, erosion, or areas of sedimentation. > Correct post-construction site conditions as necessary to comply with the SWPPP and any other pertinent SFRWQCB requirements. ■ Train construction site personnel on components of the SWPPP and BMP implementation. Train personnel that will perform inspection and monitoring activities.					
MM HY-1a.3 Groundwater Dewatering Plan. Prior to commencement of construction activities and to minimize potential impacts to receiving water quality during the construction period, the Project Applicant shall through the proper implementation of this dewatering plan, show compliance with SFRWQCB/NPDES requirements, whichever are applicable. The Dewatering Plan shall specify how the water would be collected, contained, treated, monitored, and/or discharged to the vicinity drainage system	Project Applicant	Groundwater Dewatering Plan to be a specific component of SWPPP, to be submitted to SFRWQCB for approval prior to initiating construction activity in any area draining to *separate* sewer system	SFRWQCB	SFRWQCB; SFRA	SWPPP for each site undergoing construction in areas draining to separate storm sewer system to be approved by SFRWQCB Quarterly reporting to SFRWQCB and SFRA, to include reporting on compliance with this measure, until completion of construction

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
or Lower Bay. Subject to the review and approval of the SFRWQCB, the Dewatering Plan shall include, at a minimum: ■ Identification of methods for collecting and handling water on site for treatment prior to discharge, including locations and capacity of settling basins, infiltration basins (where not restricted by site conditions), treatment ponds, and/or holding tanks ■ Identification of methods for treating water on site prior to discharge, such as filtration, coagulation, sedimentation settlement areas, oil skimmers, pH adjustment, and other BMPs ■ Procedures and methods for maintaining and monitoring dewatering operations to ensure that no breach in the process occurs that could result in an exceedance of applicable water quality objectives ■ Identification of discharge locations and inclusion of details on how the discharge would be conducted to minimize erosion and scour ■ Identification of maximum discharge rates to prevent exceedance of storm drain system capacities ■ Additional requirements of the applicable General Permit or NPDES Permit/WDR (including effluent and discharge limitations and reporting and monitoring requirements, as applicable) shall be incorporated into the Dewatering Plan Any exceedance of established narrative or numeric water quality objectives shall be reported to the SFRWQCB and corrective action taken as required by the SFRWQCB and the Dewatering Plan. Corrective action may include increased					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
residence time in treatment features (e.g., longer holding time in settling basins) and/or incorporation of additional treatment measures (e.g., addition of sand filtration prior to discharge).					
MM HY-6a.1 Regulatory Stormwater Requirements. The Project Applicant shall comply with requirements of the Municipal Stormwater General Permit and associated City SWMP, appropriate performance standards established in the Green Building Ordinance, and performance standards established by the SFPUC in the San Francisco Management Requirements and Stormwater Design Guidelines (SMR). The SMR includes regulatory requirements for post-construction stormwater management controls for new and redevelopment projects and helps design teams implement these stormwater controls. The Project Applicant shall comply with requirements of the SMR. Per the SMR, the Project Applicant shall submit a Stormwater Control Plan (SCP) to the SFPUC, as part of the development application submitted for approval. The SCP shall demonstrate how the following measures would be incorporated into the Project: ■ Low impact development site design principles (e.g., preserving natural drainage channels, treating stormwater runoff at its source rather than in downstream centralized controls) ■ Source control BMPs in the form of design standards and structural features for the following areas, as applicable: > Commercial areas > Restaurants > Retail gasoline outlets > Automotive repair shops	Project Applicant	Stormwater Control Plan (SCP) and Stormwater Drainage Master Plan (SDMP) to be submitted to SFPUC as part of development application.	SFPUC; SFRA	SFPUC; SFRA	Approval by SFPUC of SCP and SDMP

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
> Parking lots ■ Source control BMPs for landscaped areas shall be documented in the form of a Landscape Management Plan that relies on Integrated Pest Management and also includes pesticide and fertilizer application guidelines. ■ Treatment control measures (e.g., bioretention, porous pavement, vegetated swales) targeting the Project-specific COCs: sediment, pathogens, metals, nutrients (nitrogen and phosphorus compounds), oxygen-demanding substances, organic compounds (e.g., PCBs, pesticides), oil and grease, and trash and debris. The SCP shall demonstrate that the Project has the land area available to support the proposed BMP facilities sized per the required water quality design storm. Volume-based BMPs shall be sized to treat runoff resulting from 0.75 inch of rainfall, and flow-based BMPs shall be sized to treat runoff resulting from a rainfall intensity of 0.24 inch per hour. Treatment trains shall be used where feasible. Additional requirements: ■ The SCP shall include an Operations and Maintenance Plan that demonstrates how the treatment control BMPs would be maintained in the long term, what entities would be responsible for BMP maintenance within the public and private rights-of-way, funding mechanisms, and what mechanisms would be used to formalize maintenance and access agreements.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ The Project Applicant shall also prepare a Stormwater Drainage Master Plan (SDMP) for approval by the SFPUC. The SDMP shall include plans for the storm drain infrastructure and plans for stormwater management controls (e.g., vegetated swales, dry wells). The storm drain infrastructure shall illustrate conveyance of the 5-year storm event in a separate storm drain piped system, and conveyance of the 100-year storm event in the street and drainage channel rights-of-way.	Project Applicant	Prior to approval of site specific development plans	SFPUC/DPW	SFPUC/DPW	Approval of the SDMP
MM HY-6a.2 Recycled Water Irrigation Requirements. Prior to application of recycled water at the Project site for landscape irrigation, the Project Applicant shall demonstrate compliance with all terms and conditions of the SFPUC's Operations and Maintenance Plan and the Recycled Water General Permit conditions for the use of recycled water. As required by the Recycled Water General Permit, the Project Applicant shall submit an Operations and Maintenance Plan and an Irrigation Management Plan to the SWRCB. The Project Applicant shall also submit the Operations and Maintenance Plan and the Irrigation Management Plan to the SFPUC. Prior to on-site application of recycled water, the Project Applicant shall obtain written confirmation from the SFPUC that the Project Operations and Maintenance Plan and the Irrigation Management Plan is in compliance with the SFPUC's Operations and Maintenance Plan, and other SFPUC requirements for the use of recycled water. All recycled water provided to Project Applicant, pursuant to the Recycled Water General Permit, shall be treated in and managed in conformance with all applicable provisions of the Recycled	Project Applicant	Prior to application of recycled water at project site for landscaping irrigation, Applicant to submit Operations and Management Plan, and Irrigation Management Plan to both SWRCB and SFPUC	SWRCB/SFPUC	SWRCB/SFPUC	Approval of Operations and Management Plan and Irrigation Management Plan by SFPUC
		Monthly monitoring of recycled water applied	SWRCB/SFPUC/ SFRA	SWRCB/SFPUC/ SFRA	Ongoing reporting to SFPUC and SFRA

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Water Policy and shall meet Title 22 Requirements for disinfected tertiary recycled water as described in CCR Title 22, sections 60301.230 and 60301.320.					
In accordance with the Recycled Water General Permit, the Project Applicant's Operations and Maintenance Plan shall describe methods and procedures for complying with recycled water regulations, and the maintenance of equipment and emergency backup systems to maintain compliance with the General Permit conditions and California Department of Public Health (CDPH) requirements. The Project Applicant shall ensure that all users of recycled water comply with the Operations and Maintenance Plan by developing educational materials (e.g., pamphlet or brochure) that convey key operational elements (e.g., prevention of cross-connections) of the plan.					
In accordance with the Recycled Water General Permit, the Project Applicant's Irrigation Management Plan shall include measures to ensure the use of recycled water occurs at an agronomic rate while employing practices to minimize application of salinity constituents. The Irrigation Management Plan shall account for soil characteristics, recycled water characteristics, plant species irrigation requirements, climatic conditions, supplemental nutrient additions to support plant growth, and management of impoundments used to store or collect recycled water. The Irrigation Management Plan shall describe any conditions of approval required by the City, CDPH, or SWRCB.					
The Project Applicant shall implement the following landscape irrigation BMPs in accordance with Recycled Water General Permit Requirements:					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ The Operations and Maintenance Plan shall include leak detection methods and correction within 72 hours of identifying a leak or prior to the release of 1,000 gallons. ■ Recycled water shall not be applied during precipitation events. ■ Impoundment areas shall be managed such that no discharge occurs from storms smaller than the 25-year, 24-hour event. The Project Applicant shall also implement BMPs for general operational controls, protection of workers and the public (e.g., education about not drinking recycled water), and efficient irrigation (e.g., dedicated landscape water meters for monitoring water usage and leak detection). The Project Applicant shall conduct monthly monitoring to quantify the volume of recycled water applied, the locations and total area of application, and the mass of nitrogen and salinity constituents applied.					
MM HY-6b.1 Limitations on Stormwater Infiltration. Infiltration BMPs on HPS Phase II shall be prohibited. Alternative BMPs for stormwater quality control, reuse, and treatment shall be used. For instance, biofiltration BMPs can be implemented with an impervious liner and subdrain system to treat stormwater runoff while preventing infiltration. Overland flow (greater than the five-year and up to the 100-year storm) shall be conveyed in lined channels or other conveyances that will not result in infiltration.	Project Applicant	With respect to Hunters Point Shipyard Phase II, the SCP and SDMP referred to in HY-6a.1 will avoid infiltration BMPs	SFPUC	SFPUC	Approval by SFPUC of SCP and SDMP
MM HY-6b.2 Industrial General Permit. The Facility Operator shall apply for an Industrial General Permit prior to operational activities for facilities requiring coverage under the Industrial General Permit, which is determined based on the facility's SIC. The Facility Operator shall comply	Project Applicant/ Site Specific Facility Operator	Prior to facility operation	SWRCB/SFPUC	SWRCB/SFPUC	Approval by SFRWQCB

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
with all provisions in the Industrial General Permit, including implementation of a SWPPP, to effectively control pollutants to the BAT/BCT during the normal course of operations. Primary components and pollution prevention measures that the SWPPP shall address are described below. The Facility Operator shall refer to the California Stormwater Quality Association Stormwater Best Management Practice Handbook – Industrial and Commercial or equivalent for details on BMP implementation. The SFRWQCB is responsible for overseeing Industrial General Permit activities, including SWPPP compliance. The following BMPs shall be incorporated into the SWPPP. <u>Non-Structural BMPs</u> ■ Good Housekeeping: Good housekeeping generally consists of practical procedures to maintain a clean and orderly facility. ■ Preventive Maintenance: Regular inspection and maintenance of structural stormwater controls (catch basins, oil/water separators, etc.) as well as other facility equipment and systems. ■ Spill Response: Spill clean-up procedures and necessary clean-up equipment based upon the quantities and locations of significant materials that may spill or leak. ■ Material Handling and Storage: Procedures to minimize the potential for spills and leaks and to minimize exposure of significant materials to stormwater and authorized non-stormwater discharges. ■ Employee Training: Training of personnel who are responsible for (1) implementing activities identified in the SWPPP, (2) conducting inspections, sampling, and visual					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
observations, and (3) managing stormwater. The SWPPP shall identify periodic dates for such training. Records shall be maintained of all training sessions held. ■ Waste Handling/Recycling: Procedures or processes to handle, store, or dispose of waste materials or recyclable materials. ■ Recordkeeping and Internal Reporting: Procedures to ensure that all records of inspections, spills, maintenance activities, corrective actions, visual observations, etc., are developed, retained, and provided, as necessary, to the appropriate facility personnel. ■ Erosion Control and Site Stabilization: This may include the planting and maintenance of vegetation, diversion of run-on and runoff, placement of sandbags, silt screens, or other sediment control devices, etc. ■ Inspections: This includes, in addition to the preventative maintenance inspections identified above, an inspection schedule of all potential pollutant sources. Tracking and follow-up procedures shall be described to ensure adequate corrective actions are taken and SWPPP revisions are made as needed. ■ Quality Assurance: Procedures to ensure that all elements of the SWPPP and Monitoring Program are adequately conducted. <u>Structural BMPs to be Considered</u> ■ Overhead Coverage: Structures that provide horizontal coverage of materials, chemicals, and pollutant sources from contact with stormwater and authorized non-stormwater discharges.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Retention Ponds: Basins, ponds, surface impoundments, etc. that do not allow stormwater to discharge from the facility. ■ Control Devices: Berms or other devices that channel or route run-on and runoff away from pollutant sources. ■ Secondary Containment Structures: This generally includes containment structures around storage tanks and other areas for the purpose of collecting any leaks or spills. ■ Treatment: This includes inlet controls, infiltration devices, oil/water separators, detention ponds, vegetative swales, etc. that reduce the pollutants in stormwater discharges and authorized non-stormwater discharges. However, because of extensive site constraints, use of infiltration BMPs shall be limited.					
MM HY-6b.3 Clean Marinas California Program. The marina operator shall obtain certification under the Clean Marinas California Program. The Clean Marinas California Program has developed marina BMPs and an inspection and certification process for marinas that meet the program standard for BMP implementation. The marina operator shall implement BMPs that address the following sources of pollution: petroleum containment, topside boat maintenance and cleaning, underwater boat hull cleaning, marina operations, marina debris, boat sewage discharge, solid waste, liquid waste, fish waste, hazardous materials, and stormwater runoff.	Project Applicant	Prior to marina operation	SFRWQCB/SFRA	SFRWQCB/SFRA	Upon certification of the Clean Marinas Program

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HY-12a.1 Finished Grade Elevations Above Base Flood Elevation. The Project site shall be graded such that finished floor elevations are a minimum of 5.5 feet above the Base Flood Elevation (BFE) to accommodate worst-case, future sea level rise projections for the end of the century, thereby elevating all housing and structures above the existing and potential future flood hazard area. If the FIRM for San Francisco is not finalized prior to implementation of the Project, the Project Applicant shall work with the City Surveyor or other applicable City department to revise the City's Interim Floodplain Map, as needed. If the FIRM for San Francisco is finalized prior to implementation of the Project, the Project Applicant shall request that the Office of the City Administrator (Floodplain Manager) request a Letter of Map Revision based on Fill (LOMR-F) from FEMA that places the Project outside SFHA and requires that the FIRM is updated by FEMA to reflect revised regulatory floodplain designations.	Project Applicant	Prior to issuance of construction permits	DPW/DBI	DPW/DBI	Upon revision of the City's interim Floodplain Map OR: Upon issuance of LOMAR-F from FEMA
MM HY-12a.2 Shoreline Improvements for Future Sea-Level Rise. Shoreline and public access improvements shall be designed to allow for future sea level rise above the Base Flood Elevation (BFE) that includes wave run-up (often called Total Water Level [TWL]) along the shoreline. In addition, adequate horizontal setback shall be provided to allow future increases in elevation along the shoreline edge to keep up with higher sea level rise values, should they occur. Design elements shall include providing adequate setbacks to allow for future elevation increases in response to up to 5.5 feet of sea level rise above the TWL, which is projected as the worst-case estimate at the end of the century. Before the first Small Lot Final Map is approved, the Project Applicant must petition the appropriate governing body to form (or annex into if	Project Applicant	Prior to issuance of construction permits for shoreline improvements	SFRA/DPW	SFRA/DPW	Upon approval of development permits

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
appropriate) and administer a special assessment district or other funding mechanism to finance and construct future improvements necessary to ensure that the shoreline protection system, storm drain system, public facilities, and public access improvements will be protected should sea level rise exceed 2 feet. Prior to the sale of the first residential unit within the Project, the legislative body shall have acted upon the petition to include the property within the district boundary. The newly formed district shall also administer a Monitoring and Adaptive Management Plan to monitor sea level and implement and maintain the protective improvements.					
MM HY-13b Floodplain Development Permit. To reduce the impacts of placing structures in a 100-year flood hazard area that could impede or redirect flows, the Project Applicant shall implement that following measures: ■ The Project Applicant shall obtain a Floodplain Development Permit from the Office of the City Administrator in accordance with the City's floodplain management ordinance that includes a hydraulic evaluation to determine whether structures or structural elements would impede or redirect flood flows and mandates minimum design and construction standards. Design and construction methods shall comply with NFIP requirements for placing structures in Zone V. ■ The Floodplain Development Permit shall include a "V-Zone Certification" in accordance with the NFIP. As part of the certification, a professional engineer or architect shall consider the NFIP "Free-of-Obstruction" requirement, to ensure that floodwaters or waves would not be deflected into a building or adjacent structure.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM HY-14 Shoreline Improvements to Reduce Flood Risk. To reduce the flood impacts of failure of existing shoreline structures, the Project Applicant shall implement shoreline improvements for flood control protection, as identified in the Candlestick Point/Hunters Point Development Project Proposed Shoreline Improvements report[2] (or updated Shoreline Improvements Reports). Where feasible, elements of living shorelines shall be incorporated into the shoreline protection improvement measures.	Project Applicant	Prior to issuance of construction permits for shoreline improvements	SFRA/DPW	SFRA/DPW	Upon approval of development permits
SECTION III.N (BIOLOGICAL RESOURCES)					
MM BI-4a.1 Wetlands and Jurisdictional/ Regulated Waters Mitigation for Temporary and/or Permanent Impacts. Wetlands and jurisdictional waters shall be avoided to the maximum extent practicable for all Project components. For example, any measures taken to improve the existing shoreline of Candlestick Point or HPS Phase II for purposes of flood control, erosion control, or repair or stabilization of existing structures shall minimize the amount of fill to be placed in jurisdictional areas. Where avoidance of existing wetlands and drainages is not feasible, and before any construction activities are initiated in jurisdictional areas, the Applicant shall obtain the following permits, as applicable to the activities in question: ■ CWA Section 404 permit from the USACE. ■ Section 10 *Rivers and Harbors Act* Permit from the USACE. ■ CWA Section 401 water quality certification from the RWQCB, and/or Report of Waste Discharge for Waters of the State.	Project Applicant	Prior to initiation of construction activities	CDFG, the USACE, the BCDC, SFRWQCB; and City/ SFRA	SFRA	Obtain and comply with applicable permits

[2] Moffatt & Nichols, 2009, Candlestick Point / Hunters Point Redevelopment Project Proposed Shoreline Improvements, prepared for Lennar Urban, September, 2009.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ CWA Section 402/National Pollution Discharge Elimination System permit from SWRCB [requiring preparation of a Stormwater Pollution Prevention Plan (SWPPP)]. ■ CDFG Section 1602 streambed alteration agreement from CDFG. ■ A permit from the BCDC. ■ Dredging permits from the USACE and BCDC as required, obtained through the Dredged Material Management Office (DMMO) process. Copies of these permits shall be provided to the contractor, along with the construction specifications. The Project Applicant shall be responsible for complying with all of the conditions set forth in these permits, including any financial responsibilities. Compensation for impacts to wetlands and jurisdictional waters shall be required to mitigate any permanent impacts to these habitats to less-than significant-levels. Such mitigation shall also be developed (separately from the CEQA process) as a part of the permitting process with the USACE, or for non-USACE-jurisdictional wetlands, during permitting through the SFRWQCB, BCDC, and/or CDFG. The exact mitigation ratio shall be established during the permitting process, and depends on a number of factors, including the type and value of the wetlands permanently affected by the Project; however, mitigation shall be provided at a ratio of no less than 1:1 (at least 1 acre of mitigation for every 1 acre of waters of the US/State permanently filled). Mitigation could be achieved through a combination of on-site restoration or creation of wetlands or aquatic habitats (including removal of on-site fill or structures such as piers, resulting in a gain of wetland or aquatic habitats); off-site restoration/creation; and/or mitigation credits purchased at mitigation banks within the San					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Francisco Bay Region. However, any mitigation for impacts to jurisdictional waters providing habitat for special-status fish such as the green sturgeon, Central California Coast steelhead, Chinook salmon, and longfin smelt must result in the restoration or creation (at a minimum 1:1 ratio) of suitable habitat for these species, and any mitigation for impacts to jurisdictional wetlands or other waters that are considered EFH by the NMFS must result in the restoration or creation (at a minimum 1:1 ratio) of EFH. Suitably planned mitigation sites may satisfy mitigation requirements for jurisdictional areas, special-status fish, and EFH simultaneously (i.e., in the same mitigation areas) if the mitigation satisfies all these needs.					
For funding of off-site improvements or purchase of mitigation bank credits, the Project Applicant shall provide written evidence to the City/Agency that either (a) compensation has been established through the purchase of a sufficient number of mitigation credits to satisfy the mitigation acreage requirements of the Project activity, or (b) funds sufficient for the restoration of the mitigation acreage requirements of the Project activity have been paid to the BCDC, CCC, or other entity or agency that offers mitigation credits in the San Francisco Bay Area.	Project Applicant	Prior to initiation of construction activities	CDFG, the USACE, the BCDC, SFRWQCB; and SFRA	SFRA	Written evidence to the City/SFRA for funding of off-site improvements or purchase of mitigation bank credits
For areas to be restored, to mitigate for temporary or permanent impacts, the Project Applicant shall prepare and implement a Wetland and Jurisdictional Waters Mitigation Monitoring Plan (Mitigation Monitoring Plan). The Plan shall be submitted to the regulatory agencies along with permit application materials for approval, along with a copy to the City/Agency. The Project Applicant shall retain a restoration ecologist or wetland biologist to develop the Wetland and Jurisdictional Waters Mitigation and	Project Applicant	Prior to initiation of construction activities	CDFG, the USACE, the BCDC, SFRWQCB; and SFRA	SFRA	Preparation and implementation of Wetland and Jurisdictional Waters Mitigation and Monitoring Plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Monitoring Plan, and it shall contain the following components (or as otherwise modified by regulatory agency permitting conditions): 1. Summary of habitat impacts and proposed mitigation ratios, along with a description of any other mitigation strategies used to achieve the overall mitigation ratios, such as funding of off-site improvements and/or purchase of mitigation bank credits 2. Goal of the restoration to achieve no net loss of habitat functions and values 3. Location of mitigation site(s) and description of existing site conditions 4. Mitigation design: ■ Existing and proposed site hydrology ■ Grading plan if appropriate, including bank stabilization or other site stabilization features ■ Soil amendments and other site preparation elements as appropriate ■ Planting plan ■ Irrigation and maintenance plan ■ Remedial measures/adaptive management, etc. 5. Monitoring plan (including final and performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.) 6. Contingency plan for mitigation elements that do not meet performance or final success criteria. Restoration and/or creation of wetlands or aquatic habitats could occur on site or off site and at one or more locations, as approved by the regulatory agencies. Impacts occurring due to activities on Candlestick Point may be mitigated by restoration or creation activities on HPS Phase II and vice versa.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
For example, loss of open water habitat that might result from construction of shoreline treatments could potentially be mitigated by the removal of fill or structures from aquatic habitat on HPS Phase II.					
The Project Applicant, or its agent, shall implement the Wetland and Jurisdictional Waters Mitigation Monitoring Plan. At least five years of monitoring (or more if required as a condition of the permits) shall be conducted to document whether the success criteria (that are determined as part of the mitigation plan) are achieved, and to identify any remedial actions that must be taken if the identified success criteria are not met. Annual monitoring reports (described below) shall be submitted to CDFG, the USACE, the BCDC, the City/Agency, and the SFRWQCB. Each report shall summarize data collected during the monitoring period, describe how the habitats are progressing in terms of the success criteria, and discuss any remedial actions performed. Additional reporting requirements imposed by permit conditions shall be incorporated into the Wetland and Jurisdictional Waters Mitigation Monitoring Plan and implemented. Success criteria for specified years of monitoring for vegetated mitigation wetlands are as follows (though these may be subject to change pending development of specific Mitigation and Monitoring Plans and consultation during the permit process): ■ Year 1 after restored areas reach elevations suitable for colonization by wetland plants: 10 percent combined area and basal cover (rhizomatous turf) of all vegetation in the preserve wetland; at least two hydrophytic plants co-dominant with whatever other vegetative cover exists. ■ Year 3 after restored areas reach colonization elevation: 50 percent combined	Project Applicant	During construction activities, for at least 5 years	CDFG, the USACE, the BCDC, SFRWQCB; and City/ SFRA	SFRA	At least 5 years of monitoring, and preparation of annual monitoring reports to be submitted to CDFG, USACE, BCDC, SFRA, and SFRWQCB. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
area and basal cover (rhizomatous turf) of all vegetation; prevalence of hydrophytic species in terms of both cover and dominant species composition of the vegetation; native vascular species shall comprise 95 percent of the vegetation in the preserve wetland. ■ Year 5 after restored areas reach colonization elevation: 70 percent combined area and basal cover (rhizomatous turf) of all vegetation; more than 50 percent dominance in terms of both cover and species composition of facultative (FAC), facultative wetland (FACW), and obligate (OBL) species; native vascular species shall comprise 95 percent of the vegetation in the preserve wetlands.					
Other success criteria shall be developed for open water/mud flat habitats (which would not be expected to support vegetation) or for wetland complexes specifically designed to contain extensive areas of channels, pannes, or flats that would not be vegetated. In addition, the final Project design shall avoid substantial adverse effects to the pre-Project hydrology, water quality, or water quantity in any wetland that is to be retained on site. This shall be accomplished by avoiding or repairing any disturbance to the hydrologic conditions supporting these wetlands, as verified through an on-site Wetland Protection Plan that shall be prepared by a restoration ecologist or wetland biologist that is retained by the Project Applicant, and submitted to regulatory agencies for approval, along with a copy to the City/Agency. If such indirect effects cannot be avoided, compensatory mitigation shall be provided for the indirectly affected wetlands at a minimum 1:1 ratio, as described above. Mitigation for indirectly impacted wetlands shall be described in the Wetland and Jurisdictional Waters Mitigation and Monitoring Plan.	Project Applicant	Prior to initiation of construction activities	CDFG, the USACE, the BCDC, SFRWQCB; and City/ SFRA	SFRA	Preparation of an on-site Wetland Protection Plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Project features resulting in impacts to open water areas as a result of the marina, bridge, and breakwater construction shall be designed to be the minimum size required to meet their designated need. The opening in the breakwater shall be large enough and positioned such that it would allow for a complete daily exchange of water within the marina that would otherwise result from normal tidal flow, as determined by a coastal engineer and an aquatic biologist. This opening shall be designed to minimize disruption to the local hydrology generated by the breakwater and allow for normal tidal flow to ensure the daily exchange of nutrients.	Project Applicant	During Project design	SFRA	SFRA	Approval of final design
MM BI-4a.2 Wetlands and Jurisdictional/Regulated Waters Impact Minimization for Construction-Related Impacts. The Project Applicant shall ensure that the contractor minimizes indirect construction-related impacts on wetlands and jurisdictional/regulated waters throughout the Study Area by implementing the following Best Management Practices (BMPs): ■ Prior to any construction activities on the site, a protective fence shall be installed a minimum of one foot (or greater, if feasible) from the edge of all wetland habitat to be avoided in the immediate vicinity of the proposed construction areas. Prior to initiation of construction activities, a qualified biologist shall inspect the protective fencing to ensure that all wetland features have been appropriately protected. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities within 50 feet of the protected feature have been completed.	Project Applicant	Prior to initiation of construction activities	DBI/SFRA; CDFG, USACE, BCDC, SFRWQCB	DBI/SFRA, in consultation with other regulatory agencies, as necessary	SFRA and DBI to review construction documents and construction staging, access, and parking plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Construction inspectors shall routinely inspect protected areas to ensure that protective measures remain in place and effective until all construction activities near the protected resource have been completed. The fencing shall be removed immediately following construction activities.					
■ To maintain hydrologic connections, the Project design shall include culverts for all seasonal and perennial drainages that are waters of the United States and/or Waters of the State.					
■ Sediment mitigation measures shall be in place prior to the onset of Project construction and shall be monitored and maintained until construction activities have been completed. Temporary stockpiling of excavated or imported material shall occur only in approved construction staging areas. Excess excavated soil shall be disposed of at a regional landfill or at another approved and/or properly permitted location. Stockpiles that are to remain on the site throughout the wet season shall be protected to prevent erosion.					
■ Where determined necessary by regulatory agencies, geotextile cushions and other appropriate materials (i.e., timber pads, prefabricated equipment pads, geotextile fabric) shall be used in saturated conditions to minimize damage to the substrate and vegetation.					
■ Exposed slopes and banks shall be stabilized immediately following completion of construction activities to reduce the effects of erosion on the drainage system.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ In highly erodible areas, such as Yosemite Slough, banks shall be stabilized using a non-vegetative material that shall bind the soil initially and break down within a few years. If, during review of the grading permit for this area, the City/Agency determines that more aggressive erosion control treatments are needed, the contractor shall be directed to use geotextile mats, excelsior blankets, or other soil stabilization products.					
■ The contractors shall develop a Storm Water Pollution Prevention Plan (SWPPP) prior to construction. As discussed in the Regulatory Framework of the Hydrology and Water Quality section of this EIR, the SWPPP will comply with applicable local, state, and federal requirements. Erosion control BMPs may include, but are not limited to, the application of straw mulch; seeding with fast growing grasses; construction of berms, silt fences, hay bale dikes, stormwater detention basins, and other energy dissipaters. BMPs shall be selected and implemented to ensure that contaminants are prevented from entering the San Francisco Bay during construction and operation of the facilities shall protect water quality and the marine species in accordance with all regulatory standards and requirements.					
■ Testing and disposal of any dredged sediment shall be conducted as required by the USACE and the Long-Term Management Strategy (LTMS)[3]					

[3] US Army Corps of Engineers, US Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. Long-term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan 2001.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ All temporarily impacted wetlands and other jurisdictional waters, whether in tidal or non-tidal areas, shall be restored to pre-construction contours following construction. Such impact areas include areas that are dewatered (e.g., using coffer dams) and/or used for construction access. Temporarily impacted wetlands that were vegetated prior to construction shall be revegetated in accordance with a Wetlands and Jurisdictional Water Mitigation and Monitoring Plan as described above. ■ For impacts to tidal habitats: > Conduct all work in dewatered work areas > Install sediment curtains around the worksite to minimize sediment transport > Work only during periods of slack, tide (minimal current) and low wind to minimize transport of sediment laden water					
MM BI-4c Mitigation for Shading Impacts to Jurisdictional/Regulated Waters. Mud flats and aquatic habitats impacted by permanent shading from the Yosemite Slough bridge shall be mitigated by the creation or restoration, either on site, off site, and/or via purchase of mitigation bank credits, at a 0.5:1 (mitigation:impacted) ratio. Aside from the mitigation ratio, such mitigation shall be provided as described for mitigation measure MM BI-4a.1.	Project Applicant	Prior to initiation of construction activities	DBI/SFRA; CDFG, USACE, BCDC, SFRWQCB	DBI/SFRA, in consultation with other regulatory agencies, as necessary	Written evidence to the City/SFRA for funding of off-site improvements or purchase of mitigation bank credits; preparation of Wetland and Jurisdictional Waters Mitigation and Monitoring Plan and subsequent annual monitoring reports for areas to be restored shall be submitted to CDFG, the USACE, the BCDC, the City/SFRA, and the SFRWQCB.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM BI-5b.1 Avoidance of Impacts to Eelgrass. As the design of shoreline treatments progresses, and a specific Shoreline Treatment Plan is determined, the Plan shall minimize any in-water construction required for installation of any treatment measures near either of the two eelgrass locations noted above.	Project Applicant	During the design of shoreline treatments	NMFS; SFRA	SFRA	Approval of Shoreline Treatment Plan; Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-5b.2 Eelgrass Survey. Prior to the initiation of construction of the Yosemite Slough bridge or construction of shoreline treatments, an update to the existing eelgrass mapping shall be conducted to determine the precise locations of the eelgrass beds. This survey shall occur when a final Shoreline Treatment Plan has been prepared. The survey shall be conducted by a biologist(s) familiar with eelgrass identification and ecology and approved by NMFS to conduct such a survey. The area to be surveyed shall encompass the mapped eelgrass beds, plus a buffer of 750 feet. Survey methods shall employ either SCUBA or sufficient grab samples to ensure that the bottom was adequately inventoried. The survey shall occur between August and October and collect data on eelgrass distribution, density, and depth of occurrence for the survey areas. The edges of the eelgrass beds shall be mapped. At the conclusion of the survey a report shall be prepared documenting the survey methods, results, and eelgrass distribution within the survey area. This report shall be submitted to NMFS for approval. The survey data shall feed back into the shoreline treatment design process so that Project engineers can redesign the treatments to avoid or minimize any direct impacts to eelgrass beds. If the shoreline treatments can be adjusted so that no direct impacts to eelgrass beds would occur, no further mitigation under this measure would be	Project Applicant	When a final Shoreline Treatment Plan has been prepared	NMFS; SFRA	SFRA	Submittal of a report for NMFS approval documenting survey methods, results, and eelgrass distribution within the survey area. Submit report and proof of NMFS approval to SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
required for shoreline treatment construction. Management of water quality concerns is addressed through mitigation measure MM BI-5b.4 and shall be required to minimize sediment accumulation on the eelgrass. If direct impacts to eelgrass beds cannot be avoided, either by Hunters Point shoreline treatments or Yosemite Slough bridge construction, mitigation measure MM BI-5b.3 shall be implemented.					
MM BI-5b.3 Compensatory Eelgrass Mitigation. If direct impacts to eelgrass beds cannot be avoided, compensatory mitigation shall be provided in conformance with the Southern California Eelgrass Mitigation Policy. Mitigation shall entail the replacement of impacted eelgrass at a 3:1 (mitigation:impact) ratio on an acreage basis, based on the eelgrass mapping described in mitigation measure MM BI-5b.2 and detailed designs of the feature(s) that would impact eelgrass beds. Such mitigation could occur either off site or on site.[4] Off-site mitigation could be achieved through distribution of a sufficient amount of funding to allow restoration or enhancement of eelgrass beds at another location in the Bay. If this option is selected, all funds shall be distributed to the appropriate state or federal agency or restoration-focused non-governmental agency (i.e., CDFG restoration fund, California Coastal Conservancy, Save the Bay, etc.). The Project Applicant shall provide written evidence to the City/Agency that either a) compensation has been established through the purchase of a sufficient number of mitigation credits to satisfy the mitigation acreage requirements of the Project activity, or b) funds sufficient for the restoration of	Project Applicant	Upon the determination that direct impacts to eelgrass beds cannot be avoided, and off-site mitigation would be appropriate (prior to in-water construction)	NMFS/SFRA	SFRA	Written evidence to the City/SFRA for the compensation of off-site mitigation credits or funds

[4] NMFS, Southwest Regional Office, Southern California Eelgrass Mitigation Policy, as revised August 30, 2005. Website: http://swr.nmfs.noaa.gov/hcd/policies/EELPOLrev11_final.pdf. Accessed July 20, 2009.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
the mitigation acreage requirements of the Project activity have been paid. These funds shall be applied only to eelgrass restoration within the Bay.					
If on-site mitigation is selected as the appropriate option, the Project Applicant shall retain a qualified biologist familiar with eelgrass ecology (as approved by the City/Agency) to prepare and implement a detailed Eelgrass Mitigation Plan. Unless otherwise directed by NMFS, the Eelgrass Mitigation Plan shall follow the basic outline and contain all the components required of the Southern California Eelgrass Mitigation Policy (as revised in 2005),[5] including: identification of the mitigation need, site, transplant methodology, mitigation extent (typically 3:1 on an acreage basis[6]), monitoring protocols (including frequency, staffing, reviewing agencies, duration, etc.), and success criteria. A draft Eelgrass Mitigation Plan shall be submitted to NMFS, for its review and approval prior to implementation, with a copy to the City/Agency. Once the plan has been approved, it shall be implemented in the following appropriate season for transplantation. Restored eelgrass beds shall be monitored for success over a 5-year period.	Project Applicant	Upon the determination that direct impacts to eelgrass beds cannot be avoided, and on-site mitigation would be appropriate (prior to in-water construction)	NMFS/SFRA	SFRA	Preparation and implementation of an Eelgrass Mitigation Plan if on-site mitigation occurs.

[5] NMFS, Southwest Regional Office, Southern California Eelgrass Mitigation Policy, as revised August 30, 2005. Website: http://swr.nmfs.noaa.gov/hcd/policies/EELPOLrev11_final.pdf. Accessed July 20, 2009.

[6] US Army Corps of Engineers, US Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. Long-term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan 2001; Appendix F – ESA and EFH Consultation.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM BI-5b.4 Eelgrass Water Quality BMPs. To prevent sediment that could be suspended during construction from settling out onto eelgrass, for any shoreline treatments within 750 feet of identified eelgrass beds, the Project Applicant shall require the selected contractor to implement appropriate BMPs that could include any or all of the following options, or others deemed appropriate by NMFS: 1. Conduct all work in dewatered work areas 2. Conduct all in-water work during periods of eelgrass dormancy (November 1-March 31) 3. Install sediment curtains around the worksite to minimize sediment transport 4. Work only during periods of slack tide (minimal current) and low wind to minimize transport of sediment laden water	Project Applicant	Prior to and during in-water construction	NMFS/SFRA	SFRA	BMPs deemed appropriate by NMFS
MM BI-6a.1 Impact Avoidance and Pre-Construction Surveys for Nesting Special-Status and Legally Protected Avian Species. The following measures shall be implemented by the Project Developer to avoid impacts to nesting birds. 1. Not more than 15 days prior to construction activities that occur between February 1 and August 31, surveys for nesting birds shall be conducted by a qualified biologist (one familiar with the breeding biology and nesting habits of birds that may breed in the Project vicinity) that is selected by the Project Developer, and approved by the City/Agency. Surveys shall cover the entire area to be affected by construction and the area within a 250-foot buffer of construction or ground-disturbing activities. The results of the surveys, including survey dates, times, methods, species observed, and a map of any discovered nests,	Project Applicant	Not more than 15 days prior to construction activities that occur between February 1 and August 31	CDFG	SFRA	Submittal of nesting bird survey findings to the SFRA and consultation with CDFG as appropriate

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
shall be submitted to the City/Agency. If no active avian nests (i.e. nests with eggs or young) are identified on or within 250 feet of the limits of the disturbance area, no further mitigation is necessary. Phased construction work shall require additional surveys if vegetation or building removal has not occurred within 15 days of the initial survey or is planned for an area that was not previously surveyed. Alternatively, to avoid impacts, the Project Developer shall begin construction after the previous breeding season for local raptors and other special-status species has ended (after August 31) and before the next breeding season begins (before February 1).					
2. If active nests (with eggs or young) of special-status or protected avian species are found within 250 feet of the proposed disturbance area, a minimum 250-foot no-disturbance buffer zone surrounding active raptor nests and a minimum 100-foot buffer zone surrounding nests of other special-status or protected avian species shall be established until the young have fledged. Project activities shall not occur within the buffer as long as the nest is active. The size of the buffer area may be reduced if a qualified biologist familiar with the species' nesting biology (as approved by the City/Agency) and CDFG determine it would not be likely to have adverse effects on the particular species. Alternatively, certain activities may occur within the aforementioned buffers, with CDFG concurrence, if a qualified biologist monitors the activity of nesting birds for signs of agitation while those activities are being performed. If the birds show signs of agitation suggesting that they could abandon the nest,					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
activities would cease within the buffer area. No action other than avoidance shall be taken without CDFG consultation. 3. Completion of the nesting cycle (to determine when construction near the nest can commence) shall be determined by a qualified biologist experienced in identification and biology of the specific special-status or protected species.					
MM BI-6a.2 Burrowing Owl Protocol Surveys and Mitigation. Because burrowing owls may take refuge in burrows any time of year, species-specific measures are necessary to avoid take of this species. The following measures shall be undertaken by the Project Developer to protect burrowing owls. Prior to construction activities, focused pre-construction surveys shall be conducted for burrowing owls where suitable habitat is present within the construction areas. Surveys shall be conducted by a qualified biologist (i.e., one who is familiar with burrowing owl ecology and experienced in performing surveys for them, approved by the City/Agency) no more than 30 days prior to commencement of construction activities. These surveys shall be conducted in accordance with the CDFG burrowing owl survey protocol contained within California Burrowing Owl Consortium's April 1995 Burrowing Owl Survey Protocol and Mitigation Guidelines, or any more current equivalent should new guidelines be released before construction. 1. If no occupied burrows are found in the survey area, a letter report documenting survey methods and findings shall be submitted to the City/Agency and CDFG, and no further mitigation is necessary.	Project Applicant	No more than 30 days prior to commencement of construction activities	CDFG	SFRA	Submittal of burrowing owl survey findings to the SFRA and consultation with CDFG as appropriate

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
2. If unoccupied burrows are found during the non-breeding season, prior to construction activities, the Project Developer shall collapse the unoccupied burrows, or otherwise obstruct their entrances to prevent owls from entering and nesting in the burrows. This measure would prevent inadvertent impacts during construction activities.	Project Applicant	Upon determination that impacts to occupied burrows are unavoidable and prior to construction activities	CDFG	SFRA	If unoccupied burrows are found during non-breeding season, unoccupied burrows will be collapsed. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
3. If occupied burrows are found, a letter report documenting survey methods and findings (including a map showing the locations of the occupied burrows) shall be submitted to the City/Agency and CDFG. Impacts to the burrows shall be avoided by providing a construction-free buffer of 250 feet during the nesting season (February 1 through August 31). A buffer of 165 feet from the active burrows should be provided during the non-breeding season (September 1 through January 31) if feasible, though a reduced buffer is acceptable during the non-breeding season as long as construction avoids direct impacts to the burrow(s) used by the owls. The size of the buffer area may be reduced if the CDFG determines it would not be likely to have adverse effects on the owls. No Project activity shall commence within the buffer area until a qualified biologist (as approved by the City/Agency) confirms that the burrow is no longer occupied. If the burrow is occupied by a nesting pair, as recommended by the California Burrowing Owl Consortium's April 1995 Burrowing Owl Survey Protocol and Mitigation Guidelines, a minimum of 6.5 acres of foraging habitat contiguous (immediately adjacent) to the burrow shall be maintained until the nesting season is over. If the foraging habitat contiguous to the	Project Applicant	Prior to construction activities upon completion of preconstruction focused surveys for burrowing owls	CDFG	SFRA	If occupied burrows are found, a letter report of findings will be submitted to CDFG and the City/SFRA. Avoidance of occupied burrows and compensatory habitat mitigation, as appropriate, shall occur as stated. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
occupied burrow is currently less than 6.5 acres, the entire foraging habitat shall be maintained until the nesting season is over.					
4. If impacts to occupied burrows are unavoidable, passive relocation techniques approved by CDFG shall be used to evict owls from burrows within the construction area prior to construction activities. However, no occupied burrows shall be disturbed during the nesting season unless a qualified biologist (as approved by the City/Agency) verifies through non-invasive methods that juveniles from the occupied burrows are foraging independently and are capable of independent survival, or verifies the owls have not yet laid eggs. If any breeding owls must be relocated (i.e., after the nesting season has ended), mitigation of impacts to lost foraging and nesting habitat for relocated pairs shall follow guidelines provided in the California Burrowing Owl Consortium's April 1995 Burrowing Owl Survey Protocol and Mitigation Guidelines, which depending upon conditions detailed in the guidance (such as mitigation habitat quality), range from 7.5 to 19.5 acres per pair. This mitigation may take the form of the purchase of credits in a burrowing owl mitigation bank or the preservation and management of the required habitat acreage on site (e.g., in the Grasslands Ecology Park) or off site. If mitigation is provided via on-site or off-site habitat preservation and management, a Burrowing Owl Habitat Management Plan shall be prepared by a qualified biologist and submitted to the CDFG for review and approval, along with a copy to the City/Agency. This plan shall detail the location of the mitigation site, the means of preservation of the site (i.e., via a conservation easement), any enhancement and	Project Applicant	Upon determination that impacts to occupied burrows are unavoidable and prior to construction activities	CDFG	SFRA	If mitigation is required and provided via on-site or off-site habitat preservation and management, a Burrowing Owl Habitat Management Plan to be prepared by qualified biologist and submitted to the CDFG for review and approval, along with a copy to the City/SFRA. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
management measures necessary to ensure that habitat for burrowing owls is maintained in the long term, a monitoring program, and the size of an endowment established for the long-term maintenance of the site.					
MM BI-6b American Peregrine Falcon Nest Protection Measures. To protect the nest of peregrine falcons during construction, the following measures shall be implemented by the Project Developer prior to construction or other disturbance within 500 feet of the Re-gunning crane nest. 1. Not more than 30 days prior to construction activities that occur between February 1 and August 15, surveys for nesting peregrine falcons shall be conducted on the Re-gunning crane, and within a 500-foot buffer surrounding the potential nesting location. Surveys shall be performed by a qualified biologist (i.e., one familiar with falcon biology and nesting) that is selected by the Project Developer, and approved by the City/Agency. The results of the surveys shall be submitted to the City/Agency and the CDFG. If no active peregrine falcon nests, eggs, or breeding activity, are identified on or within 500 feet of the limits of the disturbance area, no further mitigation is necessary. Alternatively, to avoid impacts, the Project Developer can begin construction after the previous breeding season has ended (after August 31) and before the next breeding season begins (before February 1). 2. If active peregrine nests or breeding activity are observed within the survey area, a minimum 250-foot no disturbance buffer zone surrounding the nesting location shall be established until the young have fledged. Within this buffer, no Project construction	Project Applicant	Not more than 30 days prior to construction activities that occur between February 1 and August 15.	CDFG	SFRA	Survey for nesting peregrine falcons and submittal of results to CDFG and the City/SFRA. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
activities shall occur while the nest is active. The size of the buffer area may be reduced if a qualified biologist and CDFG determine it would not be likely to have adverse effects on the falcons. No action other than avoidance shall be taken without CDFG consultation. 3. No new Project construction activity shall commence within the buffer area until young have fledged and the nest is no longer active, or until nesting has been terminated for reasons unrelated to Project activities. Completion of the nesting cycle shall be determined by a qualified biologist who is experienced in peregrine falcon breeding biology (as determined and approved by the City/Agency).					
MM BI-7b Enhancement of Raptor Foraging Habitat. The Draft Parks, Open Space, and Habitat Concept Plan shall implement, at a minimum, the following measures in open space areas outside the CPSRA, and if allowed, within the CPSRA area: ■ **Restoration and Management of Grasslands:** To maintain grassland-associated wildlife species on the site, grasslands extensive enough to support such species shall be maintained and enhanced through the restoration of native grasses. Such grassland habitat shall not be well manicured or regularly mown. No trees shall be planted within such areas, and shrub cover would be limited to a few small, scattered patches of low-statured coastal scrub plants. At a minimum, replacement of non-native grassland impacted at HPS Phase II with native-dominated grassland shall occur at a ratio of 1:1 (1 acre of native-dominated grassland restored: 1 acre of non-native grassland impacted).	Project Applicant	Throughout the construction phase	SFRA	SFRA	Approval of Plan by SFRA and, if applicable, by CPSRA. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ **Increase in Tree/Shrub Cover:** Trees and shrubs (particularly natives) shall be planted and maintained outside the designated grassland restoration area to provide foraging habitat for raptors and other migratory birds, and cover for mammals, reptiles, and smaller birds that may serve as raptor prey. While native vegetation shall be favored, site-appropriate non-native trees and shrubs that provide food or structural resources that are particularly valuable to native wildlife shall also be considered. Approximately 10,000 net new trees shall be planted at the Project site and in the community, in addition to trees that will be replaced as required by the Urban Forestry Ordinance or MM BI-14a.					
The elements identified above shall be reviewed and approved by a qualified biologist (one familiar with the ecology of the Project site), and the Draft Parks, Open Space, and Habitat Concept Plan shall be implemented during construction of the Project. This plan shall be approved by the City/Agency prior to construction, and its preparation and implementation shall be the financial responsibility of the Project Applicant.	Project Applicant	Plan to be approved by City/ SFRA prior to construction, and implemented throughout the construction phase of the Project	SFRA	SFRA	Approval and implementation of the Draft Parks, Open Space, and Habitat Concept Plan. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-9b Pile Driving Design and Minimization Measures. To minimize impacts on fish and marine mammals, the Project Applicant shall be implemented the following measure to reduce the amount of pressure waves generated by pile driving. The first set of measures shall be implemented during Project design. The second set of measures shall be implemented during construction.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Design Measures: 1. Engineer structures to use fewer or smaller piles, where feasible, and preferably, solid piles. 2. Design structures that can be installed in a short period of time (i.e., during periods of slack tide when fish movements are lower). 3. Do not use unsheathed creosote-soaked wood pilings. The City/Agency, with consultation from a qualified biologist who is familiar with marine biology, as approved by the City/Agency, shall review the final Project design to ensure that these design requirements have been incorporated into the Project.	Project Applicant	During Project design	DBI/SFRA	DBI/SFRA	Approval of final plans
Construction Measures: 1. Drive piles with a vibratory device instead of an impact hammer if feasible. 2. Restrict pile driving of steel piles to the June 1 to November 30 work window, or as otherwise recommended by NMFS (driving of concrete piles would not be subject to this condition). 3. Avoid installation of any piles during the Pacific herring spawning season of December through February. Consult with the CDFG regarding actual spawning times if pile installation occurs between October and April. 4. If steel piles must be driven with an impact hammer, an air curtain shall be installed to disrupt sound wave propagation, or the area around the piles being driven shall be dewatered using a cofferdam. The goal of either measure is to disrupt the sound wave as it moves from water into air. 5. If an air curtain is used, a qualified biologist shall monitor pile driving to ensure that the air curtain is functioning properly and Project-	Project Applicant	During construction activities	DBI/SFRA, in consultation with NMFS and CDFG, if necessary	DBI/SFRA, in consultation with NMFS and CDFG, if necessary	Monitoring of pile driving activities. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
generated sound waves do not exceed the threshold of 180-decibels generating 1 micropascal (as established by NMFS guidelines). This shall require monitoring of in-water sound waves during pile driving. 6. Unless the area around the piles is dewatered during pile driving, a qualified biologist shall be present during pile driving of steel piles to monitor the work area for marine mammals. Driving of steel piles shall cease if a marine mammal approaches within 250 feet of the work area or until the animal leaves the work area of its own accord.					
MM BI-12a.1 Seasonal Restrictions on In-Water Work. In-water work when juvenile salmonids are moving through the estuary on the way to the ocean or when groundfish and prey species could be directly impacted shall be avoided. Because steelhead are potentially present, the allowed dredge window for this area of the San Francisco Bay is June 1 through November 30. All in-water construction shall occur during this window. If completion of in-water work within this period is not feasible due to scheduling issues, new timing guidelines that shall be established and submitted to NMFS and CDFG for review and approval.	Project Applicant	During construction between June 1st and November 30th	NMFS and CDFG	SFRA, in consultation with NMFS and CDFG, as necessary	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM BI-12a.2 Worker Training. Personnel involved in in-water construction and deconstruction activities shall be trained by a qualified biologist (experienced in construction monitoring, as approved by the City/Agency) in the importance of the marine environment to special-status fish, birds, and marine mammals and the environmental protection measures put in place to prevent impacts to these species, their habitats, and Essential Fish Habitat. The training shall include, at a minimum, the following: ■ A review of the special-status fish, birds, and marine mammals and sensitive habitats that could be found in work areas ■ Measures to avoid and minimize adverse effects to special-status fish, birds, marine mammals, their habitats, and Essential Fish Habitat ■ A review of all conditions and requirements of environmental permits, reports, and plans (i.e., USACE permits)	Project Applicant	Prior to construction activities	DBI/SFRA	DBI/SFRA	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-12b.1 Essential Fish Habitat Avoidance and Minimization Measures. The following mitigation measures have been adapted from Amendment 11 of the West Coast Groundfish Plan[7] and Appendix A of the Pacific Coast Salmon Plan.[8] Incorporation of the following, or equivalent mitigation as otherwise required by the USACE or NMFS, would reduce the impacts to Essential Fish Habitat (EFH) to a level considered less than significant. Unless modified by the federal permitting agencies (NMFS or USACE), these measures shall be implemented during construction by the Project Applicant. Any reporting	Project Applicant	During construction activities	USACE; NMFS	SFRA, in consultation with NMFS and USACE, as necessary	Approval of dredging permits. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

[7] PFMC 1998. Essential Fish Habitat – West Coast Groundfish, Amendment 11.

[8] PFMC 1999. Appendix A: Identification and description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon. *In* Pacific Coast Salmon Plan (1997) as amended through Amendment 14. Website: http://www.pcouncil.org/salmon/salfmp/a14.html.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
required shall be specified in the USACE permits and reports shall be submitted to the USACE and NMFS. ■ If dredging is required, permits will be obtained through the Dredged Material Management Office (DMMO) process, and the following mitigation from the Long-Term Management Strategy (LTMS) shall be implemented: > Dredging shall avoid areas with submerged aquatic vegetation (eelgrass beds or other EFH areas of particular concern) especially where the action could affect groundfish, prey of outmigrating juvenile salmon or groundfish, larval marine species, or habitat for native oysters > Sediments shall be tested for contaminants as per EPA and USACE requirements. Contaminated sediments shall be disposed of in accordance with EPA and USACE guidelines > Slopes of the dredged area shall be gradual enough so that sloughing is unlikely to occur. Verification of these conditions shall be achieved through follow-up bathymetric surveys > To minimize turbidity and potential resuspension of contaminated sediments, dredging shall use suction equipment, or similar equipment, when feasible. Where an equipment type may generate significant turbidity (i.e., clamshell), dredging shall be conducted using adequate engineering and best management practices to control turbidity. These include, but are not limited to, sediment curtains and tidal work windows.					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ All construction equipment used in conjunction with in-water work (pipelines, barges, cranes, etc.) shall avoid wetlands, marshes, and areas of subaquatic vegetation (including eelgrass beds) ■ Upland disposal options shall be considered for all spoils generated by on-site construction, especially if high levels of contaminants are present ■ Maximize the use of clean dredged material for beneficial use opportunities, such as salt marsh restoration ■ Use Best Management Practices (BMPs) for controlling pollution from marina operations, boatyards, and fueling facilities that meet, as applicable, the BMPs listed in the National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating[9]					
MM BI-12b.2 Deconstruction/Construction Debris Recovery. A Seafloor Debris Minimization and Removal Plan shall be prepared by the Project Applicant and approved by the City/Agency, prior to initiation of in-water deconstruction (dismantling) or construction activities. The Plan shall be implemented during in-water deconstruction or construction activities, and such activities shall be monitored by a qualified biologist who is experienced in construction monitoring (as approved by the City/Agency). The Seafloor Debris Minimization and Removal Plan shall include, at a minimum: ■ Debris field boundaries associated with deconstruction activities	Project Applicant	Seafloor Debris Minimization and Removal Plan to be prepared prior to initiation of in-water deconstruction or construction activities; implementation of the plan to occur during in-water deconstruction or construction activities	DBI/SFRA	DBI/SFRA	Approval of Seafloor Debris Minimization and Removal Plan; Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

[9] National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating. EPA 841-B-01-005, November 2001.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Identification of measures taken to minimize the potential for debris to fall into aquatic habitats (i.e., the use of netting below in-water construction or deconstruction areas) ■ Deconstruction equipment, tools, pipes, pilings, and other materials or debris that are inadvertently dropped into the Bay, along with their descriptions and locations ■ Circumstances requiring immediate cessation of deconstruction activities and immediate initiation of search and recovery efforts, including procedures for implementing those recovery efforts ■ How lost debris that is to be removed post-deconstruction is to be identified, who will be conducting search and recovery operations, and the survey methods to be employed to locate lost equipment and materials ■ Criteria that will be used to: > Determine whether recovery efforts are appropriate for the object being recovered and do not result in potential environmental impairment greater than if the debris was allowed to remain in place > When sufficient effort has been expended to recover a lost object(s) with no success and continued efforts to recover the seafloor debris have diminishing potential for success and/or result in environmental impairment greater than leaving the debris in place ■ Person(s) responsible for implementing the Plan and making the determination on the type of recovery required ■ How debris is to be disposed of or recycled ■ Metrics for determining when recovery efforts will be considered complete					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Following completion of all post deconstruction recovery efforts for seafloor debris, a report shall be prepared by the Project Applicant and submitted to the City/Agency detailing, at a minimum, (1) recovery activities during deconstruction and post-deconstruction, (2) listings of all lost and recovered debris, (3) final disposition of recovered debris, and (4) discussion of what debris could not be recovered and why.	Project Applicant	Following completion of all post deconstruction recovery efforts for seafloor debris	DBI/SFRA	DBI/SFRA	Receipt of report of recovery activities by DBI/SFRA
MM BI-14a Preservation and Replacement of Significant Trees, and Preservation and Planting of Street Trees. Construction activities outside of the Department of Public Works (DPW) jurisdiction could result in the disturbance or removal of a large number of trees. To minimize this impact, the following measures shall be implemented by the Project Applicant in these areas: 1. Avoidance of the removal of trees that meet the size specifications of significant trees in the Public Works Code Article 16 shall occur to the maximum extent feasible, and any such trees that are removed shall be replaced at a minimum of 1:1 (1 impacted:1 replaced). The species used for replacement shall be consistent with DPW recommendations. 2. Street trees shall be planted in all new development areas. The species, size, and locations shall be consistent with the requirements specified in Planning Code Section 143, including, but not limited to, the following: a) The street trees installed shall be a minimum of one 24-inch box tree for each 20 feet of frontage of the property along each street or alley, with any remaining fraction of 10 feet or more of frontage requiring an additional tree.	Project Applicant	During construction activities	DBI/SFRA	DBI/SFRA	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
Such trees shall be located either within a setback area on the lot or within the public right-of-way along such lot. b) The species of trees selected shall be suitable for the site, and, in the case of trees installed in the public right-of-way, the species and locations shall be subject to the approval by the DPW. Procedures and other requirements for the installation, maintenance, and protection of trees in the public right-of-way shall be as set forth in Public Works Code Article 16.					
3. If a significant tree or street tree will not be removed, but construction activities will occur within the dripline of such trees, a Tree Protection Plan shall be prepared by an International Society of Arboriculture (ISA) certified arborist, in accordance with the Urban Forestry Ordinance. This plan shall be submitted to the Planning Department for review and approval prior to issuance of a demolition or building permit. The Tree Protection Plan shall include measures to protect all parts of a tree from disturbance during construction, and may include the following: a) A site plan with tree species, trunk location, trunk diameter at breast height, and the canopy dripline area within development b) The use of protective fencing to establish an area to be left undisturbed during construction c) Protection specifications, including construction specifications such as boring instead of trenching for utility lines, or tree	Project Applicant	Prior to issuance of a demolition or building permit	Planning Department/ SFRA	Planning Department/ SFRA	Approval of a Tree Protection Plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
specifications such as drainage, fertilization, or irrigation measures d) Pruning specifications, if needed, to preserve the health of the tree and allow construction to proceed					
MM BI-18b.1 Maintenance Dredging and Turbidity Minimization Measures for the Operation of the Marina. Maintenance dredging for the marina could remove or generate sediment plumes that could impact special-status species, their habitats, and Essential Fish Habitat (EFH). To minimize this effect, the following measures shall be implemented by the Project Applicant:					
1. Conduct a detailed survey for native oysters in all suitable substrates within the marina, which includes the area between the land and breakwaters, after construction of the new breakwaters. This survey shall be conducted by a qualified oyster biologist at low tides that expose the maximum amount of substrate possible. Surveys can be conducted at any time of year, but late summer and early fall are optimal because newly settled oysters are detectable. This survey shall occur before any construction within the proposed marina location takes place to establish a baseline condition. If few or no oysters are observed on hard substrates that would remain in place after dredging, no further mitigation is required.	Project Applicant	Prior to in-water dredging activities, and at low tides preferably in late summer or early fall	NMFS	SFRA, in consultation with NMFS, as necessary	Approval by NMFS of Survey for native oysters
2. If oysters are found at densities at or above 90 oysters per square meter[10] on suitable oyster-settlement substrates that would be removed or in areas where dredging sediment could	Project Applicant	Prior to issuance of any permits for construction of marina structures	USACE; NMFS	SFRA, in consultation with NMFS and USACE, as necessary	Submittal of a detailed sediment plume modeling study to NMFS

[10] MACTEC Engineering and Consulting, Inc. 2008. *Oyster Point Marina Olympia Oyster Surveys Pre- and Post-Dredging February 2008, Oyster Point Marina, South San Francisco, California*. Prepared for PBS&J; Obernolte. 2009. Personal communication between MACTEC and PBS&J.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
settle out onto the oysters, a detailed sediment plume modeling study of the proposed marina operation shall be conducted to determine if the operations and maintenance of the marina would generate a substantial plume of sediment. This model shall include the local bathymetry and sediment information, tidal data, and detailed marina information (number and types of boats, etc.). The model shall be prepared by a qualified harbor engineer (as approved by the City/Agency) with direct experience in this type of work within San Francisco Bay, prior to issuance of any permits for the construction of features directly associated with the marina. A report documenting modeling methods, input data, assumptions, results, and implications for increased rates of sedimentation shall be prepared and provided to NMFS during the USACE-directed Section 7 and EFH consultation for the marina. If the model demonstrates minimal sediment resuspension that would settle out before reaching sensitive habitats, no further mitigation is required.					
3. If the sediment plume reaches sensitive shoreline habitats (substrates that support native oysters), compensatory mitigation shall be provided by the Project Applicant at a ratio recommended by NMFS for the type of habitat adversely affected. The Project Applicant shall retain a qualified oyster biologist (as approved by the City/Agency) to develop an Oyster Restoration Plan that shall be reviewed and approved by the City/Agency. This Plan shall include site selection, substrate installation, and monitoring procedures, and include the	Project Applicant	Prior to issuance of any permits for construction of marina structures	NMFS	SFRA, in consultation with NMFS, as necessary	Development and approval of an Oyster Restoration Plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
following components (unless otherwise modified by NMFS): ■ A suitable site for installation of replacement substrate would be one with adequate daily tidal flow, a location that would not be affected by maintenance dredging or other routine marina maintenance activities, and one that is lacking in appropriate settlement substrate. A location outside of the new breakwaters or in association with any eelgrass mitigation sites would be appropriate. ■ Although oysters would settle on a variety of materials, the most appropriate for restoration purposes is oyster shell. This is typically installed by placing the shell into mesh bags that can then be placed in piles on the seafloor of the mitigation site. Enough shell shall be installed under the guidance of a qualified oyster biologist to make up for the loss attributable to the Project. Mitigation shall occur after construction of all in-water elements of the Project within HPS Phase II. ■ The restoration site shall be monitored on a regular basis by a qualified oyster biologist for a minimum of two years, or until success criteria are achieved if they are not achieved within two years. Monitoring shall involve routine checks (bi-monthly during the winter and monthly during the spring and summer) to evaluate settlement, growth, and survival on the mitigation site. Success shall be determined to have been achieved when settlement and survival					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
rates for oysters are not statistically significantly different between the mitigation site and either populations being impacted (if data are available) or nearby established populations (i.e., Oyster Point Marina).					
MM BI-18b.2 Implement BMPs to Reduce Impacts of Dredging to Water Quality. BMPs established in Appendix I of the Long-Term Management Strategy (LTMS) for management of disposal of dredge material in San Francisco Bay are designed specifically to minimize spread of contaminants Long-Term Management Strategy (LTMS) outside of dredge areas. All of these elements of the LTMS shall be applied to any proposed dredging or construction activities associated with the Project unless otherwise modified by the USACE, BCDC, or SFRWQCB in permit conditions associated with the proposed dredging activities associated with this Project (same as MM BI-19b.2).	Project Applicant	During dredging or construction activities	USACE, BCDC, SFRWQCB	SFRA, in consultation with regulatory agencies, as necessary	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-19b.1 Work Windows to Reduce Maintenance Dredging Impacts to Fish during Operation of the Marina. According to the Long-Term Management Strategy (LTMS), dredging Projects that occur during the designated work windows do not need to consult with NMFS under the federal *Endangered Species Act* (FESA).[11] The window in which dredging is allowed for the protection of steelhead in the central Bay is June 1 to November 30. The spawning season for the Pacific herring is December 1 to February 28.[12] Therefore,	Project Applicant	Dredging activities may not occur between March 1 and November 30	NMFS	SFRA, in consultation with NMFS, as necessary	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.

[11] US Army Corps of Engineers, US Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. Long-term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan 2001.
[12] US Army Corps of Engineers, US Environmental Protection Agency, San Francisco Bay Conservation and Implementation Commission, and San Francisco Bay Regional Water Quality Control Board. Long-term Management Strategy for the Placement of Dredge Material in the San Francisco Bay, Management Plan 2001; Appendix F.

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
the window that shall be applied to minimize impacts to sensitive fish species (during which dredging activities cannot occur) is June 1 to November 30.					
MM BI-19b.2 Implement BMPs to Reduce Impacts of Dredging to Water Quality. BMPs established in Appendix I of the Long-Term Management Strategy (LTMS) are designed specifically to minimize spread of contaminants outside of dredge areas. All of these elements of the LTMS shall be applied to any proposed dredging or construction activities associated with the Project unless otherwise modified by the USACE, BCDC, or the San Francisco Bay Regional Water Quality Control Board in permit conditions associated with the proposed dredging activities associated with this Project (same as MM BI-18b.2).	Project Applicant	During dredging or construction activities	USACE, BCDC, SFRWQCB	SFRA, in consultation with regulatory agencies, as necessary	Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
MM BI-20a.1 Lighting Measures to Reduce Impacts to Birds. During building design, the Project Applicant and architect shall consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify lighting-related measures to minimize the effects of the building's lighting on birds. Such measures, which may include the following and/or other measures, will be incorporated into the building's design and operation. ■ Where lighting is necessary on rooftops, use strobe or flashing lights in place of continuously burning lights for obstruction lighting. Use flashing white lights rather than continuous light, red light, or rotating beams. ■ Install shields onto light sources not necessary for air traffic to direct light towards the ground and away from areas that provide high-quality bird habitat.	Project Applicant	During Project design	DBI/SFRA	DBI/SFRA	DBI/SFRA approval of building designs

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
■ Extinguish all exterior lighting (i.e., rooftop floods, perimeter spots) not required for public safety. ■ No uplighting will be installed. ■ When interior or exterior lights must be left on at night, the developer and/or operator of the buildings shall examine and adopt alternatives to bright, all-night, floor-wide lighting, which may include: > Installing motion-sensitive lighting. > Using desk lamps and task lighting. > Reprogramming timers. > Use of lower-intensity lighting. ■ Windows or window treatments that reduce transmission of light out of the building will be implemented to the extent feasible. ■ Educational materials will be provided to building occupants encouraging them to minimize light transmission from windows, especially during peak spring and fall migratory periods, by turning off unnecessary lighting and/or closing drapes and blinds at night. ■ A report of the lighting alternatives considered and adopted shall be provided to the City/Agency for review and approval prior to construction. The City/Agency shall ensure that lighting-related measures to reduce the risk of bird collisions have been incorporated into the design of such buildings to the extent practicable.					
MM BI-20a.2 Building Design Measures to Minimize Bird Strike Risk. During design of any building within 300 feet of a potential "urban bird refuge" (an open space 2 acres and larger dominated by vegetation, including vegetated	Project Applicant	During Project design	DBI/SFRA	DBI/SFRA	DBI/SFRA approval of building designs

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
landscaping, forest, meadows, grassland, or wetlands, or open water) or any structure containing free-standing glass walls, wind barriers, skywalks, balconies, and greenhouses on rooftops that have unbroken glazed segments 24 square feet and larger in size, the Project Applicant and architect will consult with a qualified biologist experienced with bird strikes and building/lighting design issues (as approved by the City/Agency) to identify measures related to the external appearance of the building/structure to minimize the risk of bird strikes. Such measures, which may include the following and/or other measures, will be incorporated into the building's design. ■ Minimize the use of glass, particularly within the portion of the building between ground level and 60 feet above the ground. ■ Use non-reflective tinted glass. ■ Use window films to make windows visible to birds from the outside. ■ Use external surfaces/designs that "break up" reflective surfaces. These patterns should include vertical elements at least 0.25 inch wide at a maximum spacing of 4 inches or horizontal elements at least 0.125 inch wide at a maximum spacing of 2 inches. ■ Place bird attractants, such as bird feeders and baths, at least 3 feet and preferably 30 feet or more from windows in order to reduce collision mortality. ■ A report of the design measures considered and adopted shall be provided to the City/Agency for review and approval prior to construction. If, in the opinion of a qualified biologist, modification or waiver of these bird-safe design measures would not result in substantial increases in bird collision risk, the report should include the justification for such					

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
an opinion, for consideration by the City/Agency. The City/Agency shall ensure that building design-related measures to reduce the risk of bird collisions have been incorporated to the extent practicable.					
SECTION III.O (PUBLIC SERVICES)					
MM PS-1 Site Security Measures During Construction. During site preparation and in advance of construction of individual buildings, fencing, screening, and security lighting shall be provided by the Project Applicant. During non-construction hours the site must be secured and locked, and ample security lighting shall be provided.	Project Applicant	During site preparation and in advance of construction of individual buildings, fencing, screening, and security lighting	DBI/SFRA	DBI/SFRA	DBI/SFRA approval of construction documents. Construction Contractor to submit quarterly report of compliance activity, until deemed complete by SFRA.
SECTION III.P (RECREATION)					
MM RE-2 Phasing of parkland with respect to residential and/or employment generating uses. Development of the Project and associated parkland shall ensure that within each phase or sub-phase, parks and population increase substantially concurrently and development shall be scheduled such that adequate parkland is constructed and operational when residential and employment-generating uses are occupied. The following standards shall be met: ■ No project development shall be granted a temporary certificate of occupancy if the City determines that the new population associated with that development would result in a parkland-to-population ratio within the Project site lower than 5.5 acres per 1,000 residents/population, as calculated by the Agency. ■ For the purposes of this mitigation measure, in order for a park to be considered in the parkland-to-population ratio, the Agency must	Project Applicant	Prior to issuance of a temporary certificate of occupancy	DBI/SFRA	DBI/SFRA	Issuance of a temporary certificate of occupancy

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
determine that within 12 months of the issuance of the temporary certificate of occupancy, it will be fully constructed and operational, and, if applicable, operation and maintenance funding will be provided to the Agency.					
SECTION III.Q (UTILITIES)					
MM UT-2 Auxiliary Water Supply System. Prior to issuance of occupancy permits, as part of the Infrastructure Plan to be approved, the Project Applicant shall construct an Auxiliary Water Supply System (AWSS) within Candlestick Point to connect to the City's planned extension of the off-site system off-site on Gilman Street from Ingalls Street to Candlestick Point. The Project Applicant shall construct an additional AWSS on HPS Phase II to connect to the existing system at Palou and Griffith Avenues, with service along Spear Avenue/Crisp Road.	Project Applicant	Prior to issuance of occupancy permits	San Francisco Fire Dept.	SFFD/SFRA	Approval of Infrastructure Plan; Deemed complete upon issuance of temporary certificate of occupancy.
MM UT-3a Wet-Weather Wastewater Handling. Prior to approval of the Project's wastewater infrastructure construction documents for any new development, the Project Applicant shall demonstrate to the San Francisco Public Utilities Commission (SFPUC), in writing, that there will be no net increase in wastewater discharges during wet-weather conditions from within the Project Area boundary to the Bayside System compared to pre-Project discharges. This may be accomplished through a variety of means, including, but not limited to: ■ Temporary on-site retention or detention of flows to the system ■ Separation of all or a portion of the stormwater and wastewater system at Candlestick Point	Project Applicant	Prior to approval of wastewater infrastructure construction documents for new developments	SFPUC	SFPUC	Approval of wastewater infrastructure construction documents

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
MM UT-5a Construction Waste Diversion Plan. The Project Applicant shall submit a Construction Waste Diversion Plan to the Director of the San Francisco Department of the Environment demonstrating a plan to divert at least 75 percent of or more of the total construction and demolition debris produced as the result of the Project (such as wood, metal, concrete, asphalt, and sheetrock) from landfill interment, which is required by the City's Green Building Ordinance. The Plan shall be submitted and approved by the Director of the San Francisco Department of the Environment before the issuance of building permits. This Plan shall include (1) identification of how much material resulting from demolition of existing facilities could be reused on site (e.g., existing asphalt and concrete could be removed, crushed, reconditioned, and reused as base material for new roadways and parking lots); (2) the extent to which materials could be sorted on site (e.g., through piecemeal demolition of selected facilities to extract recyclable materials), (3) the amount of material that would be transported to an off-site location for separation; and (4) the amount of materials that cannot be reused or recycled and would be interred at a landfill, such as the Altamont Landfill in Livermore.	Project Applicant	Prior to the issuance of building permits	SFRA/Department of the Environment	SFRA/Department of the Environment	Submittal and approval of a Construction Waste Diversion Plan
MM UT-7a Site Waste Management Plan. The Project Applicant shall prepare a Site Waste Management Plan (SWMP) in cooperation with the Agency to describe the methods by which the Project shall minimize waste generation not otherwise covered by existing City regulatory policies, with the goal of achieving a diversion rate of at least 72 percent, consistent with the City's existing diversion rate in 2008. The SWMP shall be submitted to the Department of Environment (DOE) for approval prior to the issuance of the first development permit for the Project.	Project Applicant	Prior to the issuance of the first development permit	SFRA/Department of the Environment	SFRA/Department of the Environment	Submittal and approval of a Site Waste Management Plan

Mitigation Monitoring & Reporting Program					
Mitigation Measure	*Responsibility for Implementation*	*Mitigation Timing*	*Enforcement Responsibility*	*Monitoring Responsibility*	*Monitoring Actions/ Verification of Compliance*
SECTION III.S (GREENHOUSE GAS EMISSIONS)					
MM GC-1 Plant up to 10,000 net new trees at the Project site and in the community.	Project Applicant	Throughout the construction phase	SFRA	SFRA	Deemed complete upon issuance of temporary certificate of occupancy.
MM GC-2 Comply with the 2016 Standards for Title 24 Part 6 energy efficiency standards for homes and businesses.	Project Applicant	Throughout the construction phase	SFRA	SFRA	Deemed complete upon issuance of temporary certificate of occupancy.
MM GC-3 Install ENERGY STAR appliances, where appliances are offered by homebuilders.	Project Applicant	Throughout the construction phase	SFRA	SFRA	Deemed complete upon issuance of temporary certificate of occupancy.
MM GC-4 Use light emitting diode (LED) based energy efficient street lighting.	Project Applicant	Throughout the construction phase	SFRA	SFRA	Deemed complete upon issuance of temporary certificate of occupancy.

Appendix C

Impacts Evaluated in Addendum 5

ESA

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
SECTION III.B (LAND USE AND PLANS)		
Impact LU-1 Implementation of the Project would not physically divide an established community.	✕	
Impact LU-2 Implementation of the Project would not conflict with land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect.	✕	
Impact LU-3 Implementation of the Project would not have a substantial adverse impact on the existing character of the vicinity.	✕	
SECTION III.C (POPULATION, HOUSING, AND EMPLOYMENT)		
Impact PH-1 Construction of the Project would not induce substantial direct population growth.	✕	
Impact PH-2 Operation of the Project would not induce substantial direct or indirect population growth.	✕*	
Impact PH-2a Operation of Candlestick Point would not induce substantial direct or indirect population growth.	✕	
Impact PH-2b Operation of HPS Phase II would not induce substantial direct or indirect population growth.	✕	
Impact PH-3 The Project would not displace existing housing units or residents, necessitating the construction of new units elsewhere.	✕*	
Impact PH-3a Implementation of the Project would not displace existing housing units and residents at Candlestick Point, necessitating the construction of new units elsewhere.	✕	
Impact PH-3b Implementation of the Project would not displace existing housing units or residents at HPS Phase II, necessitating the construction of new units elsewhere.	✕	
SECTION III.D (TRANSPORTATION AND CIRCULATION)		
Impact TR-1 Construction of the Project would result in transportation impacts in the Project vicinity due to construction vehicle traffic and roadway construction and would contribute to cumulative construction impacts in the Project vicinity.	✕	
Impact TR-2 Implementation of the Project would cause an increase in traffic that would be substantial relative to the existing and proposed capacity of the street system, even with implementation of a Travel Demand Management Plan.	✕	
Impact TR-3 Implementation of the Project would contribute traffic to significant cumulative impacts at intersections in the Project vicinity.	✕	
Impact TR-4 At the intersection of Tunnel/Blanken, implementation of the Project would result in significant Project AM peak hour traffic impacts, and would contribute to cumulative PM peak hour traffic impacts.	✕	
Impact TR-5 Implementation of the Project would contribute traffic at some study area intersections that would operate at LOS E or LOS F under 2030 No Project conditions.	✕	
Impact TR-6 Implementation of the Project could contribute traffic at the intersections of Geneva/US-101 Southbound Ramps and Harney/US-101 Northbound Ramps, which would operate at LOS F under 2030 No Project conditions.	✕	
Impact TR-7 Implementation of the Project could contribute traffic to the intersections of Amador/Cargo/Illinois, which would operate at LOS E under 2030 No Project.	✕	
Impact TR-8 Implementation of the Project could contribute traffic to the intersections of Bayshore/Geneva, which would operate at LOS F under 2030 No Project.	✕	
Impact TR-9 Implementation of the Project would have less-than-significant Project and cumulative impacts at some study area intersections that would operate at LOS E or LOS F under 2030 No Project conditions.	✕	

* Where the combined impact of CP and HPS2 was analyzed, it is assumed that the individual impacts of CP and HPS2 were analyzed, as well.

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact TR-10 Implementation of the Project would result in significant Project traffic spillover impacts and contribute to cumulative traffic spillover impacts.	✕	
Impact TR-11 Implementation of the Project would contribute to significant cumulative traffic impacts at four freeway segments.	✕	
Impact TR-12 Implementation of the Project would result in significant impacts at four freeway on-ramp locations.	✕	
Impact TR-13 Implementation of the Project would contribute to significant cumulative traffic impacts at 12 freeway ramp locations.	✕	
Impact TR-14 Implementation of the Project could result in significant impacts related to freeway diverge queue storage at the Harney/US-101 Northbound Off-ramp.	✕	
Impact TR-15 Implementation of the Project could contribute to significant cumulative traffic impacts related to freeway diverge queue storage at some off-ramp locations (US-101 Northbound off-ramp to Harney Way, and US-101 Southbound Off-ramp to Harney Way/Geneva Avenue).	✕	
Impact TR-16 Implementation of the Project would increase traffic volumes and would not make a considerable contribution to cumulative traffic volumes on Harney Way.	✕	
Impact TR-17 Implementation of the Project would not exceed available transit capacity, because the Project and the Project's contribution to cumulative demand would be accommodated within the existing transit service, proposed TEP service, plus the service proposed as part of the Project.	✕	
Impact TR-18 With full implementation of the Project with proposed transit improvements, the Project demand and the Project's contribution to cumulative demand would not exceed the proposed transit system's capacity at the study area cordons.	✕	
Impact TR-19 Implementation of the Project would add transit trips and the Project's contribution to cumulative transit trips to the Downtown Screenlines would not increase demands in excess of available capacity.	✕	
Impact TR-20 Implementation of the Project would add transit trips and the Project's contribution to cumulative transit trips would not contribute significantly to Regional Screenlines conditions where overall ridership is projected to exceed available capacity.	✕	
Impact TR-21 Implementation of the Project could increase congestion and contribute to cumulative conditions at intersections along San Bruno Avenue, which would increase travel times and impact operations of the 9-San Bruno.	✕	
Impact TR-22 Implementation of the Project would contribute traffic to cumulative conditions at intersections along Palou Avenue, which would increase travel times and impact operations of the 23-Monterey, 24-Divisadero, and the 44-O'Shaughnessy.	✕	
Impact TR-23 Implementation of the Project would increase congestion at intersections along Gilman Avenue and Paul Avenue, which would increase travel times and would impact operations of the 29-Sunset.	✕	
Impact TR-24 Implementation of the Project would increase congestion at intersections along Evans Avenue, which would increase travel times and impact operations of the 48-Quintara-24th Street.	✕	
Impact TR-25 Implementation of the Project would increase congestion at intersections in the study area, and make a considerable contribution to cumulative impacts that would increase travel times and impact operations of the 54-Felton.	✕	
Impact TR-26 Implementation of the Project would increase congestion at intersections along Third Street, and make a considerable contribution to cumulative impacts that would increase travel times and impact operations of the T-Third.	✕	
Impact TR-27 Implementation of the Project could increase congestion at the intersection of Geneva Avenue and Bayshore Boulevard. This would increase travel times and impact operations of the 28L-19th Avenue/Geneva Limited.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact TR-28 Implementation of the Project would increase congestion on US-101 mainline and ramps, which would increase travel times and impact operations of the 9X, 9AX, 9BX-Bayshore Expresses, and 14X-Mission Express. The Project would also contribute to cumulative impacts on these transit routes on US-101.	✕	
Impact TR-29 Implementation of the Project would not contribute to cumulative impacts on the 14X-Mission Express transit route when on I-280.	✕	
Impact TR-30 Implementation of the Project would increase congestion and contribute to cumulative congestion on US-101 and on Bayshore Boulevard, which would increase travel times and adversely affect operations of SamTrans bus lines on these facilities. No feasible mitigation has been identified.	✕	
Impact TR-31 During implementation of the Project, bicycle facilities would be expanded to serve additional users. This would be a beneficial impact of the Project.	✕	
Impact TR-32 Implementation of the Project's proposed transit preferential treatments and significant increases in traffic volumes on Palou Avenue could result in impacts on bicycle travel on Bicycle Routes #70 and #170 between Griffith Street and Third Street.	✕	
Impact TR-33 During implementation of the Project, pedestrian facilities would be expanded to serve additional users. This would be a beneficial impact of the Project.	✕	
Impact TR-34 Implementation of the Project would result in traffic volumes on area roadways that would not substantially affect pedestrian circulation and safety in the Project vicinity.	✕	
Impact TR-35 Implementation of the Project would not result in significant impacts associated with a lack of an adequate supply of parking that could not be accommodated within alternative modes.	✕	
Impact TR-36 Implementation of the Project roadway improvements would displace on-street parking spaces, and the existing demand could be accommodated in the nearby vicinity.	✕	
Impact TR-37 Implementation of the Project would not result in significant impacts associated with a lack of adequate supply of loading spaces.	✕	
Impact TR-38 For as many as 12 times a year, 49ers games at the proposed stadium would result in significant impacts on study area roadways and intersections.		✕
Impact TR-39 Implementation of the Project with existing game day service and Project transit improvements would not be adequate to accommodate projected transit demand.		✕
Impact TR-40 For as many of 12 times per year during game days, bicycle access in the vicinity of the proposed stadium would be constrained, however, accommodations for bicycle access and circulation would be provided.		✕
Impact TR-41 For as many of 12 times per year during game days, pedestrian access in the vicinity of the proposed stadium would be constrained, however, accommodations for pedestrian access and circulation would be provided.		✕
Impact TR-42 For as many as 12 times per year during game days, access to state park facilities for vehicles, bicyclists and pedestrians would be constrained, and heavy traffic congestion could discourage use of the park. However, access for vehicles, bicyclists, and pedestrians would be maintained.		✕
Impact TR-43 For as many of 12 times per year during game days, parking demand associated with sell-out events would exceed the proposed on-site supply, resulting in a parking supply shortfall. The shortfall would be accommodated within other on-street and off-street parking facilities, and some patrons may elect to take transit to the stadium.		✕
Impact TR-44 Implementation of the Project would result in stadium game day loading demand that would be accommodated within the proposed on-site supply.		✕
Impact TR-45 During game days, accommodation for emergency access would be provided.		✕
Impact TR-46 Weekday evening secondary events at the stadium would result in increased congestion at intersections, freeway mainline, and freeway ramps already operating at unacceptable LOS under Project conditions without a secondary event, and result in significant impacts at nine additional intersections and one additional freeway off-ramp.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact TR-47 With implementation of the Project, the existing transit service and Project improvements would not be adequate to accommodate projected transit demand during secondary events with attendance of 37,500 spectators. In addition, transit lines serving the area would experience additional delays due to traffic generated by the secondary event.		✕
Impact TR-48 With implementation of the Project, bicycle circulation would not be impeded during secondary events at the stadium.		✕
Impact TR-49 With implementation of the Project, pedestrian circulation would not be impeded during arena events.		✕
Impact TR-50 With implementation of the Project, parking demand associated with a secondary event with an attendance of 37,500 spectators would be accommodated within the proposed supply.		✕
Impact TR-51 With implementation of the Project, weekday evening events at the arena would exacerbate congestion at intersections, freeway mainline, and freeway ramps already operating at unacceptable LOS under Project conditions without an arena event, and result in significant traffic impacts at Harney Way and Jamestown Avenue, which was operating acceptably under Project conditions without an arena event.	✕	
Impact TR-52 With implementation of the Project, sell-out weekday evening events at the arena could impact existing and proposed transit service.	✕	
Impact TR-53 With implementation of the Project, bicycle circulation would not be impeded during arena events.	✕	
Impact TR-54 With implementation of the Project, pedestrian circulation would not be impeded during arena events.	✕	
Impact TR-55 With implementation of the Project, arena parking demand would be accommodated on street and within proposed off-street parking facilities.	✕	
Impact TR-56 Implementation of the Project would not impact air traffic.	✕	
Impact TR-57 Implementation of the Project would not create hazards due to any proposed design features.	✕	
Impact TR-58 Implementation of the Project would not result in significant emergency access impacts.	✕	
SECTION III.E (AESTHETICS)		
Impact AE-1 Construction activities associated with the Project would not have a substantial adverse effect on a scenic vista or scenic resources.	✕	
Impact AE-2 Construction activities associated with the Project would not result in temporary degradation of the visual character or quality of the site.	✕	
Impact AE-3 Construction activities associated with the Project would not create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties.	✕	
Impact AE-4 Implementation of the Project would not have a substantial adverse effect on a scenic vista.	✕	
Impact AE-5 Implementation of the Project would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting.		✕
Impact AE-5a Implementation of the Project at Candlestick Point would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting.		✕
Impact AE-5b Implementation of the Project at HPS Phase II would not substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment that contribute to a scenic public setting.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact AE-6 Implementation of the Project would not substantially degrade the existing visual character or quality of the site or its surroundings.		✕
Impact AE-6a Implementation of the Project at Candlestick Point would not substantially degrade the existing visual character or quality of the site or its surroundings.		✕
Impact AE-6b Implementation of the Project at HPS Phase II would not substantially degrade the visual character or quality of the site or its surroundings.	✕	
Impact AE-7 Implementation of the Project would not create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties.		✕
Impact AE-7a Implementation of the Project at Candlestick Point would not create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties.		✕
Impact AE-7b Implementation of the Project at HPS Phase II would not create a new source of substantial light or glare that would adversely affect day or night views in the area or that would substantially impact other people or properties.	✕	
SECTION III.F (SHADOWS)		
Impact SH-1 Implementation of the Project would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space.		✕
Impact SH-1a Implementation of the Project at Candlestick Point would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space.		✕
Impact SH-1b Implementation of the Project at HPS Phase II would not result in new structures with the potential to cast shadows on existing or proposed parks and open space in a manner that would have an adverse effect on the use of the open space.	✕	
SECTION III.G (WIND)		
Impact W-1 Implementation of the Project would not include tall structures that would result in ground-level-equivalent wind speed exceeding 26 mph for a single hour of the year in pedestrian corridors and public spaces.		✕
Impact W-1a Implementation of the Project at Candlestick Point would not include tall structures that would result in ground-level-equivalent wind speed exceeding 26 mph for a single hour of the year in pedestrian corridors and public spaces.		✕
Impact W-1b Implementation of the Project at HPS Phase II would not include tall structures that would result in ground-level-equivalent wind speed exceeding 26 mph for a single hour of the year in pedestrian corridors and public spaces.	✕	
SECTION III.H (AIR QUALITY)		
Impact AQ-1 Construction activities associated with the Project would not result in short-term increases in emission of criteria air pollutants and precursors that exceed BAAQMD CEQA significance criteria.	✕	
Impact AQ-2 Construction activities associated with the Project would not result in impacts to on-site and off-site populations from Project-generated emissions of DPM.		✕
Impact AQ-2a Construction at Candlestick Point would not result in impacts to off-site populations from Project-generated emissions of DPM.		✕
Impact AQ-2b Construction at HPS Phase II would not result in impacts to off-site populations from Project-generated emissions of DPM.	✕	
Impact AQ-2c Construction activities associated with the Project would not result in impacts to the existing Alice Griffith Public Housing from Project-generated emissions of DPM.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact AQ-3 Construction activities associated with the Project would not result in impacts to off-site and Alice Griffith populations from emissions of TACs bound to soil-PM_{10}.		✕
Impact AQ-3a Construction at Candlestick Point would not result in impacts to off-site and Alice Griffith populations from emissions of TACs bound to soil-PM_{10}.		✕
Impact AQ-3b Construction at HPS Phase II would not result in impacts to off-site and Alice Griffith populations from emissions of TACs bound to soil-PM_{10}.	✕	
Impact AQ-4 Operation of the Project would violate BAAQMD CEQA significance thresholds for mass criteria pollutant emissions from mobile and area sources and contribute substantially to an existing or projected air quality violation at full buildout.	✕	
Impact AQ-5 Operation of the Project would not cause local concentrations of CO to exceed State and federal ambient air quality standards due to motor vehicles trips.	✕	
Impact AQ-6 Implementation of HPS Phase II would not expose nearby receptors to an increase in local concentrations of toxic air contaminants due to the operation of Research and Development uses.	✕	
Impact AQ-7 Operation of the Project would not expose receptors to concentrations of $PM_{2.5}$ above a 0.2 $\mu g/m^3$ action level for $PM_{2.5}$ and, therefore, would not substantially affect the health of nearby receptors as a result of an increase in local concentrations of vehicle emissions ($PM_{2.5}$) associated with vehicle use attributable to operation of the Project.	✕	
Impact AQ-8 Implementation of the Project would not generate objectionable odors affecting a substantial number of people.	✕	
Impact AQ-9 The Project would conform to the current regional air quality plan.	✕	
SECTION III.I (NOISE AND VIBRATION)		
Impact NO-1 Construction activities associated with the Project would generate increased noise levels for both off-site and on-site sensitive receptors; however, the Project's construction noise impacts would occur primarily in noise-sensitive areas adjacent or near to active construction sites (which would vary in location and duration over the entire period the proposed Project would be under construction); they would also not occur during recognized sleep hours, and would be consistent with the requirements for construction noise that exist in Sections 2907 and 2908 of the *Municipal Code*.		✕
Impact NO-1a Construction at Candlestick Point would generate increased noise levels for both off-site and on-site sensitive receptors; however, the Project's construction noise impacts would occur primarily in noise-sensitive areas adjacent or near to active construction sites (which would vary in location and duration over the entire period the proposed Project would be under construction), they would not occur during recognized sleep hours, and would be consistent with the requirements for construction noise that exist in Sections 2907 & 2908 of the *Municipal Code*.		✕
Impact NO-1b Construction at HPS Phase II would generate increased noise levels for both off-site and on-site sensitive receptors; however, the Project's construction noise impacts would be temporary, they would also not occur during recognized sleep hours, and would be consistent with the requirements for construction noise that exist in Sections 2907 and 2908 of the *Municipal Code*.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact NO-2 Construction activities associated with the Project would create excessive groundborne vibration levels in existing residential neighborhoods adjacent to the Project site and at proposed on-site residential uses should the latter be occupied before Project construction activity on adjacent parcels is complete. Although the Project's construction vibration impacts would be temporary, would not occur during recognized sleep hours, and would be consistent with the requirements for construction activities that exist in Sections 2907 & 2908 of the *Municipal Code*, vibration levels would still be significant.		×
Impact NO-2a Construction activities at Candlestick Point would create excessive groundborne vibration levels in existing residential neighborhoods adjacent to the Project site and at proposed on-site residential uses should the latter be occupied before Project construction activity on adjacent parcels is complete. Although the Project's construction vibration impacts would be temporary, would not occur during recognized sleep hours, and would be consistent with the requirements for construction activities that exist in Sections 2907 & 2908 of the *Municipal Code*, vibration levels would still be significant.		×
Impact NO-2b Rock removal in the Alice Griffith and Jamestown districts would result in vibration levels that exceed the FTA threshold of 80 VdB or could cause damage to structures from vibration caused by the fracturing of bedrock for excavation.		×
Impact NO-2c Construction at HPS Phase II would create excessive groundborne vibration levels in existing residential neighborhoods adjacent to the Project site and at proposed on-site residential uses should the latter be occupied before Project construction activity on adjacent parcels is complete. Although the Project's construction vibration impacts would be temporary, would not occur during recognized sleep hours, and would be consistent with the requirements for construction activities that exist in Sections 2907 & 2908 of the *Municipal Code*, vibration levels would be significant.	×	
Impact NO-3 Construction activities associated with the Project would result in a substantial temporary or periodic increase in ambient noise levels.	×	
Impact NO-4 Implementation of the Project, including the use of mechanical equipment or the delivery of goods, would not expose noise-sensitive land uses on or off site to noise levels that exceed the standards established by the City.	×	
Impact NO-5 Implementation of the Project would not generate or expose persons on or off site to excessive groundborne vibration.	×	
Impact NO-6 Operation of the Project would generate increased local traffic volumes that could cause a substantial permanent increase in ambient noise levels in existing residential areas along the major Project site access routes.	×	
Impact NO-7 Noise during football games and concerts at the proposed stadium would result in temporary increases in ambient noise levels that could adversely affect surrounding residents for the duration of a game or concert.		×
Impact NO-8 Implementation of the Project would not expose residents and visitors to excessive noise levels from flights from San Francisco International Airport such that the noise would be disruptive or cause annoyance.	×	
SECTION III.J (CULTURAL RESOURCES AND PALEONTOLOGICAL RESOURCES)		
Impact CP-1 Construction activities associated with the Project could result in a substantial adverse change in the significance of a historical resource.		×
Impact CP-1a Construction at Candlestick Point would not result in a substantial adverse change in the significance of an historical resource.		×
Impact CP-1b Construction at HPS Phase II could result in a substantial adverse change in the significance of an historical resource.	×	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact CP-2 Construction activities associated with the Project would not result in a substantial adverse change in the significance of archaeological resources, including prehistoric Native American resources, Chinese fishing camps, and maritime related resources.		✕
Impact CP-2a Construction at Candlestick Point would not result in a substantial adverse change in the significance of archaeological resources, including prehistoric Native American, Chinese fishing camp, and maritime-related archaeological remains.		✕
Impact CP-2b Construction at HPS Phase II would not result in a substantial adverse change in the significance of archaeological resources, including prehistoric Native American resources, Chinese fishing camps, and maritime related resources.	✕	
Impact CP-3 Construction activities associated with the Project would not result in a substantial adverse change in the significance of a paleontological resource.		✕
Impact CP-3a Construction at Candlestick Point would not result in a substantial adverse change in the significance of a paleontological resource.		✕
Impact CP-3b Construction at HPS Phase II would not result in a substantial adverse change in the significance of a paleontological resource.	✕	
Impact CP-3c Construction of the Yosemite Slough bridge, shoreline improvements, and the marina improvements activities, including in-water activities, would not result in a substantial adverse change in the significance of a paleontological resource.		✕
Impact CP-3d Pile driving associated with construction of the Yosemite Slough bridge, shoreline improvements, and the marina improvements would not result in a substantial adverse change in the significance of a paleontological resource.		✕
SECTION III.K (HAZARDS AND HAZARDOUS MATERIALS)		
Impact HZ-1 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with known contaminants from historic uses.		✕
Impact HZ-1a Construction at Candlestick Point bayward of the historic high tide line would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with known contaminants from historic uses.		✕
Impact HZ-1b Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with known contaminants from historic uses.	✕	
Impact HZ-2 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with previously unidentified subsurface contaminants from historic uses.		✕
Impact HZ-2a Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with previously unidentified subsurface contaminants from historic uses.		✕
Impact HZ-2b Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil and/or groundwater with previously unidentified subsurface contaminants from historic uses.	✕	
Impact HZ-3 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of off-site transport and disposal of contaminated soil and groundwater.		✕
Impact HZ-3a Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of off-site transport and disposal of contaminated soil and groundwater.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact HZ-3b Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of off-site transport and disposal of contaminated soil and groundwater.	×	
Impact HZ-4 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of improvements to existing and installation of new underground utilities.		×
Impact HZ-4a Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of improvements to existing and installation of new underground utilities.		×
Impact HZ-4b Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of improvements to existing and installation of new underground utilities.	×	
Impact HZ-5 Construction activities associated with the Project would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles.		×
Impact HZ-5a Construction at Candlestick Point would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles.		×
Impact HZ-5b Construction at HPS Phase II would not create vertical conduits for hazardous materials that could contaminate groundwater as a result of installation of foundation support piles.	×	
Impact HZ-6 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the handling, stockpiling, and transport of soil that may contain contaminants.		×
Impact HZ-6a Construction at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of handling, stockpiling, and transport of soil that may contain contaminants.		×
Impact HZ-6b Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of handling, stockpiling, and transport of soil that may contain contaminants.	×	
Impact HZ-7 Construction activities associated with the Project would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff.		×
Impact HZ-7a Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff.		×
Impact HZ-7b Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials that could be present in stormwater runoff.	×	
Impact HZ-8 Project occupants or visitors in or near portions of HPS Phase II where remediation has not been fully completed would not be exposed to unacceptable levels of hazardous materials.	×	
Impact HZ-9 Construction at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of Yosemite Slough bridge construction.		×
Impact HZ-10 Construction activities associated with the Project in shoreline areas would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of sediment or soil that may contain chemical or radiological contaminants.		×
Impact HZ-10a Construction in the shoreline areas at Candlestick Point would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of sediment or soil that may contain chemical contaminants.		×

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact HZ-10b Construction in the shoreline areas at HPS Phase II would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of sediment or soil that is radiologically affected or that may contain chemical contaminants.	✕	
Impact HZ-11 Construction activities associated with the Project on Navy-owned property, including improvements to existing utilities and installation of new underground utilities, would not expose occupants, construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, or groundwater that may contain contaminants from historic uses, including radiological contaminants.	✕	
Impact HZ-12 Remediation activities conducted on behalf of the City or Project Applicant at the HPS Phase II parcels transferred prior to completion of remediation in an "early transfer" would not expose remediation and construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain contaminants from historic uses.	✕	
Impact HZ-13 Construction of off-site roadway improvements would not expose construction workers, the public, or the environment to unacceptable levels of hazardous materials as a result of the disturbance of soil or groundwater that may contain contaminants.	✕	
Impact HZ-14 Construction activities associated with the Project would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater with contaminants from historic uses.		✕
Impact HZ-14a Construction at Candlestick Point would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain contaminants from historic uses.		✕
Impact HZ-14b Construction at HPS Phase II would not expose ecological receptors to unacceptable levels of hazardous materials as a result of the disturbance of soil, sediment, and/or groundwater that may contain contaminants from historic uses.	✕	
Impact HZ-15 Construction and grading activities associated with the Project would not disturb soil or rock that could be a source of naturally occurring asbestos in a manner that would present a human health hazard.	✕	
Impact HZ-16 Construction activities associated with the Project would not result in a health hazard to construction workers, the public, or the environment as a result of the demolition or renovation of existing structures that could include asbestos-containing materials, lead-based paint, PCBs, or fluorescent lights containing mercury.		✕
Impact HZ-16a Construction at Candlestick Point would not result in a health hazard to construction workers, the public, or the environment as a result of the demolition or renovation of existing structures that could include asbestos-containing materials, lead-based paint, PCBs, or fluorescent lights containing mercury.		✕
Impact HZ-16b Construction at HPS Phase II would not result in a health hazard to construction workers, the public, or the environment as a result of the demolition or renovation of existing structures that could include asbestos-containing materials, lead-based paint, PCBs, or fluorescent lights containing mercury.	✕	
Impact HZ-17 Construction activities associated with the Project would not expose construction workers to unacceptable levels of hazardous materials in soil, sediment, or groundwater in a manner which would present a human health risk.		✕
Impact HZ-17a Construction at Candlestick Point would not expose construction workers to unacceptable levels of hazardous materials in soil or groundwater in a manner which would present a human health risk.		✕
Impact HZ-17b Construction at HPS Phase II would not expose construction workers to unacceptable levels of hazardous materials in soil, sediment, or groundwater in a manner which would present a human health risk.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact HZ-18 Construction activities associated with the Project would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within one-quarter mile of an existing school.		✕
Impact HZ-18a Construction at Candlestick Point would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within one-quarter mile of an existing school.		✕
Impact HZ-18b Construction at HPS Phase II would not result in a human health risk involving the disturbance of naturally occurring asbestos, demolition of buildings that could contain hazardous substances in building materials, or possible disturbance of contaminated soils or groundwater within one-quarter mile of an existing school.	✕	
Impact HZ-19 Simultaneous construction activities at the Project site would not pose a human health risk from the release of contaminants from historic uses or fill.	✕	
Impact HZ-20 Construction activities associated with the Project would not result in adverse impacts to construction workers, visitors, or the environment from the routine use, storage, transportation, and disposal of hazardous materials.	✕	
Impact HZ-21 Implementation of the Project would not result in adverse impacts to residents, visitors, or the environment from periodic maintenance requiring excavation of site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs.		✕
Impact HZ-21a Implementation of the Project at Candlestick Point would not result in adverse impacts to residents, visitors, or the environment from periodic maintenance requiring excavation of site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs.		✕
Impact HZ-21b Implementation of the Project at HPS Phase II would not result in adverse impacts to residents, visitors, or the environment from periodic maintenance requiring excavation of site soils to maintain or replace utilities, repair foundations, or make other subsurface repairs.	✕	
Impact HZ-22 Implementation of the Project would not result in a significant impact involving the routine use, storage, transportation, and disposal of hazardous materials.	✕	
Impact HZ-23 Implementation of the Project would not pose a human health risk and/or result in an adverse effect on the environment from reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	✕	
Impact HZ-24 Areas designated for research and development uses within HPS Phase II would not pose a human health risk as a result of hazardous air emissions within one-quarter mile of a school.	✕	
Impact HZ-25 The Project site is not within the San Francisco Airport Land Use Policy Plan and the Project would not result in a safety hazard for people residing or working in the Project site.	✕	
Impact HZ-26 Implementation of the Project would not occur within the vicinity of a private airstrip and would not result in a safety hazard for people residing or working in the Project site.	✕	
Impact HZ-27 Implementation of the Project would not expose people or structures to a significant risk of loss, injury, or death involving fires or conflict with emergency response or evacuation plans.	✕	
SECTION III.L (GEOLOGY AND SOILS)		
Impact GE-1 Construction activities associated with the Project would not result in the loss of topsoil caused by soil erosion.		✕
Impact GE-1a Construction at Candlestick Point, including the Yosemite Slough bridge, would not result in the loss of topsoil caused by soil erosion.		✕
Impact GE-1b Construction at HPS Phase II would not result in the loss of topsoil caused by soil erosion.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact GE-2 Construction activities associated with the Project would not result in damage to structures caused by settlement from lowering of groundwater levels.		✕
Impact GE-2a Construction at Candlestick Point and the Yosemite Slough bridge would not result in damage to structures from settlement caused by lowering of groundwater levels.		✕
Impact GE-2b Construction at HPS Phase II would not result in damage to structures caused by settlement from lowering of groundwater levels.	✕	
Impact GE-3 Rock removal activities at the Alice Griffith Public Housing site and the Jamestown area would not result in damage to structures from vibration and/or settlement caused by the fracturing of bedrock for excavation.		✕
Impact GE-4 Implementation of the Project would not expose people and structures to substantial adverse effects caused by seismically induced groundshaking.		✕
Impact GE-4a Implementation of the Project at Candlestick Point, including the Yosemite Slough bridge and Alice Griffith Housing, would not expose people or structures to substantial adverse effects caused by seismically induced groundshaking.		✕
Impact GE-4b Implementation of the Project at HPS Phase II would not expose people and structures to substantial adverse effects caused by seismically induced groundshaking.	✕	
Impact GE-5 Implementation of the Project would not expose people or structures to substantial adverse effects caused by seismically induced ground failure such as liquefaction, lateral spreading, and settlement.		✕
Impact GE-5a Implementation of the Project at Candlestick Point, including the Alice Griffith Housing and Yosemite Slough bridge, would not expose people or structures to substantial adverse effects caused by seismically induced ground failure such as liquefaction, lateral spreading, and settlement.		✕
Impact GE-5b Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by seismically induced ground failure such as liquefaction, lateral spreading, and settlement.	✕	
Impact GE-6 Implementation of the Project would not expose people or structures to substantial adverse effects caused by seismically induced landslides.		✕
Impact GE-6a Implementation of the Project at Candlestick Point, including the Alice Griffith Housing, would not expose people or structures to substantial adverse effects caused by seismically induced landslides.		✕
Impact GE-6b Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by seismically induced landslides.	✕	
Impact GE-7 Implementation of the Project would not expose people or structures to substantial adverse effects caused by shoreline instability.		✕
Impact GE-7a Implementation of the Project at Candlestick Point would not expose people or structures to substantial adverse effects caused by shoreline instability.		✕
Impact GE-7b Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by shoreline instability.	✕	
Impact GE-8 Implementation of the Project would not expose people or structures to substantial adverse effects caused by landslides.		✕
Impact GE-8a Implementation of the Project at Candlestick Point would not expose people or structures to substantial adverse effects caused by landslides.		✕
Impact GE-8b Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by landslides.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact GE-9 Implementation of the Project would not expose people or structures to substantial adverse effects caused by damage from settlement.		✕
Impact GE-9a Implementation of the Project at Candlestick Point, including Alice Griffith Housing and the Yosemite Slough bridge, would not expose people or structures to substantial adverse effects caused by damage from settlement.		✕
Impact GE-9b Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by damage from settlement.	✕	
Impact GE-10 Implementation of the Project would not expose people or structures to substantial adverse effects caused by expansive soils.		✕
Impact GE-10a Implementation of the Project at Candlestick Point, including Alice Griffith Housing and the Yosemite Slough bridge, would not expose people or structures to substantial adverse effects caused by expansive soils.		✕
Impact GE-10b Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by expansive soils.	✕	
Impact GE-11 Implementation of the Project would not expose people or structures to substantial adverse effects caused by corrosive soils.		✕
Impact GE-11a Implementation of the Project at Candlestick Point, including Alice Griffith Housing and the Yosemite Slough bridge, would not expose people or structures to substantial adverse effects caused by corrosive soils.		✕
Impact GE-11b Implementation of the Project at HPS Phase II would not expose people or structures to substantial adverse effects caused by corrosive soils.	✕	
Impact GE-12 Implementation of the Project would not expose people or structures to substantial adverse effects caused by surface fault rupture.	✕	
Impact GE-13 Implementation of the Project would not result in the use of soils incapable of adequately supporting septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.	✕	
Impact GE-14 Implementation of the Project would not result in a substantial change of topography or destruction of unique geologic features.	✕	
SECTION III.M (HYDROLOGY AND WATER QUALITY)		
Impact HY-1 Construction activities associated with the Project would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements.		✕
Impact HY–1a Construction at Candlestick Point would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements.		✕
Impact HY-1b Construction at HPS Phase II would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements.	✕	
Impact HY-1c Construction of the Yosemite Slough bridge would not cause an exceedance of water quality standards or contribute to or cause a violation of waste discharge requirements.		✕
Impact HY-2 Construction activities associated with the Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.	✕	
Impact HY-3 Construction activities associated with the Project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site.	✕	
Impact HY-4 Construction activities associated with the Project would not substantially alter the existing drainage pattern of the site, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off site.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact HY-5 Construction activities associated with the Project would not create or contribute runoff water that would exceed the capacity of existing or planned storm sewer systems or provide substantial additional sources of polluted runoff.	✕	
Impact HY-6 Implementation of the Project would not contribute to violations of water quality standards or waste discharge requirements.		✕
Impact HY-6a Implementation of the Project at Candlestick Point would not contribute to violations of water quality standards or waste discharge requirements.		✕
Impact HY-6b Implementation of the Project at HPS Phase II would not contribute to violations of water quality standards or waste discharge requirements.	✕	
Impact HY-6c Implementation of the Yosemite Slough bridge would not contribute to violations of water quality standards or waste discharge requirements.		✕
Impact HY-7 Implementation of the Project would not otherwise degrade water quality.	✕	
Impact HY-8 Implementation of the Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.	✕	
Impact HY-9 Implementation of the Project would not alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, and would not result in substantial erosion or siltation on site or off site.	✕	
Impact HY-10 Implementation of the Project would not alter the existing drainage pattern of the site, through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff, and would not result in flooding on site or off site.	✕	
Impact HY-11 Implementation of the Project would not create or contribute runoff water that would exceed the capacity of existing or planned storm sewer systems or provide substantial additional sources of polluted runoff.	✕	
Impact HY–12 Implementation of the Project would not place housing in a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.		✕
Impact HY-12a Implementation of the Project at Candlestick Point would not place housing in a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.		✕
Impact HY-12b Implementation of the Project at HPS Phase II would not place housing in a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.	✕	
Impact HY-13 Implementation of the Project would not place structures within a 100-year flood hazard area or impede or redirect flood flows.		✕
Impact HY-13a Implementation of the Project at Candlestick Point would not place structures within a 100-year flood hazard area that could impede or redirect flood flows.		✕
Impact HY-13b Implementation of the Project at HPS Phase II would not place structures within a 100-year flood hazard area or impede or redirect flood flows.	✕	
Impact HY-13c The Yosemite Slough bridge would not place structures within a 100-year flood hazard area or impede or redirect flood flows.		✕
Impact HY-14 Implementation of the Project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.	✕	
Impact HY-15 Implementation of the Project would not expose people or structures to inundation by seiche, tsunami, or mudflow.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
SECTION III.N (BIOLOGICAL RESOURCES)		
(Note: Project impacts for Impact BI-3a through Impact BI-21b are provided by Impact BI-22 through Impact BI-26)		
Impact BI-1 Implementation of the Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	✕	
Impact BI-2 Implementation of the Project would not have a substantial adverse effect, either directly or through habitat modifications, on any common species or habitats through substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	✕	
Impact BI-3a Construction at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on any plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.		✕
Impact BI-3b Construction at HPS Phase II and construction of the Yosemite Slough bridge would not have a substantial adverse effect, either directly or through habitat modifications, on any plant species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.	✕	
Impact BI-4a Construction at Candlestick Point would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the *Clean Water Act* through direct removal, filling, hydrological interruption, or other means.		✕
Impact BI-4b Construction at HPS Phase II would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the *Clean Water Act* (including, but not limited to, marsh, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	✕	
Impact BI-4c Construction of the Yosemite Slough bridge would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the *Clean Water Act* (including, but not limited to, marsh, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.		✕
Impact BI-5a Construction at Candlestick Point would not have a substantial adverse effect on eelgrass beds, a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS.		✕
Impact BI-5b Construction at HPS Phase II and construction of the Yosemite Slough bridge would not have a substantial adverse effect on eelgrass beds, a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS.	✕	
Impact BI-6a Construction at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on any bird species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.	✕	
Impact BI-6b Construction at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on any bird species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.	✕	
Impact BI-7a Construction at Candlestick Point would not have a substantial adverse effect on the quantity and quality of suitable foraging habitat for raptors.		✕
Impact BI-7b Implementation of the Project at HPS Phase II would not have a substantial adverse effect on the quantity and quality of suitable foraging habitat for raptors.	✕	
Impact BI-8a Construction at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on the western red bat, a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact BI-8b Construction at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on the western red bat, a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.	✕	
Impact BI-9a Pile driving associated with construction at Candlestick Point would not have a substantial adverse effect either directly or through habitat modifications, on marine mammals or fish identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.		✕
Impact BI-9b Pile driving associated with construction of the marina and the Yosemite Slough bridge would not have a substantial adverse effect at HPS Phase II, either directly or through habitat modifications, on marine mammals or fish identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.	✕	
Impact BI-10a Construction of the Candlestick Point would require the removal of hard substrates (riprap) used by native oysters, but would not have a substantial adverse effect, either directly or through habitat modifications, on this species.		✕
Impact BI-10b Construction at HPS Phase II would require removal of hard substrates (docks, riprap, seawalls, pilings, etc) used by native oysters, but would not have a substantial adverse effect, either directly or through habitat modifications, on this species.	✕	
Impact BI-10c Construction of the Yosemite Slough bridge may require removal of hard substrates (docks, riprap, seawalls, pilings, etc) used by native oysters, but would not have a substantial adverse effect, either directly or through habitat modifications, on this species.		✕
Impact BI-11a Construction at Candlestick Point would not have a substantial adverse effect on designated critical habitat for green sturgeon and Central California Coast steelhead, and would not result in impacts to individuals of these species as well as Chinook salmon and longfin smelt through disturbance and loss of aquatic and mudflat habitat as a result of construction of shoreline revetments.		✕
Impact BI-11b Construction at HPS Phase II would not have a substantial adverse effect on designated critical habitat for green sturgeon and Central California Coast steelhead, and would not result in impacts to individuals of these species as well as Chinook salmon and longfin smelt through temporary and permanent disturbance of aquatic and mudflat habitat during construction of shoreline revetments.	✕	
Impact BI-11c Construction of the Yosemite Slough bridge would not have a substantial adverse effect on designated critical habitat for green sturgeon and Central California Coast steelhead and would not result in impacts to individuals of these species, Chinook salmon, or longfin smelt through disturbance or loss of aquatic and mudflat habitat as a result of construction of shoreline revetments.		✕
Impact BI-12a Construction at Candlestick Point would not have a substantial adverse effect on designated essential fish habitat through (EFH) or result in a substantial change in total available essential fish habitat through placement of riprap and other fill or through temporary water-quality impacts during construction. EFH is a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS.		✕
Impact BI-12b Construction at HPS Phase II would not have a substantial adverse effect on designated essential fish habitat through (EFH) through placement of riprap and other fill, or through temporary water-quality impacts during construction. EFH is a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS.	✕	
Impact BI-12c Construction of the Yosemite Slough bridge would not have a substantial adverse effect on designated essential fish habitat through (EFH) through placement of riprap and other fill, or through temporary water-quality impacts during construction. EFH is a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact BI-13a Construction at Candlestick Point would not interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridor, or impede the use of native wildlife nursery sites.		✕
Impact BI-13b Construction at HPS Phase II and construction of the Yosemite Slough bridge would not interfere substantially with the movement of native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, but it could impede the use of native wildlife nursery sites.	✕	
Impact BI-14a Construction at Candlestick Point would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.		✕
Impact BI-14b Construction at HPS Phase II and Yosemite Slough bridge would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	✕	
Impact BI-15a Construction within the shoreline or Bay at Candlestick Point would not result in the disturbance of contaminated soil or the re-suspension of contaminated sediments.		✕
Impact BI-15b Construction within the shoreline or Bay at HPS Phase II would not result in the disturbance of contaminated soil or the re-suspension of contaminated sediments.	✕	
Impact BI-16a Implementation of the Project at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS or interfere substantially with the movement of any native resident or migratory fish, or impede the use of native wildlife nursery sites.		✕
Impact BI-16b Implementation of the Project at HPS Phase II, including operation of the proposed marina, would not have a substantial adverse effect, either directly or through habitat modifications, on aquatic species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS or interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	✕	
Impact BI-17a Implementation of the Project at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on nesting American peregrine falcons, identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.		✕
Impact BI-17b Implementation of the Project at HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on nesting American peregrine falcons, identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.	✕	
Impact BI-18a Implementation of the Project at Candlestick Point would not have a substantial adverse effect, either directly or through habitat modifications, on aquatic species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the CDFG or USFWS, or have a substantial adverse effect on designated EFH, a sensitive natural community identified in local or regional plans, policies, and regulations or by the NMFS.		✕
Impact BI-18b Implementation of the marina in HPS Phase II would require routine maintenance dredging of the marina, which could remove habitat or generate substantial increases in turbidity within the marina, but would not have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the CDFG or USFWS, or have a substantial adverse effect on designated EFH, a sensitive natural community identified in local or regional plans, policies, and regulations or by the NMFS.	✕	
Impact BI-19a Implementation of the Project at Candlestick Point would not result in impacts to aquatic organisms through the re-suspension of contaminated sediments.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact BI-19b Implementation of the marina in HPS Phase II would not have a substantial adverse effect, either directly or through habitat modifications, on sensitive aquatic species, identified as candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFG or USFWS, or have a substantial adverse effect on designated EFH, a sensitive natural community identified in local or regional plans, policies, and regulations or by the CDFG or USFWS, or have a substantial effect on predators that prey on contaminated species or feed on contaminated substrates as a result of routine maintenance dredging or could generate routine increases in turbidity within the marina that would result in the re-suspension of contaminated sediments.	✕	
Impact BI-20a Implementation of the Project at Candlestick Point would not interfere substantially with the movement of resident or migratory bird species by increasing collision hazards and the amount of artificial lighting.	✕	
Impact BI-20b Implementation of the Project at HPS Phase II would not interfere substantially with the movement of resident or migratory bird species by increasing collision hazards and the amount of artificial lighting.	✕	
Impact BI-21a Implementation of the Project at Candlestick Point would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.		✕
Impact BI-21b Implementation of the Project at HPS Phase II would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	✕	
Impact BI-22 Implementation of the Project would not have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, by the CDFG, USFWS, or NMFS.	✕	
Impact BI-23 Implementation of the Project would not have a substantial adverse effect on sensitive natural communities identified in local or regional plans, policies, or regulations by the CDFG, USFWS, or NMFS.	✕	
Impact BI-24 Implementation of the Project would not have a substantial adverse effect on federally protected wetlands and other waters as defined by Section 404 of the *Clean Water Act* (including, but not limited to, marsh, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	✕	
Impact BI-25 Implementation of the Project would not interfere substantially with the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery site.	✕	
Impact BI-26 Implementation of the Project would not conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	✕	
SECTION III.O (PUBLIC SERVICES)		
Impact PS-1 Construction activities associated with the Project would not result in a need for new or physically altered facilities in order to maintain acceptable service ratios, response times, or other performance objectives for police protection.	✕	
Impact PS-2 Implementation of the Project would not result in a need for new or physically altered facilities beyond those included as part of this Project in order to maintain acceptable service ratios, response times, or other performance objectives for police protection.	✕	
Impact PS-3 Construction activities associated with the Project would not result in a need for new or physically altered facilities in order to maintain acceptable response times for fire protection and emergency medical services.	✕	
Impact PS-4 Implementation of the Project would not result in a need for new or physically altered facilities beyond those included as part of this Project in order to maintain acceptable response times for fire protection and emergency medical services.	✕	
Impact PS-5 Construction activities associated with the Project would not affect the provision of school services by decreasing access to school services.	✕	

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6

Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact PS-6 New students associated with implementation of the Project would not require new or expanded school facilities, the construction of which could result in substantial adverse impacts.	✕	
Impact PS-7 Construction activities associated with the Project would not affect provision of school services by decreasing access to library services.	✕	
Impact PS-8 Implementation of the Project would not result in an increase in demand for library services that is not met by existing library facilities in the vicinity that have been expanded or updated.	✕	
SECTION III.P (RECREATION)		
Impact RE-1 Construction of the parks, recreational uses, and open space proposed by the Project would not result in substantial adverse physical environmental impacts beyond those analyzed and disclosed in this EIR.	✕	
Impact RE-2 Implementation of the Project would not increase the use of existing parks and recreational facilities that would cause the substantial physical deterioration of the facilities to occur or to be accelerated, nor would it result in the need for, new or physically altered park or recreational facilities.	✕	
Impact RE-3 Implementation of the Project would decrease the size of CPSRA but would not, overall, have an adverse effect on the recreational opportunities offered by that park, nor would it substantially adversely affect windsurfing opportunities at the Project site.		✕
SECTION III.Q (UTILITIES)		
Impact UT-1 Implementation of the Project would not require water supplies in excess of existing entitlements or result in the need for new or expanded entitlements.	✕	
Impact UT-2 Implementation of the Project would not require or result in the construction of new or expanded water treatment facilities. The Project would require the expansion of an auxiliary water conveyance system to provide adequate water supply for firefighting to the Project site.	✕	
Impact UT-3 Implementation of the Project would not require expansion of existing off-site wastewater conveyance or treatment facilities.		✕
Impact UT-3a Implementation of the Project at Candlestick Point would not require expansion of existing off-site wastewater conveyance facilities.		✕
Impact UT-3b Implementation of the Project at HPS Phase II would not require expansion of existing off-site wastewater conveyance facilities.	✕	
Impact UT-4 Implementation of the Project would not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.	✕	
Impact UT-5 Construction activities associated with the Project, including demolition of existing facilities, would not generate construction-related solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.		✕
Impact UT-5a Construction at Candlestick Point, including demolition of existing facilities, would not generate construction-related solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.		✕
Impact UT-5b Construction at HPS Phase II, including demolition of existing facilities, would not generate construction-related solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.	✕	
Impact UT-6 Construction activities associated with the Project would not require the disposal of hazardous wastes such as lead-based paint, asbestos, and contaminated soils that would exceed the capacity of transport, storage, and disposal facilities permitted to treat such waste.		✕
Impact UT-6a Construction at Candlestick Point would not require the disposal of hazardous wastes such as lead-based paint, asbestos, and contaminated soils that would exceed the capacity of transport, storage, and disposal facilities permitted to treat such waste.		✕

APPENDIX C IMPACTS EVALUATED IN ADDENDUM 6		
Impact(s)	*Impact Evaluated in Addendum 5*	*Impact Not Evaluated in Addendum 5*
Impact UT-6b Construction at HPS Phase II would not require the disposal of hazardous wastes such as lead-based paint, asbestos, and contaminated soils that would exceed the capacity of transport, storage, and disposal facilities permitted to treat such waste.	✕	
Impact UT-7 Implementation of the Project would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.		✕
Impact UT-7a Implementation of the Project at Candlestick Point would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.		✕
Impact UT-7b Implementation of the Project at HPS Phase II would not generate solid waste that would exceed the capacity of landfills serving the City and County of San Francisco.	✕	
Impact UT-8 Implementation of the Project would not generate hazardous waste that would exceed the permitted capacity of transport, storage, and disposal facilities authorized to treat such waste.		✕
Impact UT-8a Implementation of the Project at Candlestick Point would not generate hazardous waste that would exceed the permitted capacity of transport, storage, and disposal facilities authorized to treat such waste.		✕
Impact UT-8b Implementation of the Project at HPS Phase II would not generate hazardous waste that would exceed the permitted capacity of transport, storage, and disposal facilities authorized to treat such waste.	✕	
Impact UT-9 Implementation of the Project would comply with federal, state, and local statutes and regulations related to solid waste.	✕	
Impact UT-10 Implementation of the Project would not require extension of dry utility infrastructure that would exceed the capacity of the services providing such utilities.	✕	
SECTION III.R (ENERGY)		
Impact ME-1 Construction activities associated with the Project would not result in the use of large amounts of energy, or use energy in a wasteful manner.	✕	
Impact ME-2 Buildings constructed by the Project would not use large amounts of electricity in a wasteful manner.	✕	
Impact ME-3 Buildings constructed by the Project would not use large amounts of natural gas in a wasteful manner.	✕	
Impact ME-4 Vehicle trips associated with the Project would not use large amounts of energy in a wasteful manner.	✕	
SECTION III.S (GREENHOUSE GAS EMISSIONS)		
Impact GC-1 The Project would not result in a substantial contribution to global climate change by increasing GHG emissions in a manner that conflicts with the state goal of reducing GHG emissions in California to 1990 levels by 2020 (e.g., a substantial contribution to global climate change) or conflicts with San Francisco's Climate Action Plan by impeding implementation of the local GHG reduction goals established by the San Francisco 2008 Greenhouse Gas Reduction Ordinance.	✕	

Appendix D

Analysis of Transportation Effects

ESA

FEHR PEERS

April 4, 2018

Mr. Jose Campos
Office of Community Investment and Infrastructure
1 South Van Ness Avenue, 5th Floor
San Francisco, CA 94103

Subject: Analysis of Transportation Effects of Project Refinements to the Candlestick Point/Hunters Point Shipyard Phase II Project Since Certification of the Project's Final EIR (Addendum 5)

Dear Joy:

As you know, the *Candlestick Point/Hunters Point Shipyard Phase II Project Final EIR* (herein referred to simply as "EIR") was certified by the San Francisco Planning Commission and the San Francisco Redevelopment Commission in June 2010. The EIR analyzed the originally-proposed project (as described in Chapter II of the FEIR, hereinafter referred to as "FEIR Project"), several variants (as described in Chapter IV of the FEIR), and several alternatives (as described in Chapter VI of the FEIR). The City's subsequent actions approved a subset of the options analyzed in the EIR, including:

1. The Project with a stadium, with Candlestick Tower Variant 3D, Utilities Variant 4, and Shared Stadium Variant 5;
2. The Project without the stadium, with Non-Stadium R&D Variant 1, Candlestick Tower Variant 3D, and Utilities Variant 4;
3. The Project without the stadium, with Non-Stadium Housing Variant 2, Non-Stadium Housing/R&D Variant 2a, Candlestick Tower Variant 3D, and Utilities Variant 4; and
4. Sub-alternative 4A, which provides for the preservation of four historic structures in HPS2; Sub-alternative 4A could be implemented with either the stadium Variants or non-stadium Variants (see Board of Supervisors CEQA Findings pp. 2–4).

Since the certification of the EIR, a number of refinements have been proposed to the FEIR Project. Modifications to the FEIR Project 2010 Phasing Schedule and the schedules for implementation of the Transportation Plan and other public benefits were analyzed in Addendum 1, published on December 11, 2013, and approved by various City agencies and OCII in 2014. Addendum 4, published on February 22, 2016, analyzed modifications to the CP Design for Development and certain transportation system changes that required modification of several CP-HPS2 Project plan documents. These modifications were approved in 2016. (The same City agencies also approved

FEIR Addenda 2 and 3; however, FEIR Addendum 2 is no longer applicable to the Modified Project and Addendum 3 did not modify any portion of the project affecting the transportation network or affect any transportation impact analysis, and thus are not discussed further.)

The Modified Project, as proposed in this analysis, is most similar in land uses to Non-Stadium R&D Variant 1, listed above. This letter summarizes a review of the proposed refinements to determine whether and to what extent they would change conclusions regarding significant transportation-related impacts and associated mitigation measures as described in the EIR.

PROJECT MODIFICATIONS

Table 1 highlights the Addendum 5 transportation-related revisions as well as other previously analyzed and approved revisions from prior addenda, followed by a brief description of the changes. **Table 2** summarizes the Modified Project proposed land uses at Candlestick Point and at Hunters Point Shipyard (herein referred to as "CP" and "HPS," respectively). A detailed comparison of the modified land uses to the FEIR Project, FEIR Variant 1 (R&D), and FEIR Variant 2A (Housing/R&D) is provided in **Appendix A**. Compared to FEIR Variant 1, the Modified Project would reduce the number of housing units in CP by 632 housing units, relocating those units at HP. Additionally in HPS, the Modified Project would add a 175-room hotel, add 410,000 square feet of institutional/educational uses, reduce R&D/Office in HPS from 5,000,000 square feet to 4,265,000 square feet, and increase the retail/maker space in HPS from 125,000 square feet to 401,000 square feet (71,000 square feet of the retail in HPS would be retail that was previously approved and no longer planned to be built as part of HPS Phase 1). HPS would also include an additional 172 housing units that were previously approved but no longer planned to be built as part of HPS Phase 1. The Modified Project site plan is shown in **Figure 1**.

TABLE 1: PROJECT DESCRIPTION REVISIONS					
Project Description Component	**Change from FEIR Assumptions for Variant 1 (R&D)**				
	Addendum 1[1]	**Addendum 2**	**Addendum 3**	**Addendum 4[2]**	**Addendum 5**
Land Use	No Change	Project change involved implementation of an Automated Waste Collection System to serve the entire project site, including very minor effects to the transportation system. That system is no longer proposed and the effects studied in Addendum 2 are no longer applicable to the Modified Project.	Project change does not impact transportation assumptions or conclusions	• Convert 15.5 ksf of office to 6 ksf of local serving retail • Convert 42 ksf of performance venue space to 1,200-seat (42 ksf) cinema • All other uses (and balance of office and performance venue space) to remain unchanged • Reduce the number of seats in the performance venue from 10,000 to 5,600 (including a Performance Arts Center and a Film Arts Center)	FEIR Variant 1 (R&D) land uses, plus the following changes: • Reduce R&D/Office from 5,000,000 square feet to 4,265,000 square feet at HP • Add a 175-room hotel at HP • Add 410,000 square feet of institutional/educational uses at HP • Increase the retail/maker space from 125,000 square feet to 401,000 square feet at HP • Relocation of 632 housing units from CP to HP • Addition of 172 additional residential dwelling units at HP previously approved but no longer planned to be built as part of HP Phase 1
Construction Phasing	Generally accelerated construction within Candlestick Point, including the regional retail center, and postponed construction within Hunters Point Shipyard. As a result of changes to development phasing, also included changes to phasing of internal transportation infrastructure, off-site roadway improvements, and transit service improvements.			No changes to project construction phasing compared to Addendum 1. EIR analyzed an initial and long-term configuration for Harney Way. Addendum 4 analyzed the effects of splitting construction of the initial configuration into two phases. Attachment A in the transportation assessment included with Addendum 4 illustrates the initial configuration.	Same land uses within CP as FEIR Variant 1 (with the exception of 632 residential units relocated from CP to HP as part of the Modified Project), but with similar construction phasing to Addendum 1 (i.e., overall acceleration of construction at CP). Within HP, as a result of additional changes to development phasing, more substantial changes to construction phasing, including internal transportation infrastructure, off-site roadway improvements, and transit service improvements

TABLE 1: PROJECT DESCRIPTION REVISIONS					
Roadway Geometry					
Roadway Cross Sections	A number of changes to roadway cross-sections based on need to align roadways and standardize lane widths per SFMTA direction.	Project change involved implementation of an Automated Waste Collection System to serve the entire project site, including very minor effects to the transportation system. That system is no longer proposed and the effects studied in Addendum 2 are no longer applicable to the Modified Project.	Project change does not impact transportation assumptions or conclusions	Additional changes to lane, sidewalk, and median widths to accommodate storm-water treatment and fire department requirements. Number of lanes and facility capacity generally remained unchanged. Attachment C of the transportation assessment included with Addendum 4 includes a cross-section comparison figure.	No changes in CP compared to Addendum 4. Changes in HPS South associated with re-orientation of street grid. Changes in R&D and HPS North associated with improvements to bicycle network to connect cycletrack through entire CP site, as well as to provide transit-only lanes on Lockwood Avenue. Generally, street design principles remain unchanged and facility capacity generally remains unchanged. Appendix D includes the revised cross-sections.
Gilman Avenue	No Change			Reconfigure the Gilman Avenue cross-section between Third Street and Arelious Walker. The cross-section would be revised to increase the sidewalk width and decrease the number of travel lanes from two lanes to one lane in each direction. Parking would remain on both sides of the street. Attachment D of the transportation assessment included with Addendum 4 illustrates the revised cross-section.	No change compared to Addendum 4
Roadway Alignment	Revised roadway alignment to accommodate changes to BRT alignment.			No changes to roadway alignment compared to Addendum 1.	Updated alignment of internal streets in HPS South associated with reorientation of street grid. Modified Project now also includes optional extension of Donahue Avenue from its current terminus south to connect to Crisp Avenue.
Yosemite Slough Bridge	Widen the bridge by four feet from the previously-approved non-stadium project alternative, to accommodate bicycle and pedestrian circulation on both sides of the bridge. Total width still within the maximum width evaluated in the EIR for the Stadium Alternative.			No additional changes to Yosemite Slough Bridge cross-section since Addendum 1.	No additional changes to Yosemite Slough Bridge cross-section since Addendum 1.

TABLE 1: PROJECT DESCRIPTION REVISIONS					
Transit					
BRT Alignment	Convert proposed BRT lanes from a two-way, side-running alignment to a center-running alignment, where possible. At the Candlestick Point site, the BRT lanes would be re-oriented such that both BRT lanes are on the west side of the Wedge Park.			No additional changes to BRT alignment since Addendum 1.	No additional changes to BRT alignment since Addendum 1.
29 Sunset	Minor re-routing through Candlestick Point.			No additional changes to the 29-Sunset route since Addendum 1.	No additional changes to the 29-Sunset route since Addendum 1.
Hunters Point Shipyard Transit Center	Relocate the Hunters Point Transit Center one block north from the originally proposed location, resulting in re-routing all bus routes traversing the transit center.			No additional changes to the Hunters Point Shipyard Transit Center or transit routes since Addendum 1.	Relocate the Hunters Point Transit Center one block north from the revised location analyzed in Addendum 1, resulting in minor rerouting of all bus routes traversing the transit center in its vicinity. Figure 8 illustrates the proposed change.
Bicycle Network	Refine the bicycle network including the addition of a cycle track near the Candlestick Point Retail Center. The cycle track would replace the Class II bike lanes originally proposed on Arelious Walker and Harney Way.	Project change involved implementation of an Automated Waste Collection System to serve the entire project site, including very minor effects to the transportation system. That system is no longer proposed and the effects studied in Addendum 2 are no longer applicable to the Modified Project.	Project change does not impact transportation assumptions or conclusions	Minor bicycle network refinement. Replace Class III sharrows with Class II bike lanes on Earl Street. Attachment H of the Transportation Assessment included with Addendum 4 shows the revisions to the bicycle network.	No changes to the bicycle network in CP compared to Addendum 4. Changes in HP to realign the cycletrack away from Crisp Avenue, through the open space to the south, and to connect to a midblock break within HPS South. Cycletrack would continue through HPS South and across Drydock 4 as a two-way cycletrack, and then travel up Spear and Robinson Street as a directional separated bicycle facility to connect to the cycletrack planned in the Northside Park, west of Donahue Street. Figure 12 presents the Modified Project bicycle network.
Pedestrian Network	Minor refinements to the pedestrian network.			Addition of sidewalk on the west-side of Arelious Walker, between Jamestown Avenue and Ingerson Avenue. Other minor changes to sidewalk widths to accommodate storm-water runoff, as noted above.	Changes in HP associated with realigned street grid; however, sidewalk widths and intersection density remain similar. Creation of two pedestrian bridges across Drydock 4. See Appendix D for revised cross-sections.

TABLE 1: PROJECT DESCRIPTION REVISIONS					
Parking	Minor refinement to the total parking supply. Generally the Project would supply parking within the range contemplated in the EIR (2,800 to 20,000 on- and/or off-street parking spaces).			Minor increases to the total off-street parking supply to account for loss of anticipated on-street parking. Accomplished through modifications to parking rates outlined in the D4D. Total parking supply is similar to what was initially contemplated in the EIR.	Minor changes to total supply associated with minor changes in land use and refinements to street and intersection designs. Decrease of approximately 725 spaces in Hunters Point and a decrease of approximately 250 in Candlestick Point compared to FEIR Variant 1 (R&D). No changes to maximum parking rates by land use, however. Generally, the Project would supply parking within the range contemplated in the EIR for Variant 1 (R&D) (3,000 to 23,000 on- and/or off-street parking spaces).
Loading	No Changes			No Changes	No Changes

Notes:

1. Detailed changes to the Project Description are described in Addendum 1, dated December 11, 2013.
2. Addendum 4 did not propose revisions that would affect the transportation system or analysis at the Hunters Point Shipyard site. Detailed changes to the Project Description are described in Addendum 4, dated February 22, 2016.

TABLE 2

MODIFIED PROJECT PROPOSED LAND USES

Land Use Program	FEIR Variant 1 (R&D)				Modified Project			
	CP		HPS		CP		HPS	
	Size	Units	Size	Units	Size	Units	Size	Units
Residential[1]	7,850	units	2,650	units	7,218	units	3,454	units
Neighborhood Retail/Maker Space[1,2]	125	ksf	125	ksf	125	ksf	301	ksf
Regional Retail	635	ksf	--	ksf	635	ksf	100	ksf
Office	150	ksf	--	ksf	150	ksf	--	ksf
Hotel	220	rooms	--	rooms	220	rooms	175	rooms
Community Services	50	ksf	50	ksf	50	ksf	50	ksf
Park	147	acres	238	acres	105.7	acres	337.7	acres
Arena	10,000	seats	--	seats	10,000	seats	--	seats
R&D	--	ksf	5,000	ksf	--	ksf	4,265	ksf
Artists' Studios	--	ksf	255	ksf	--	ksf	255	ksf
Marina	--	slips	300	slips	--	slips	300	slips
Institutional (Jr. HS/HS)	--	students	--	students	--	students	1,000[3]	students
Institutional (HS/Post-Secondary)	--	students	--	students	--	students	1,000[3]	students

1. The total amount of proposed land development for HPS Phase 2 shown in Table 2 includes 71 ksf of additional retail space and 172 additional dwelling units that will no longer be included as part of the HPS Phase 1 development, and therefore, would not represent "net new" approved development within the overall HPS Plan Area.
2. 75 ksf of the 301 ksf of Neighborhood Retail at HPS would be dedicated for maker space uses.
3. Includes 600 HS students and 400 college students. Half of the HS students would be on site at any given time. Only 1/3 of college students would be on site at any one time.

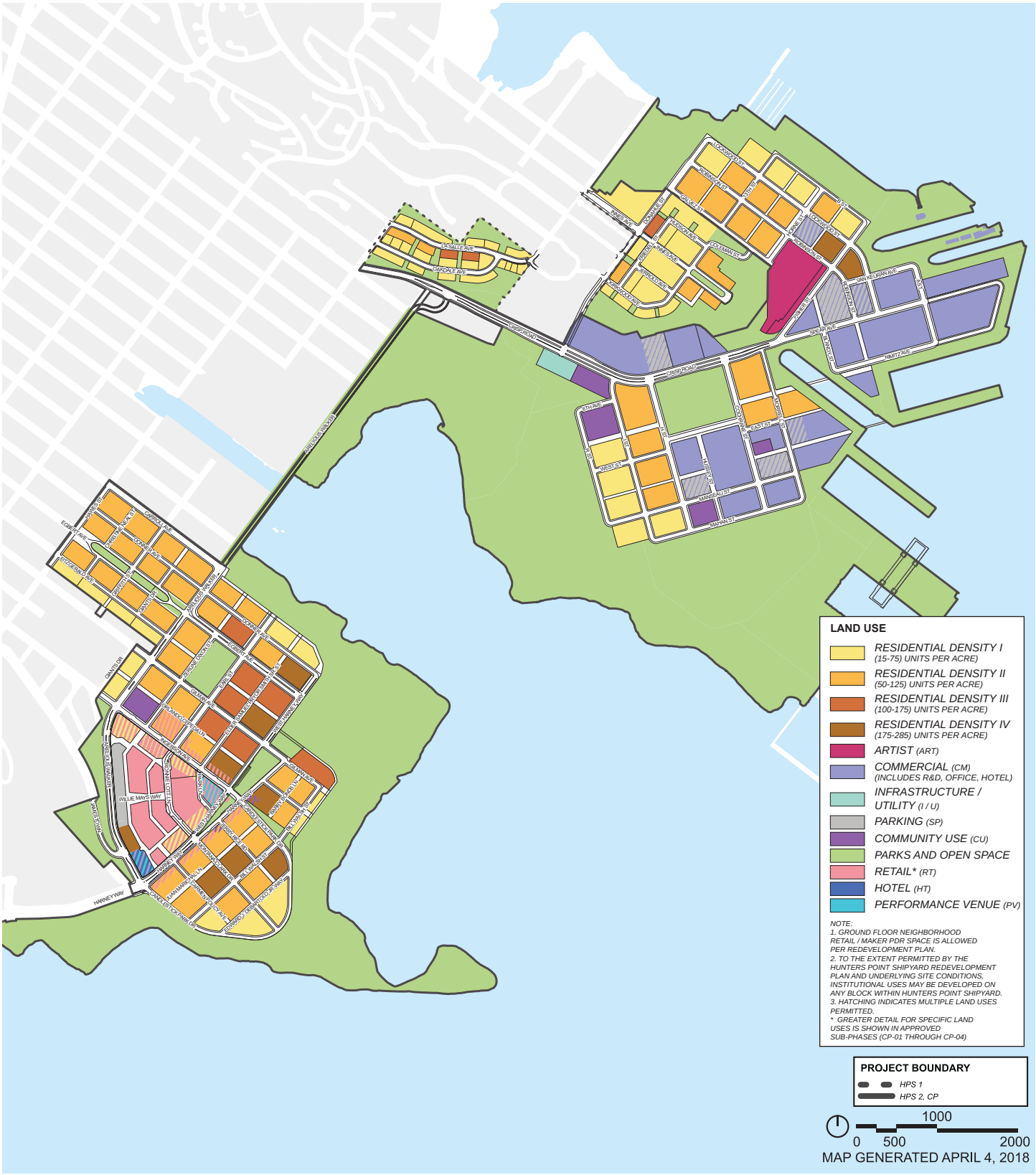


Figure 1

Modified Project Site Plan

TRAVEL DEMAND

Fehr & Peers conducted a detailed travel demand forecast of the Modified Project land uses using the same methods as described in the EIR. As noted earlier, the FEIR analyzed the FEIR Project as well as several variants and alternatives to the originally-proposed project. The land uses and travel demand characteristics of the Modified Project are similar to FEIR Variant 1 (R&D). Therefore, **Table 3**, below, compares the travel demand forecasts for the Modified Project with both the FIER Project and FEIR Variant 1 (R&D). Detailed calculation sheets are provided in **Appendix B**.

TABLE 3

TRAVEL DEMAND FORECAST COMPARISON (VEHICLE TRIPS)

		FEIR Project	FEIR Variant 1 (R&D)	Modified Project	Difference from FEIR Variant 1 (R&D)
AM Peak Hour	CP	2,310	2,310	2,264	-46
	HP	1,924	3,065	3,212	+147
	Total	**4,234**	**5,375**	**5,476**	**+101**[1]
PM Peak Hour	CP	4,913	4,913	4,882	-31
	HP	2,164	3,134	3,644	+510
	Total	**7,077**	**8,047**	**8,526**	**+479**

Notes:

1. Increases in trips associated with the Modified Project include approximately 100 AM peak hour and 200 PM peak hour vehicle trips for 172 dwelling units and 71 ksf of retail space. These new trips would not affect the total amount of traffic in the area at Project buildout because they correspond to the number of units and commercial square footage approved but not built, and no longer planned to be built, as part of the adjacent HPS Phase 1 project; however, they do represent an increase in the number of trips that are considered a part of the Modified Project. Thus, although the Modified Project's contribution in traffic is expected to increase by approximately 100 to 480 vehicle trips in the AM and PM peak hours,respectively, the total traffic volume in the area is expected to be nearly identical to the FEIR in the AM peak hour and increase by approximately 280 trips in the PM peak hour, since the other vehicle trips were previously accounted for as part of Phase 1.

As shown, the Modified Project would generate approximately 100 more vehicle trips overall in the AM peak hour (although it would generate approximately 150 more vehicle trips at Hunters Point Shipyard, which would be offset by a decrease of nearly 50 vehicle trips at Candlestick Point). In the PM peak hour, it would generate approximately 480 peak hour vehicle trips more than FEIR Variant 1, which includes an increase of approximately 500 trips at Hunters Point and a decrease of approximately 30 trips at Candlestick Point. Overall, the changes compared to Variant 1 represent an increase of 1.9 percent in vehicle trips during the AM peak hour and an increase of 6.0 percent during the PM peak hour associated with the Modified Project. In reviewing these numbers it is important to recall that nearly all of the AM peak hour increase and approximately 40 percent of the PM peak hour increase is due to land uses that were previously considered as part of Phase 1 and which are now considered part of the Modified Project. Thus, the overall increase in traffic in the area associated with the Modified Project is essentially nothing in the AM peak hour and 3.5 percent in the PM peak hour, even though the Modified Project's portion of the total traffic generated is higher.

Tables 4 and 5, below, summarize the change in transit travel demand associated with the Modified Project compared to Variant 1 (R&D). As shown, the Modified Project would generate slightly fewer transit trips than Variant 1 (R&D) from the EIR, although demand would increase slightly inbound to the HP and CP sites and decrease slightly outbound from the site in the AM peak hour compared to Variant 1 (R&D). The reverse phenomenon occurs in the PM peak hour.

TABLE 4
TRAVEL DEMAND FORECAST COMPARISON (TRANSIT TRIPS)

		FEIR Project	FEIR Variant 1 (R&D)	Modified Project	Difference from FEIR Variant 1 (R&D)
AM Peak Hour	Inbound	998	1,103	1,163	+52
	Outbound	813	1,215	1,155	-53
	Total	**1,811**	**2,318**	**2,318**	**-1**
PM Peak Hour	Inbound	1,475	1,506	1,602	-96
	Outbound	1,415	1,869	1,831	+37
	Total	**2,890**	**3,375**	**3,433**	**-59**

TABLE 5 FEIR VARIANT 1 (R&D) AND MODIFIED PROJECT TRANSIT TRIP GENERATION							
		FEIR Variant 1 (R&D)			**Modified Project**		
		CP	**HP**	**Total**	**CP**	**HP**	**Total**
AM Peak Hour	Inbound	299	916	1,103	300	863	1,163
	Outbound	667	435	1,215	642	513	1,155
	Total	**966**	**1,352**	**2,318**	**942**	**1,376**	**2,318**
PM Peak Hour	Inbound	1,054	452	1,506	1,029	573	1,602
	Outbound	835	1,033	1,869	833	998	1,831
	Total	**1,889**	**1,486**	**3,375**	**1,861**	**1,571**	**3,433**

Below is a discussion of the effects of the proposed changes on the impacts identified in the EIR.

IMPACT TR-1: ON-SITE AND OFF-SITE CONSTRUCTION IMPACTS

As described in the EIR, construction of the Project would result in transportation impacts in the Project vicinity due to construction vehicle traffic and roadway construction and would contribute to cumulative construction impacts in the Project vicinity. The EIR concluded implementation of mitigation measure MM TR-1, which would require the Applicant to develop and implement a construction traffic management plan to reduce the impact of construction activity on transportation facilities, would reduce the impacts caused by construction, but not to a less-than-significant level.

The overall amount of construction anticipated to occur as part of the Modified Project will be the same as or less than originally conceived and described for the FEIR Project, although the sequencing may be somewhat different. The FEIR Project analysis anticipated development phasing that would create more construction activities in the Hunters Point Shipyard in the early years of project buildout, with higher construction levels in Candlestick Point during later phases. Additionally, the FEIR Project also included construction of a new NFL stadium in the very early phases of development, which would have resulted in much more intense construction activities then will likely ever occur during any of the non-stadium options.

The revised phasing proposed for the Modified Project will reverse this, with more construction activities in Candlestick Point during the earlier years and more activity in the Hunters Point Shipyard site during later years. Further, because the Modified Project does not include a new NFL stadium, the overall construction activities will be more spread out over time and well below the peak levels anticipated for the FEIR Project.

Although the latest proposed phasing at Candlestick Point is slightly different from previous analyses of accelerated construction at Candlestick Point, such as the evaluation outlined in EIR Addendum 1, the overall construction activities and general proposal is similar to what was analyzed in EIR Addendum 1. Portions of the construction outlined in Addendum 1, including demolition of Candlestick Park, have already occurred. Postponement of construction in Hunters Point Shipyard is primarily a result of delays in transferring land from the US Navy to the City and County of San Francisco. An estimate of construction activities during the course of project buildout associated with the FEIR Project and the Modified Project, as well as a chart illustrating the difference in terms of construction truck trips over time between the two, is provided in **Appendix C**.

Overall, although the timing and location of construction activities may vary within the site compared to what was originally anticipated, the construction activities are expected to create similar or even less intense significant and unavoidable localized construction-related traffic impacts as were originally described in Impact TR-1 the EIR. Mitigation measure MM-TR-1, development of a Construction Traffic Management Program, would still apply, although impacts would continue to remain significant and unavoidable.

Therefore, construction of the Modified Project would not result in any new significant effects to transportation beyond those identified in the EIR nor would they result in a substantial increase in the severity of a significant impact, and no new mitigation measures would be required.

IMPACTS TR-2 THROUGH TR-16: TRAFFIC IMPACTS TO REGIONAL AND LOCAL ROADWAY SYSTEM, STUDY INTERSECTIONS, AND FREEWAY FACILITIES

As described in the EIR, the Project would generate substantial amounts of new vehicular traffic resulting in a number of significant impacts and mitigation measures. More specifically, the EIR identified Impact TR-2, a significant impact related to the Project's overall increase in traffic generation in relation to the current roadway system capacity. The EIR identified Mitigation Measure MM TR-2, the development and implementation of the Project's Transportation Demand

Management (TDM) plan as a means to lessen the severity of Project-generated traffic impact; however, Impact TR-2 would remain significant and unavoidable with mitigation.

The EIR identified Impacts TR-3 through TR-8, which described locations where the Project would create new project-related impacts or contribute to significant cumulative impacts at study intersections. Mitigation Measures MM TR-4 (restriping at the intersection of Tunnel/Blanken), MM TR-6 (participating in the bi-county study and paying a fair share contribution toward improvements near the Geneva Avenue/US 101 interchange), MM TR-7 (restriping at the Amador/Cargo Way intersection), and MM TR-8 (participating in the bi-county study and paying a fair share contribution toward improvements near the Bayshore/Geneva intersection) were recommended to reduce the severity of Project-related impacts. However, due to uncertainty regarding implementation of mitigation measures, Impacts TR-3 through TR-8 were determined to remain significant and unavoidable with mitigation. The EIR also identified Impact TR-9, which described the project's less than significant impact to a number of other study intersections.

At a slightly larger scale, the EIR identified Impact TR-10, which describes the effect of Project-related traffic spilling over into nearby residential neighborhood streets. The EIR determined this impact to be significant, and referenced other mitigation measures described elsewhere in the EIR (including Mitigation Measure MM TR-2, the development and implementation of a TDM Plan) as appropriate strategies to reduce the severity of Impact TR-10. However, the EIR determined that the impact would remain significant and unavoidable with mitigation.

The EIR also identified a number of significant Project-related impacts to freeway facilities, including Impacts TR-11 through TR-15. No feasible mitigation measures were identified for Impacts TR-11 through TR-13 and these impacts would be significant and unavoidable. Mitigation Measures MM TR-14 and MM TR-15, which called for participation in the bi-county study and payment of a fair share contribution toward improvements near the Geneva Avenue / US 101 interchange area, were identified to reduce the severity of Impacts TR-14 and TR-15; however, since the implementation of these measures was uncertain, Impacts TR-14 and TR-15 would also remain significant and unavoidable.

Finally, the EIR identified Impact TR-16, a significant impact associated with the Project's contribution to traffic on Harney Way, which will be a primary access route for all modes between the Project site and regional transportation facilities (US 101, Bayshore Caltrain, Balboa Park BART, the Bay Trail, etc.). Mitigation Measure MM TR-16 called for the project to construct the initial

phase of Harney Way at the outset of construction of the first major phase, which would reduce the Project's impact to less than significant.

However, as shown in Tables 3 and 4, the Modified Project would be most similar to FEIR Variant 1 (R&D) in terms of vehicle trips generated. The EIR also included a discussion of how the transportation impacts associated with Variant 1 (R&D) would be different from those of the FEIR Project summarized above. As noted in the EIR (pp. IV-18-IV-21), in addition to the same significant impacts as the FEIR Project, Project Variant 1 (R&D) would also have significant project-level or cumulative impacts on five intersections that would not occur with the FEIR Project. Specifically, FEIR Variant 1 (R&D) would have significant and unavoidable impacts at three additional intersections:

- Ingalls Street / Carrol Avenue
- Bayshore Boulevard / Oakdale Street
- Evans Avenue / Jennings Street

FEIR Variant 1 (R&D) would also have significant impacts at two additional intersections that could be reduced to less than significant levels with mitigation:

- Crisp Road / Palou Avenue / Griffith Street
- Innes Avenue / Earl Street

Mitigation at Crisp Road / Palou Avenue / Griffith Street identified in the EIR for Variant 1 (R&D) would involve re-striping the southbound approach to provide a dedicated left-turn lane and a shared through/right-turn lane, and prohibiting on-street parking on Griffith Street between Palou Avenue and Oakdale Avenue.

Mitigation at Innes Avenue / Earl Street identified in the EIR for Variant 1 (R&D) would involve constructing a new traffic signal at the intersection. Subsequent to the preparation of the EIR, the India Basin project has been proposed, and as of the writing of this analysis, that project has published a Draft EIR for public review and comment. The India Basin project includes construction of a traffic signal at this intersection.

There are two components to the discussion of the Modified Project's traffic impacts: one component addresses how project refinements would affect impacts under long-term buildout

conditions (similar to the conditions analyzed in the EIR) and the other component addresses how changes to project phasing would affect auto access to the site during the buildout period.

Buildout Conditions

The EIR's discussion of traffic impacts is based on project buildout. Refinements have been made to the internal roadway network, both to cross-section dimensions and roadway alignments. Refinements to roadway cross sections have been made to continue to encourage slow-speed auto traffic, but also to better accommodate transit, bicyclists, and on-street parking based on recent SFMTA design guidance for travel lane widths. Some of these changes have been discussed in prior addenda. Specifically, Addendum 1 (p. 10) described some general categories of modifications, such as establishing consistent design principles, establishing a more consistent BRT alignment, the design of the Yosemite Slough Bridge, and reorientation of some streets in Candlestick Point. These principles have not changed since Addendum 1, although some additional modifications to cross-sections have been proposed as a consequence of modification of some roadway alignments in HPS. Revised cross-sections associated with the Modified Project are presented in **Appendix D**.

However, other principles affecting the roadway designs described in Addendum 1, such as the revised bicycle network and the re-orientation of the street grid in Hunters Point South are no longer directly applicable, and additional modification is proposed as part of the Modified Project. Those elements are described generally below:

- **Revised bicycle network.** Project modifications described in Addendum 1 included a new cycletrack facility that closed a gap in the bicycle network near the project's retail center. The cycletrack would extend west of the project site, along Harney Way toward US 101[1] replacing the originally-proposed Class II bicycle lanes on both sides of the street. The cycletrack was also anticipated to travel along Crisp Road in Hunters Point Shipyard, before terminating near Spear Avenue. The modifications described in Addendum 1 related to the bicycle network revisions in Candlestick Point remain unchanged since Addendum 1.

[1] The EIR anticipated that Harney Way would be constructed in two phases. The first phase would construct two auto travel lanes in each direction (with two BRT lanes, on-street bicycle lanes, and a center turn lane). The changes proposed for the initial configuration of Harney Way do not affect auto capacity, but rather use land reserved for potential future expansion to extend the two-way Class I cycletrack from the project site west toward the Bay Trail. The Class I cycletrack would be removed if Harney Way were widened to its ultimate width because of the need for auto capacity. Under these circumstances, bicycle conditions along Harney Way would be identical to what was originally approved in the EIR.

Refer to Addendum 1, p. 26 for a comparison of the FEIR Project and the Addendum 1 refinements to the bicycle network. However, the Modified Project proposes to realign the cycletrack through HPS such that it traverses the open space to the south of Crisp Road, and then uses a neighborhood midblock break in Hunters Point South to travel parallel to Crisp Road. Refer to the bicycle impacts section of this letter for further discussion of the changes to the bicycle network.

- **Reorientation of Street Grid in Hunters Point South.** Streets in the Hunters Point South neighborhood associated with the Modified Project are similar to what was proposed in FEIR Variant 1 (R&D) (FEIR Figure IV-1, p. IV-7), but street alignments have been slightly modified to account for retention of some additional existing buildings. Overall, the size and density of the street grid in Hunters Point South is similar to what was originally approved in FEIR Variant 1 (R&D) and therefore, transportation capacity is expected to be similar.

- **Extension of Donahue Street south to Crisp Road.** Within Hunters Point, the originally-proposed Project provided one travel route to the north (via Donahue and Innes Avenue) and one travel route to the south (via Crisp Road and Palou Avenue). Travelers on the northern side of the Hunters Point Shipyard who wanted to travel south would have to travel through the entire Shipyard site to reach Crisp Avenue and Palou Avenue. Similarly, travelers in the southern part of Hunters Point who wish to travel north, would have to travel through the entire site to get to Innes Avenue. The extension of Donahue Street would provide a direct connection between Crisp Avenue and Innes Avenue, allowing for less circuitous travel and fewer vehicle trips through the center of the Shipyard site.

Although most roadway cross-section refinements consist of relatively minor modifications to the roadway network to accommodate refined bus circulation, bicycle networks, and pedestrian amenities as described above, one refinement is proposed – to Arelious Walker Drive – that does affect vehicular capacity at buildout. That refinement would reduce the ultimate width of the street from six lanes to four lanes, and would remove on-street parking and Class II bike lanes (to be replaced by the Class I cycletrack discussed elsewhere). This proposed change was evaluated and approved in Addendum 1, and found to continue to provide acceptable vehicular capacity for the refined land uses evaluated in Addendum 1. This change is also included in the Modified Project,

and the evaluation discussed in this section assesses the degree to which this change would continue to provide acceptable vehicular capacity for the Modified Project.

The EIR assessed cumulative (year 2030) weekday AM and PM peak hour intersection turning movement volumes for approximately 60 study intersections, assuming the development of the FIER Project (and numerous variants and alternatives), a number of adjacent planned projects, and some background traffic growth on area roadways. The operating characteristics of these study intersections were described in terms of Level of Service ("LOS")[2].

Because the Modified Project results in changes to the overall peak hour travel demand and includes some modifications that affect vehicular capacity, as noted above, this assessment includes a LOS analysis at a subset of intersections closest to the Modified Project site to assess the degree to which the Modified Project may affect impact determinations identified in the EIR. The subset of intersections evaluated is expected to include the intersections that experience the majority of project-related traffic volume changes, as they are closer to the project site where traffic is less dispersed. If changes to delay and LOS at these intersections are relatively small, it can reasonably be concluded that changes to other intersections further away from the project site would be even smaller.

Below, **Table 6** summarizes the intersection LOS for intersections nearest to the project site at full project buildout as described for Variant 1 (R&D) in the EIR and as forecasted with the Modified Project, including the proposed change to the ultimate configuration of Arelious Walker Drive (i.e., two through lanes in each direction instead of three). As shown, the Modified Project would have only minor effects to the intersection LOS analysis compared to Variant 1 (R&D) as outlined in the EIR. No intersections that operate at LOS D or better under Variant 1 (R&D) would deteriorate to LOS E or F, or deteriorate from LOS E under Variant 1 (R&D) to LOS F. Furthermore, the intersections forecasted to operate at LOS E or F under conditions with Variant 1 (R&D) would continue to operate at LOS E or F, respectively under the Modified Project. Volume to capacity ratios at each of the intersections forecasted to operate at LOS F with delays over 80 seconds per

[2] LOS is a qualitative description of an intersection's performance based on the average delay of per vehicles traveling through it. Intersection levels of service range from "A", which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays. LOS A through D are considered excellent to satisfactory service levels.

TABLE 6

INTERSECTION OPERATIONS

Intersection[1]	FEIR Variant 1 (R&D)[2,3,4]				Modified Project[2,3]			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C
#4 – Evans / Third	**>80 / F**	**1.59**	**>80 / F**	**1.59**	**>80 / F**	**1.59**	**>80 / F**	**1.65**
#6 – Palou / Third	**>80 / F**	**2.22**	**>80 / F**	**5.97**	**>80 / F**	**2.47**	**>80 / F**	**6.65**
#9 – Gilman / Third[5]	**>80 / F**	**2.02**	**>80 / F**	**3.40**	**>80 / F**	**1.63**	**>80 / F**	**2.94**
#29 – Harney / Arelious Walker	25 / C	--	53 / D	--	22 / C	--	36 / D	--
#30 – Crisp / Palou	**>80 / F**	**1.12**	**>80 / F**	**1.18**	**>80 / F**	**1.12**	**>80 / F**	**1.21**
#34 – Arelious Walker / Gilman[5]	30 / C	--	38 / D	--	36 / D	--	52 / D	--
#46 – Innes Ave / Fitch	5 / A	--	6 / A	--	5 / A	--	6 / A	--
#47 – Innes Ave / Earl	1 (21) / A (C)[5]	--	3 (**63**) / A (**F**)[6]	--	1 (24) / A (C)	--	4 (**77**) / A (**F**)	--
#48 – Middle Point / Evans / Jennings	**61 / E**	**1.17**	43 / D	--	**64 / E**	**1.15**	30 / C	--
#54 – Ingalls / Palou	23 / C	--	33 / C	--	22 / C	--	37 / D	--
#55 – Keith / Palou	9 / A	--	8 / A	--	9 / A	--	8 / A	--

Notes:

1. Intersection numbers are based on EIR intersection numbering for reference and comparison purposes.
2. Delay in seconds per vehicle. For side-street stop controlled intersections, delay and LOS presented for the worst approach and indicated in parenthesis. For intersections operating at LOS F, delay calculations are not relevant, based on the HCM methodology, and therefore, delay is simply reported as greater than 80 seconds per vehicle. To allow for comparison in operating conditions at intersections operating at LOS F, the volume to capacity ratio (V/C) is also shown.
3. Intersections operating at LOS E or F shown in **bold**.
4. Refer to Tables 45 and 46, on pp. 167-172 of the Project's Transportation Impact Study, included as Appendix D to the FEIR, for LOS results for FEIR Variant 1 (R&D).
5. The analysis of conditions with the Modified Project at Gilman / Third and Gilman / Arelious Walker was performed using a more detailed and sophisticated software, the Synchro platform, than what was used in the FEIR in order to capture unique features of those intersections. Analysis of Modified Project conditions at Gilman / Third also reflects updated lane configurations established by SFMTA subsequent to publication of the EIR.
6. The EIR-reported calculation of LOS for the intersection of Innes Avenue / Earl Street in Table 46 on pp. 170-172 in the Transportation Impact Study included a typographical error. The error did not affect the conclusion of the EIR with respect to significant impacts. The correct LOS is included here.

vehicle would change only slightly at all intersections, indicating little change in operating conditions at these intersections, with the exception of Palou Avenue / Third Street in the PM peak hour. At Palou Avenue / Third Street, the v/c ratio would increase from 2.22 and 5.97 to 2.47 to 6.65 with the Modified Project in the AM and PM peak hours, respectively – an increase of approximately 10 percent. Overall, the Modified Project would increase volumes by approximately 14 vehicles in the AM peak hour and 87 vehicles in the PM peak hour, an increase of less than 0.3 percent in the AM peak hour and 1.5 percent in the PM peak hour. This increase in traffic volumes is well within the range of error of the project's travel demand forecasts[3] and is therefore not likely to create a perceptible difference for users.

Finally, as shown in Table 6 for Intersections #29 and #34, the proposed reduction in travel lanes from six to four lanes on Arelious Walker Drive that was first proposed in Addendum 1 would continue to provide for acceptable intersection operations under the Modified Project. Detailed intersection LOS calculations are included in **Appendix E**.

As noted above, significant impacts at the intersections of Crisp / Palou and Innes / Earl were able to be reduced to less than significant with mitigation measures identified specifically for Variant 1 (R&D) in the EIR. Implementation of the traffic signal at the intersection of Innes / Earl, as identified in the EIR, would continue to reduce impacts at this intersection to less than significant levels with the Modified Project.

However, the mitigation measure identified for Crisp / Palou would not be sufficient to reduce the impacts associated with the Modified Project to less than significant levels. As a result, a revised mitigation measure at this intersection would be required to achieve acceptable operations and reduce the impacts at this intersection to less than significant levels.

Therefore, the paragraph in the EIR describing the mitigation measure at this intersection (p. IV-19) should be revised, as follows:

---

[3] Refer to *Trip Generation*, 9th Edition, Institute of Transportation Engineers, which was the source of the data used in this study for forecasting trip generation, and is widely used in the industry. Generally, forecasts from this source are based average rates or fitted curve equations based on a set of observed data. However, the standard deviation of the data to the rates or equations is greater than two percent in virtually every land use category.

Striping the southbound approach to provide a dedicated ~~left~~right-turn lane and a shared through/~~right~~left-turn lane, ~~and~~ prohibiting on-street parking on Griffith Street between Palou Avenue and Oakdale Avenue, and constructing the westbound approach on Crisp Avenue to provide two dedicated left-turn lanes and one shared through/right-turn lane would result in an LOS D at the intersection. Implementation of this improvement would be the responsibility of SFMTA and DPW, the Project Applicant shall contribute its fair-share toward construction of the mitigation measure. Prior to payment of the contribution, the City shall create a mechanism to determine and receive fair share contributions from the Project Applicant. The SFMTA and DPW shall design and implement the measure as necessary.

Table 7, below, shows the operation of these two intersections with the mitigation measures as described above. With mitigation measures, these two intersections would operate acceptably and the impacts associated with the Modified Project would be less than significant, similar to the conclusions in the FEIR for Variant 1 (R&D).

TABLE 7
INTERSECTION OPERATIONS WITH MITIGATION

Intersection[1]	Modified Project[2,3]				Modified Project With Mitigation[2,3]			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C
#30 – Crisp / Palou	**>80 / F**	**1.12**	**>80 /F**	**1.21**	33 / C	0.86	36 / D	0.85
#47 – Innes Ave / Earl	1 (24) / A (C)[4]	--	4 (77) / A (F)[4]	--	18 / B	--	21 / C	--

Notes:

1. Intersection numbers are based on EIR intersection numbering for reference and comparison purposes.
2. Delay in seconds per vehicle. For side-street stop controlled intersections, delay and LOS presented for the worst approach and indicated in parenthesis. For intersections operating at LOS F, delay calculations are not relevant, based on the HCM methodology, and therefore, delay is simply reported as greater than 80 seconds per vehicle. To allow for comparison in operating conditions at intersections operating at LOS F, the volume to capacity ratio (V/C) is also shown.
3. Intersections operating at LOS E or F shown in **bold**.
4. The EIR-reported calculation of LOS for the intersection of Innes Avenue / Earl Street in Table 46 on pp. 170-172 in the Transportation Impact Study included a typographical error. The error did not affect the conclusion of the EIR with respect to significant impacts. The correct LOS is included here.

Therefore, because travel demand would be similar to that identified for Variant 1 (R&D) in the EIR, there would be no changes to auto capacity associated with project refinements that result in additional or more severe significant impacts, and intersection LOS would be similar to that identified in the EIR for Variant 1 (R&D) with some minor revisions to one of the mitigation measures identified in the EIR, the Modified Project would have similar impact conclusions for Impacts TR-2 through TR-16, as applied to Variant 1 (R&D) in the EIR. Mitigation measures MM TR-2, MM TR-4, MM TR-6, MM TR-7, MM TR-8, and MM TR-16 will continue to apply, including the additional locations identified for Variant 1 (R&D) in the EIR, revised as noted above.

Timing of Traffic Improvements

Although, for purposes of assessing transportation impacts, the Modified Project will be similar to FEIR Variant 1 (R&D) at buildout, the project development phasing has changed. The phasing of traffic improvements was set forth in a memorandum included as Appendix A4 to the FEIR Comments & Responses[4]. An analysis of the Modified Project phasing and infrastructure implementation timing was conducted to determine whether the Modified Project would provide auto circulation and access at a level adequate to meet the travel demand throughout the buildout period.

Candlestick Point

As noted earlier, development at Candlestick Point is anticipated to occur earlier than originally anticipated. As a result, and to respond to some of the changes in the order of development, revisions to the implementation phasing are proposed to better respond to land use phasing[5]. As shown in **Table 8**, most roadway improvements are scheduled to be implemented at the same triggers or sooner (relative to development levels) than proposed in the EIR, with the exception of Jamestown Avenue and Ingerson Avenue and the automobile route around Yosemite Slough. However, Jamestown Avenue and Ingerson Avenue improvements are largely streetscape improvements, designed to improve the overall urban design of the streets, and will not affect

---

[4] Fehr & Peers, *Roadway and Transit Phasing Plan*, March 17, 2010

[5] Although previous EIR Addenda also considered revisions to the project phasing compared to what was analyzed in the EIR, the comparison in this Addendum compares the Modified Project with the FEIR Project, and not to previously contemplated revisions.

TABLE 8
PROJECT STREET SEGMENT IMPROVEMENTS - CANDLESTICK POINT

Intersection	Improvement	Original Non-Stadium Option[d]		Modified Project	
		Traffic Volume Trigger?[c]	Trigger	Traffic Volume Trigger?[c]	Trigger[e]
Arelious Walker Drive, Shafter Avenue to Carroll Avenue	Construct Yosemite Slough Bridge[a]	No	Implementation of BRT	No	Implementation of BRT (HP-04)
Arelious Walker Drive, Carroll Avenue to Gilman Avenue	Interim Two-Lane Condition (See Addendum 2)	N/A		No	CP-01 (Adjacency)
	Ultimate Condition (See description above)	No	Implementation of BRT	Yes	CP-07 (Approximately 3,900 PM Peak Hour Vehicle Trips CP) or Implementation of BRT
Arelious Walker Drive, Gilman Avenue to Harney Way	Construct two travel lanes in each direction with center median/turn lane	No	Implementation of BRT	No	CP-02 (Adjacency)
Harney Way Widening, Arelious Walker Drive to Thomas Mellon Drive	Near Term (See Addendum 2)	Yes	3,537 PM Peak Hour Vehicle Trips or Implementation of BRT[c]	No	CP-02 (Adjacency)
	Long-Term (See Addendum 2)	TBD[b]	Per Mitigation Measure MM TR-16	TBD[b]	Per Mitigation Measure MM TR-16
Jamestown Avenue, Arelious Walker Drive to Third Street	Resurface and Restripe	No	Demolition of Candlestick Park	No	CP-07
Ingerson Avenue, Arelious Walker Drive to Third Street	Resurface and Restripe	No	Demolition of Candlestick Park	No	CP-07
Gilman Avenue, Arelious Walker Drive to Third Street	Reconstruct or Resurface and Restripe	No	TBD	No	CP-02
Carroll Avenue, Arelious Walker Drive to Ingalls Street	See Figures 2.1.2A – 2.1.2G	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[c]	Yes	CP-07 (Approximately 7,600 PM Peak Hour Vehicle Trips, CP & HP)[c]
Ingalls Street, Carroll Avenue to Thomas Avenue	See Figures 2.1.2A – 2.1.2G	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[c]	Yes	CP-07 (Approximately 7,600 PM Peak Hour Vehicle Trips, CP & HP)[c]

a. The cross-section for Yosemite Slough Bridge has been modified from what is shown in the EIR for the Non-Stadium alternative. However, at 45-feet in width, the structure would be smaller than the bridge approved in the Stadium scenario.
b. The isolated intersection analysis conducted for this study shows that the two intersections along Harney Way would operate acceptably with the near-term configuration even with full buildout of the project. However, because Harney Way is part of a complex series of roadway improvements and due to the inherent uncertainty in traffic forecasts, a study will be conducted prior to construction of each development phase to determine whether conditions are better or worse than projected. The results of that study will indicate whether additional development can be accommodated under the near-term configuration while maintaining acceptable LOS or whether widening is required.
c. Based on trip rates by land use used in the EIR for Variant 1 (R&D) and currently-proposed phasing. See Appendix E for LOS calculation showing that approximately 82% of project-related growth (corresponding to approximately 7,600 vehicle trips) can be accommodated at this intersection before significant LOS impacts would occur.
d. As summarized in the FEIR (Comments and Responses, Appendix A4, Roadway and Transit Phasing Plan), Fehr & Peers, March 17, 2010. Note that the "Original Non-Stadium Option" as presented in the FEIR and replicated here is applicable to all non-stadium options.
e. Where multiple triggers are provided, the trigger shall be whichever event occurs first. When a sub-phase is listed as the trigger, the improvement shall be fully constructed and operational prior to occupancy of the sub-phase.

vehicular capacity along the streets, so in terms of assessing traffic impacts, this modification is not material. Furthermore, the need for the auto route around Yosemite Slough is driven by the need for connection between HP and CP. Since development at HP is somewhat delayed compared to the forecasted schedule from the FIER, these improvements are not needed as quickly, and technical analysis has shown that they can be postponed until Subphase CP-07 (see discussion below).

Figures 2 – 4, attached, illustrate the auto access routes that would be available based on the Modified Project development and roadway infrastructure phasing. As shown, the major connections between the Candlestick Point development and the external transportation network are expected to be developed as part of the first Major Phase. These include Arelious Walker Drive, the four-lane internal spine roadway that connects the smaller internal streets to the external roadways connecting to the rest of the City via Carroll Avenue, Gilman Avenue, Ingerson Avenue, and Jamestown Avenue.

Within Major Phase 1 in Candlestick Point, the development will occur in five sub-phases, CP-01 through CP-05. CP-01 is already constructed or under construction, and includes 337 residential dwelling units on the Alice Griffith site, which will generate approximately 100 PM peak hour auto trips, based on the methodology described in the EIR. As part of this sub-phase, a portion of Arelious Walker has been constructed, between Gilman Avenue and Carroll Avenue. Ultimately, as noted earlier, Arelious Walker Drive would be constructed to provide two travel lanes in each direction, separated by a median. However, as part of CP-01, only the two lanes west of the median were constructed. During this initial period, this segment of Arelious Walker provides one travel lane in each direction. Then, during later phases of development, as noted below, the remaining half of Arelious Walker Drive would be constructed such that two auto lanes would be provided in each direction. The construction of this interim portion of Arelious Walker Drive is consistent with and supports the final configuration of Arelious Walker Drive. Refer to Addendum 1 (Appendix A, Sub-Appendix D) for figures showing the interim and final configuration of Arelious Walker Drive.

As proposed, providing only one travel lane in each direction along Arelious Walker Drive is adequate for this small number of units comprising CP-01, and essentially serves to connect the four development blocks together and provide connections to Carroll Avenue and Gilman Avenue, two primary east-west connections to the greater Bayview neighborhood.

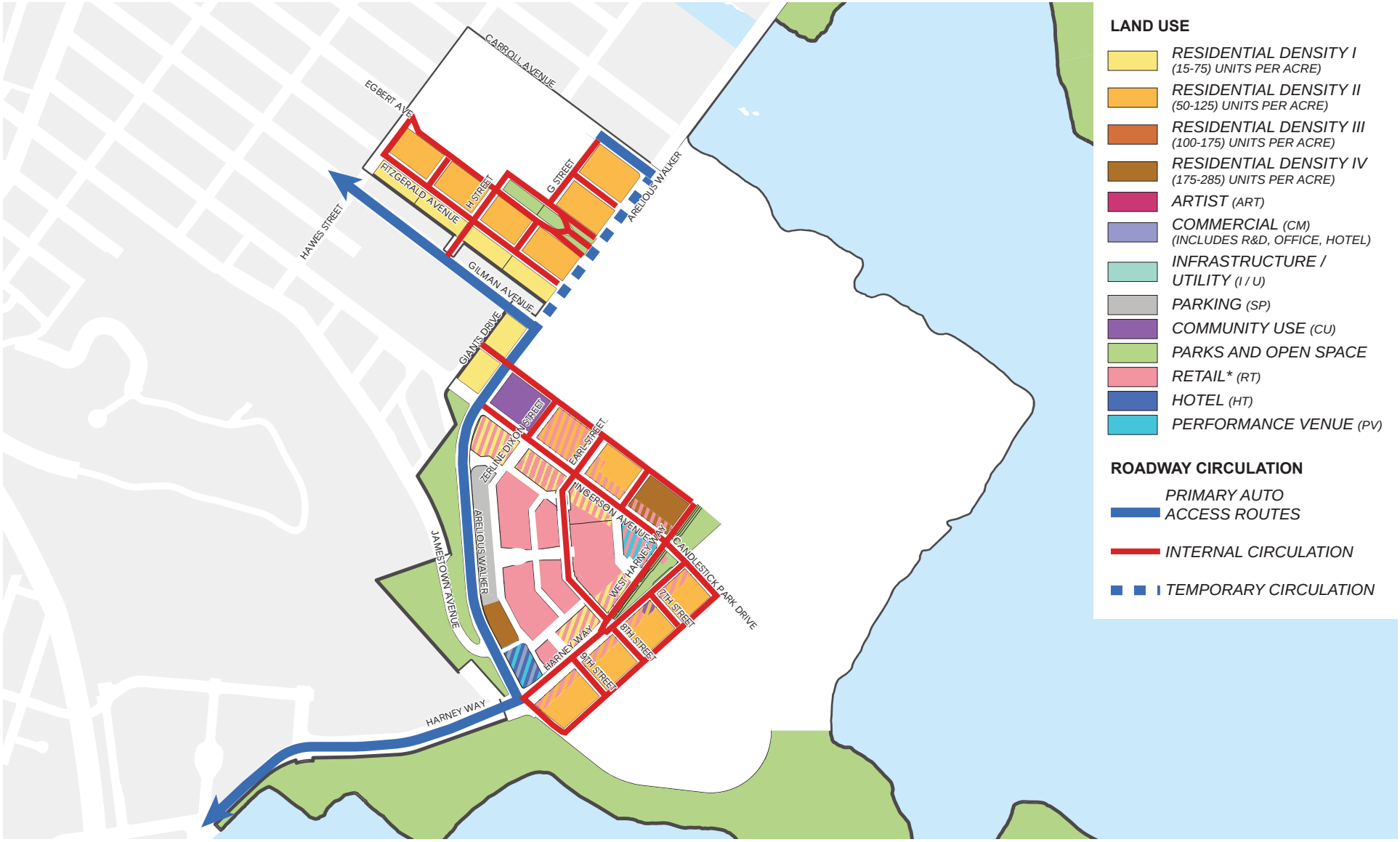


Figure 2

CP Major Phase 1

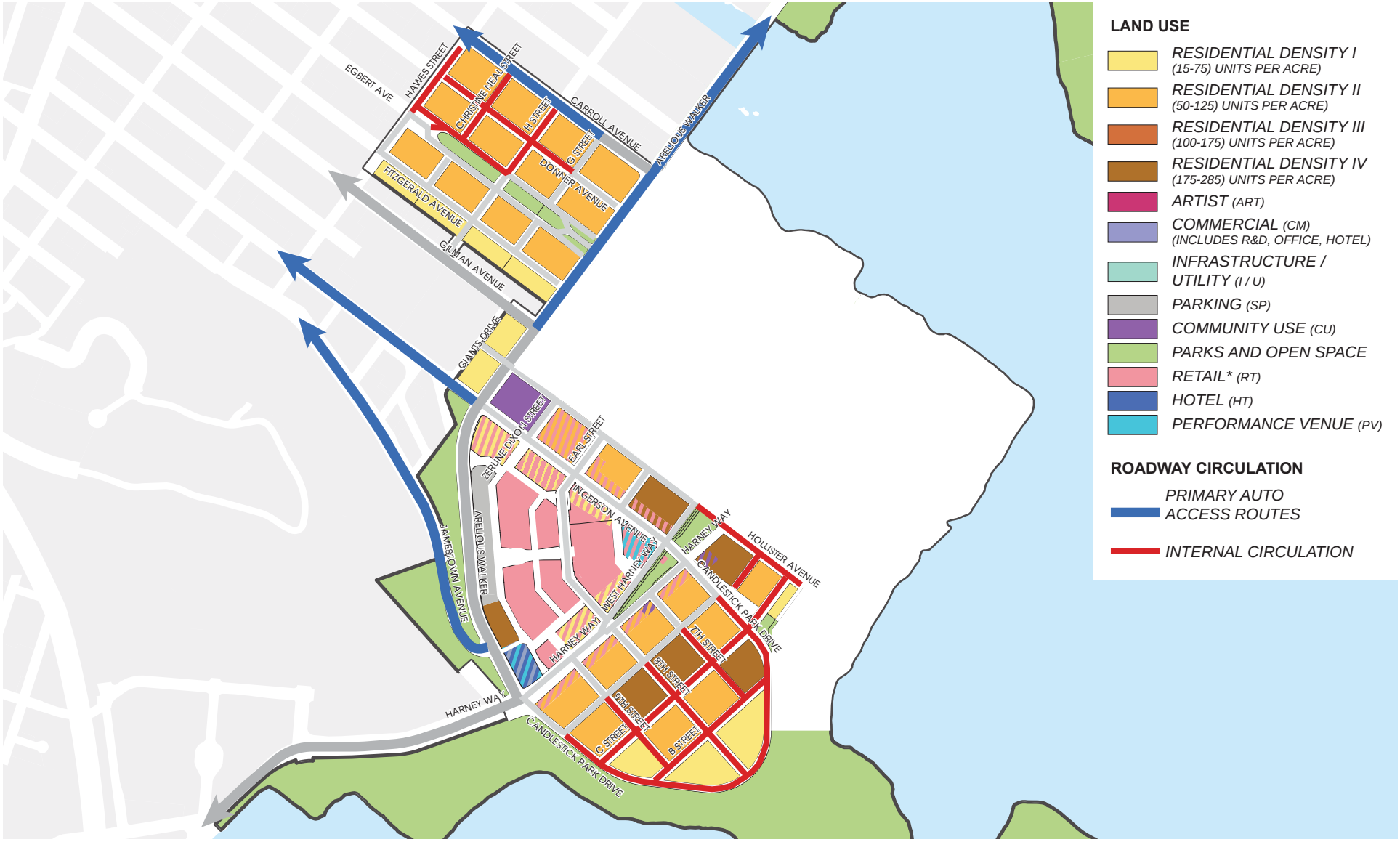


Figure 3

CP Major Phase 2

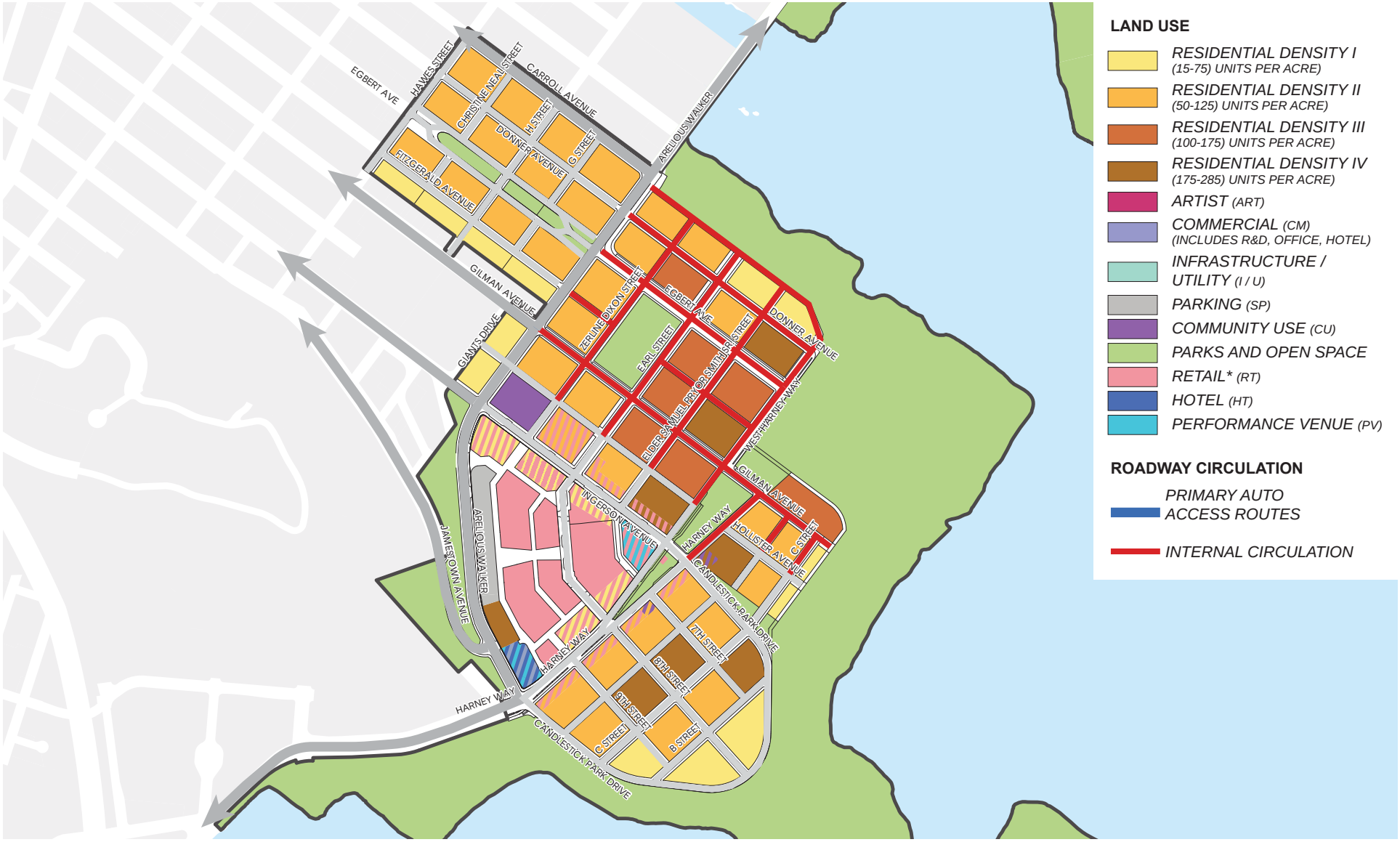


Figure 4

CP Major Phase 3

Sub-phase CP-02 would develop the 635 ksf regional retail center, a 220-room hotel, 419 residential units, 150 ksf of office, and the 10,000-seat arena. To support this large amount of new development, the key transportation infrastructure connecting Candlestick Point to external routes will be constructed, including Harney Way between the retail center and Thomas Mellon Drive and Arelious Walker Drive, between Harney Way and Gilman Avenue. This portion of Arelious Walker Drive would be constructed to its ultimate width of four lanes, and would connect to the interim two-lane portion to the north of Gilman. Harney Way will be constructed to its initial configuration with four lanes, as described in the EIR[6]. Additionally, Gilman Avenue, between Arelious Walker and Third Street would be reconfigured to provide one travel lane in each direction, center turn lanes, on-street parking, and would retain the existing sidewalks on both sides of the street. Intersections along Gilman Avenue would be signalized between Arelious Walker Drive and Third Street[7].

Note that Mitigation Measure MM TR-16 in the EIR requires Harney Way to be reconstructed prior to the issuance of a grading permit for the first Major Phase of development. As noted in EIR Addendum 1, since the first Sub-phase in Major Phase 1 in Candlestick Point, CP-01, does not connect to Harney Way and improvements to Harney Way would not affect auto capacity associated with CP-01, reconstruction of Harney Way is not necessary for the first subphase of development. Consequently, a modification was proposed to Mitigation Measure MM TR-16 as part of Addendum 1 (and subsequently approved by OCII, as noted earlier) to provide that Harney Way would be constructed such that it is complete prior to the issuance of occupancy permits for the second subphase of Major Phase 1, CP-02. These same revisions addressed in Addendum 1 would continue to apply to the modified Project.

Other than ensuring that other existing east-west streets connect to Arelious Walker Drive, none of the project-proposed improvements to Carroll Avenue, Ingerson Avenue, or Jamestown Avenue will be constructed as part of Sub-phase CP-02. Carroll Avenue is at the northernmost portion of the CP site, and therefore, not likely to be a desirable route to the Candlestick Point retail center, which

---

[6] EIR Addendum 4 discussed the potential for the initial phase of Harney Way to be constructed in two sequences corresponding to the need for information from SFMTA regarding the ultimate interim routing of the 28R BRT route. Addendum 4 concluded that since the sequenced construction would still result in the same auto capacity at all times and would still complete the exclusive right of way for the BRT in advance of service, there would be a less than significant impact of this sequencing. The same conclusions still apply to the Modified Project.

[7] This is different from the EIR proposal for Gilman Avenue. The proposed changes were evaluated in EIR Addendum 4, which showed the revised design would operate similar to the originally-proposed configuration, with less disruption to the neighborhood due to construction.

sits at the southern end of the CP site. Further, improvements proposed for Ingerson Avenue and Jamestown Avenue are generally streetscape improvements designed to improve the attractiveness of the streets and not to increase auto capacity; therefore, for purposes of discussing traffic impacts, the timing of improvements to these streets is not critical and most of the auto capacity connecting the CP site to the external roadway network will be constructed as part of Sub-phase CP-02 with the described improvements to Harney Way and interim improvements to Arelious Walker Drive.

At this point, prior to occupancy of Sub-phase CP-02, with the exception of the interim portion of Arelious Walker Drive between Gilman Avenue and Carroll Avenue, all of the major auto traffic infrastructure in Candlestick Point required to connect project-related traffic to the external roadway network will be constructed, as will most of the off-site capacity enhancements, including Harney Way and Gilman Avenue.

Subphase CP-03 involves construction of the blocks directly opposite the retail center across Ingerson Avenue. No additional transportation improvements are proposed as part of CP-03 because the major improvements needed to serve CP-03 will be constructed earlier, as part of CP-01 and CP-02.

With the opening of CP-04, the first four subphases would generate about 3,750 vehicle trips, which would exceed the trigger point identified in the FEIR of approximately 3,150 vehicle trips that would require improvements to the auto route around the Yosemite Slough, that includes Carroll Avenue, Ingalls Street, Thomas Avenue, and Griffith Avenue[8]. The analysis conducted for the FEIR was based on the original phasing, which as noted earlier, would develop in the Hunters Point Shipyard site faster than currently proposed. As a result, the automobile route around Yosemite Slough was identified as appropriate infrastructure to provide access to Candlestick Point and US 101 from the development at Hunters Point Shipyard. The trigger in the FEIR was identified as the appropriate time when the improvements would be necessary.

However, based on current proposed phasing, the previously-identified trigger point for the auto route around Yosemite Slough would be met with less development in the Hunters Point Shipyard and substantially more development in Candlestick Point than originally anticipated. As a result, there is likely to be less auto demand for travel between the Hunters Point site and US 101 or

[8] Fehr & Peers, *Roadway and Transit Phasing Plan*, p.5, Table 4, March 17, 2010

between the Candlestick Point and Hunters Point Shipyard sites, making the auto route around Yosemite Slough less critical at such an early stage.

The improvements around Yosemite Slough would be required when approximately 85 percent of the total forecasted increase in vehicle traffic at the intersection of Carroll Avenue and Ingalls Street would occur. Based on currently-proposed phasing, this would occur around CP-07, which is also when the northern portion of Alice Griffith development adjacent to Carroll Avenue is scheduled to be constructed. Thus, the trigger for improvements to Carroll Avenue and the automobile route around Yosemite Slough has been modified based on the revised phasing. Intersection LOS calculation sheets demonstrating that the intersection would operate acceptably under its current configuration up to approximately 85 percent of the total forecasted growth is provided in **Appendix E**.

The remaining auto capacity enhancements on Arelious Walker Drive, between Gilman Avenue and Carroll Avenue would also be required to be constructed prior to occupancy of Sub-phase CP-07. At the end of Sub-phase CP-06 in Candlestick Point, which represents the condition at which the most traffic would be using the interim portion of Arelious Walker Drive, the intersection of Arelious Walker Drive and Gilman Avenue would operate within acceptable level of service, as shown in **Table 9** below, and therefore, no significant impacts would occur as a result of providing this interim condition through Sub-phases CP-01 through CP-06. Detailed LOS calculations are provided in **Appendix E**.

TABLE 9
INTERIM INTERSECTION OPERATIONS – ARELIOUS WALKER DRIVE

Intersection	Arelious Walker/Gilman (PM Peak Hour)	
	Delay[1]	LOS[1]
Interim Condition at completion of CP-06	53	D

Notes:
1. Intersection level of service (LOS) based on weighted average control delay per vehicle, according to the *2000 Highway Capacity Manual*.

As a result, the roadways that facilitate travel between the project site and the external roadway network would generally provide their full capacity prior to any new trips being generated from Major Phase 2, with the exception of the portion of Arelious Walker between Gilman and Carroll. This segment would be widened to its full capacity near the beginning of Major Phase 2, at which point all major roadways in the CP portion of the project site would be at their full capacity. Otherwise, as shown in Figures 3 – 5, Major Phases 2 and 3, would only add internal circulation roadways adjacent to new development parcels to connect to the major roadways built as part of Major Phase 1. As a result, auto capacity in the Candlestick Point area will be greater than or similar to what was described in the EIR throughout the development buildout.

Hunters Point Shipyard

As noted earlier, development at Hunters Point Shipyard is anticipated to occur later than originally anticipated. As a result, and to respond to some of the changes in the order of development, revisions to the FEIR improvement phasing requirements are proposed to better respond to land use phasing. As shown in **Table 10**, similar to the proposed changes at Candlestick Point, all roadway improvements are scheduled to be implemented at the same triggers or sooner (relative to development levels) than proposed in the EIR.

Figures 5 – 7 show the development of land use and roadway infrastructure for Major Phases 1 – 3 for the Hunters Point Shipyard site, respectively. At buildout, the primary access routes to the Hunters Point Shipyard site include the four-lane Innes Avenue and the two-lane Palou Avenue. **Figure 5** illustrates that the primary northern access route to the Shipyard site, Donahue Street and Innes Avenue, would be constructed and connected to the HPS North area as part of Major Phase 1. The main southern access route to the Shipyard Site, Crisp Avenue, would also be constructed as part of Major Phase 1. Improvements to Crisp Avenue, Spear Avenue, and a portion of Robinson Street, and associated internal streets to connect between them, would be constructed as part of Subphase CP-01, prior to any new trips generated by development in the Hunters Point Shipyard site. The remainder of Robinson Street, and improvements to Donahue Street and Innes Avenue would be reconstructed as part of HP-02, when the first nearby developments as part of HP-02 are constructed. With the improvements constructed in HP-02, the roadway network will provide a complete, continuous route from Innes Avenue to Crisp and Palou avenues. This access route accounts for the total auto capacity of the HPS site to connect with the surrounding neighborhoods and will be adequate to serve the development proposed as part of Major Phase 1 in Hunters Point

Shipyard. Internal streets proposed as part of Major Phase 1 in Hunters Point Shipyard would connect between Donohue Street and Innes Avenue.

TABLE 10

PROJECT STREET SEGMENT IMPROVEMENTS – HUNTERS POINT SHIPYARD

Intersection	Improvement	Original Non-Stadium Option[c]		Modified Project	
		Traffic Volume Trigger?[b]	Trigger	Traffic Volume Trigger?[b]	Trigger[d]
Palou Avenue, Griffith Avenue to Third Street	Resurface and Restripe, Streetscape Amenities	Yes	TBD - Based on Transit Phasing	No	HP-05 or Based on Transit Phasing to coincide with improved service frequencies
Thomas Avenue, Ingalls Street to Griffith Street	Resurface and Restripe, Streetscape Amenities	Yes	3,131 PM Peak Hour Vehicle Trips (CP & HP)[a]	Yes	CP-07[e]
Griffith Street, Thomas Street to Palou Street	Resurface and Restripe, Streetscape Amenities	Yes	Reconstruction of Crisp Avenue	Yes	CP-07[e]
Innes Avenue, Donahue Street to Earl Street	Resurface and Restripe, Streetscape Amenities	Yes	1,000 PM Peak Hour Vehicle Trips	No	HP-02
Crisp Avenue, Palou Avenue to Fischer Street	Resurface, Restripe, Realign	No	Adjacency	No	HP-01
Innes Avenue/Hunters Point Boulevard/Evans Street, Earl Street to Jennings Street	Resurface and Restripe, Streetscape Amenities	Yes	1,000 PM Peak Hour Vehicle Trips	No	HP-02
Donahue Street, LaSalle Avenue/Kirkwood Avenue to Crisp Road	Extend Street	N/A		No	None. Optional Improvement.

a. Combined total from CP and HP
b. Based on trip rates by land use used in the EIR for Variant 1 (R&D).
c. As summarized in the FEIR (Comments and Responses, Appendix A4, Roadway and Transit Phasing Plan, Fehr & Peers, March 17, 2010
d. Where multiple triggers are provided, the trigger shall be whichever event occurs first. When a sub-phase is listed as the trigger, the improvement shall be fully constructed and operational prior to occupancy of the sub-phase.
e. Although these two segments are technically part of the HP improvements, they are part of an overall strategy to provide increased auto capacity between HP and CP and should be implemented simultaneously with other improvements on Carroll Avenue and Ingalls Street that are triggered by development in CP.

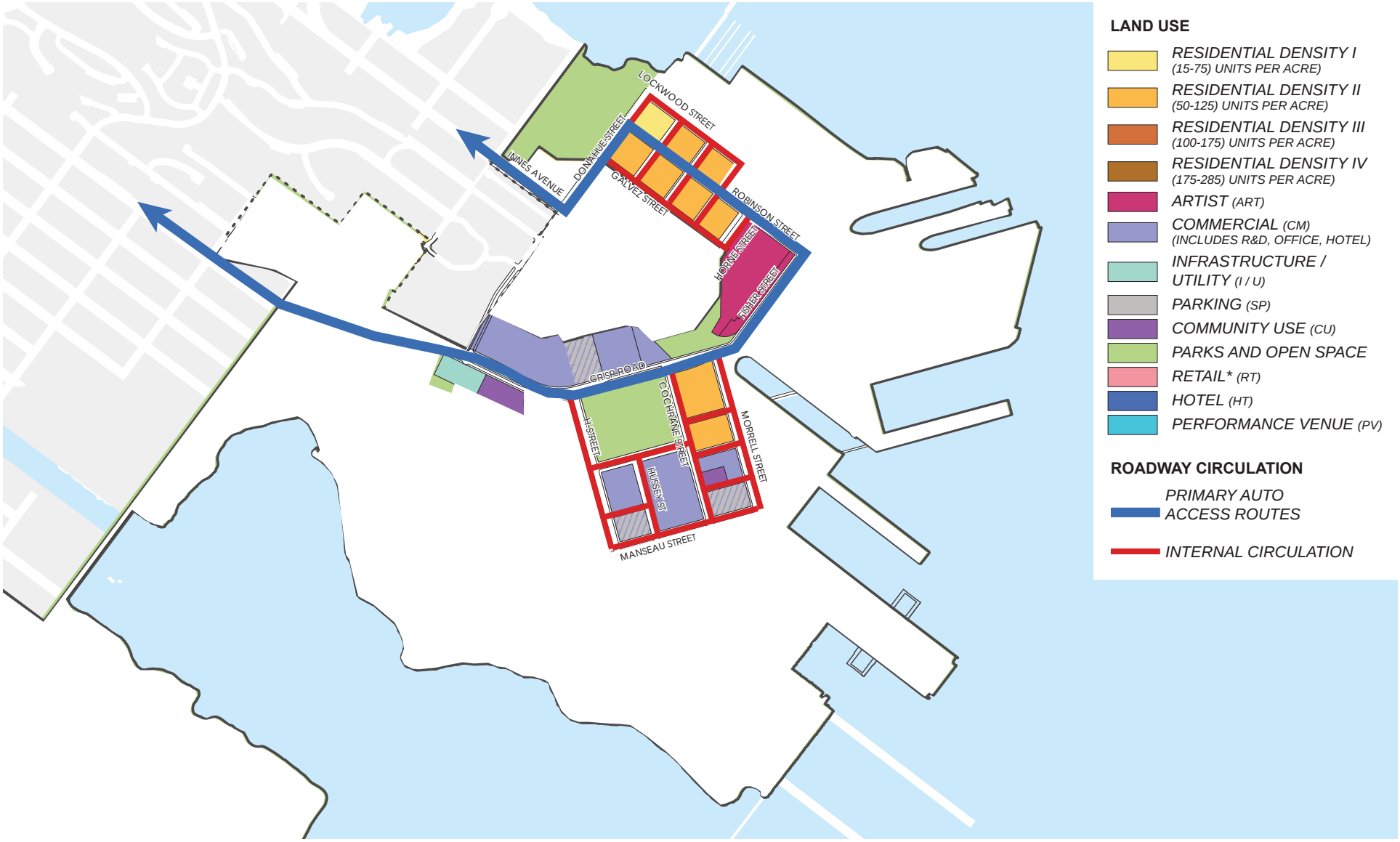


Figure 5

HP Major Phase 1

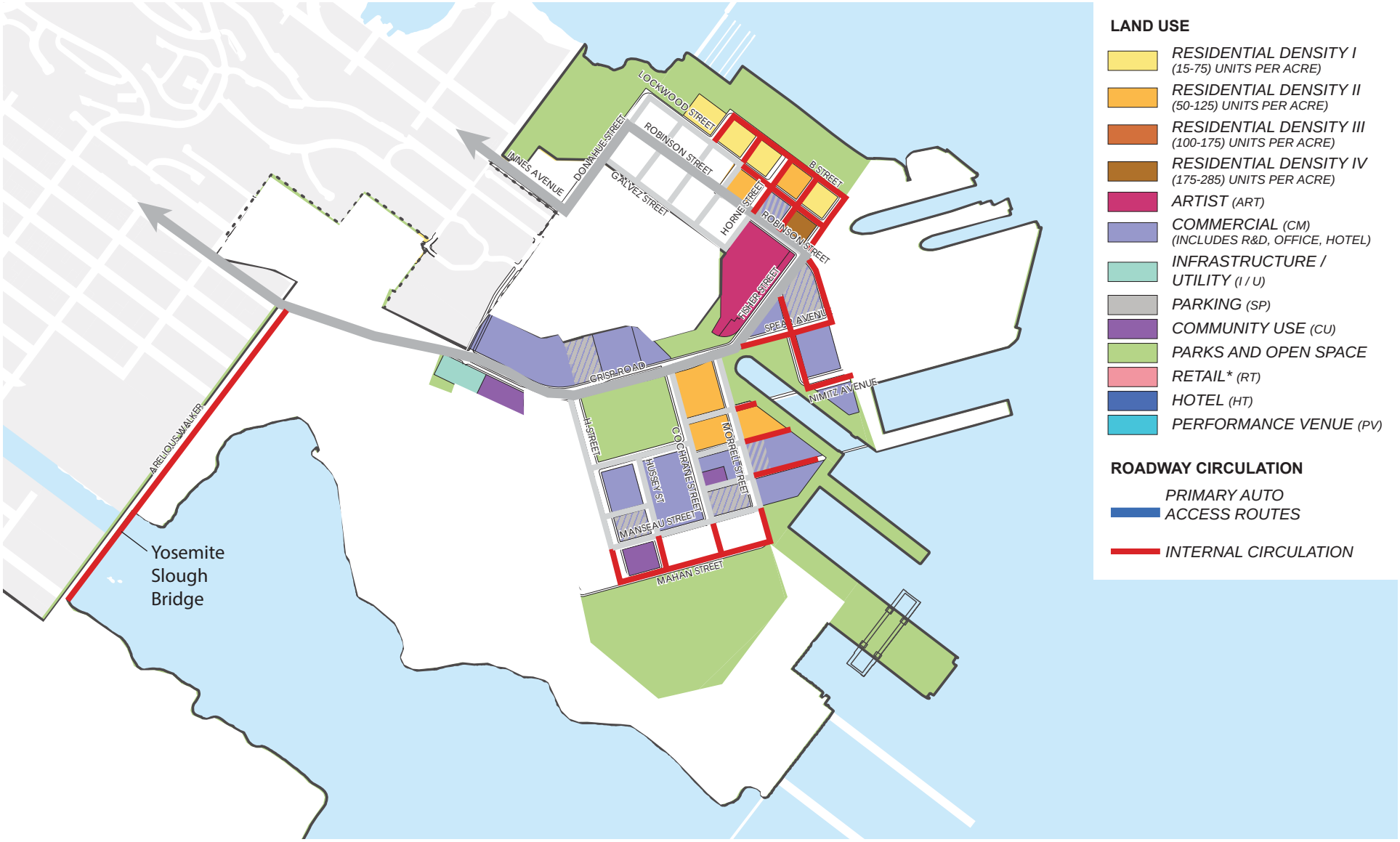


Figure 6

HP Major Phase 2

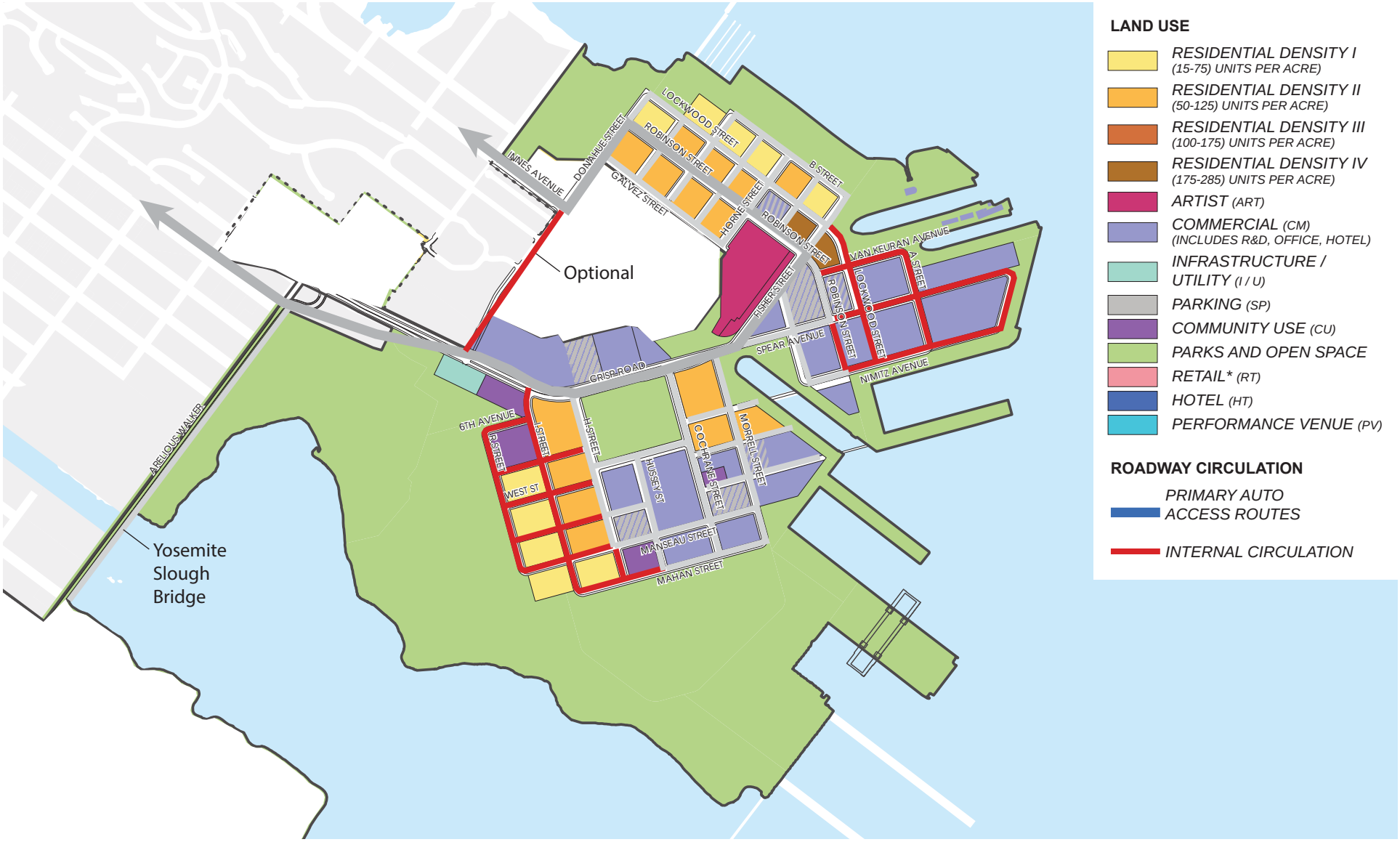


Figure 7

HP Major Phase 3

Figures 6 and 7 illustrate that, other than the optional extension of Donahue Street to Crisp Avenue, subsequent phases would simply build out the internal roadway network adjacent to individual development parcels, all of which will connect to the major access routes. Therefore, the major pieces of auto infrastructure connecting Hunters Point Shipyard with the external roadway network will be constructed as part of Major Phase 1 in Hunters Point Shipyard, and therefore, auto capacity should be greater than or similar to what was described in the EIR during all phases of development.

As noted earlier, the Modified Project includes an optional extension of Donahue Street to provide a better connection between the northern and southern portions of Hunters Point Shipyard. The technical analysis conducted as part of this letter report does not include this extension.

However, the decision to implement this extension would not affect impact conclusions. For example, under conditions without the extension, traffic from the southern portion of Hunters Point Shipyard destined for Innes Avenue and points north would drive through the site, "around the hill" (likely via Fischer Street, Robinson Street, and Donahue Street) to reach Innes Avenue. With the extension, this traffic could simply drive along Crisp Road to Donahue Street and drive directly "over the hill" to Innes Avenue. Traffic on external roadways would likely be similar, and traffic within the site would likely be less, as there would be less need for circuitous travel within the site. Thus, if anything, the extension of Donahue Street would likely reduce congestion within the site.

As a result of the analysis described above, no new or substantially increased significant traffic impacts are expected as a result of the Modified Project or the modified phasing compared to the traffic impacts described in the EIR associated with FEIR Variant 1 (R&D), and therefore, no new mitigation measures are required. Conditions with mitigation measures described in the FIER (and as modified above) would continue to operate similarly to conditions described in the FEIR.

IMPACTS TR-17 THROUGH TR-30: IMPACTS TO LOCAL AND REGIONAL TRANSIT OPERATIONS AND CAPACITY

The EIR described the Project's impacts to transit in Impacts TR-17 through TR-30. Impacts TR-17 through TR-20 identified that, with implementation of the Project's Transit Operating Plan (identified as Mitigation Measure MM TR-17), the Project would provide adequate transit capacity locally, at the standard Downtown screenlines, and regionally to meet its projected demand. With implementation of MM TR-17, Impacts TR-17 through TR-20 were determined to be less than significant.

The EIR also identified Impacts TR-21 through TR-27, which describe impacts to transit travel time associated with Project-generated traffic congestion on specific corridors affecting specific transit lines. Mitigation Measures MM TR-21 through MM TR-27 were identified and consist of three parts:

- Transit travel times should be monitored throughout the course of project buildout to determine whether Project-generated traffic is decreasing transit travel speeds.
- If speeds are decreasing, travel time reduction measures should be implemented on the affected corridors. These measures typically involve dedication of transit-only lanes.
- If reduction measures are either infeasible or not effective at improving travel speeds, new vehicles should be purchased to allow SFMTA to maintain planned service frequencies.

However, because implementation of these measures requires substantial additional outreach and design, the feasibility of these measures is uncertain, and Impacts TR-21 through TR-27 were determined to be significant and unavoidable.

The EIR also identifies Impact TR-28, a significant and unavoidable impact to SFMTA transit express routes using US 101 that may be slowed down by Project-generated freeway traffic for which no mitigation measures were identified. Impact TR-29 was identified as a less than significant impact to SFMTA transit express routes using I-280 because project-generated traffic on this route would not be as substantial. Impact TR-30 would be a significant and unavoidable impact to other regional transit routes (such as SamTrans express routes) using regional facilities to which the Project would contribute substantial amounts of traffic congestion.

The EIR concluded that Variant 1 (R&D) would have significant impacts to transit at the same locations as the FIER Project, but that Variant 1 (R&D) impacts would be more severe than the FEIR Project due to higher levels of traffic generated. No additional mitigation measures were required as part of Variant 1 (R&D), although the number of additional vehicles that may be required on the 48 Quintara was determined to be higher than that of the Proposed Project. Generally, the mitigation measures would be as effective at reducing the impacts to transit associated with Variant 1 (R&D) as they were forecasted to be at reducing the FEIR Project's impacts.

Similar to traffic impacts, the Modified Project's transit impacts at buildout as described in Impacts TR-17 through TR-30 will be similar to what was described in the EIR for Variant 1 (R&D), although two minor changes have been proposed. Specifically, the Modified Project proposes minor changes to the proposed routes for the 29 Sunset in Candlestick Point and to all routes in the Hunters Point Shipyard associated with a shift of the Hunters Point Shipyard Transit Center. As these routes were

part of the Project's Transit Operating Plan, which was required as part of mitigation measure MM-TR-17, the changes described below, are considered changes to the mitigation measure itself (although no changes to the text of the measure in the FIER are required). Changes described herein have been developed in consultation with SFMTA. Refer to the original Transit Operating Plan, which was included as Appendix A to the Project's Transportation Plan, approved in 2010 as part of the FEIR Project for details on the original transit plan. Refer to the revised Transit Operating Plan, included as Appendix A to the Modified Project's Transportation Plan, which has been prepared as part of the Modified Project, for a more detailed presentation of the Modified Project's transit service plan.

The modification to the 29 Sunset was evaluated as part of EIR Addendum 1 (pp. 19-24), which found that the revisions to the route would offer similar or better transit service levels to the route evaluated in the EIR. The 29 Sunset routing proposed as part of the Modified Project is identical to those evaluated in Addendum 1 and approved by OCII and SFMTA.

Figure 8 illustrates the proposed changes to routes serving the Hunters Point Shipyard. The changes involve moving the Hunters Point Transit Center two blocks to the north from the original EIR proposal. The 28R BRT route and the 23 Monterey/24 Divisadero would travel an additional two blocks along Spear Street to reach the center. Routes approaching the Transit Center from Innes Avenue would travel along Lockwood Street to reach the Transit Center instead of Robinson Street, as originally proposed in the FEIR. Land uses along Lockwood Street and Robinson Street are relatively similar, so no change to transit mode share is expected as a result of this change. In Hunters Point South, transit (the 28R BRT and the 23 Monterey/24 Divisadero) would travel along Crisp Avenue along the northern edge of Hunters Point South. This is similar to the original EIR proposed routing in Hunters Point South.

Figure 8

Proposed Change to Hunters Point Shipyard Transit

Transit Demand and Capacity

As shown in Tables 3 – 5 above, the changes contemplated as part of the Modified Project would slightly increase traffic demand and would not substantially change transit demand compared to FEIR Variant 1 (R&D) in the EIR. Furthermore, the proposed changes in routing are not likely to have an effect on mode share. Therefore, the proposed modifications will not likely result in additional or substantially more severe significant impacts beyond those identified in the EIR under buildout conditions as it relates to transit capacity impacts or delay associated with traffic congestion.

Transit Delay

Mitigation Measure MM TR-17, which calls for the project applicant to work with SFMTA to implement the proposed transit service increases would still apply. Mitigation Measures MM TR-21, MM TR-22, MM TR-23, MM TR-24, MM TR-25, MM TR-26, and MM TR-27, which call for the applicant and SFMTA to implement transit priority features or purchase new vehicles to maintain headways affected by Project-generated traffic congestion, would also still apply.

As noted in Table 3, the Modified Project would increase traffic volumes within the Hunters Point Shipyard site, possibly increasing delays to transit serving the Hunters Point Shipyard site. However, the Modified Project includes several features designed to ensure that transit within and around the Hunters Point Shipyard site is not adversely affected by increased traffic. Internal to the site, all transit would operate in transit-only lanes, as the Modified Project includes new transit only lanes along Lockwood Avenue that were not part of the FEIR Variant 1 (R&D), as well as the transit lanes along Crisp Avenue that have always been a part of the project.

External to the site, mitigation in the form of transit-only lanes was identified for the Palou Avenue routes in the FEIR, and monitoring is required to determine when/if the mitigation is needed. To the extent changes in Addendum 6 increase conflicts and delay to transit, the mitigation measure would simply be triggered sooner, as identified by the monitoring. Therefore, the delay to transit along Palou will not get worse than what the FEIR contemplated.

Similarly, the FEIR identified mitigation in the form of transit-only lanes along Evans Avenue. A similar monitoring program was established, such that if transit delays associated with the Modified Project are greater (or materialize more quickly in the buildout stages of the Modified Project) than

identified in the FEIR, the mitigation measure would simply be implemented sooner, meaning that excessive transit delays would still be avoided.

Furthermore, although not required as part of the FEIR Variant 1 (R&D) or the Modified Project, a nearby development project that would develop within India Basin, along Innes Avenue, west of the HP site, has been proposed. A Draft EIR has recently been published for public review and comment, although as of the preparation of this analysis, the Draft EIR has not been certified nor has the associated project been approved. However, that project's Draft EIR identified a significant impact to transit associated with movements into and out of the India Basin project's site. The Draft EIR has called for conversion of one lane in each direction on Innes Avenue to transit-only as mitigation for the significant impact associated with that project. That measure, if approved, would ensure a continuous transit-only lane between the Modified Project's transit center and Third Street, potentially resulting in increased traffic congestion and more efficient transit service.

While implementation of the India Basin project's mitigation measure for transit-only lanes along Innes Avenue would be an additional benefit to transit, the analysis herein does not assume that mitigation measure to be in place because it has not yet been approved. If those transit-only lanes are not implemented, transit conditions along the Innes Avenue corridor would be similar to those identified in the FEIR for Variant 1 (R&D) as the amount of traffic increase along Innes Avenue associated with the Modified Project would be relatively small (i.e., less than 100) since the Modified Project represents a net increase of only approximately 280 vehicle trips in the PM peak hour compared to FEIR Variant 1 (R&D), and only approximately half of those trips would occur along Innes Avenue, and only a fraction of the trips along Innes Avenue would occur in the peak direction.

Transit Phasing

Similar to the Project's roadway infrastructure, the Project's transit network was proposed to be implemented at various levels throughout the development as described in the Transit Operating Plan. As a result of proposed changes to the development phasing, the transit phasing has been modified in order to ensure that the appropriate transit service is provided throughout the development as currently envisioned. Mitigation Measure MM TR-17 notes that the transit operating plan may be modified from what was approved in the EIR "to address changes in the operating environment and service demands" based on SFMTA's planning methodology and public input if modifications result in:

- Similar or higher transit mode share to what was projected in the EIR
- Adequate capacity to serve projected transit ridership
- Similar or less severe traffic impacts to those identified in the EIR

Although the changes to the Transit Operating Plan are not specifically to address current or observable changes in the operating environment and service demands, the Project Sponsor and SFMTA believe that the proposed changes to development phasing would affect the future operating environment and service demands, and thus propose changes to the Transit Operating Plan to better meet future demands consistent with the Mitigation Measure MM TR-17 provisions.

The FEIR Project and Modified Project transit phasing are shown in **Table 11**. **Appendix F** includes detailed comparison of the approximate number of transit trips (and approximate level of development) that would be in place at the time each level of transit service would be implemented under the FEIR Project and the Modified Project. Generally, changes to the transit phasing delay the provision of transit service to the Hunters Point Shipyard site, due to the delay in development there. In response to the acceleration of planned development in Candlestick Point, transit service at Candlestick Point would be accelerated. Overall, the revised phasing has been developed in collaboration with SFMTA service planning staff to retain a relatively close approximation to the level of transit demand that would be generated for each level of transit service between the FEIR Project and Modified Project, combined with engineering judgment to account for the unique development phasing currently proposed.

Additional analysis demonstrating that the levels of transit service relative to development would result in similar effectiveness to the analysis in the FEIR is provided later in this section. **Figures 9 – 11** show the phasing of transit and bicycle infrastructure relative to the three Major Phases of development at HP. (Phasing of transit and bicycle infrastructure at CP is relatively similar to what was assessed in Addendum 1, and therefore, no additional detail is provided here).

CP-01, CP-03, and CP-04 are currently slated to be first sub-phases completed as part of Major Phase 1. They consist of residential and neighborhood-serving retail uses. The primary transit service likely to be used by residents in CP is express bus service to Downtown San Francisco. Thus, as part of these sub-phases (currently scheduled to be completed by approximately 2021), the Candlestick Point Express (CPX) bus route will be initiated. Because of the relatively high number of residential units comprising these sub-phases, the CPX will start out at 15-minute headways and then quickly increase to 10-minute headways.

TABLE 11

TRANSIT PHASING

Route	Frequency	FEIR/Approved Transit Operating Plan		Modified Project	
		Major Phase	Approx. Year	Major Phase/ Subphase	Approx. Year
Hunters Point Shipyard					
Hunters Point Express (HPX)	20	1	2017	1 / HP-01	2021[d]
	10	1[a]	2019[a]	2 / HP-04	2025
	6	N/A	N/A	3 / HP-06	2026
23 Monterey	20	1	2017	1 / HP-01	2021
23 Monterey or 24 Divisadero[b]	15	2	2023	2 / HP-04	2025
	10	2	2025	3 / HP-06	2026
48 Quintara	15	1	2015	1 / HP-01	2021
	10	1	2019	2 / HP-03	2025
44 O'Shaughnessy	10	N/A	N/A	1 / HP-02	2022
	7.5	1	2017	2 / HP-03	2025
	6.5	1	2019	3 / HP-06	2026
Candlestick Point					
Privately-Funded Shuttle[c]	7.5	N/A	N/A	1 / CP-02	2022
Candlestick Point Express (CPX)	20	2	2021	N/A	N/A
	15	2	2022	1 / CP-03	2021
	10	3	2027	1 / CP-02	2022
29 Sunset	10	2	2021	1 / CP-03	2021
	5	2	2022	1 / CP-02	2025
Routes Serving Both Sites					
28R/BRT (Includes Construction of Yosemite Slough Bridge)	8	2	2021	2 / HP-04	2025
	5	2	2022	3 / CP-07	2028
T Third	6	2	2020	No Change - Not triggered by project development	
	5	3	2025		

Notes:

a) Approved Transit Operating Plan called for service increases to 12-minute headways. This has been revised to 10-minute headways as part of the Modified Project.

b) The 23 Monterey service may extend into HPS until SFMTA's fleet is modified to eliminate the need for OCS wires extended into the HPS site, at which point the 24 Divisadero would be extended and the 23 Monterey would return to its original (existing) routing. Note that the Approved Transit Operating Plan also called for three levels of service, corresponding to 15-, 10-, and 7.5-minute frequencies. The Modified Transit Operating Plan has been changed to reduce service levels somewhat on this route and increase service levels on express bus routes based on direction from SFMTA staff.

c) Temporary until initiation of BRT

d) Although the anticipated development schedule calls for the first portions of HP-01 to be completed in 2019, that portion is primarily reconstruction of existing artists' studios. The first portion of new development is scheduled to be complete by approximately 2021, which is when new transit service would likely be warranted.

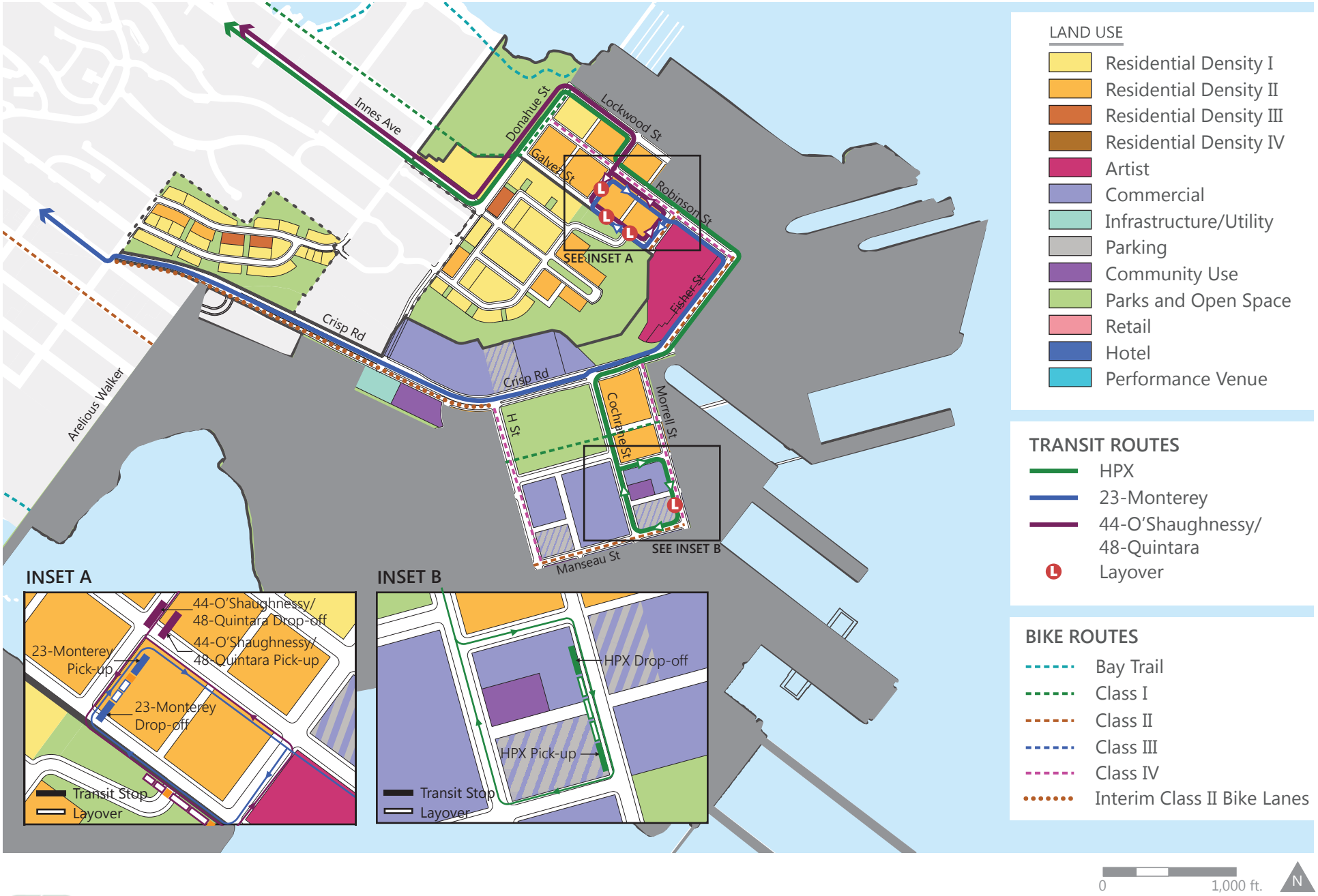


Figure 9

Hunters Point Shipyard - Major Phase I

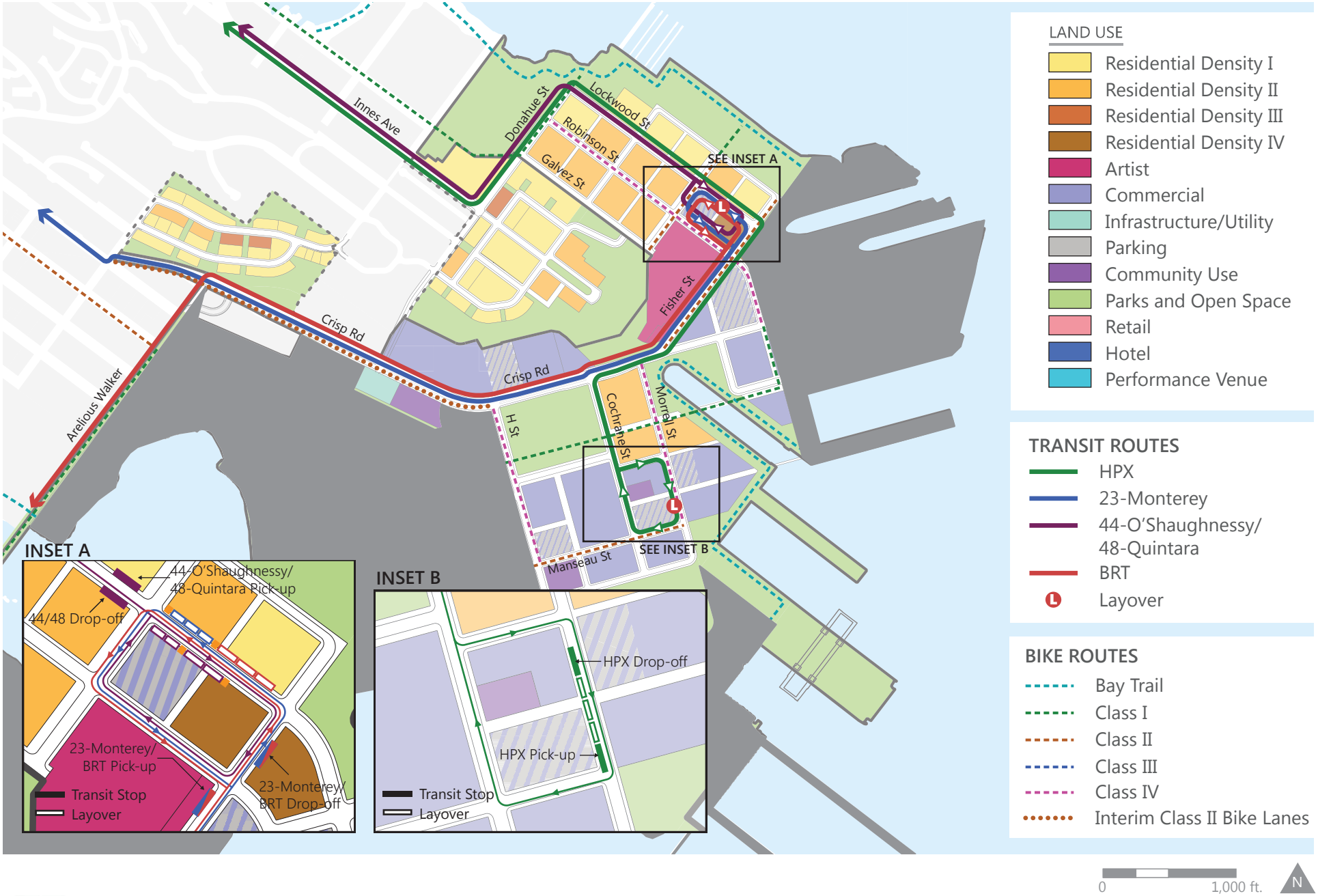


Figure 10

Hunters Point Shipyard - Major Phase II

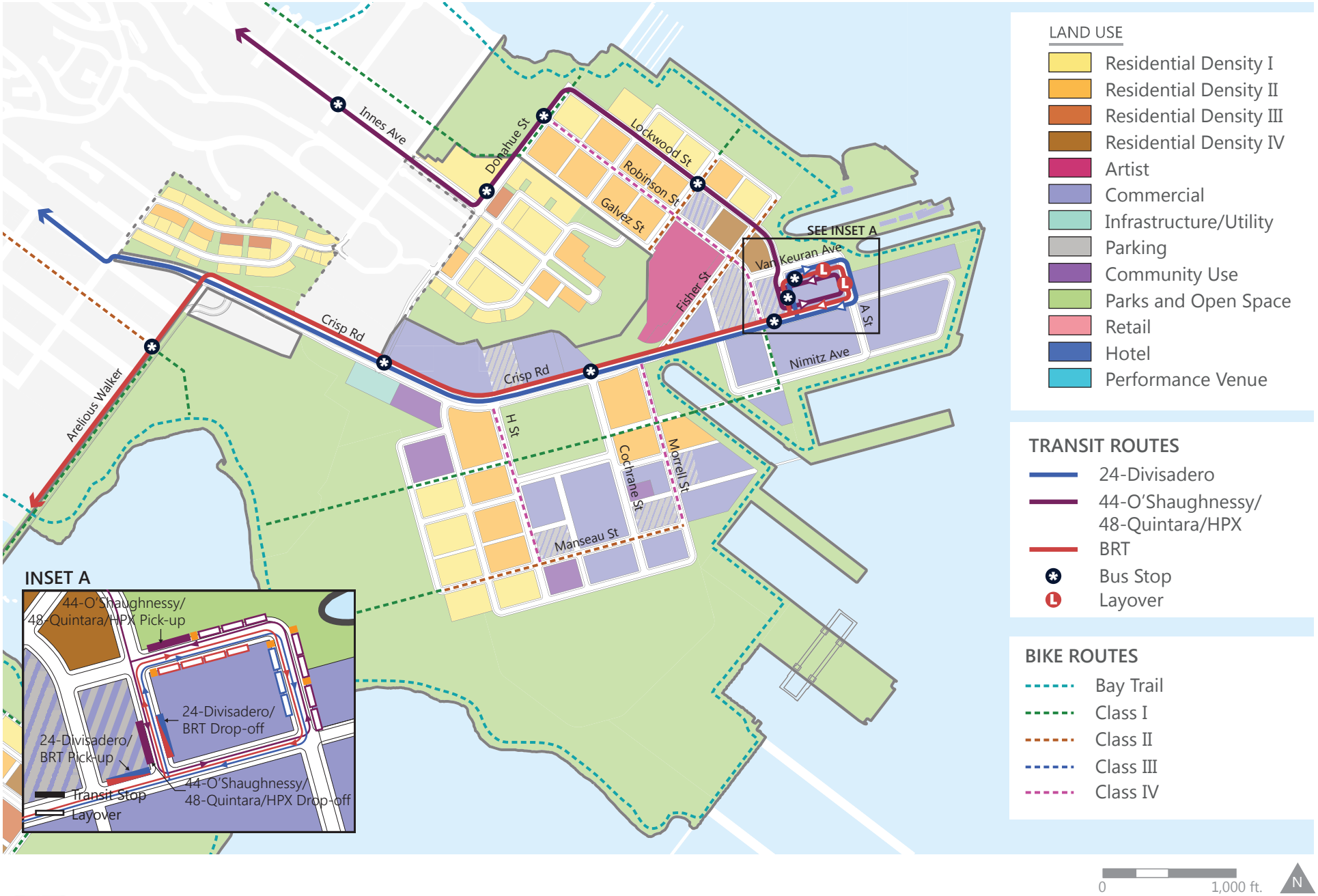


Figure 11

Hunters Point Shipyard - Major Phase III

To serve the retail center planned as part of CP-02, currently scheduled for completion around 2022, the 29 Sunset would be extended to the retail center. The FEIR also assumed the 28R BRT route would be operational prior to opening of the CP retail center. Because the opening of the retail center is currently proposed to be sooner relative to the rest of the development in the Project, SFMTA has indicated that operating the 28R BRT route is not possible in the near term, because of fleet requirements and infrastructure needs (both the Yosemite Slough Bridge and a workable routing west of US 101 prior to completion of the Geneva Interchange Project).

Addendum 1 modified the Transit Operating Plan to include a privately-funded shuttle, available complimentary for the general public, including existing neighbors, future residents, and shopping center patrons and employees, to provide service between the project site and the Balboa Park BART station, replicating service that will ultimately be offered by the 28R BRT route. This shuttle would be provided by the Project Sponsor or other on-site tenant. Service will be offered at 7.5 minute frequency with approximately 30-passenger vehicles. This service will be interim service until the 28R BRT route, or other comparable transit service is implemented. Although the shuttle service will initially be oriented to the Balboa Park BART Station, the site's TDM coordinator will retain the ability to reroute the shuttle to other regional transit hubs to better match patron and employee demand, with the mutual agreement of the Environmental Review Officer. This shuttle service will remain in the Transit Operating Plan as part of the Modified Project.

Addendum 1 also modified the Transit Operating Plan to include a temporary extension of the 56 Rutland route into the CP site to provide additional connections to Caltrain and other regional transit. However, that modification called for the extension to be implemented temporarily, only until such time as the CPX was implemented. Since the Modified Project phasing includes implementation of the CPX early on, the 56 Rutland extension would no longer be necessary, and that would be removed from the Transit Operating Plan, consistent with the original FEIR Transit Operating Plan.

Figures 12 and 13 summarize the level of transit supply proposed to be implemented over time relative to the expected transit ridership demand, based on the development phasing schedule and the transit implementation triggers described above, for Candlestick Point and Hunters Point Shipyard, respectively. **Appendix F** provides a year-by-year summary of anticipated development, auto trip generation, and transit trip generation for the Candlestick Point and Hunters Point Shipyard sites, which, along with anticipated transit phasing described in Table 9, formed the basis for **Figures 12 and 13**.

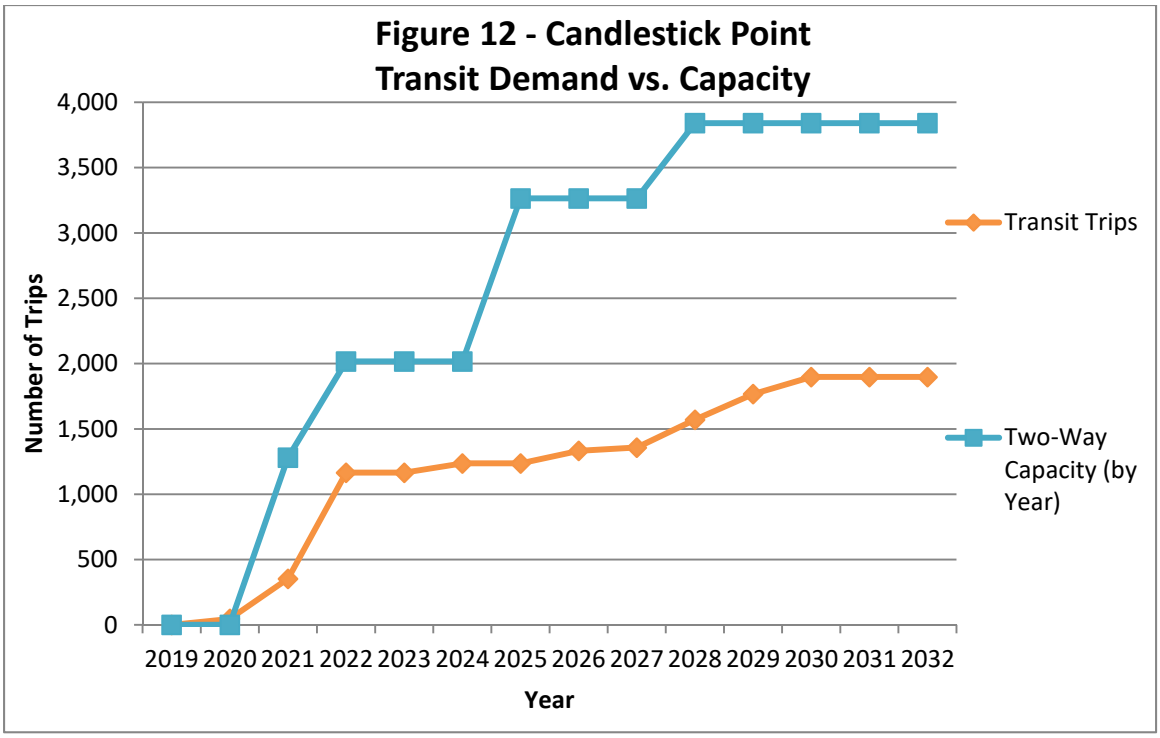


Figure 12 - Candlestick Point
Transit Demand vs. Capacity
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Number of Trips
2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032
Year
Transit Trips
Two-Way Capacity (by Year)

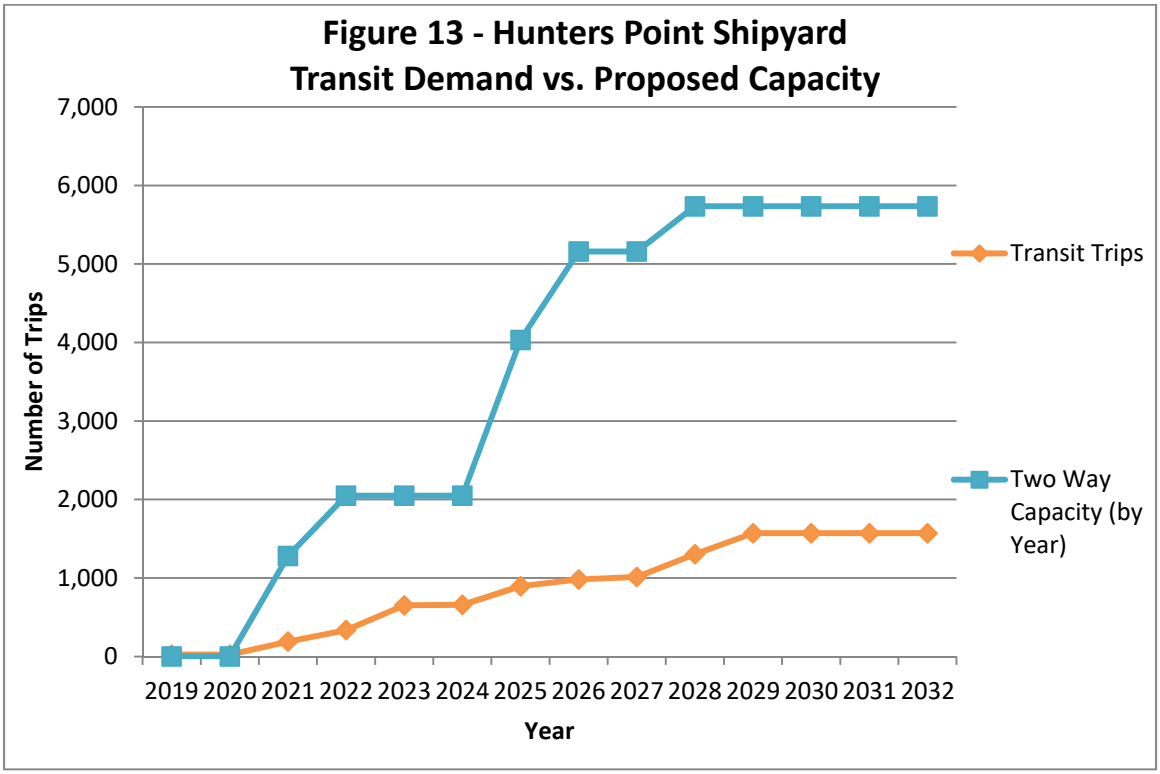


Figure 13 - Hunters Point Shipyard
Transit Demand vs. Proposed Capacity
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Number of Trips
2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032
Year
Transit Trips
Two Way Capacity (by Year)

The figures illustrate that with the proposed changes in development and transit phasing, the level of transit service proposed over time increases roughly in proportion to (and where possible, in advance of) increases in development and associated transit demand. **Figure 12** illustrates that with the Modified Project development schedule and transit phasing, the level of transit service relative to demand will always remain substantially higher than the demand at the Candlestick Point site. For example, the transit service capacity increases substantially in 2021 and 2022, coincident with substantial increases in demand over those same two years. Transit service increases again in 2025, in advance of increases in demand in years 2027 through 2030. The alignment of transit service increases with land use development throughout the development process and at buildout, means the transit will remain an attractive option for travelers in the area.

Figure 13 similarly illustrates that transit service relative to development at Hunters Point Shipyard will generally increase along with, and where possible, in advance of development.

Therefore, transit capacity will be adequate to serve the expected demand, and the mode split (i.e., the percentage of trips made by transit) should remain similar, meaning that there will not be additional significant transit impacts beyond those described in the EIR, nor will the Modified Project substantially increase the severity of significant impacts identified in the FIER, and no additional mitigation measures are required.

IMPACT TR-31 AND TR-32: BICYCLE CIRCULATION

The EIR identified Impacts TR-31 and TR-32 to bicycle circulation. Impact TR-31 generally describes the overall improvement to the areawide bicycle network that would result from the Project. Impact TR-32 describes a significant impact to Bicycle Routes #70 and #170 on Palou Avenue that would be adversely affected by the substantial increases to transit service along this street. Mitigation Measure MM TR-32 calls for relocating the bicycle routes to another nearby street with fewer conflicts, although the measure does not specify where the bicycle facilities should be relocated to.

As noted in the EIR, bicycle facilities are typically categorized as one of four "classes." A Class I facility is a dedicated, off-street space for bicycles to operate without interference from cars, except at intersections. Class I facilities can be one-way or two-way, and can also be shared with pedestrians in some cases. Class II facilities are on-street striped bicycle lanes, which allocate specific space on the street for bicycle use only. Class III facilities are bicycle routes, which do not allocate space dedicated for bicycles, but often include signage and "sharrow" pavement markings

alerting drivers to the likely presence of bicycles. Class IV facilities are exclusively for the use of bicycles and are separated from adjacent auto traffic lanes.

As shown in **Figures 14 and 15**, the Modified Project includes refinements to the proposed bicycle network. Many of these changes – particularly those in Candlestick Point – were addressed in and approved as part of Addendum 1 (pp. 25-27), and would not be changed further as part of the Modified Project being assessed herein. Therefore, they are not discussed further here.

The primary change to the bicycle network in the Modified Project compared to the changes approved as part of Addendum 1 is the re-alignment of the cycletrack in Hunters Point Shipyard South. One of the primary modifications approved as part of Addendum 1 was a new two-way cycletrack connecting the Hunters Point Shipyard and Candlestick Point neighborhoods. Within Hunters Point Shipyard, the cycletrack was to travel along the northern side of Crisp Avenue.

However, the Modified Project proposes an institutional/educational use and some R&D uses on the northern side of Crisp Avenue, which may require driveways or other curb cuts that may disrupt the cycletrack. Therefore, the Modified Project proposes to align the cycletrack through the open space and park area south of Crisp Avenue, and along one of the midblock breaks in HPS South. From there, it would extend across the new bridges across Drydock 4, where it would connect to the planned portion of the Bay Trail traversing the perimeter of HPS and with proposed facilities on Robinson Street. The facility on Robinson Street would be constructed as a Class IV separated facility providing an additional buffer between cyclists and adjacent traffic. These changes would ensure a more direct route between HPS and CP, and would ensure a complete connection within HPS, and to proposed cycletrack facilities west of HPS, within the proposed India Basin project. As a result, the modified Project would provide a more complete and connected network of routes and facilities, and would penetrate through the center of HPS South, instead of along its northern edge as had previously been contemplated.

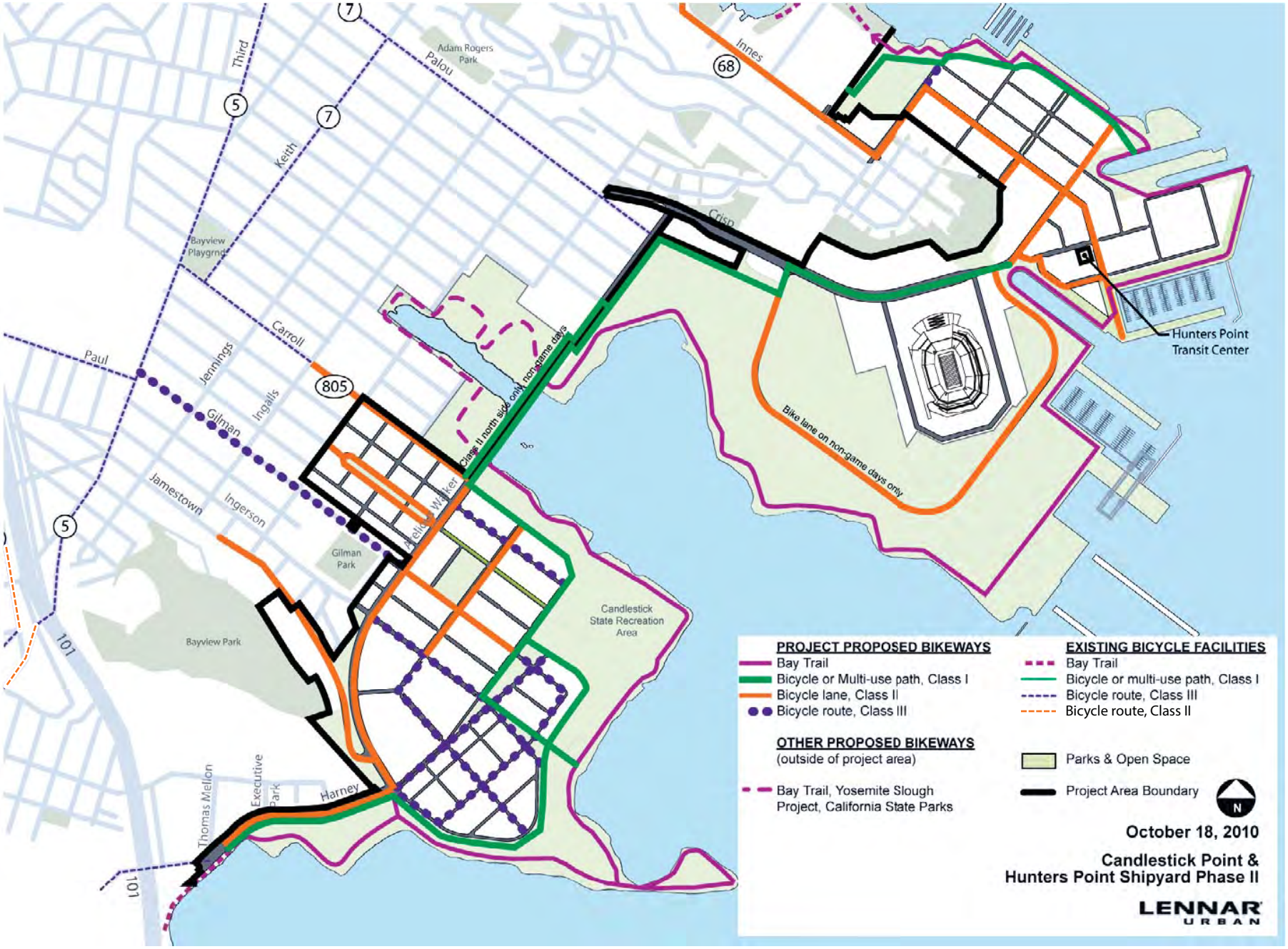


Figure 14

Originally Approved Bicycle Network

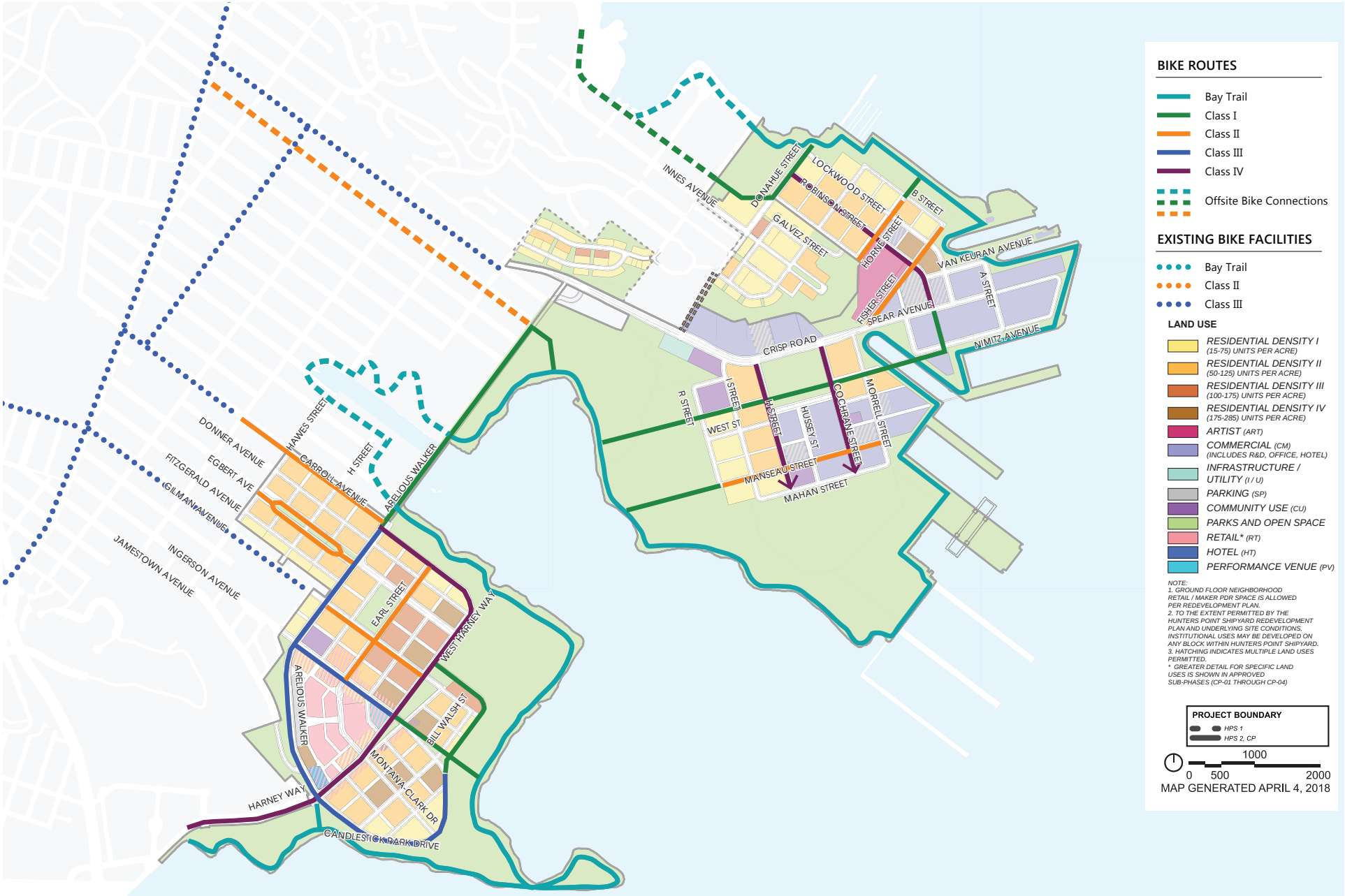


Figure 15

Modified Bicycle Network

Overall, the project refinements would continue to improve the overall bicycle network in the study area and facilities will be adequate to meet bicycle needs and Impacts TR-31 and TR-32 would remain unchanged. Mitigation Measure MM TR-32 would also still apply, and as part of the requirements of MM TR-32, SFMTA has already initiated conversations with the Project Sponsor regarding a study to consider relocating the existing bicycle route on Palou Avenue to Quesada Avenue, immediately to the south, and part of the City's Green Connections project. As noted in the EIR, this study must be complete prior to issuance of the grading permit for Major Phase 1 at Hunters Point Shipyard. No new significant impacts beyond those identified in the EIR would result from the Modified Project and the Modified Project would not make bicycle impacts substantially more severe than identified in the FIER, and therefore, no additional mitigation measures are required.

IMPACTS TR-33 AND TR-34: PEDESTRIAN CIRCULATION

The EIR identified Impacts TR-33 and TR-34 and determined that the Project would cause less than significant impacts on pedestrian circulation. The Modified Project generally maintains the project's goals of prioritizing the pedestrian realm through provision of generous sidewalks with streetscape amenities and safety measures, such as bulbouts at key locations. As noted earlier, sidewalks would generally remain between 12 and 15 feet, within the range of sidewalks considered in the original plan.

Overall, the Modified Project includes minor changes with respect to the pedestrian realm, such as slightly modified sidewalk widths and reoriented streets as shown in Appendix D and impacts are expected to be similar to Impacts TR-33 and TR-34, as described in the EIR and no new significant impacts or mitigation measures would be required.

IMPACTS TR-35 AND TR-36: PARKING

The EIR identified Impacts TR-35 and TR-36, which determined that although the Project would result in a shortfall of parking spaces compared to its projected demand and would remove some existing on-street parking spaces, the Project's impacts to parking conditions would be less than significant. The Modified Project may result in slightly fewer parking spaces on-street than the maximum envelope anticipated as part of FEIR Variant 1 (R&D). Specifically, the EIR identified that Variant 1 (R&D) would include approximately 3,000 on-street parking spaces (roughly evenly split between Candlestick Point and Hunters Point Shipyard) and between zero and approximately

20,000 off-street spaces. Therefore, the EIR concluded there would be a range of between approximately 3,000 spaces and 23,000 spaces in the entire development area.

The Modified Project would reduce on-street parking supply by up to several hundred spaces between Candlestick Point and Hunters Point Shipyard based on more detailed designs prepared as part of subphase applications and the desire to provide separated bicycle facilities along Robinson Street. (A precise count is unknown because the actual number of spaces that would have been provided cannot be determined until more detailed final designs are complete). Although the range of off-street parking spaces constructed was projected to be between zero and approximately 20,000 spaces in the FEIR, it is reasonable to expect that the Modified Project will build at least as many off-street spaces as would be removed through the minor design changes, such that with the loss of a few hundred on-street spaces, the Modified Project will still contain between 3,000 spaces and total 23,000 spaces.

Furthermore, **Table 12**, below, compares the maximum amount of parking allowed for FEIR Variant 1 (R&D) and the maximum amount that would be allowed for the Modified Project as described herein. As shown, there would be an overall increase in the maximum spaces allowed at Hunters Point Shipyard of 737 spaces and a corresponding decrease in the maximum amount of parking allowed at Candlestick Point of 242 spaces. The resulting maximum total of parking allowed within the Modified Project would be 495 more spaces than allowed under FEIR Variant 1 (R&D).

Therefore, since the Modified Project will still provide parking within the range identified in the EIR, or possibly very slightly above it, conclusions in the EIR related to parking, as described in Impacts TR-35 and TR-36, remain valid, no new significant impacts have been identified, and no new mitigation measures would be required.

TABLE 12 MAXIMUM ALLOWED PARKING SUPPLY						
	FEIR Variant 1 (R&D)			Modified Project		
	CP	HP	Total	CP	HP	Total
On-Street	1,360	1,678	3,038	1,360	1,487	2,847
Off-Street	10,196	9,678	19,874	9,954	10,606	20,560
Total	11,556	11,356	22,912	11,314	12,093	23,407
Source: Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR (2010) and FivePoint (2018)						

IMPACT TR-37: LOADING

The EIR identified Impact TR-37 and determined that the Project would provide adequate loading supply and therefore concluded that impacts related to loading would be less than significant, and that no mitigation measures would be required. As the modified Project does not change the overall loading requirements, implementation of the Modified Project would not result in any new significant impacts related to loading and no new mitigation measures would be required.

IMPACTS TR-38 THROUGH TR-50: STADIUM IMPACTS

The EIR included a number of impacts related to operation of the proposed new NFL stadium in the Hunters Point Shipyard site. However, the stadium is not part of the modified Project and these impacts and associated mitigation measures no longer apply.

IMPACT TR-51 THROUGH TR-55: ARENA IMPACTS

The EIR determined that the Project's proposed Arena use would create new impacts. Specifically, Impact TR-51 noted that the arena component of the Project would create significant and unavoidable traffic and site access impacts, and required development of an event Transportation

Management Plan (TMP) by the arena operator as Mitigation Measure MM TR-51. However, even with MM TR-51, the arena's impacts to site access and traffic would be significant and unavoidable. The EIR also identified as part of impact TR-52, that the arena's traffic generation would have significant impacts to transit operation and identified Mitigation Measure MM TR-23.1 (operational improvements to the 29 Sunset route) as a way to reduce the effects of the arena traffic on the 29 Sunset travel times. However, even with implementation of these two mitigation measures, the EIR concluded that the arena's impacts to traffic congestion and transit operations would remain significant and unavoidable.

The EIR also determined that the arena would have a less than significant impact to bicycle circulation (TR-53), pedestrian circulation (TR-54), and parking conditions (TR-55).

The Modified Project would not change the project with respect to the arena. Thus, the "event conditions" impacts associated with the arena would be essentially the same as identified in the FEIR. The Modified Project would not create any new significant impacts or substantially increase the severity of a significant impact associated with events at the arena compared to what was described in the EIR, and therefore no additional mitigation measures are required, although the previously-identified mitigation measures would continue to apply.

IMPACT TR-56: AIR TRAFFIC IMPACTS

The EIR determined that the Project would have a less than significant impact on air traffic. The modified Project would contain the same overall land uses and general development form and would not change the EIR's conclusion regarding air traffic. The modified Project would not create any new significant impacts with respect to air traffic and no additional mitigation measures are required.

IMPACT TR-57: HAZARDS DUE TO DESIGN FEATURES

The EIR determined that the Project's transportation infrastructure would be designed in accordance with City standards, and would be reviewed and approved by the City prior to construction. As a result the Project's impacts to hazards would be less than significant. The modified Project would also be designed accordance with City standards and would be reviewed and approved by the City. Therefore, no new significant impacts to design features have been identified and no mitigation measures are required.

IMPACT TR-58: EMERGENCY ACCESS

The EIR determined that the Project's transportation infrastructure would adequately facilitate emergency access and be designed to City standards, which include provisions that address emergency vehicles. The modified Project would also be designed accordance with City standards and would be reviewed and approved by the City. Therefore, no new significant impacts to emergency access have been identified and no mitigation measures are required.

CUMULATIVE IMPACTS

As noted in the EIR, the discussion of cumulative impacts was included with the discussion of project-related impacts in Impacts TR-1 through TR-58 and no additional cumulative impact discussion is necessary. Similar to what is described above and in the EIR, since the modified Project would generate similar levels of travel demand at buildout and would have a similar transportation infrastructure, the modified Project's contribution to cumulative impacts would be the same as what is described in the EIR.

VMT ANALYSIS (FOR INFORMATIONAL PURPOSES ONLY)

Subsequent to certification of the FEIR in 2010, and consistent with guidance from the State of California Office of Planning and Research (OPR)[9], the San Francisco Planning Commission adopted Planning Commission Resolution 19579 in March 2016 modifying the City's environmental review process by:

> *"removing automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion, as a significant impact on the environmental [sic] pursuant to the California Environmental Quality Act, and replace it with vehicle miles traveled criteria which promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."*[10]

As a result of this change, project-related effects on congestion are no longer considered significant traffic-related impacts for projects where the San Francisco Planning Department is the Lead

---

[9] California Office of Planning and Research, *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA,* January 20, 2016

[10] San Francisco Planning Department, *Executive Summary: Resolution Modifying Transportation Impact Analysis*, March 3, 2016.

Agency. Instead, the City of San Francisco replaced level of service as a metric with a new vehicle-miles traveled (VMT) metric and threshold.

However, since OCII is the Lead Agency for this project, and OCII has not adopted such a revised significance metric and threshold, effects on traffic congestion are still considered in the analysis, as described above. However, because the project is nearby other projects that have recently undergone environmental under the Planning Department's purview, this section presents a discussion of the Modified Project's effects on VMT for informational purposes only.

Background

Many factors affect travel behavior. These factors include density, diversity of land uses, the design of the transportation network, access to regional destinations, distance to high-quality transit, development scale, demographics, and transportation demand management. Typically, low-density development at great distance from other land uses, located in areas with poor access to non-private vehicular modes of travel, generate more automobile travel compared to development located in urban areas, where a higher density, mix of land uses, and travel options other than private vehicles are available.

Given these travel behavior factors, San Francisco has a lower VMT ratio than the nine-county San Francisco Bay Area region. In addition, some areas of the City have lower VMT ratios than other areas of the City. These areas of the City can be expressed geographically through transportation analysis zones. Transportation analysis zones are used in transportation planning models for transportation analysis and other planning purposes. The zones vary in size from single city blocks in the downtown core, multiple blocks in outer neighborhoods, to even larger zones in historically industrial areas like the Hunters Point Shipyard.

The San Francisco County Transportation Authority (Transportation Authority) uses the San Francisco Chained Activity Model Process (SF-CHAMP) to estimate VMT by private automobiles and taxis for different land use types. Travel behavior in SF-CHAMP is calibrated based on observed behavior from the California Household Travel Survey 2010-2012, Census data regarding automobile ownership rates and county-to-county worker flows, and observed vehicle counts and transit boardings. SF-CHAMP uses a synthetic population, which is a simulated set of individual actors that represents the Bay Area's actual population, who make simulated travel decisions for a complete day. The Transportation Authority uses tour-based analysis for office and residential uses, which examines the entire chain of trips over the course of a day, not just trips to and from the

project. For retail uses, the Transportation Authority uses trip-based analysis, which counts VMT from individual trips to and from the project (as opposed to entire chain of trips). A trip-based approach, as opposed to a tour-based approach, is necessary for retail projects because a tour is likely to consist of trips stopping in multiple locations, and the summarizing of tour VMT to each location would over-estimate VMT.[11,12]

Although not directly applicable to this analysis because the San Francisco Planning Department is not the lead agency, the Planning Department's threshold of significance for the new VMT metric states that:

- The project would have a significant adverse impact if it would cause major traffic hazards.
- The project would have a significant effect on the environment if it would cause substantial additional VMT.
- The project would have a significant effect on the environment if it would substantially induce additional automobile travel by increasing physical roadway capacity in congested areas (i.e., by adding new mixed-flow lanes) or by adding new roadways to the network.

Specifically, Planning Commission Resolution 19579 and supporting materials provide direction for analyzing transportation conditions and identifying the transportation impacts of a proposed project in San Francisco based on the following:

> For residential projects, a project would generate substantial additional VMT if it exceeds the regional household VMT per capita minus 15 percent.[13] For office projects, a project would generate substantial additional VMT if it exceeds the regional VMT per employee minus 15 percent. As documented in the *Revised Proposal on Updates to the CEQA*

---

[11] To state another way: a tour-based assessment of VMT at a retail site would consider the VMT for all trips in the tour, for any tour with a stop at the retail site. If a single tour stops at two retail locations, for example, a coffee shop on the way to work and a restaurant on the way back home, then both retail locations would be allotted the total tour VMT. A trip-based approach allows us to apportion all retail-related VMT to retail sites without double-counting.

[12] San Francisco Planning Department, Executive Summary: Resolution Modifying Transportation Impact Analysis, Appendix F, Attachment A, March 3, 2016.

[13] OPR's proposed transportation impact guidelines states a project would cause substantial additional VMT if it exceeds both the existing City household VMT per capita minus 15 percent and existing regional household VMT per capita minus 15 percent. In San Francisco, the City's average VMT per capita is lower (8.4) than the regional average (17.2). Therefore, the City average is irrelevant for the purposes of the analysis.

Guidelines on Evaluating Transportation Impacts in CEQA ("proposed transportation impact guidelines"), a 15 percent threshold below existing development is "both reasonably ambitious and generally achievable." [14] For retail projects, the Planning Department uses a VMT efficiency metric approach for retail projects: a project would generate substantial additional VMT if it exceeds the regional VMT per retail employee minus 15 percent. For mixed-use projects, each proposed land use is evaluated independently, per the criteria described above.

VMT Assessment

Table 13, below, presents the existing and future year VMT per capita rates for the Bay Area region and for the TAZs at CP and HP that include the Modified Project for both existing conditions and future year 2040 conditions. For residential development, the regional average daily VMT per capita is 17.2.[15] For office and retail development, regional average daily work-related VMT per employee is 19.1 and 14.9, respectively.

The Candlestick Point portion of the Modified Project includes residential, office, retail, hotel, and community services uses, plus an arena. The City considers VMT associated with hotel uses to be similar to residential. The arena has components that function similarly to retail and office. The community services are still somewhat undefined, but will likely also function similarly to retail. Therefore, the evaluation of the three primary land use categories for which data is available from the City adequately covers VMT patterns associated with all land uses at Candlestick Point.

As shown, at Candlestick Point, the VMT per capita for residential and retail uses are currently below the City's threshold of 15 percent below the regional average. VMT per capita for office uses at CP would currently exceed the threshold. However, by year 2040, all three land use types would generate VMT per capita substantially below the regional average and less than the City's threshold of significance. This is because the increased density associated with the Modified Project reduces the need for people to travel outside of the area for goods and services, and also because the substantial investment in transit service to the site reduces the need for people to travel to and from the site by automobile. So, buildout of the Modified Project itself would reduce the VMT at the site such that it would not exceed the thresholds.

---

[14] This document is available online at: https://www.opr.ca.gov/s_sb743.php, page III:20.

[15] Includes the VMT generated by the households in the development.

Table 13. Daily Vehicle Miles Traveled per Capita[1]

Land Use	Bay Area			Candlestick Point						Hunters Point Shipyard			
				TAZ 882 (CP North)		TAZ 881 (CP South/Retail)		TAZ 891 (Alice Griffith)		TAZ 386 (HP North)		TAZ 387 (HP South/R&D)	
	Regional Average	**Regional Average minus 15%**	**Year 2040 Regional Average minus 15%**	**Existing**	**Future Year 2040 (With Buildout of Proposed Project)**	**Existing**	**Future Year 2040 (With Buildout of Proposed Project)**	**Existing**	**Future Year 2040 (With Buildout of Proposed Project)**	**Existing**	**Future Year 2040 (With Buildout of Proposed Project)**	**Existing**	**Future Year 2040 (With Buildout of Proposed Project)**
Households (Residential)	17.2	14.6	13.7	11.4	10.1	11.4	10.1	10.6	9.8	9.3	9.0	**17.5**	0.0[2]
Employment (Office)	19.1	16.2	14.5	**18.7**	13.8	**18.5**	13.5	**17.8**	13.7	**19.9**	12.4	**20.9**	13.6[2]
Visitors (Retail)	14.9	12.6	12.4	9.1	9.5	9.0	9.5	10.3	9.6	8.0	7.8	7.6	**15.4[2]**

Notes:

1. VMT rates exceeding the respective threshold are shown in **bold**.
2. The SF-CHAMP model land use assumptions for TAZ 387 assume primarily office and retail land uses, and do not include residential uses. Thus, the model reports a residential VMT per capita of 0.0 in TAZ 387 for year 2040, and similarly, reports an atypically high rate of VMT generation for retail uses (which derive a large portion of trips from residential uses). However, since the mix of uses actually proposed in that TAZ are more similar to those assumed in the model for TAZ 386, the VMT forecasts for TAZ 386 are likely representative of what would occur at TAZ 387 as well, all of which would be well below the City's threshold.

Source: www.sftransportationmap.org (accessed December 29, 2017)

At the Hunters Point Shipyard site, the Modified Project includes residential, retail, office/R&D, community services, a hotel, educational uses, a marina, and artists' studios. As with Candlestick Point, the community services uses will likely function similar to retail and the hotel will function similarly to residential. The artists' studios will function similarly to office in some respects and retail in other respects. The City considers educational uses to function similarly to office uses. Finally, the marina will function similarly to a recreational use, which the City considers to operate similar to retail. Thus, similar to Candlestick Point, all uses proposed at Hunters Point can be approximated using the three primary uses the City provides VMT data for.

As shown in Table 13, at Hunters Point Shipyard, the VMT per capita for retail uses is currently below the City's threshold of 15 percent below the regional average. VMT per capita for residential uses in HP North area also currently below the City's threshold. VMT per capita for office use in HP North and for both office and residential uses at HP South and the R&D area would currently exceed the threshold.

However, by year 2040, according to SF-CHAMP, all office and residential uses would be within the threshold, retail uses at HP North would be within the City's threshold, but retail uses at HP South and the R&D area would exceed the City's threshold. Land use assumptions in SF-CHAMP for TAZ 387 assume primarily office and retail land uses, and do not include residential uses. Thus, the model reports a residential VMT per capita of 0.0 in TAZ 387 for year 2040, and similarly, reports an atypically high rate of VMT generation for retail uses (which derive a large portion of trips from residential uses). However, the Modified Project would include office, retail, and residential in both TAZ 386 and 387. Since the mix of uses actually proposed in TAZ 387 is more similar to those assumed in the model for TAZ 386, the VMT forecasts for TAZ 386 are likely representative of what would occur at both TAZ 386 and 387, and therefore, the VMT per capita generated by the Modified Project in both Hunters Point Shipyard would be within the City's threshold.

CONCLUSION

In conclusion, the Modified Project would not change or alter any of the EIR's findings with respect to transportation impacts. All impacts would remain less than significant, less than significant with mitigation, or significant and unavoidable, as previously identified, and no new mitigation measures would be required. Additionally, the EIR's transportation cumulative impact conclusions would not be altered.

We hope you have found this useful.

Sincerely,

FEHR & PEERS

Chris Mitchell, PE
Principal

APPENDIX A

Comparison of Modified Project and FEIR Project/Variants Land Uses

Table A-2: Comparison of 2018 Modified Project Variant to 2010 Project

	2010 FEIR PROJECT			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	Hunters Point Phase II	Total	Candlestick	Hunters Point Phase II	Total	Candlestick	Hunters Point Phase II	Total
NON-RESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	1,860,000 SF	**1,860,000** SF	0 SF	0 SF	**0** SF	0 SF	-1,860,000 SF	**-1,860,000** SF
	0 SEATS	69,000 SEATS	**69,000** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	-69,000 SEATS	**-69,000** SEATS
R&D/Office	150,000 SF	2,500,000 SF	**2,650,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	1,765,000 SF	**1,765,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000** SF	**4,790,000** SF	**5,975,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**711,000** SF	**711,000** SF
RESIDENTIAL	**7,850** UNITS	**2,650** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**-632** UNITS	**804** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	7,850 SPACES	2,650 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	-632 SPACES	804 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	4,028 SPACES	**6,374** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	3,124 SPACES	**3,514** SPACES
Parking Total	**10,196** SPACES	**6,678** SPACES	**16,874** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**-242** SPACES	**3,928** SPACES	**3,686** SPACES
± On-street Parking	1,360 SPACES	683 SPACES	**2,043** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	804 SPACES	**804** SPACES
Dedicated Stadium Parking	0 SPACES	12,665 SPACES	**12,665** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	-12,665 SPACES	**-12,665** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	140.0 AC	148.1 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	33.9 AC	34.8 AC
New Sports Fields & Active Urban Recreation	0.0 AC	91.6 AC	91.6 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-33.5 AC	-33.5 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**231.6** AC	**336.4** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**0.4** AC	**1.3** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table II-3 & Table II-6 of the FEIR.

[a] All infrastructure is excluded from the development program's square footage, with the exception of any associated office space, which is included in the R&D/Office category.

[b] Includes 400 high school students living on campus

[c] Includes 600 high school students and 400 college students. Half the high school students would be on site at any one time. One-third of the college students would be on site at any one time.

[d] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Retail at CP; converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1 to HPS2.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

[h] On-street parking is in addition to structured parking.

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-3: Comparison of 2018 Modified Project Variant to 2010 R&D Variant 1

	2010 R&D VARIANT 1			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NON-RESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF
	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS
R&D/Office	150,000 SF	5,000,000 SF	**5,150,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	-735,000 SF	**-735,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000** SF	**5,430,000** SF	**6,615,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**71,000** SF	**71,000** SF
RESIDENTIAL	**7,850** UNITS	**2,650** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**-632** UNITS	**804** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	7,850 SPACES	2,650 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	-632 SPACES	804 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	7,028 SPACES	**9,374** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	124 SPACES	**514** SPACES
Parking Total	**10,196** SPACES	**9,678** SPACES	**19,874** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**-242** SPACES	**928** SPACES	**686** SPACES
± On-street Parking	1,360 SPACES	1,678 SPACES	**3,038** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	-191 SPACES	**-191** SPACES
Dedicated Stadium Parking	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	152.4 AC	160.5 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	21.5 AC	22.4 AC
New Sports Fields & Active Urban Recreation	0.0 AC	69.8 AC	69.8 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-11.7 AC	-11.7 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**222.2** AC	**327.0** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**9.8** AC	**10.7** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table IV-3 & Table II-5 of the FEIR.

[a] All infrastructure is excluded from the development program's square footage, with the exception of any associated office space, which is included in the R&D/Office category.

[b] Includes 400 high school students living on campus

[c] Includes 600 high school students and 400 college students. Half the high school students would be on site at any one time. One-third of the college students would be on site at any one time.

[d] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Retail at CP; converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1 to HPS2.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

[h] On-street parking is in addition to structured parking.

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-4: Comparison of 2018 Modified Project Variant to 2010 Housing/R&D Variant 2A

	2010 HOUSING/R&D VARIANT 2A			2018 MODIFIED PROJECT VARIANT			2010-18 NET CHANGE		
	Candlestick	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**	**Candlestick**	**Hunters Point Phase II**	**Total**
NON-RESIDENTIAL LAND USE									
Artist Studio	0 SF	255,000 SF	**255,000** SF	0 SF	255,000 SF	**255,000** SF	0 SF	0 SF	**0** SF
Community Use	50,000 SF	50,000 SF	**100,000** SF	50,000 SF	50,000 SF	**100,000** SF	0 SF	0 SF	**0** SF
Arena	75,000 SF	0 SF	**75,000** SF	75,000 SF	0 SF	**75,000** SF	0 SF	0 SF	**0** SF
	10,000 SEATS	0 SEATS	**10,000** SEATS	10,000 SEATS	0 SEATS	**10,000** SEATS	0 SEATS	0 SEATS	**0** SEATS
Hotel	150,000 SF	0 SF	**150,000** SF	150,000 SF	120,000 SF	**270,000** SF	0 SF	120,000 SF	**120,000** SF
	220 ROOMS	0 ROOMS	**220** ROOMS	220 ROOMS	175 ROOMS	**395** ROOMS	0 ROOMS	175 ROOMS	**175** ROOMS
Institution	0 SF	0 SF	**0** SF	0 SF	410,000 SF	**410,000** SF	0 SF	410,000 SF	**410,000** SF
Elementary School/Junior High School	0 SF	0 SF	**0** SF	0 SF	345,000 SF	**345,000** SF	0 SF	345,000 SF	**345,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[b]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
High School/Post-Secondary	0 SF	0 SF	**0** SF	0 SF	65,000 SF	**65,000** SF	0 SF	65,000 SF	**65,000** SF
	0 ± STUDENTS	0 ± STUDENTS	**0** ± STUDENTS	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS[c]	0 ± STUDENTS	1,000 ± STUDENTS	**1,000** ± STUDENTS
Stadium	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF	0 SF	0 SF	**0** SF
	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS	0 SEATS	0 SEATS	**0** SEATS
R&D/Office	150,000 SF	3,000,000 SF	**3,150,000** SF	150,000 SF	4,265,000 SF	**4,415,000** SF[d,e]	0 SF	1,265,000 SF	**1,265,000** SF
Regional Retail	635,000 SF	0 SF	**635,000** SF	635,000 SF	100,000 SF	**735,000** SF[f]	0 SF	100,000 SF	**100,000** SF
Neighborhood Retail	125,000 SF	125,000 SF	**250,000** SF	125,000 SF	226,000 SF	**351,000** SF[e]	0 SF	101,000 SF	**101,000** SF
Maker Space	0 SF	0 SF	**0** SF	0 SF	75,000 SF	**75,000** SF	0 SF	75,000 SF	**75,000** SF
GSF Total	**1,185,000**	**3,430,000** SF	**4,615,000** SF	**1,185,000** SF	**5,501,000** SF	**6,686,000** SF	**0** SF	**2,071,000** SF	**2,071,000** SF
RESIDENTIAL	**6,225** UNITS	**4,275** UNITS	**10,500** UNITS	**7,218** UNITS	**3,454** UNITS	**10,672** UNITS[g]	**993** UNITS	**-821** UNITS	**172** UNITS
CAR PARKING									
Residential (Structured) Parking	6,225 SPACES	4,275 SPACES	**10,500** SPACES	7,218 SPACES	3,454 SPACES	**10,672** SPACES	993 SPACES	-821 SPACES	**172** SPACES
Commercial (Structured) Parking	2,346 SPACES	4,428 SPACES	**6,774** SPACES	2,736 SPACES	7,152 SPACES	**9,888** SPACES	390 SPACES	2,724 SPACES	**3,114** SPACES
Parking Total	**8,571** SPACES	**8,703** SPACES	**17,274** SPACES	**9,954** SPACES	**10,606** SPACES	**20,560** SPACES	**1,383** SPACES	**1,903** SPACES	**3,286** SPACES
± On-street Parking	1,360 SPACES	1,428 SPACES	**2,788** SPACES	1,360 SPACES	1,487 SPACES	**2,847** SPACES[h]	0 SPACES	59 SPACES	**59** SPACES
Dedicated Stadium Parking	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES	0 SPACES	0 SPACES	**0** SPACES
MARINA	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**300** SLIPS	**300** SLIPS	**0** SLIPS	**0** SLIPS	**0** SLIPS
WATER TAXI	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**NO**	**YES**	**YES**
New Parks	8.1 AC	150.9 AC	159.0 AC	9.0 AC	173.9 AC	182.9 AC	0.9 AC	23.0 AC	23.9 AC
New Sports Fields & Active Urban Recreation	0.0 AC	70.9 AC	70.9 AC	0.0 AC	58.1 AC	58.1 AC	0.0 AC	-12.8 AC	-12.8 AC
New State Recreation Area	5.7 AC	0.0 AC	5.7 AC	5.8 AC	0.0 AC	5.8 AC	0.1 AC	0.0 AC	0.1 AC
Existing State Recreation Area	91.0 AC	0.0 AC	91.0 AC	90.9 AC	0.0 AC	90.9 AC	-0.1 AC	0.0 AC	-0.1 AC
PARKS & OPEN SPACE	**104.8** AC	**221.8** AC	**326.6** AC	**105.7** AC	**232.0** AC	**337.7** AC	**0.9** AC	**10.2** AC	**11.1** AC
Other Parks[i]	**7.1** AC	**12.7** AC	**19.8** AC	**7.1** AC	**17.3** AC	**24.4** AC	**0.0** AC	**4.6** AC	**4.6** AC

SOURCE: 2010 Project Data: Table IV-19a & Table IV-21a of the FEIR.

[a] All infrastructure is excluded from the development program's square footage, with the exception of any associated office space, which is included in the R&D/Office category.

[b] Includes 400 high school students living on campus

[c] Includes 600 high school students and 400 college students. Half the high school students would be on site at any one time. One-third of the college students would be on site at any one time.

[d] The 2010 FEIR indicates that R&D uses are defined to include research and development, office, and light-industrial uses. Under the 2018 Modified Project Variant land use program, in CP, 150,000 sf of uses are designated as office uses, while in HPS2, 4,265,000 sf of uses are designated as R&D uses.

[e] Converts R&D/Office gsf to Retail at CP; converts R&D/Office gsf to Institution at HPS2.

[f] Includes 71,000 square feet of approved (but not constructed) commercial space from HPS1 to HPS2.

[g] Includes 172 approved (but not constructed) housing units from HPS1, increasing the overall unit count for CPHPS2 from 10,500 to 10,672.

[h] On-street parking is in addition to structured parking.

[i] Specific acreages for Other Parks were not provided in the 2010 FEIR. In addition, Other Parks are included for information purposes only; they are not included in the final calculation of parks and open space.

Table A-5: Comparison of 2018 Modified Project Variant to 2010 Project, R&D Variant 1, and Housing/R&D Variant 2A (Parks and Open Space)

	2010 PROJECT	2010 R&D VARIANT 1	2010 HOUSING/R&D VARIANT 2A	2018 MODIFIED PROJECT VARIANT
Hunters Point Shipyard Phase II (HPS2)				
NEW PARKS				
Grassland Ecology Park	82.1	82.7	83.4	106.8
Heritage Park	15.6	15.6	15.6	15.5
Hunters Point Mini Park	0.0	0.0	0.7	0
Hunters Point Neighborhood Park	0.0	0.0	0.9	0
Hunters Point Park Blocks	0.0	4.5	0.0	0
Hunters Point South Park	0.0	0.0	2.0	0
Hunters Point Wedge Park	0.0	2.8	3.1	0
Northside Park	12.8	12.8	12.8	12.8
R&D Plaza	0.0	2.1	0.0	0
Shipyard Hillside Open Space	0.0	0.0	0.0	2.4
Water Room/Dry Dock 4	0.0	0.0	0.0	7.3
Waterfront Promenade	29.5	31.9	32.4	29.1
Subtotal	**140.0**	**152.4**	**150.9**	**173.9**
NEW SPORTS FIELDS & ACTIVE URBAN RECREATION				
Maintenance Yard	0.0	0.0	0.0	5.5
Multi-Use Lawn/Fields	25.2	22.4	25.2	20.5
Sports Field Complex	59.7	40.7	39.0	28.7
Waterfront Recreation & Event Pier	6.7	6.7	6.7	3.4
Subtotal	**91.6**	**69.8**	**70.9**	**58.1**
HPS2 POSH Total	**231.6**	**222.2**	**221.8**	**232.0**
OTHER PARKS				
Green Room	0.0	0.0	0.0	8.1
Gunning Crane Pier Habitats	9.5	9.5	9.5	9.2
Shipyard Hillside Open Space	2.6	2.6	2.6	0.0
Horne Boulevard Park	0.6	0.6	0.6	0.0
Subtotal	**12.7**	**12.7**	**12.7**	**17.3**
HPS2 Total	**244.3**	**234.9**	**234.5**	**249.3**
Candlestick Point				
NEW PARKS				
Alice Griffith Neighborhood Park	1.4	1.4	1.4	1.4
Bayview Gardens/Wedge Park	2.5	2.5	2.5	3.7
Candlestick Point Neighborhood Park	3.1	3.1	3.1	3.1
Mini Wedge Park	1.1	1.1	1.1	0.8
Subtotal	**8.1**	**8.1**	**8.1**	**9.0**
STATE PARK LAND				
Bayview Gardens North	9.5	9.5	9.5	9.5
Grasslands South	10.3	10.3	10.3	10.3
The Heart of the Park (Includes new State Park)	15.4	15.4	15.4	15.4
Last Port (includes new State Park)	14.6	14.6	14.6	14.6
The Last Rubble	24.5	24.5	24.5	24.5
The Neck (includes new State Park)	4.9	4.9	4.9	4.9
The Point	6.1	6.1	6.1	6.1
Wind Meadow	11.4	11.4	11.4	11.4
Subtotal	**96.7**	**96.7**	**96.7**	**96.7**
CP POSH Total	**104.8**	**104.8**	**104.8**	**105.7**
OTHER PARKS				
Bayview Hillside Open Space	2.9	2.9	2.9	3.5
Earl Boulevard Park	0.4	0.4	0.4	0.0
Jamestown Walker Slope	3.9	3.9	3.9	3.6
Subtotal	**7.1**	**7.1**	**7.1**	**7.1**
CP Total	**111.9**	**111.9**	**111.9**	**112.8**
CP-HPS2 TOTAL	**356.2**	**346.8**	**346.4**	**362.1**
NEW PARKS	148.1	160.5	159.0	182.9
NEW SPORTS FIELDS & ACTIVE URBAN RECREATION	91.6	69.8	70.9	58.1
STATE PARK LAND	96.7	96.7	96.7	96.7
	336.4	327.0	326.6	337.7
OTHER PARKS	19.8	19.8	19.8	24.4

APPENDIX B

Detailed Trip Generation Calculations

Table A-1
Candlestick Point Trip Generation:

AM Peak Hour

Category		Total Use SF	Units	Land Use	ITE Land Use Code	AM ITE Trip Generation: Rate or Eqn	AM Vehicle Trips	AM Person Trips	%In	%Out	AM Vehicle Trips In	AM Person Trips In	AM Vehicle Trips Out	AM Person Trips Out	Internal Trip %	Internal Person Trip Reduction	Diverted Link Trip %	Diverted Link Trip Reduction	Pass-By Trip %	Pass-By Trip Reduction	External Person Trips (ITE less internalization, pass-by, and diverted): AM In	AM Out	AM Total	Transit %	External Transit Trips (Person Trips): AM In	AM Out	AM Total	Vehicle Trips Replaced by Transit: AM Total	External Vehicle Trips (Person/1.6): AM In	AM Out	AM Total	Bicycle Mode Share Adjustment
RETAIL																																
		760.0	**ksf**	**Neighborhood Serving + Ancillary**																												
		635.0	ksf	Shopping Center	820	Eqn	808	1,293	61%	39%	493	789	315	504	36%	460					508	325	833	15%	75	48	123	77	271	173	444	
		125.0	ksf	Specialty Retail	814	Rate	148	237	61%	39%	65	104	83	133	36%	84					93	59	153	15%	14	9	22	14	50	32	81	
COMMERCIAL / ADAPTIVE REUSE																																
		150.0	**ksf**	**Buildings 1, 2, and 3**																												
		150.0	ksf	General Office	710	Eqn	261	418	88%	12%	229	366	32	51	36%	149					237	32	269	21%	49	7	55	35	118	16	134	
		25.0	ksf	Arena	710	Eqn	63	101	88%	12%	55	88	8	13	36%	36					57	8	65	21%	12	2	13	8	28	4	32	
RECREATION																																
		50.0	**ksf**																													
		0.0	ksf	Elementary School	520	Rate	0	0	54%	46%	0	0	0	0	36%	0					0	0	0	47%	0	0	0	0	0	0	0	
		0.0	ksf	Police/Fire Station	730	Rate	0	0	84%	16%	0	0	0	0	36%	0					0	0	0	47%	0	0	0	0	0	0	0	
		50.0	ksf	Recreational Comm Center	495	Rate	108	173	88%	12%	95	152	13	21	36%	61					98	13	111	21%	21	3	24	15	48	7	55	
		97	acres	County Park	412	Rate	2	3	80%	20%	1	2	1	2	36%	1					2	0	2	21%	0	0	0	0	1	0	1	
HOTELS																																
		220.0	**rooms**																													
		0.0	rooms	Resort Hotel	330	Rate	0	0	72%	28%	0	0	0	0	36%	0					0	0	0	20%	0	0	0	0	0	0	0	
		220.0	rooms	Hotel	310	Eqn	110	176	61%	39%	67	107	43	69	36%	63					69	44	113	20%	14	9	23	14	34	22	56	
RESIDENTIAL																																
		6962.0	**units**																													
		6962.0	units	Residential Townhouse	230	Rate	3,064	4,902	17%	83%	521	834	2,543	4,069	36%	1744					537	2,622	3,158	22%	116	565	681	425	263	1,285	1,549	
		0.0	units	Apartment	220	Rate	0	0	20%	80%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	High-Rise Apartment	222	Rate	0	0	25%	75%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	All Suites Hotel	311	Rate	0	0	55%	45%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
				Total			**4,564**	**7,302**	**33%**	**67%**	**1,526**	**2,442**	**3,038**	**4,861**	**36%**	**2,598**					**1,601**	**3,104**	**4,705**		**300**	**642**	**942**	**589**	**813**	**1,539**	**2,352**	**2,264**

PM Peak Hour

Category		Total Use SF	Units	Land Use	ITE Land Use Code	PM ITE Trip Generation: Rate or Eqn	PM Vehicle Trips	PM Person Trips	%In	%Out	PM Vehicle Trips In	PM Person Trips In	PM Vehicle Trips Out	PM Person Trips Out	Internal Trip %	Internal Trip Reduction	Diverted Link Trip %	Diverted Link Trip Reduction	Pass-By Trip %	Pass-By Trip Reduction	External Trips (ITE less internalization, pass-by, and diverted): PM In	PM Out	PM Total	Transit %	External Transit Trips (Person Trips): PM In	PM Out	PM Total	Vehicle Trips Replaced by Transit: PM Total	External Vehicle Trips (Person/1.6): PM In	PM Out	PM Total	
RETAIL																																
		760.0	**ksf**	**Neighborhood Serving + Ancillary**																												
		635.0	ksf	Shopping Center	820	Eqn	3,606	5,770	48%	52%	1,731	2,770	1,875	3,000	26%	1491					2,054	2,225	4,279	15%	309	335	644	402	1,090	1,181	2,272	
		125.0	ksf	Specialty Retail	814	Eqn	548	877	44%	56%	241	386	307	491	26%	227					286	364	650	15%	43	55	98	61	152	193	345	
COMMERCIAL / ADAPTIVE REUSE																																
		175.0	**ksf**	**Buildings 1, 2, and 3**																												
		150.0	ksf	General Office	710	Eqn	247	395	17%	83%	42	67	205	328	26%	102					50	243	293	23%	12	57	69	43	24	116	140	
		25.0	ksf	Arena	710	Eqn	108	173	17%	83%	19	30	89	142	26%	45					22	106	128	23%	5	25	30	19	10	51	61	
RECREATION																																
		147.0	**acres**																													
		0.0	ksf	Elementary School	520	Rate	0	0	43%	57%	0	0	0	0	26%	0					0	0	0	47%	0	0	0	0	0	0	0	
		0.0	ksf	Police/Fire Station	730	Rate	0	0	31%	69%	0	0	0	0	26%	0					0	0	0	47%	0	0	0	0	0	0	0	
		50.0	ksf	Recreational Comm Center	495	Rate	135	216	17%	83%	23	37	112	179	26%	56					27	133	160	23%	6	31	38	23	13	64	77	
		97	acres	County Park	412	rate	7	11	41%	59%	3	5	4	6	26%	3					3	5	8	25%	1	1	2	1	2	2	4	
HOTELS																																
		220.0	**rooms**																													
		0.0	rooms	Resort Hotel	330	Rate	0	0	43%	57%	0	0	0	0	26%	0					0	0	0	39%	0	0	0	0	0	0	0	
		220.0	rooms	Hotel	310	Eqn	131	210	53%	47%	69	110	62	99	26%	54					82	73	155	23%	19	17	35	22	40	35	75	
RESIDENTIAL																																
		6962.0	**units**																													
		6962.0	units	Residential Townhouse	230	Rate	3,621	5,794	67%	33%	2,426	3,882	1,195	1,912	26%	1497					2,879	1,418	4,297	22%	634	312	946	591	1,403	691	2,094	
		0.0	units	Apartment	220	Rate	0	0	65%	35%	0	0	0	0	26%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	High-Rise Apartment	222	Rate	0	0	61%	39%	0	0	0	0	26%	0					0	0	0	50%	0	0	0	0	0	0	0	
		0.0	units	All Suites Hotel	311	Rate	0	0	45%	55%	0	0	0	0	26%	0					0	0	0	50%	0	0	0	0	0	0	0	
				Total			**8,403**	**13,445**	**54%**	**46%**	**4,554**	**7,286**	**3,849**	**6,158**	**26%**	**3,474**					**5,403**	**4,568**	**9,971**		**1,029**	**833**	**1,861**	**1,163**	**2,734**	**2,334**	**5,068**	**4,882**

Table A-2
Hunters Point Trip Generation:

AM Peak Hour

Category	Total Use SF	Units	Land Use	ITE Land Use Code	AM ITE Trip Generation: Rate or Eqn	AM Vehicle Trips	AM Person Trips	%In	%Out	AM Vehicle Trips In	AM Person Trips In	AM Vehicle Trips Out	AM Person Trips Out	Internal Trip %	Internal Person Trip Reduction	Diverted Link Trip %	Diverted Link Trip Reduction	Pass-By Trip %	Pass-By Trip Reduction	External Person Trips (ITE less internalization, pass-by, and diverted): AM In	AM Out	AM Total	Transit %	External Transit Trips (Person Trips): AM In	AM Out	AM Total	Vehicle Trips Replaced by Transit: AM Total	External Vehicle Trips (Person/1.6): AM In	AM Out	AM Total	Bicycle Mode Share Adjustment
RETAIL																															
	226.0	**ksf**	**Neighborhood Serving + Ancillary**																												
	226.0	ksf	Specialty Retail	814	Rate	258	413	61%	39%	114	182	144	230	34%	141					166	106	272	15%	24	16	40	25	88	57	145	
	100.0	ksf	Shopping Center	820	Eqn	267	427	61%	39%	163	261	104	166	34%	146					172	110	281	15%	25	16	41	26	91	58	150	
COMMERCIAL / ADAPTIVE REUSE																															
	4280.0	**ksf**	**Buildings 1, 2, and 3**																												
	15.0	ksf	Artist's	710	Eqn	42	67	88%	12%	37	59	5	8	34%	23					39	5	44	21%	8	1	9	6	19	3	22	
	4265.0	ksf	R&D	760	Eqn	3,356	5,370	83%	17%	2,785	4,456	571	914	34%	1834					2,935	601	3,536	21%	616	126	742	464	1,449	297	1,746	
	75.0	ksf	Maker's Space	BLEND	BLEND	81	130	75%	26%	60	96	21	34	34%	44					64	22	85	21%	13	5	18	11	31	11	42	
RECREATION																															
	0.0	students	Private School - Elementary	536	Rate	0	0	55%	45%	0	0	0	0	34%	0					0	0	0	20%	0	0	0	0	0	0	0	
	264.0	students	Private School - Middle	536	Rate	215	344	55%	45%	118	189	97	155	34%	117					125	102	227	20%	25	20	45	28	62	51	113	
	336.0	students	Private School - High	536	Rate	274	438	61%	39%	167	267	107	171	34%	150					176	113	289	20%	35	23	58	36	88	56	144	
	300.0	students	STEM Academy	530	Rate	130	208	68%	32%	88	141	42	67	34%	71					93	44	137	20%	19	9	27	17	47	22	68	
	135.0	students	SF State	550	Eqn	39	62	78%	22%	30	48	9	14	34%	21					32	9	41	20%	6	2	8	5	16	5	21	
	0.0	ksf	Police/Fire Station	730	Rate	0	0	84%	16%	0	0	0	0	34%	0					0	0	0	47%	0	0	0	0	0	0	0	
	50.0	ksf	Recreational Comm Center	495	Eqn	108	173	88%	12%	95	152	13	21	34%	59					100	14	114	21%	21	3	24	15	49	7	56	
	238	acres	County Park	412	Eqn	3	5	80%	20%	2	3	1	2	34%	2					3	1	3	21%	1	0	1	0	1	0	2	
HOTELS																															
	175.0	**rooms**																													
	0.0	rooms	Resort Hotel	330	Rate	0	0	72%	28%	0	0	0	0	34%	0					0	0	0	39%	0	0	0	0	0	0	0	
	175.0	rooms	Hotel	310	Eqn	82	131	61%	39%	50	80	32	51	34%	45					53	34	86	20%	11	7	17	11	26	17	43	
RESIDENTIAL																															
	3454.0	**units**																													
	3454.0	units	Residential Townhouse	230	Rate	1,521	2,434	17%	83%	259	414	1,262	2,019	34%	831					272	1,330	1,602	22%	59	287	345	216	134	652	786	
	0.0	units	Apartment	220	Rate	0	0	20%	80%	0	0	0	0	34%	0					0	0	0	50%	0	0	0	0	0	0	0	
	0.0	units	High-Rise Apartment	222	Rate	0	0	25%	75%	0	0	0	0	34%	0					0	0	0	50%	0	0	0	0	0	0	0	
	0.0	units	All Suites Hotel	311	Rate	0	0	55%	45%	0	0	0	0	34%	0					0	0	0	50%	0	0	0	0	0	0	0	
		Total				**6,376**	**10,202**	**62%**	**38%**	**3,968**	**6,349**	**2,408**	**3,853**	**34%**	**3,484**					**4,228**	**2,489**	**6,718**		**863**	**513**	**1,376**	**860**	**2,103**	**1,235**	**3,338**	**3,212**

PM Peak Hour

Category	Total Use SF	Units	Land Use	ITE Land Use Code	PM ITE Trip Generation: Rate or Eqn	PM Vehicle Trips	PM Person Trips	%In	%Out	PM Vehicle Trips In	PM Person Trips In	PM Vehicle Trips Out	PM Person Trips Out	Internal Trip %	Internal Trip Reduction	Diverted Link Trip %	Diverted Link Trip Reduction	Pass-By Trip %	Pass-By Trip Reduction	External Person Trips (ITE less internalization, pass-by, and diverted): PM In	PM Out	PM Total	Transit %	External Transit Trips (Person Trips): PM In	PM Out	PM Total	Vehicle Trips Replaced by Transit: PM Total	External Vehicle Trips (Person/1.6): PM In	PM Out	PM Total	Bicycle Mode Share Adjustment
RETAIL																															
	226.0	**ksf**	**Neighborhood Serving + Ancillary**																												
	226.0	ksf	Specialty Retail	814	Eqn	959	1,534	44%	56%	422	675	537	859	36%	549					433	552	985	15%	65	83	148	93	230	293	523	
	100.0	ksf	Shopping Center	820	Eqn	1,065	1,704	48%	52%	511	818	554	886	36%	610					525	569	1,094	15%	79	86	165	103	279	302	581	
COMMERCIAL / ADAPTIVE REUSE																															
	4280.0	**ksf**	**Buildings 1, 2, and 3**																												
	15.0	ksf	Artist's	710	Eqn	97	155	17%	83%	17	27	80	128	36%	56					17	83	100	23%	4	19	23	15	8	40	48	
	4265.0	ksf	R&D	760	Eqn	2,819	4,510	15%	85%	423	677	2,396	3,834	36%	1615					434	2,461	2,896	23%	101	573	674	421	208	1,180	1,388	
	75.0	ksf	Maker's Space	BLEND	BLEND	209	334	28%	72%	59	94	150	240	36%	120					60	155	215	23%	14	36	50	31	29	74	103	
RECREATION																															
	1323.0	**acres**																													
	0.0	students	Private School - Elementary	536	Rate	0	0	47%	53%	0	0	0	0	36%	0					0	0	0	20%	0	0	0	0	0	0	0	
	264.0	students	Private School - Middle	536	Rate	46	74	47%	53%	22	35	24	38	36%	26					22	25	47	20%	4	5	9	6	11	13	24	
	336.0	students	Private School - High	536	Rate	58	93	43%	57%	25	40	33	53	36%	33					26	34	60	20%	5	7	12	7	13	17	30	
	300.0	students	STEM Academy	530	Rate	40	64	47%	53%	19	30	21	34	36%	23					19	22	41	20%	4	4	8	5	10	11	21	
	135.0	students	SF State	550	Eqn	84	134	32%	68%	27	43	57	91	36%	48					28	59	86	20%	6	12	17	11	14	29	43	
	0.0	ksf	Police/Fire Station	730	Rate	0	0	31%	69%	0	0	0	0	36%	0					0	0	0	47%	0	0	0	0	0	0	0	
	50.0	ksf	Recreational Comm Center	495	Eqn	135	216	17%	83%	23	37	112	179	36%	77					24	115	139	23%	6	27	32	20	11	55	66	
	238	acres	County Park	412	Eqn	15	24	41%	59%	6	10	9	14	36%	9					6	9	15	25%	2	2	4	2	3	4	7	
HOTELS																															
	175.0	**rooms**																													
	0.0	rooms	Resort Hotel	330	Rate	0	0	43%	57%	0	0	0	0	36%	0					0	0	0	39%	0	0	0	0	0	0	0	
	175.0	rooms	Hotel	310	Eqn	104	166	53%	47%	55	88	49	78	36%	60					57	50	107	20%	11	10	21	13	28	25	53	
RESIDENTIAL																															
	3454.0	**units**																													
	3454.0	units	Residential Townhouse	230	Rate	1,797	2,875	67%	33%	1,204	1,926	593	949	36%	1029					1,237	609	1,846	22%	272	134	406	254	603	297	900	
	0.0	units	Apartment	220	Rate	0	0	65%	35%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
	0.0	units	High-Rise Apartment	222	Rate	0	0	61%	39%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
	0.0	units	All Suites Hotel	311	Rate	0	0	45%	55%	0	0	0	0	36%	0					0	0	0	50%	0	0	0	0	0	0	0	
		Total				**7,428**	**11,886**	**38%**	**62%**	**2,813**	**4,501**	**4,615**	**7,384**	**36%**	**4,255**					**2,889**	**4,743**	**7,631**		**573**	**998**	**1,572**	**982**	**1,447**	**2,340**	**3,787**	**3,644**

APPENDIX C

Construction Activities

Table 90
Construction Workers and Trucks by Phase
Hunters Point Shipyard and Candlestick Point

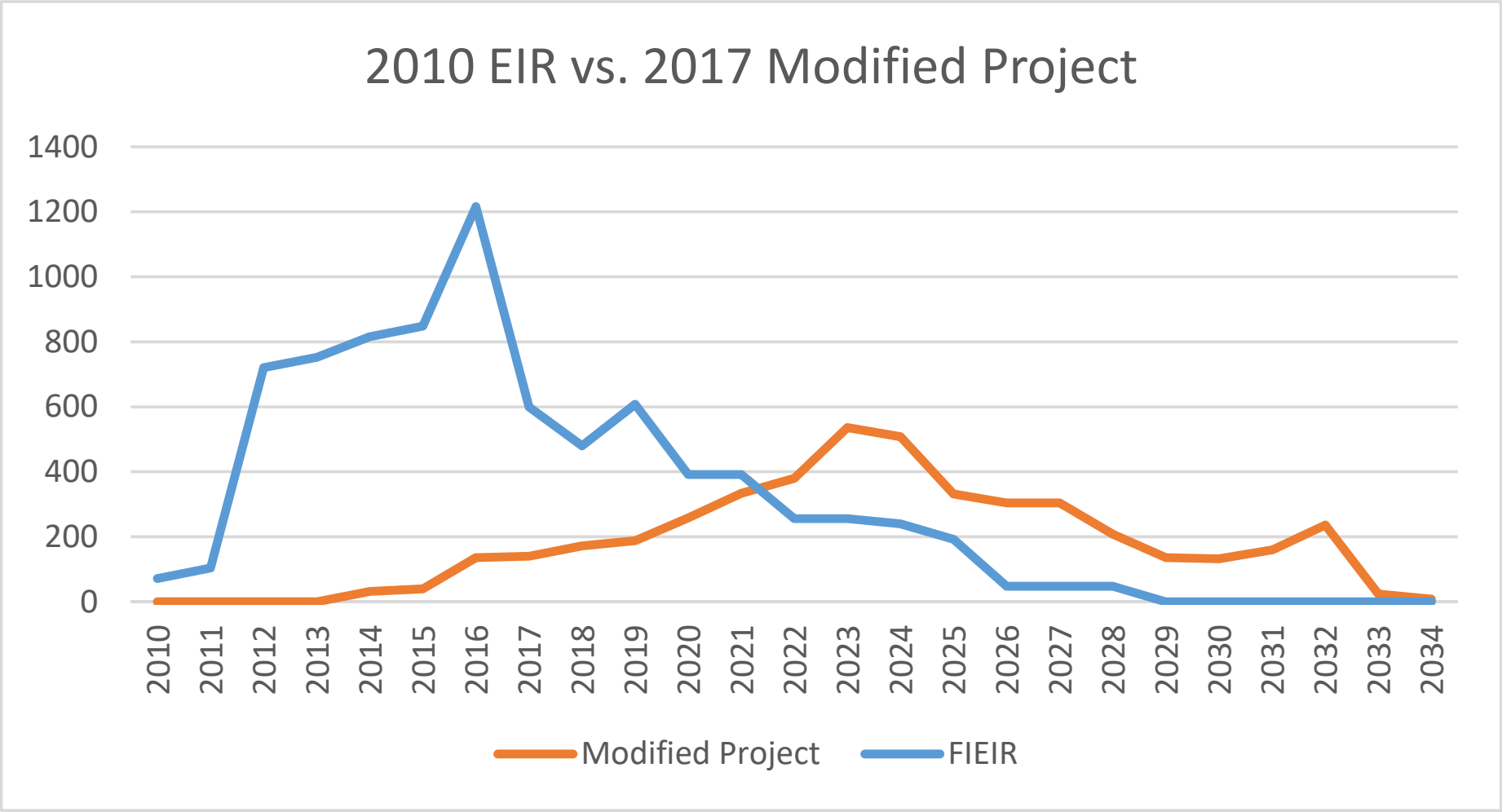
Project Area/Construction Phase	Construction Duration	Daily Construction Workers	Daily Construction Truck Trips
Hunters Point Shipyard			
Phase 1 – Site Preparation [1]			
Abatement & Demolition	2010 – 2015	10-50	8-48
Grading and Infrastructure	2012 - 2016	30-145	128-424
Phase 1 – Building Construction [1]			
Structure/Rough In	2012 - 2017	10-60	8-32
Interior and Exterior Finishes	2012 - 2017	8-10	8-16
Phase 2 – Site Preparation			
Abatement & Demolition	2014 – 2017	16-20	8-16
Grading and Infrastructure	2016 - 2019	26-85	224-256
Phase 2 – Building Construction			
Structure/Rough In	2016 - 2021	26-68	16-64
Interior and Exterior Finishes	2016 - 2021	30-60	16-64
Candlestick Point			
Phase 1 – Site Preparation			
Abatement & Demolition	2010 - 2015	10-20	8-24
Grading and Infrastructure	2012 – 2016	16-33	8-144
Phase 1 – Building Construction			
Structure/Rough In	2023 - 2017	14-18	8-16
Interior and Exterior Finishes	2023 - 2017	8-10	8-16
Phase 2 – Site Preparation			
Abatement & Demolition	2014 – 2017	10-40	8-48
Grading and Infrastructure	2016 - 2019	24-63	8-40
Phase 2 – Building Construction			
Structure/Rough In	2016 - 2021	14-18	8-16
Interior and Exterior Finishes	2016 - 2021	8-10	8-16
Phase 3 – Site Preparation			
Abatement & Demolition	2018 – 2021	16-20	16-24
Grading and Infrastructure	2020 - 2023	24-60	8-40
Phase 3 – Building Construction			
Structure/Rough In	2019 – 2025	14-40	8-32
Interior and Exterior Finishes	2019 – 2025	8-20	8-32
Phase 4 – Site Preparation			
Abatement & Demolition	2022 – 2024	16-20	16-24
Grading and Infrastructure	2024 - 2026	24-35	8-16
Phase 4 – Building Construction			
Structure/Rough In	2024 - 2028	10-20	8-16
Interior and Exterior Finishes	2024 – 2028	8-20	8-32
Yosemite Slough Bridge	2015 – 2016	62-78	24-32
HPS Off-site Improvements	2011 – 2016	24-30	8-16
CP Off-site Improvements	2011 – 2015	24-30	8-16

Note:
1. Includes stadium construction.
Source: MACTEC, 2009.

Table ## Project Construction Truck Trips								
Year	Candlestick Point		Hunters Point Shipyard		Field Management		Combined	
	Max. Number of Daily Truck Trips	Avg. Number of Daily Truck Trips	Max. Number of Daily Truck Trips	Avg. Number of Daily Truck Trips	Max. Number of Daily Truck Trips	Avg. Number of Daily Truck Trips	Max. Number of Daily Truck Trips	Avg. Number of Daily Truck Trips
2014	24	12	0	0	8	4	32	16
2015	40	20	0	0	8	4	48	24
2016	136	88	0	0	8	4	144	92
2017	116	74	24	12	8	4	148	90
2018	150	91	24	12	8	4	182	107
2019	164	84	154	93	8	4	326	181
2020	106	53	233	133	8	4	347	190
2021	72	36	266	155	8	4	346	195
2022	84	42	296	166	8	4	388	212
2023	144	78	392	230	8	4	544	312
2024	216	110	292	160	8	4	516	274
2025	188	96	144	76	8	4	340	176
2026	192	96	112	60	8	4	312	160
2027	232	116	72	40	8	4	312	160
2028	196	98	12	8	8	4	216	110
2029	96	48	40	24	8	4	144	76
2030	36	18	96	56	8	4	140	78
2031	24	12	136	84	8	4	168	100
2032	48	24	188	148	4	2	240	174
2033	0	0	24	12	4	2	28	14
2034	0	0	8	4	4	2	12	6

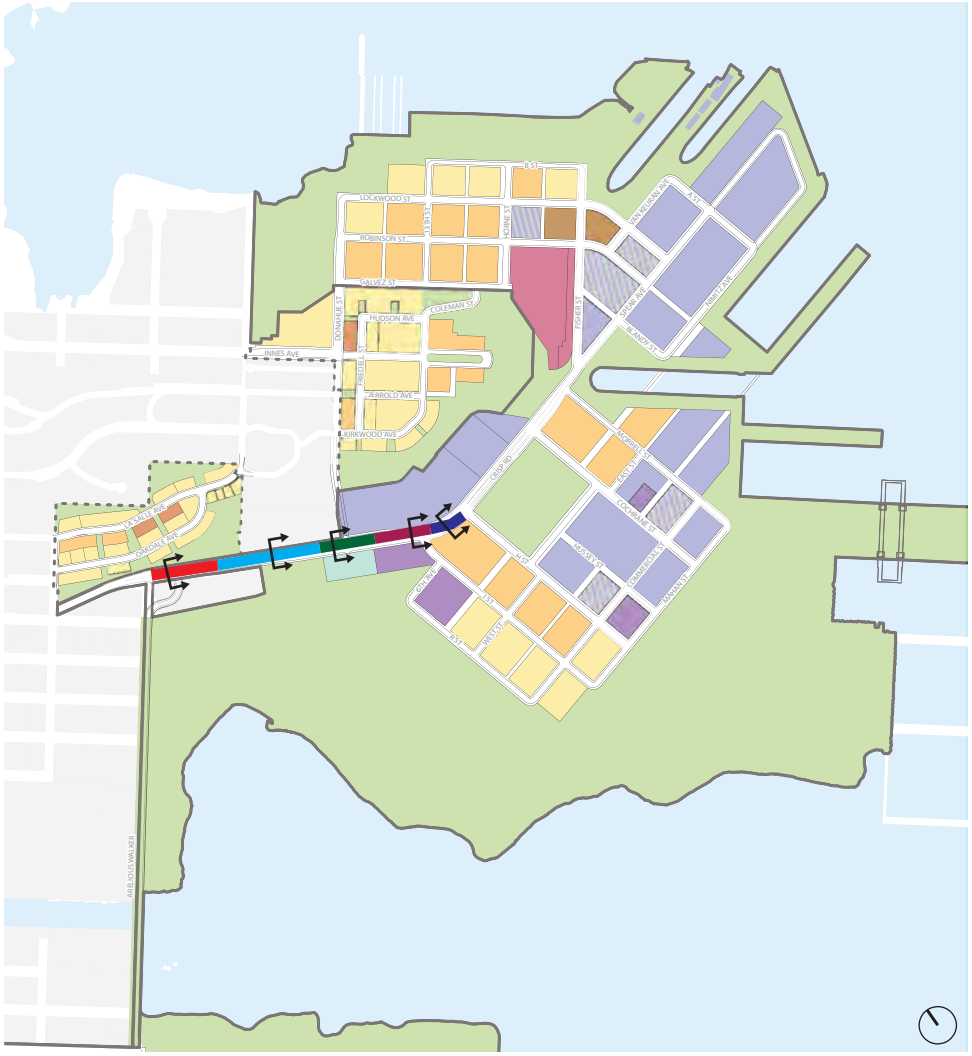
SOURCE: TRC, 2018

a.Truck trips includes on-site construction, off-site roadway improvements, and shoreline improvements.

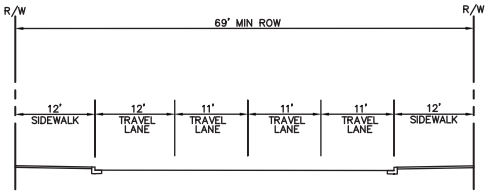

2010 EIR vs. 2017 Modified Project
1400
1200
1000
800
600
400
200
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
Modified Project
FIEIR

APPENDIX D

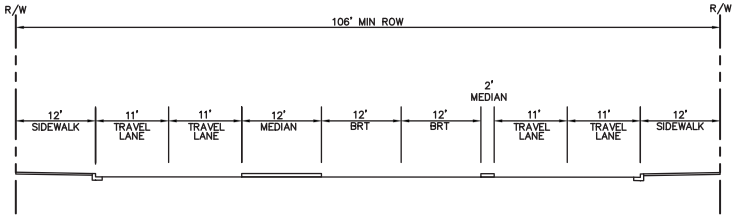
Revised Roadway Cross-Sections



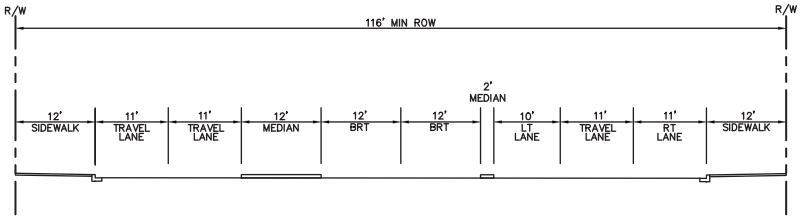
Crisp Road, west of Arelious Walker



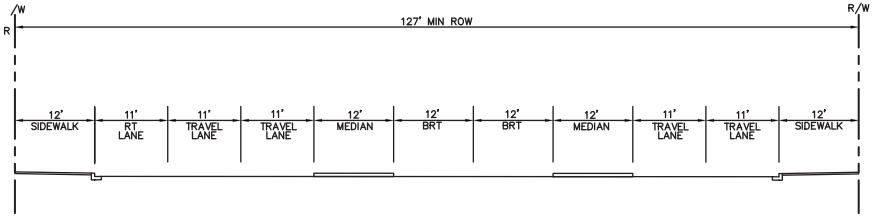
Crisp Road, east of Arelious Walker



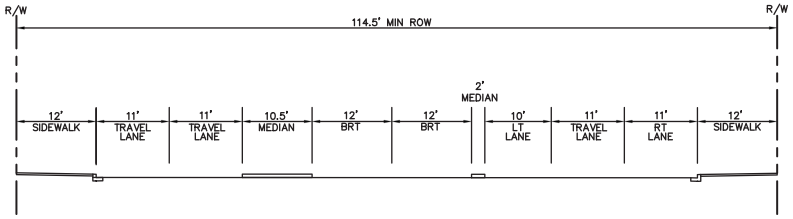
Crisp Road, west of Donahue Street



Crisp Road, east of Donahue Street



Crisp Road, between I Street and H Street



LAND USE

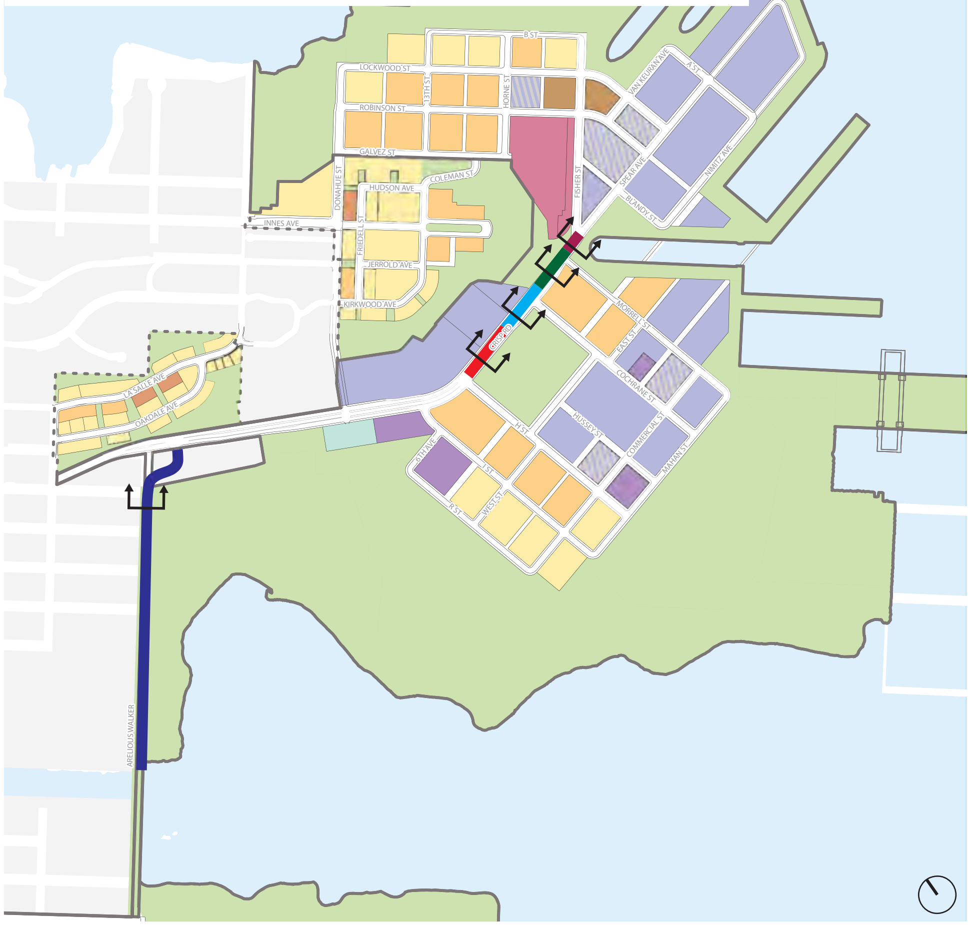
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

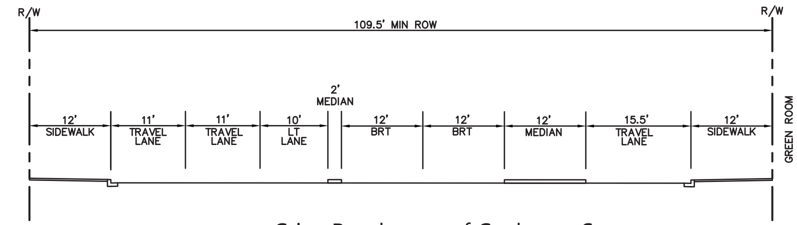
Figure 1

Hunters Point Shipyard Phase II Development: On-Site Street Network

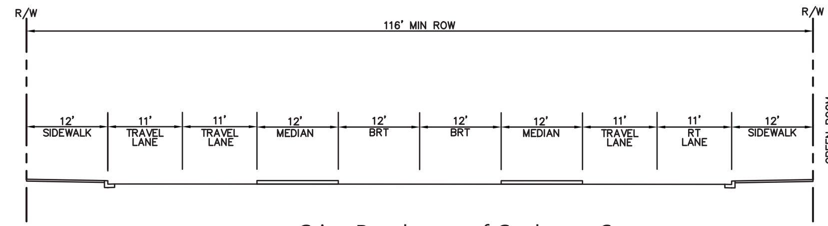
(1) Park with multi-use paths is adjacent to the street. The alignment of Arelious Walker at Crisp Road is subject to change; however, the cross-section at this intersection is fixed. The cross section of the Yosemite Slough Bridge will be refined as bridge designs advance.



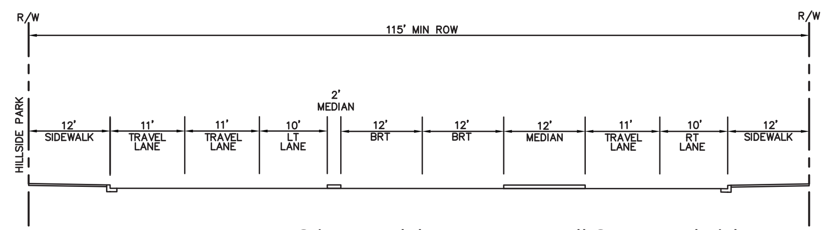
Crisp Road, east of H Street



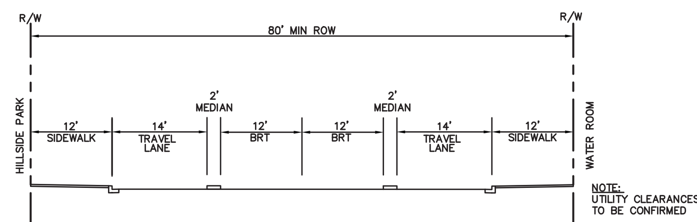
Crisp Road, west of Cochrane Street



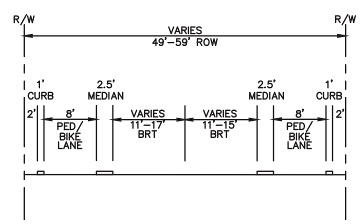
Crisp Road, east of Cochrane Street



Crisp Road, between Morrell Street and Fisher Avenue



Arelious Walker, south of Crisp Road (1)



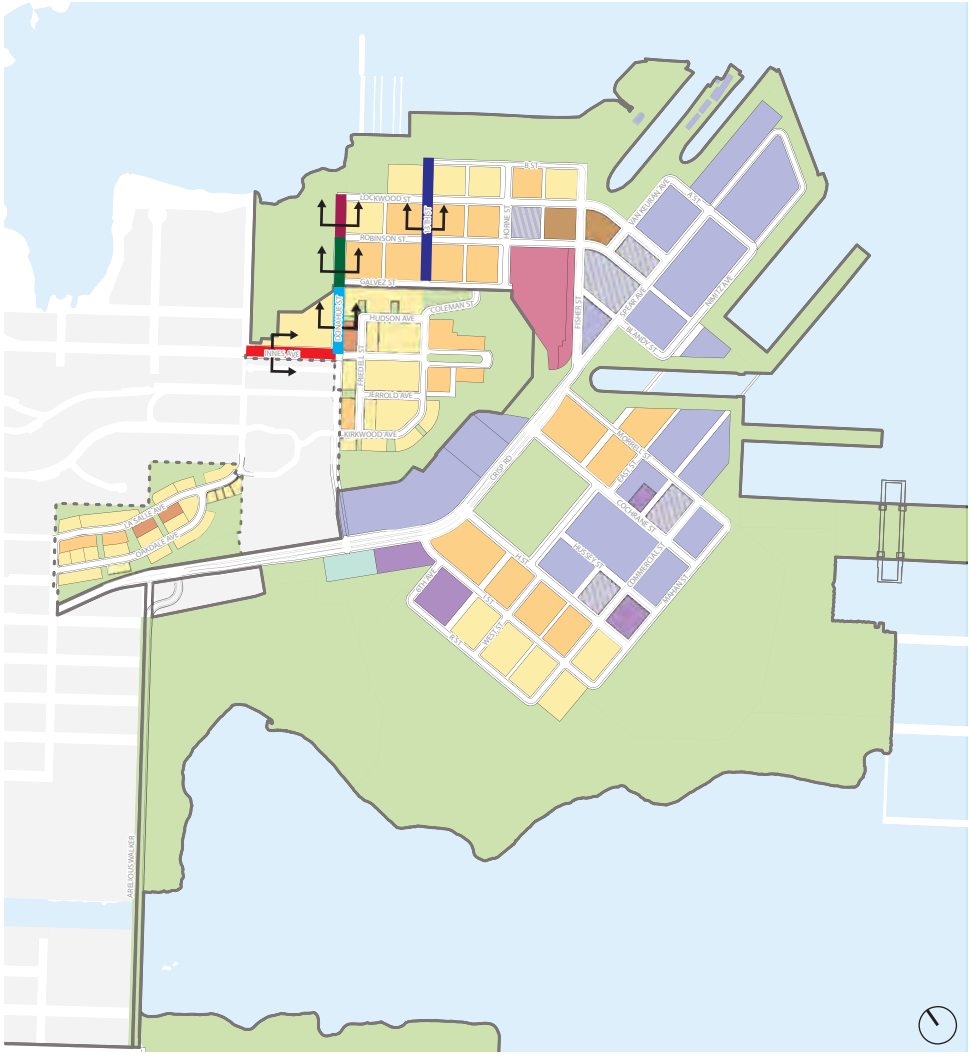
LAND USE

- RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)
- RESIDENTIAL DENSITY II (50-125) UNITS PER ACRE)
- RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)
- RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)
- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
- INFRASTRUCTURE / UTILITY (I / U)
- PARKING (SP)
- COMMUNITY USE (CU)
- PARKS AND OPEN SPACE
- RETAIL* (RT)
- HOTEL (HT)
- PERFORMANCE VENUE (PV)

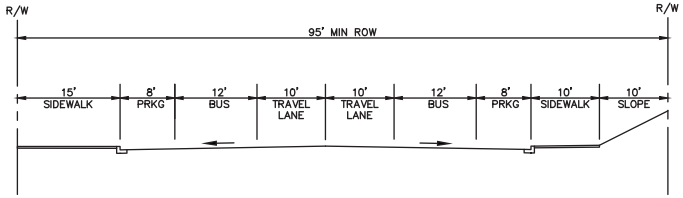
NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
* GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)

Figure 2

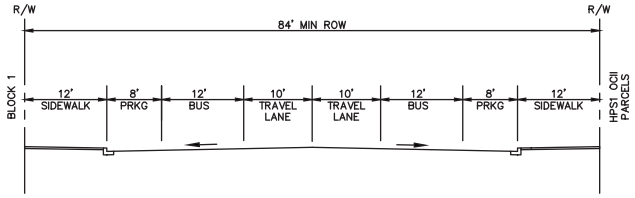
Hunters Point Shipyard Phase II Development: On-Site Street Network



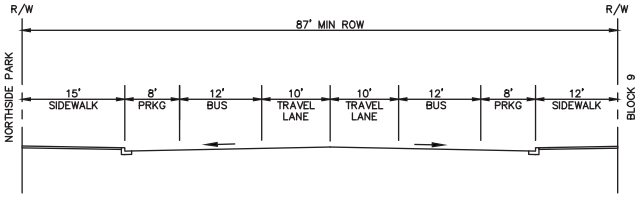
Innes Avenue at Donahue Street



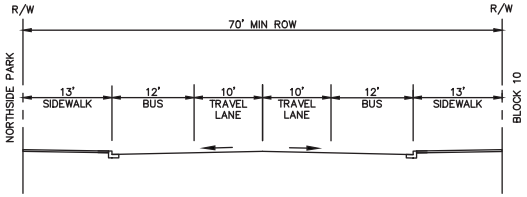
Donahue Street between Innes Avenue and Galvez Street



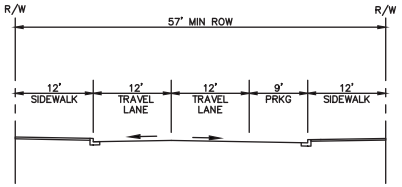
Donahue Street, between Galvez Street and Robinson Street



Donahue Street, between Robinson Street and Lockwood Street



13th Street



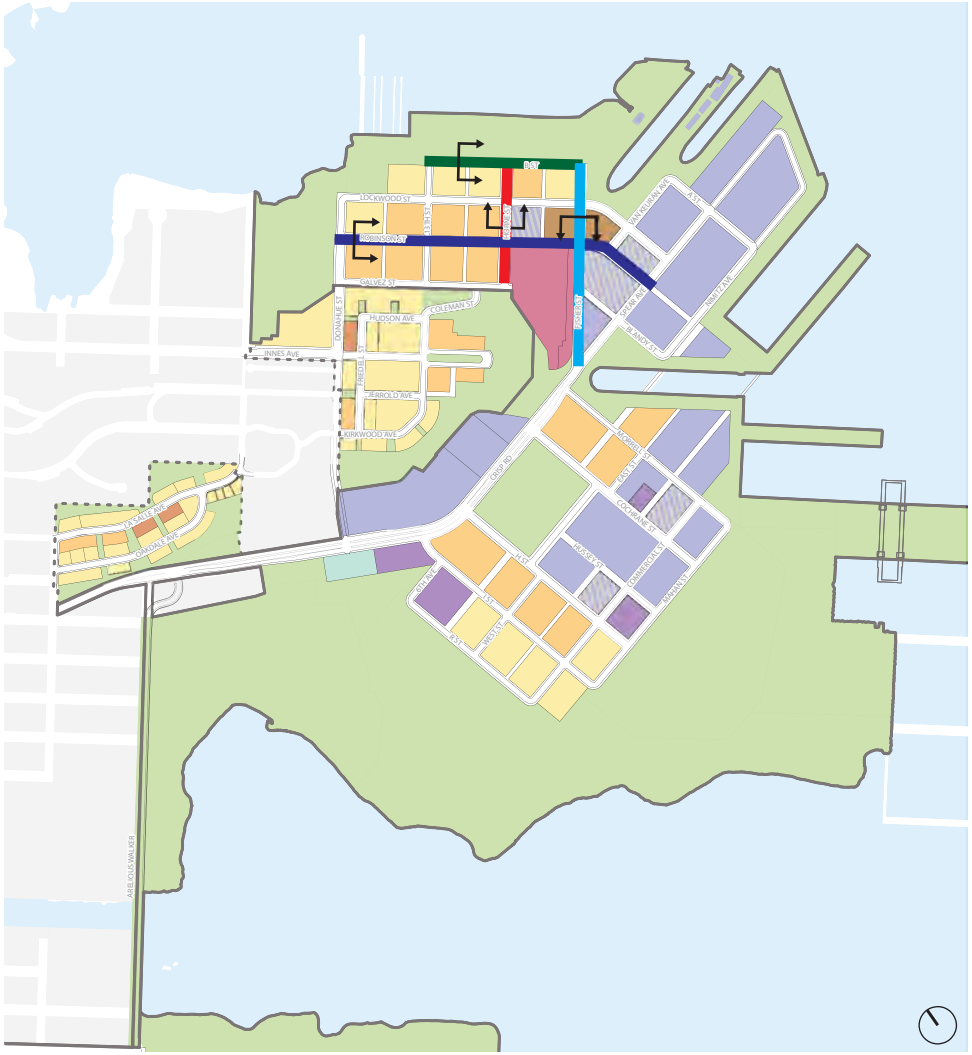
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

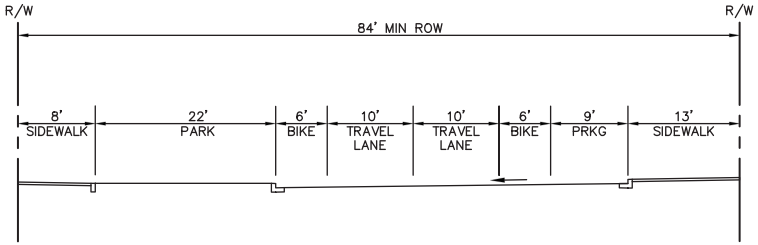
NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 3

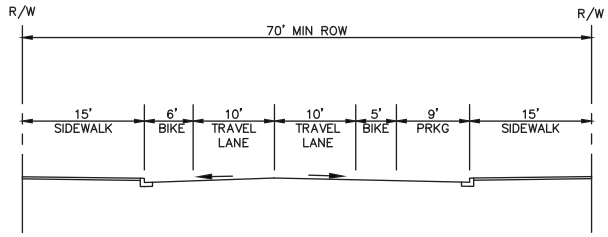
Hunters Point Shipyard Phase II Development: On-Site Street Network



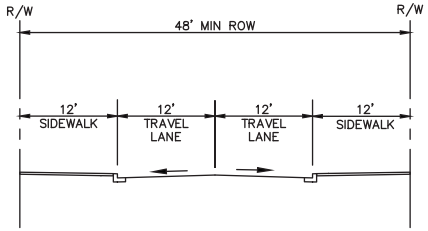
Horne Street



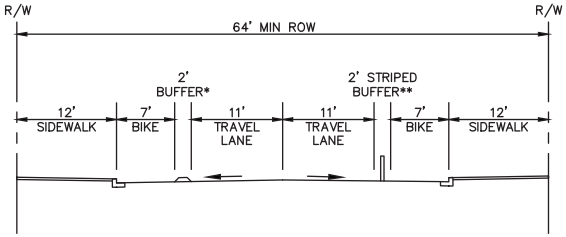
Fisher Street



B Street



Robinson Street



NOTE:

* 6" RAISED MEDIAN, OR STRIPED BUFFER WHERE REQUIRED BY SFPUC FOR UTILITY CLEARANCE

** STRIPED BUFFER WITH SAFE HIT POSTS. CURB MAY BE IMPLEMENTED IF STRIPED BUFFER NOT REQUIRED BY SFPUC FOR UTILITY CLEARANCE

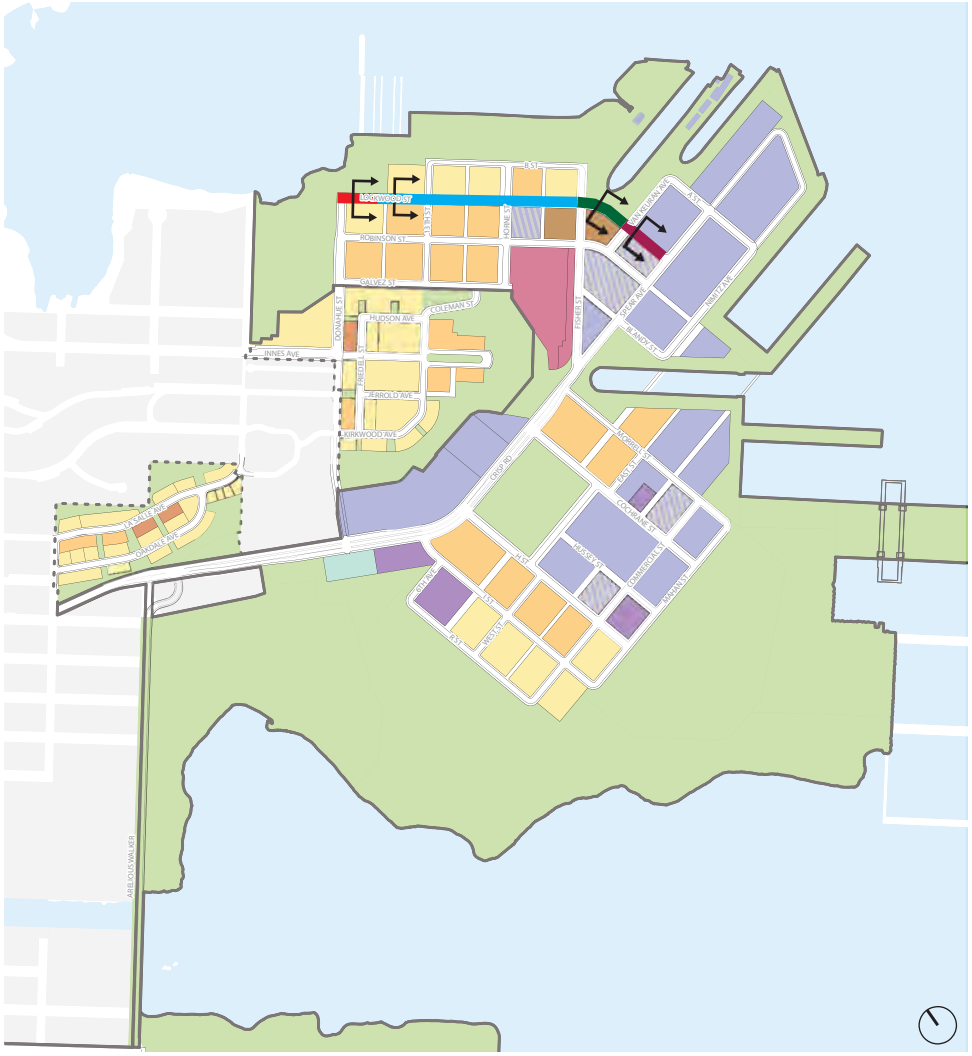
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

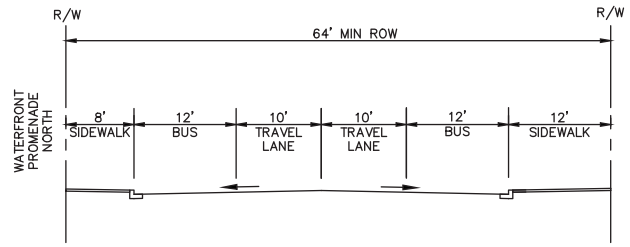
NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 4

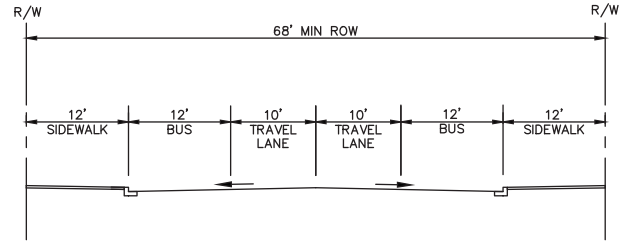
Hunters Point Shipyard Phase II Development: On-Site Street Network



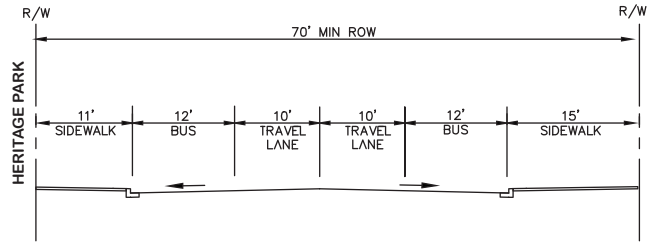
Lockwood Between Donahue and Midblock



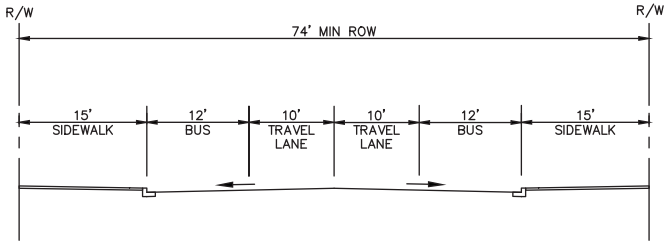
Lockwood Between midblock and Fisher Ave



Lockwood Between Fisher Ave and Van Keuran



Lockwood Between Van Keuran and Spear



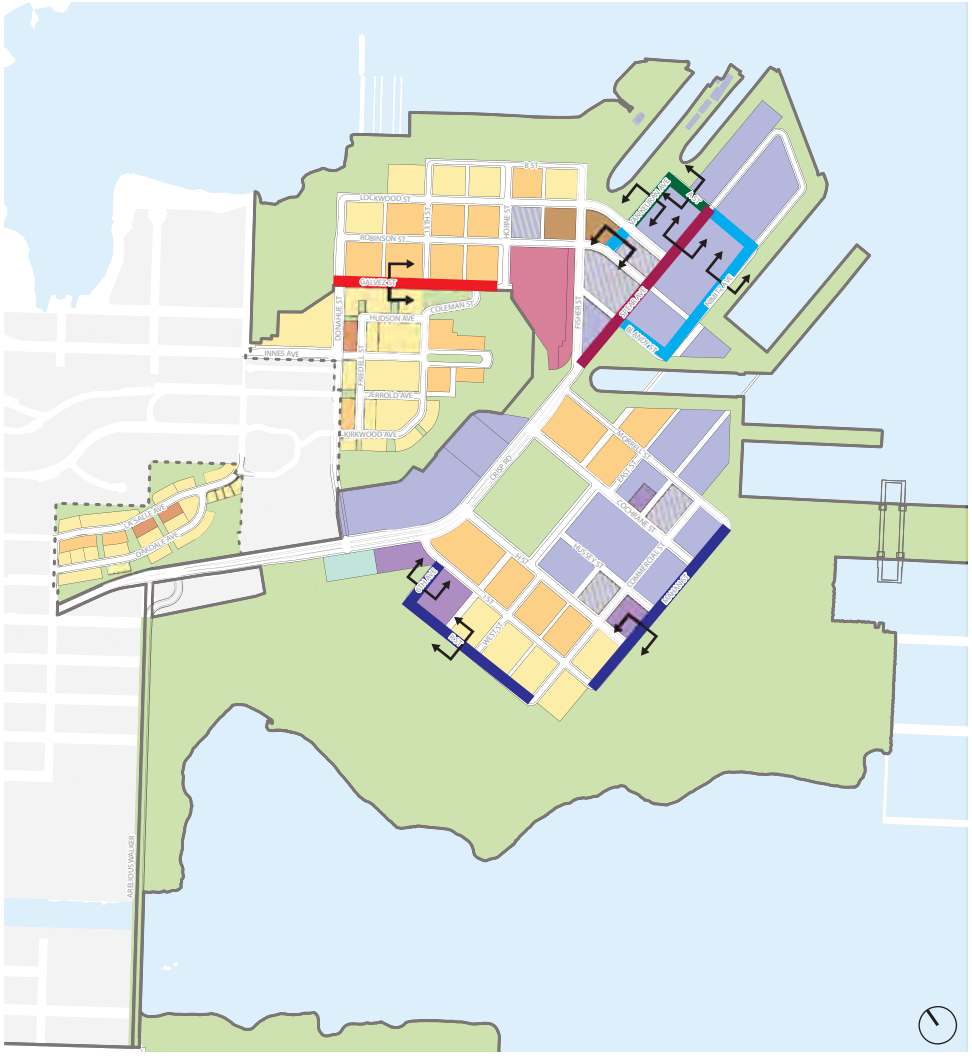
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 5

Hunters Point Shipyard Phase II Development: On-Site Street Network

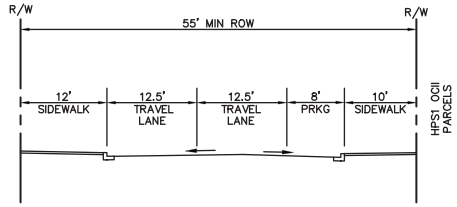


LAND USE

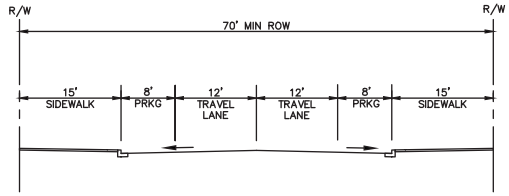
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

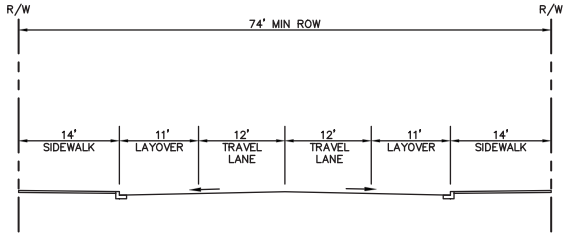
Galvez Avenue



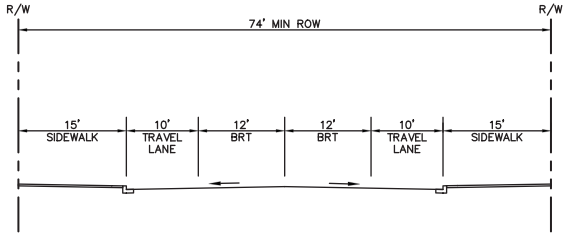
Commercial Roadway



Transit Layover



Spear Avenue



Residential/Commercial Roadway

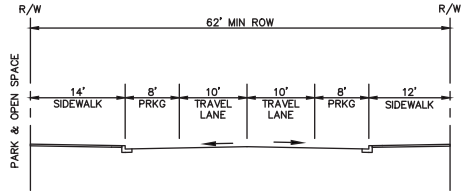
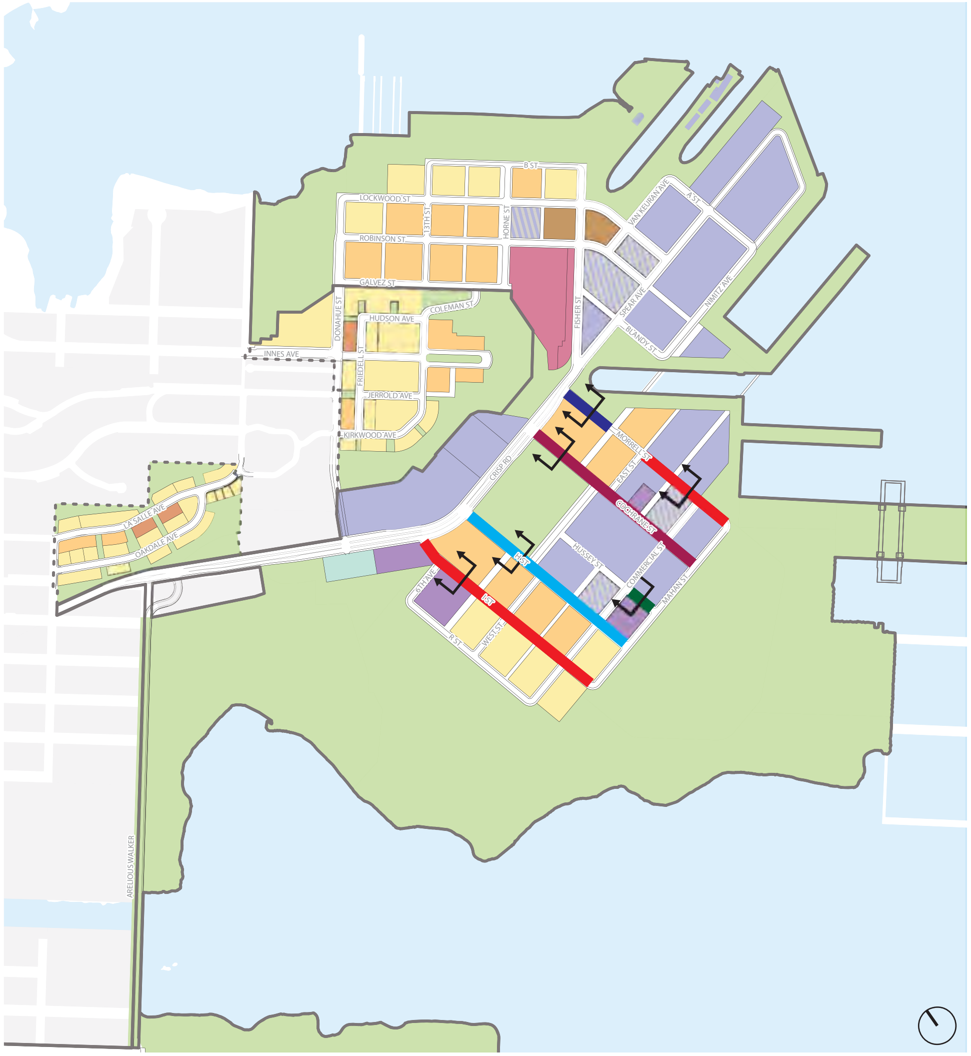


Figure 6

Hunters Point Shipyard Phase II Development: On-Site Street Network

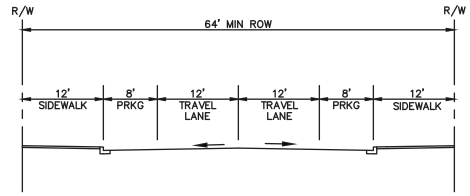


LAND USE

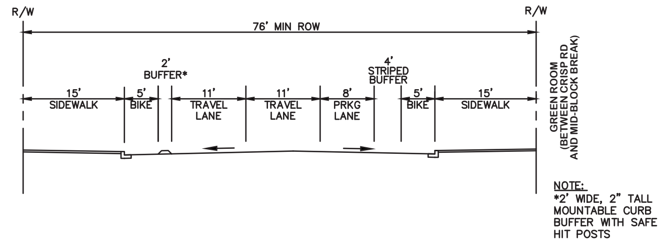
- RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)
- RESIDENTIAL DENSITY II (50-125) UNITS PER ACRE)
- RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)
- RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)
- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
- INFRASTRUCTURE / UTILITY (I / U)
- PARKING (SP)
- COMMUNITY USE (CU)
- PARKS AND OPEN SPACE
- RETAIL* (RT)
- HOTEL (HT)
- PERFORMANCE VENUE (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
* GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)

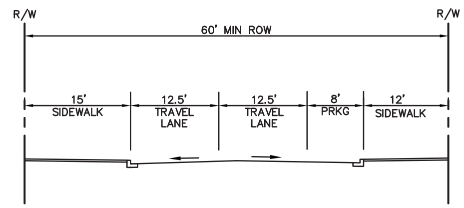
Residential/Commercial Roadway



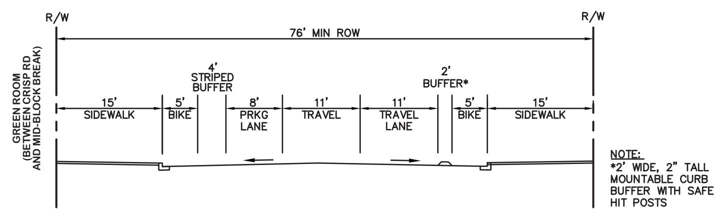
H Street



Hussey Street



Cochrane Street



Morrell Street, between Crisp Road and Mid-Block

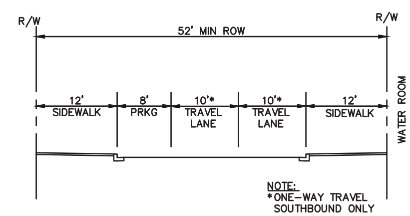
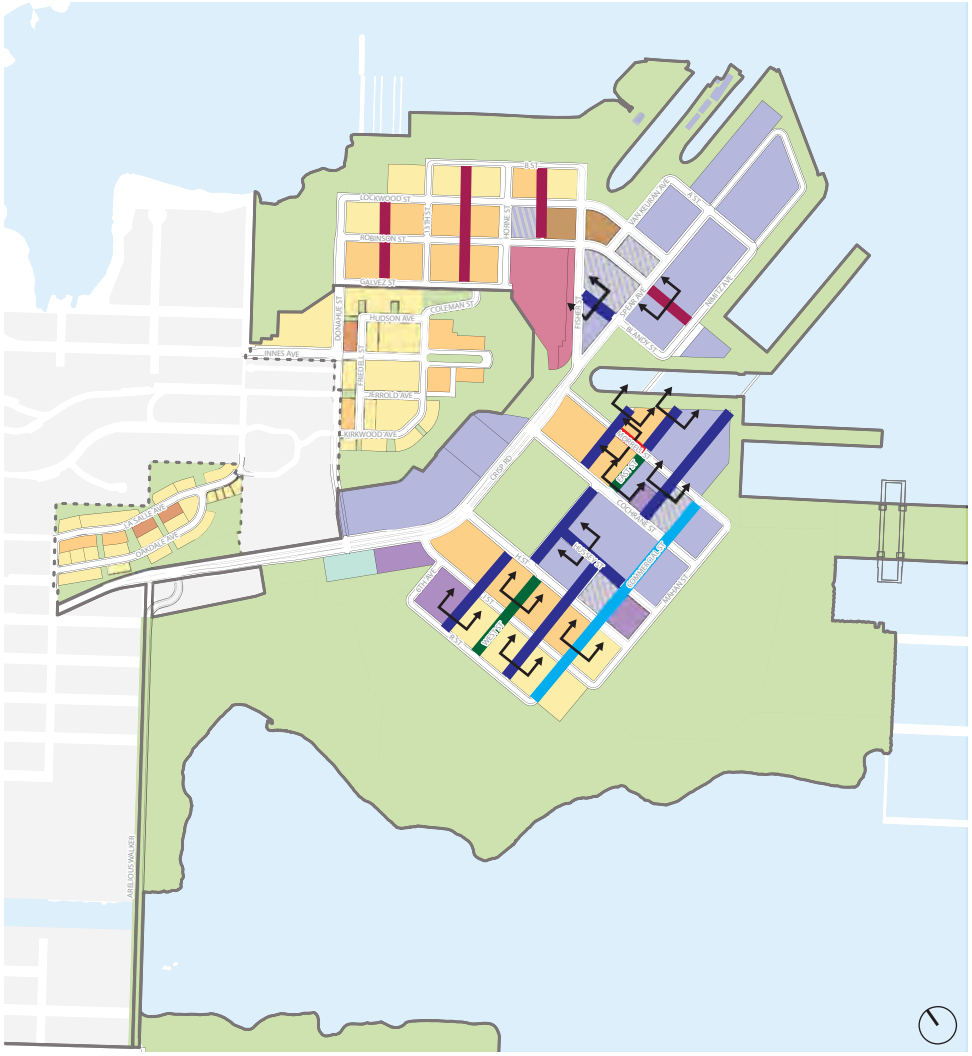


Figure 7

Hunters Point Shipyard Phase II Development: On-Site Street Network

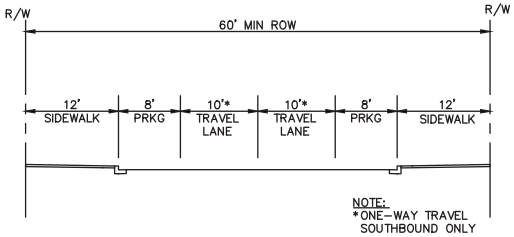


LAND USE

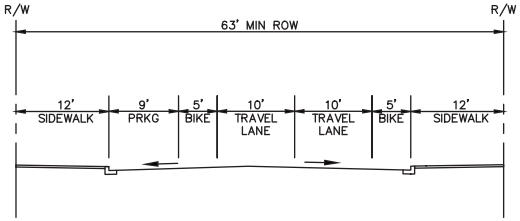
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

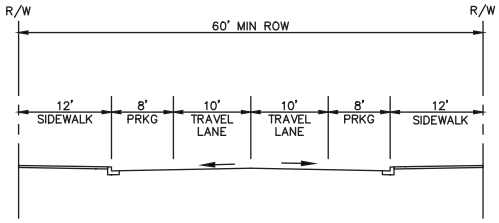
Morrell Street, between Mid-block and East Street



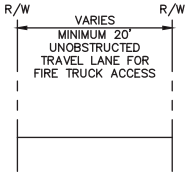
Manseau Street



Residential/Commercial Roadway



Private Mid-block Break (20' Minimum Emergency Vehicle Access)



Private Mid-block Break (26' Minimum Emergency Vehicle Access)

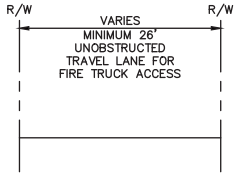
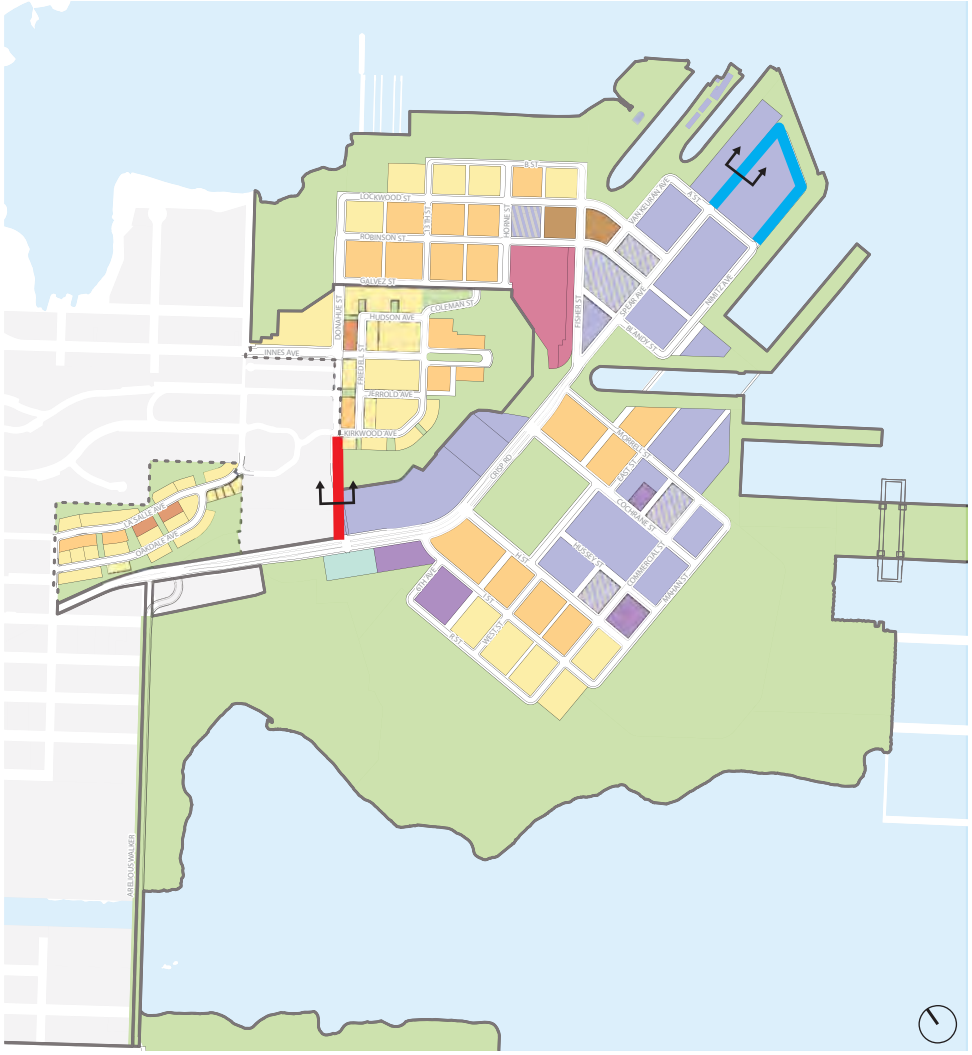
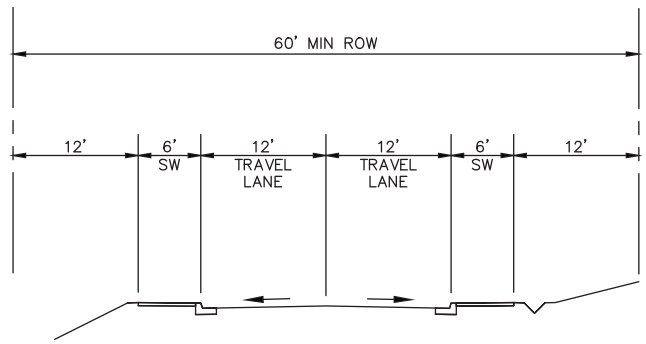


Figure 8

Hunters Point Shipyard Phase II Development: On-Site Street Network



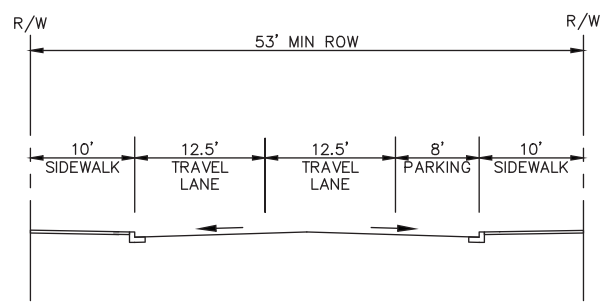
Residential/Commercial Roadway



NOTE:
THE EXTENSION OF DONAHUE STREET IS NOT VITAL TO SITE CIRCULATION. THIS SECTION MAY NOT BE CONSTRUCTED DEPENDING ON FEASIBILITY.

Note: The Developer is pursuing the extension of Donahue Street to Crisp Road. However, the Developer is not obligated to complete the extension of Donahue Street as it relies on several external factors

Commercial Street



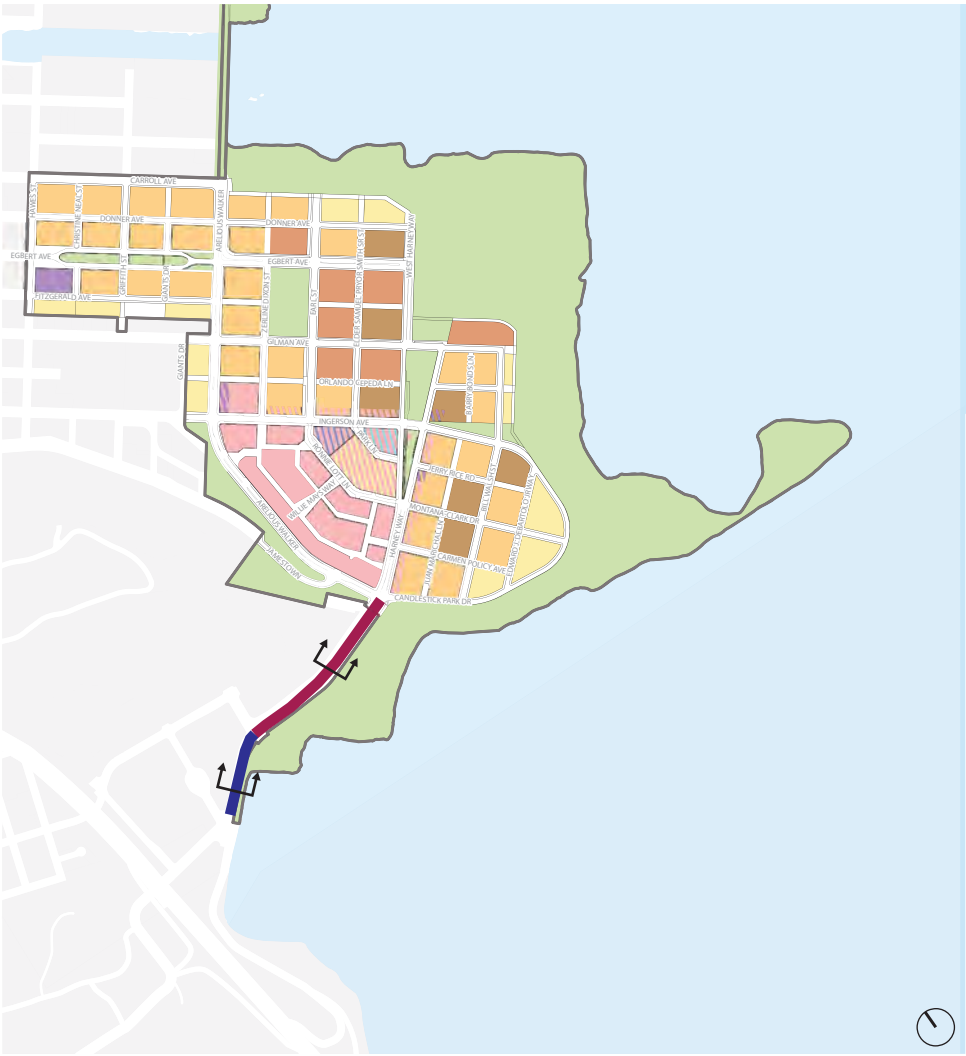
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

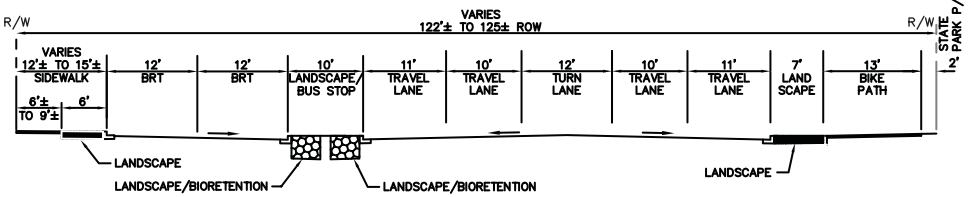
NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 9

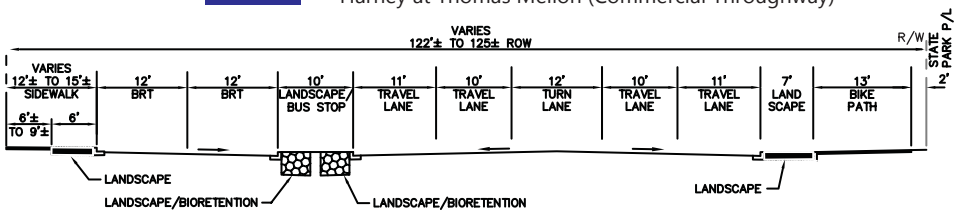
Hunters Point Shipyard Phase II Development: On-Site Street Network



Harney at Executive Park East (Commerical Throughway)



Harney at Thomas Mellon (Commercial Throughway)



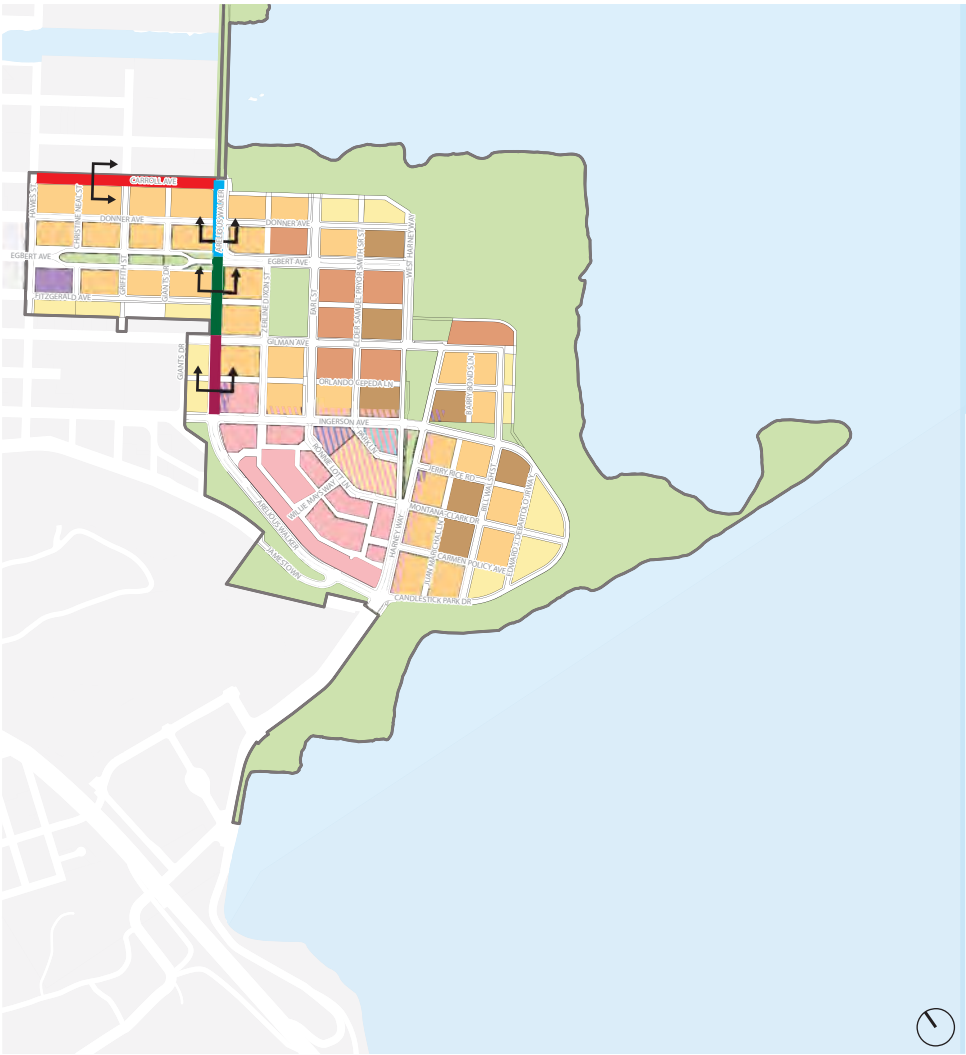
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

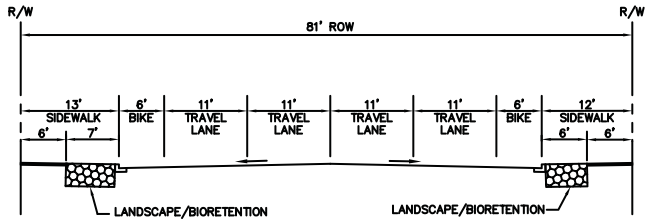
NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 10

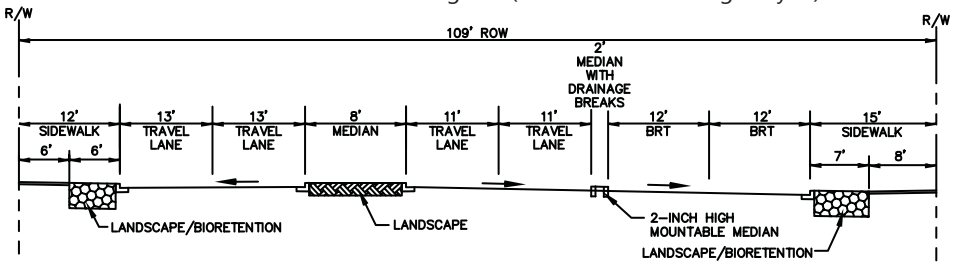
Candlestick Point Development: On-Site Street Network



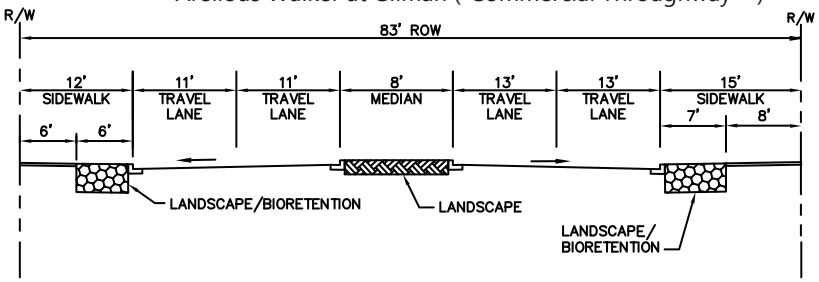
Carroll at Ingalls ("Industrial Mixed-Use Street" *)



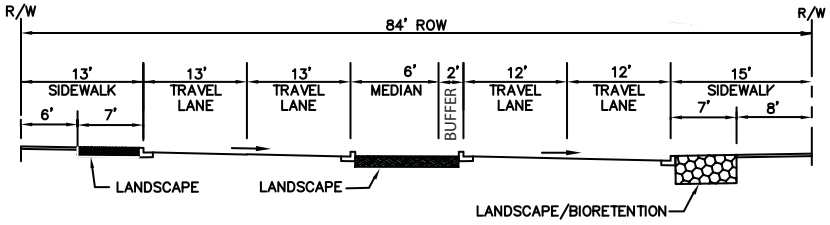
Arelious Walker at Egbert ("Commercial Throughway" *)



Arelious Walker at Gilman ("Commercial Throughway" *)



Arelious Walker at Ingerson ("Commercial Throughway" *)



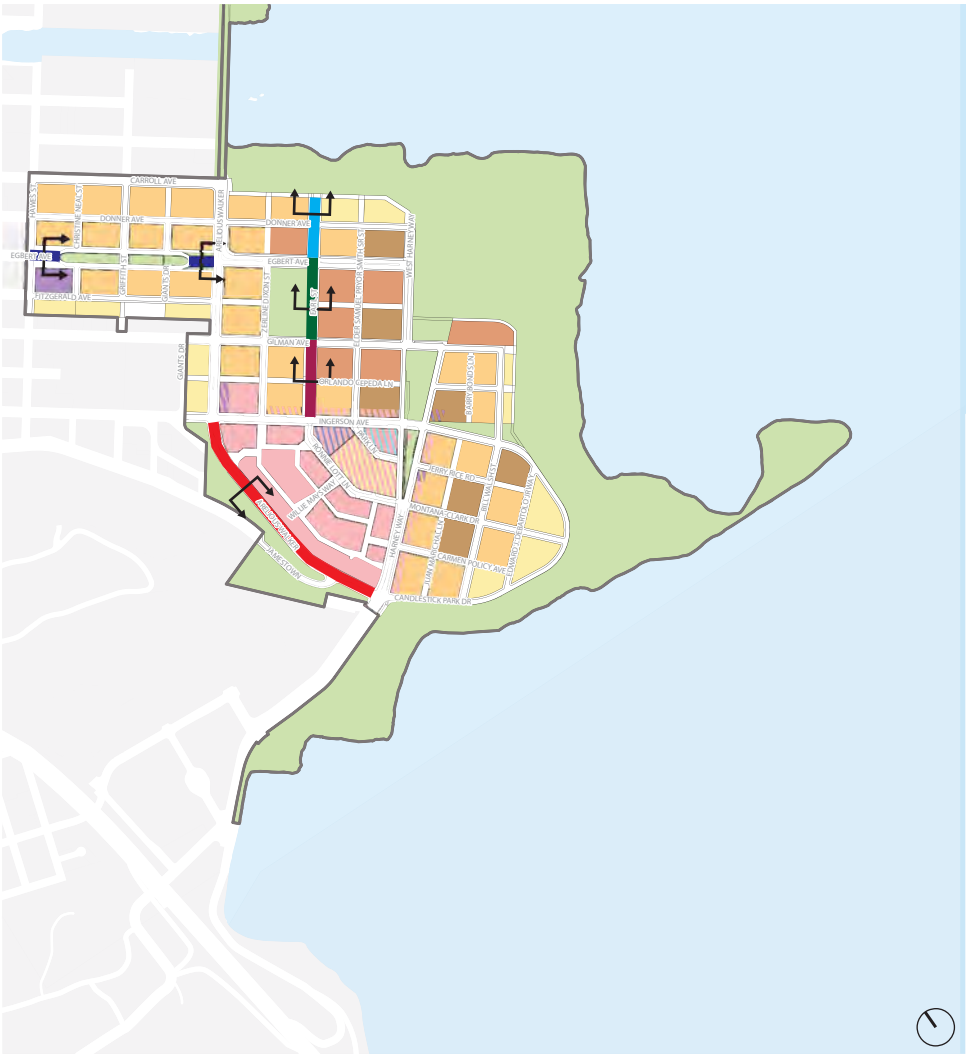
LAND USE

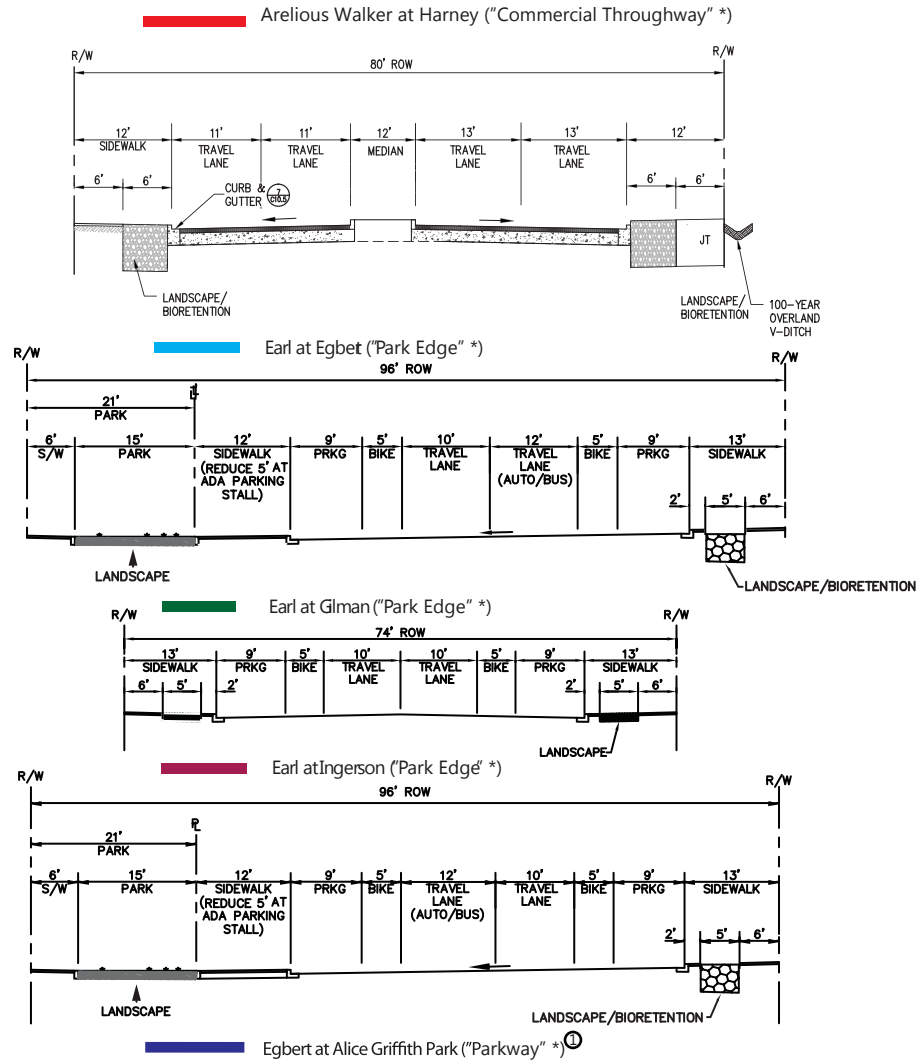
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 11

Candlestick Point Development: On-Site Street Network





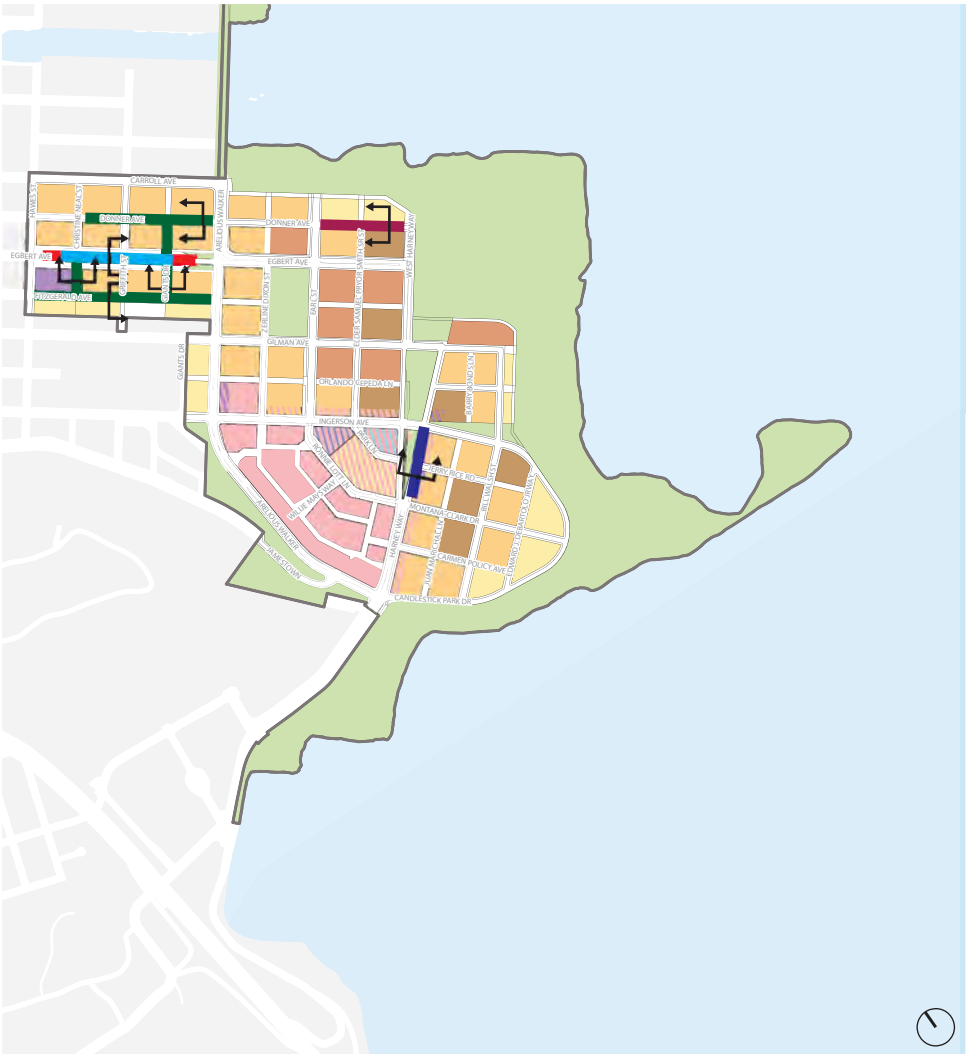
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 12

Candlestick Point Development: On-Site Street Network

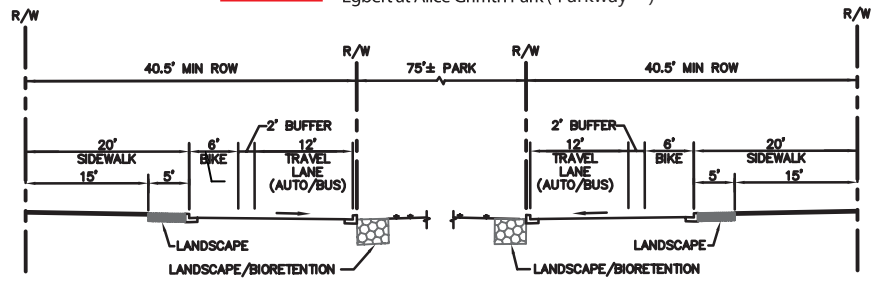


LAND USE

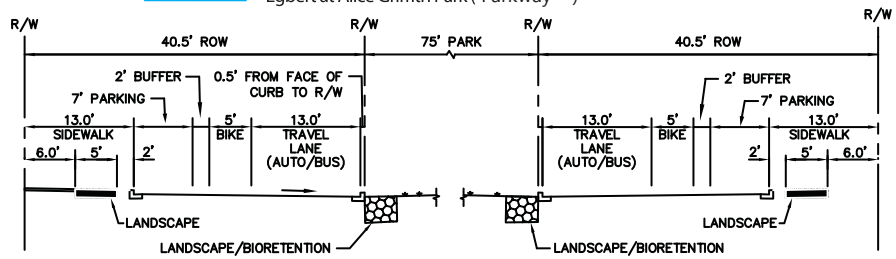
- RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)
- RESIDENTIAL DENSITY II (50-125) UNITS PER ACRE)
- RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)
- RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)
- ARTIST (ART)
- COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)
- INFRASTRUCTURE / UTILITY (I / U)
- PARKING (SP)
- COMMUNITY USE (CU)
- PARKS AND OPEN SPACE
- RETAIL* (RT)
- HOTEL (HT)
- PERFORMANCE VENUE (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
* GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)

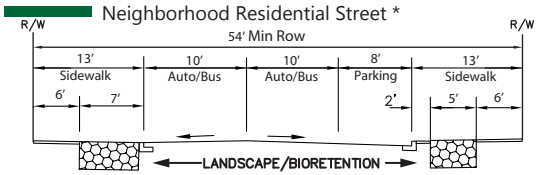
Egbert at Alice Griffith Park ("Parkway" *)①



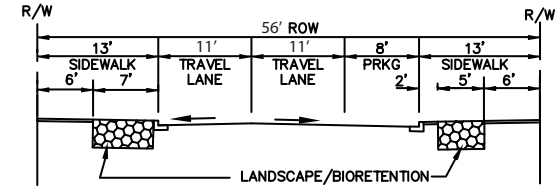
Egbert at Alice Griffith Park ("Parkway" *)①



Neighborhood Residential Street *



Neighborhood Residential Street *



Harney at Ingerson South ("Park Edge Street" *)

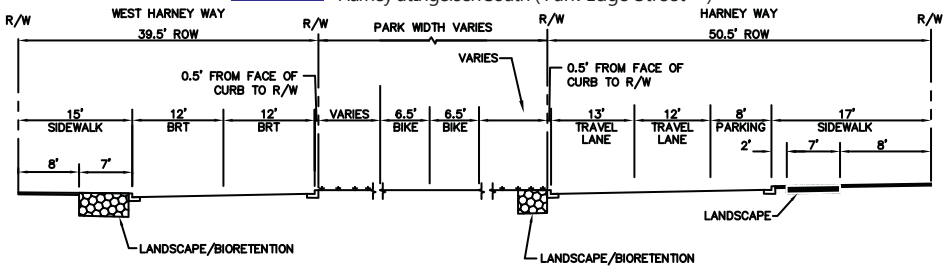
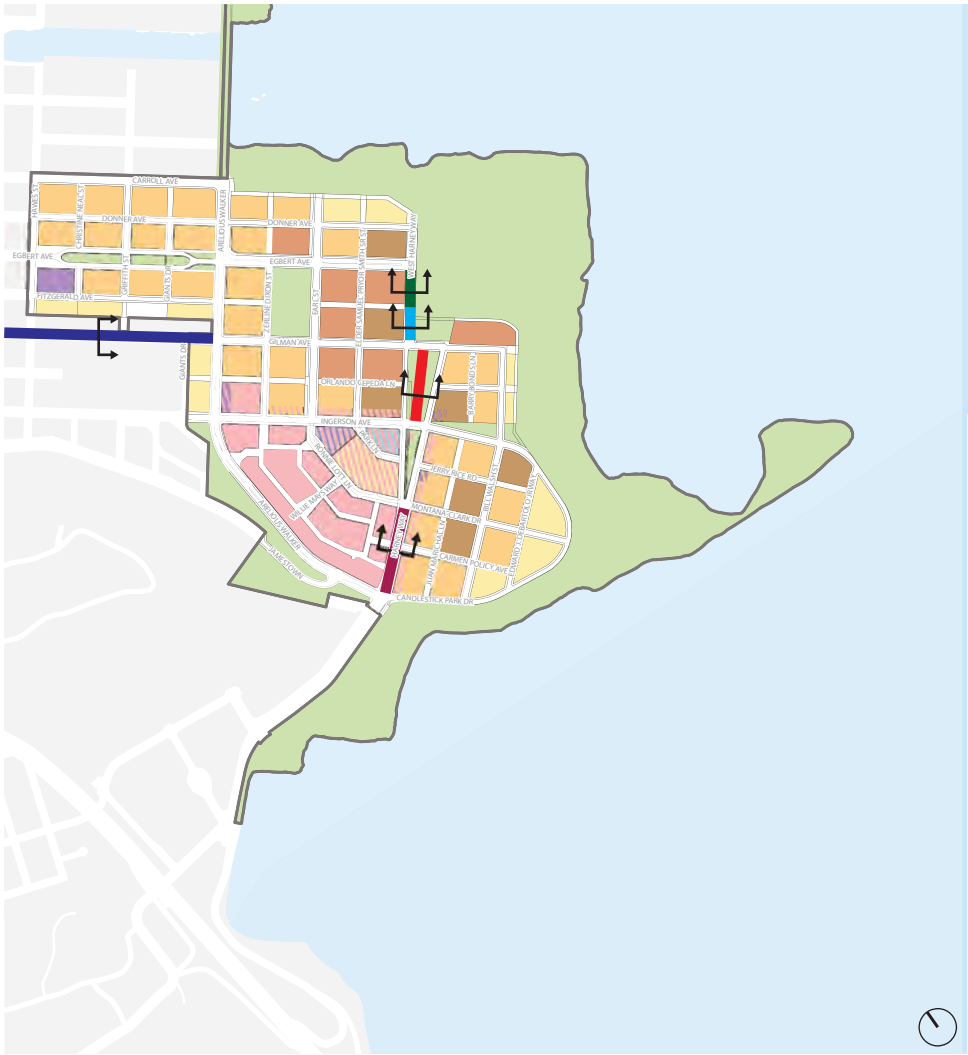
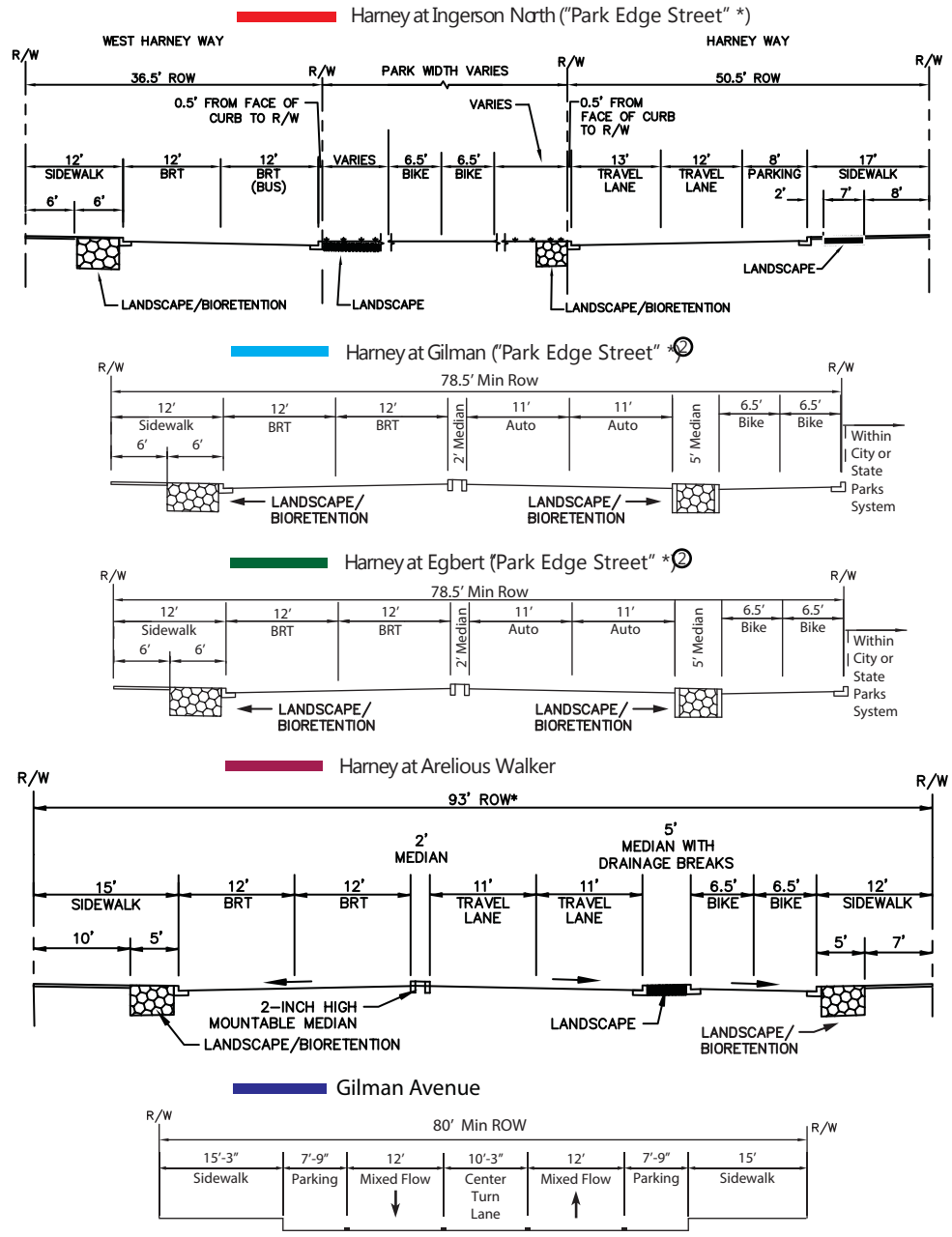


Figure 13

Candlestick Point Development: On-Site Street Network





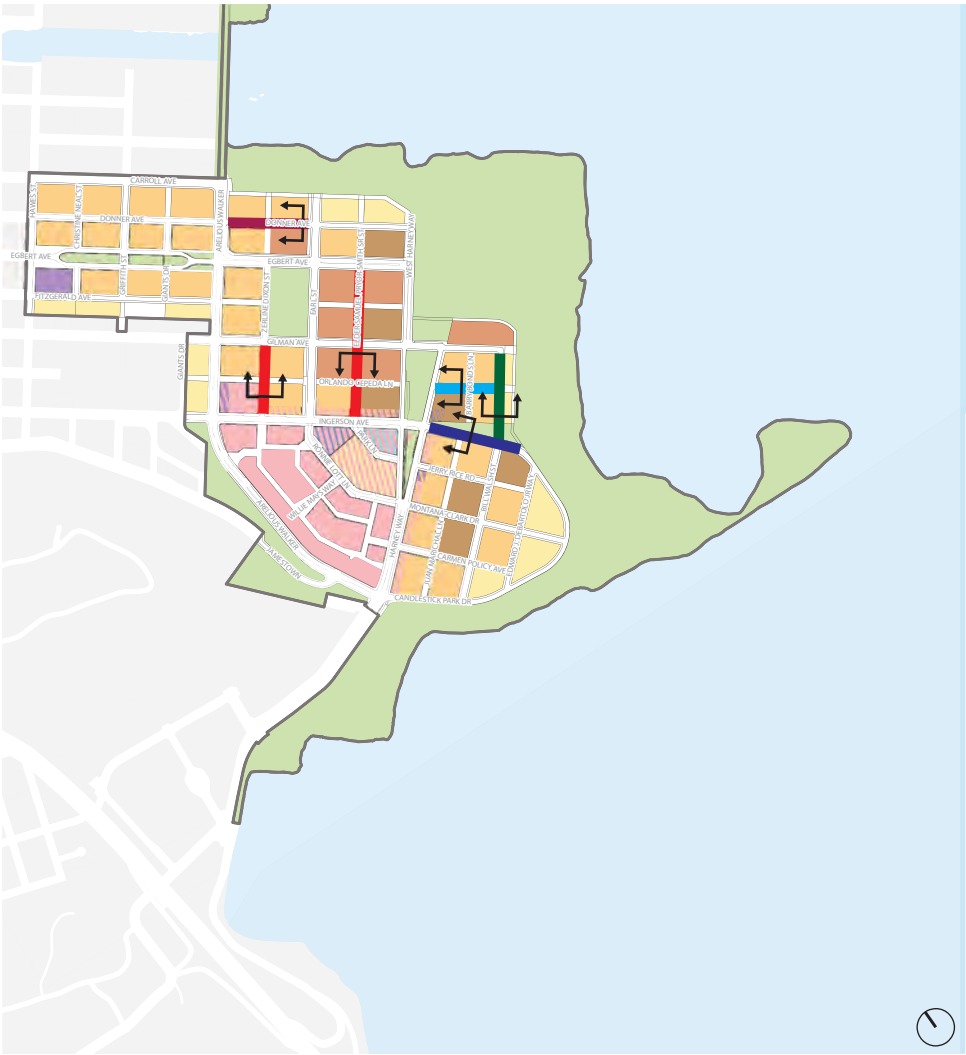
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 14

Candlestick Point Development: On-Site Street Network

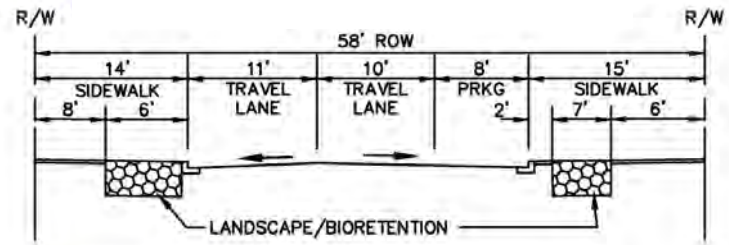


LAND USE

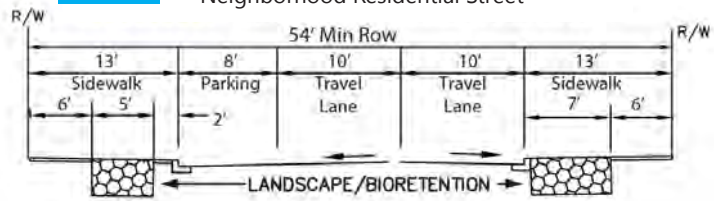
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

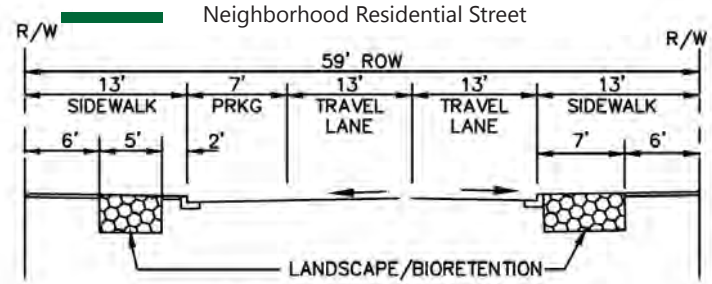
Neighborhood Residential Street



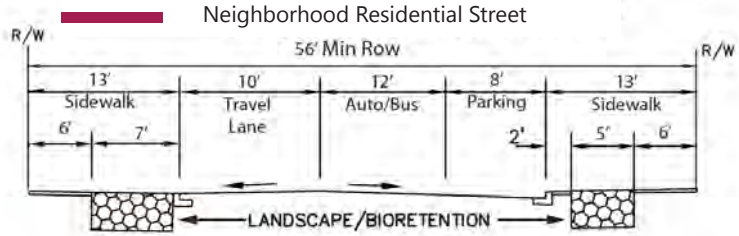
Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street

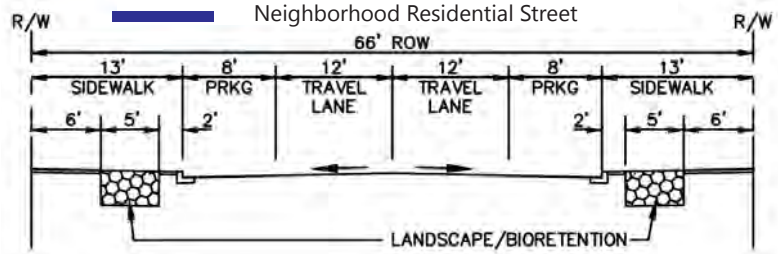
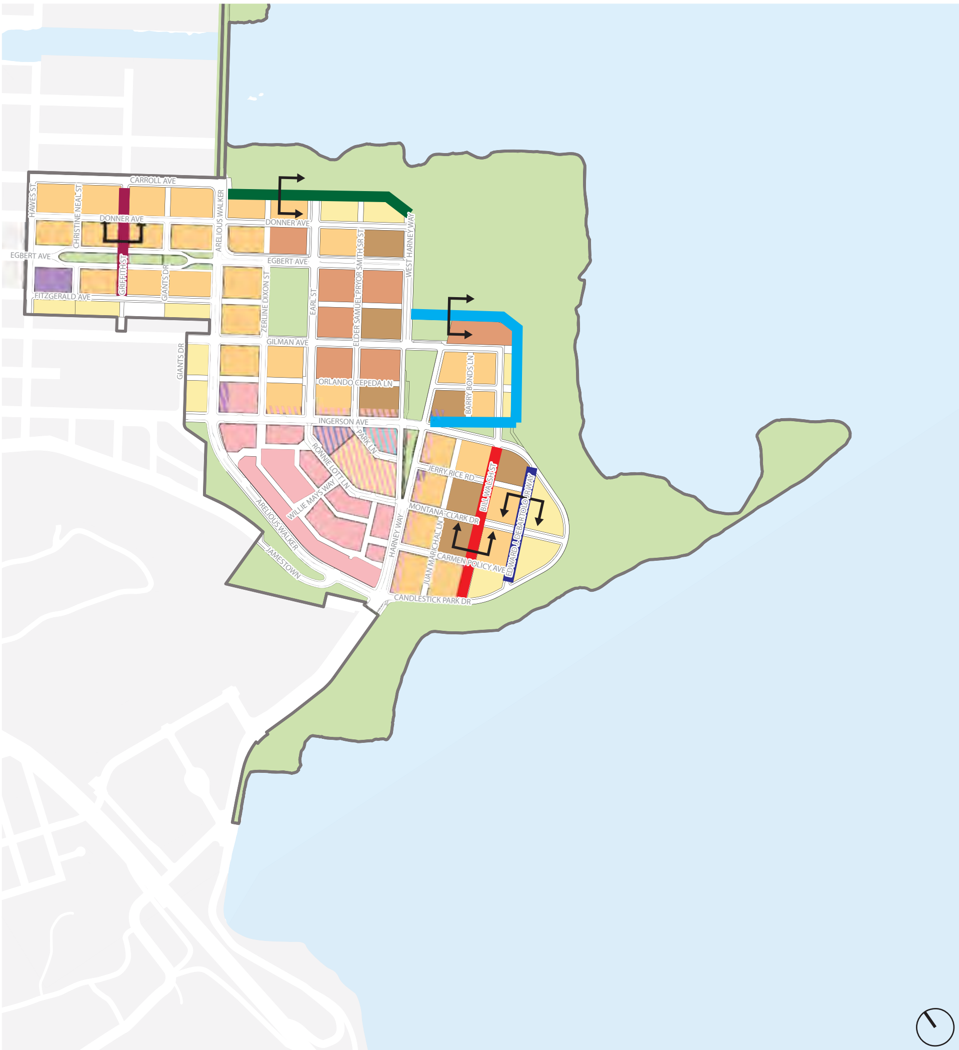


Figure 15

Candlestick Point Development: On-Site Street Network

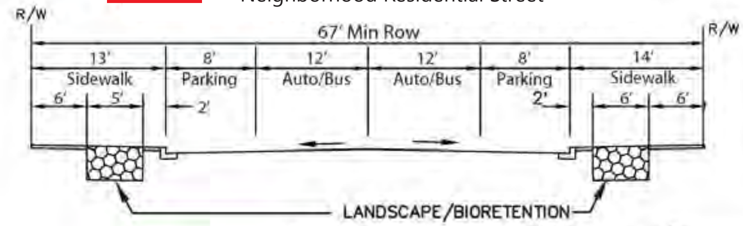


LAND USE

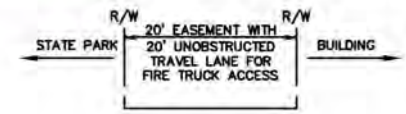
RESIDENTIAL DENSITY I (15-75) UNITS PER ACRE)	INFRASTRUCTURE / UTILITY (I / U)
RESIDENTIAL DENSITY II (50-125) UNITS PER ACRE)	PARKING (SP)
RESIDENTIAL DENSITY III (100-175) UNITS PER ACRE)	COMMUNITY USE (CU)
RESIDENTIAL DENSITY IV (175-285) UNITS PER ACRE)	PARKS AND OPEN SPACE
ARTIST (ART)	RETAIL* (RT)
COMMERCIAL (CM) (INCLUDES R&D, OFFICE, HOTEL)	HOTEL (HT)
	PERFORMANCE VENUE (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
* GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)

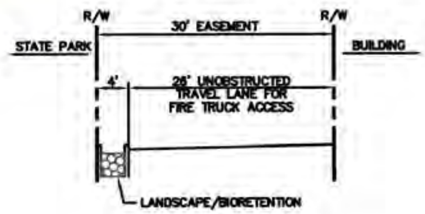
Neighborhood Residential Street



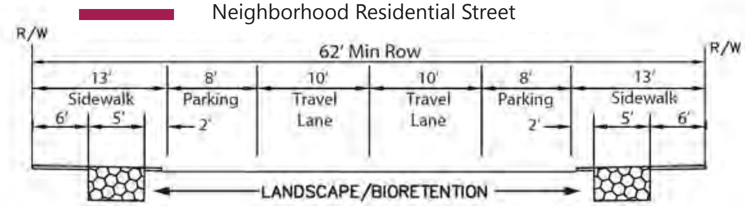
Shared Public Way - 20' Min ROW



Shared Public Way - 30' Min ROW



Neighborhood Residential Street



Neighborhood Residential Street

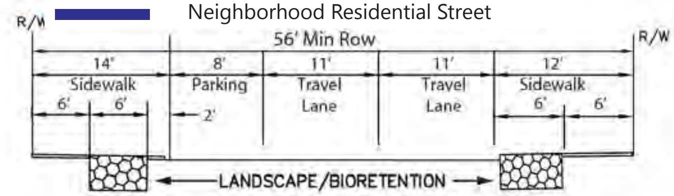
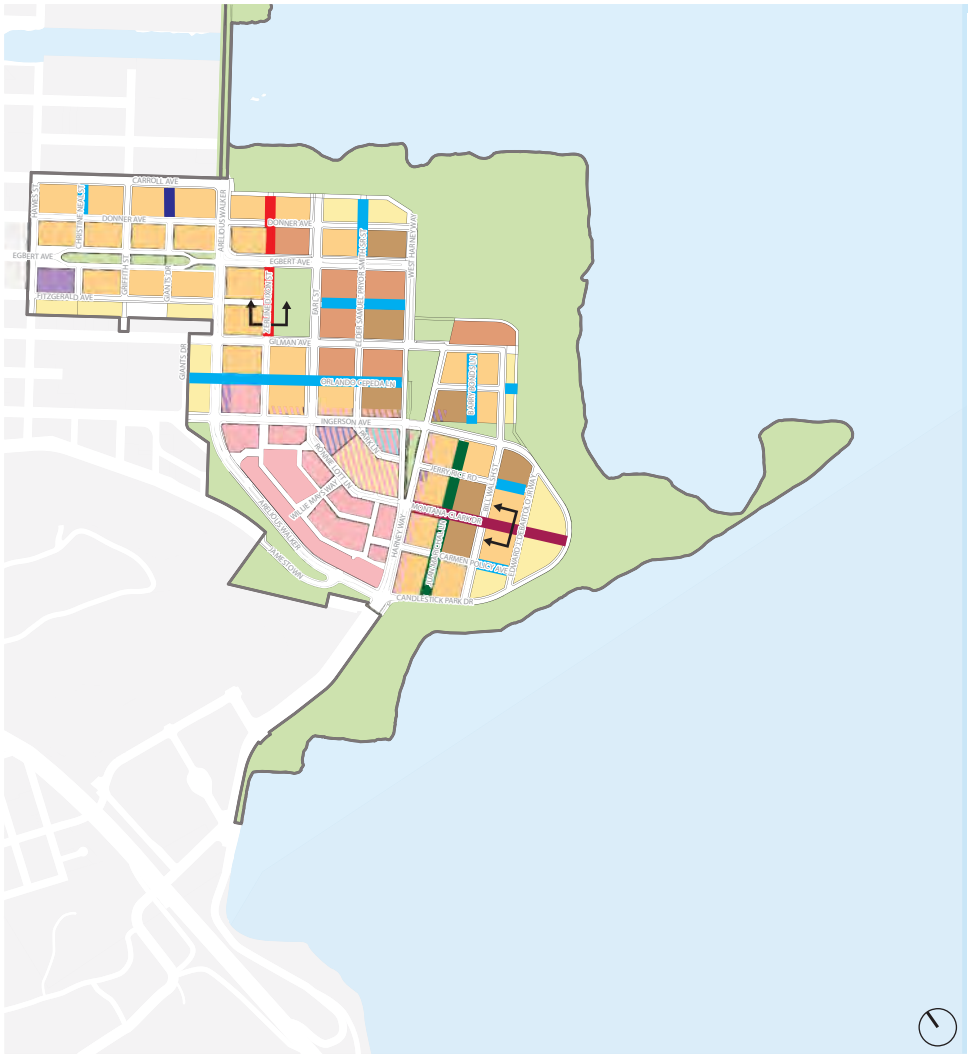


Figure 16

Candlestick Point Development: On-Site Street Network

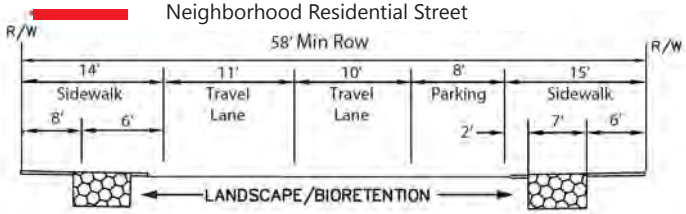


LAND USE

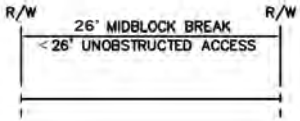
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

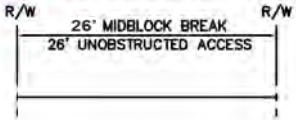
Neighborhood Residential Street



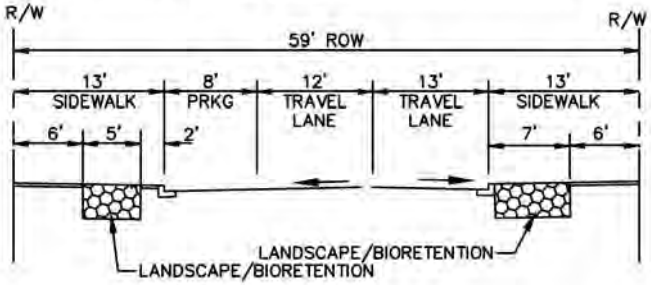
Mid-Block Break - 26' Min ROW



Mid-Block Break - 26' Min ROW



Neighborhood Residential Street



Mid-Block Break - 40' Min ROW

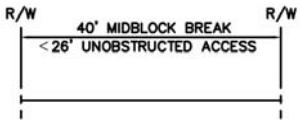
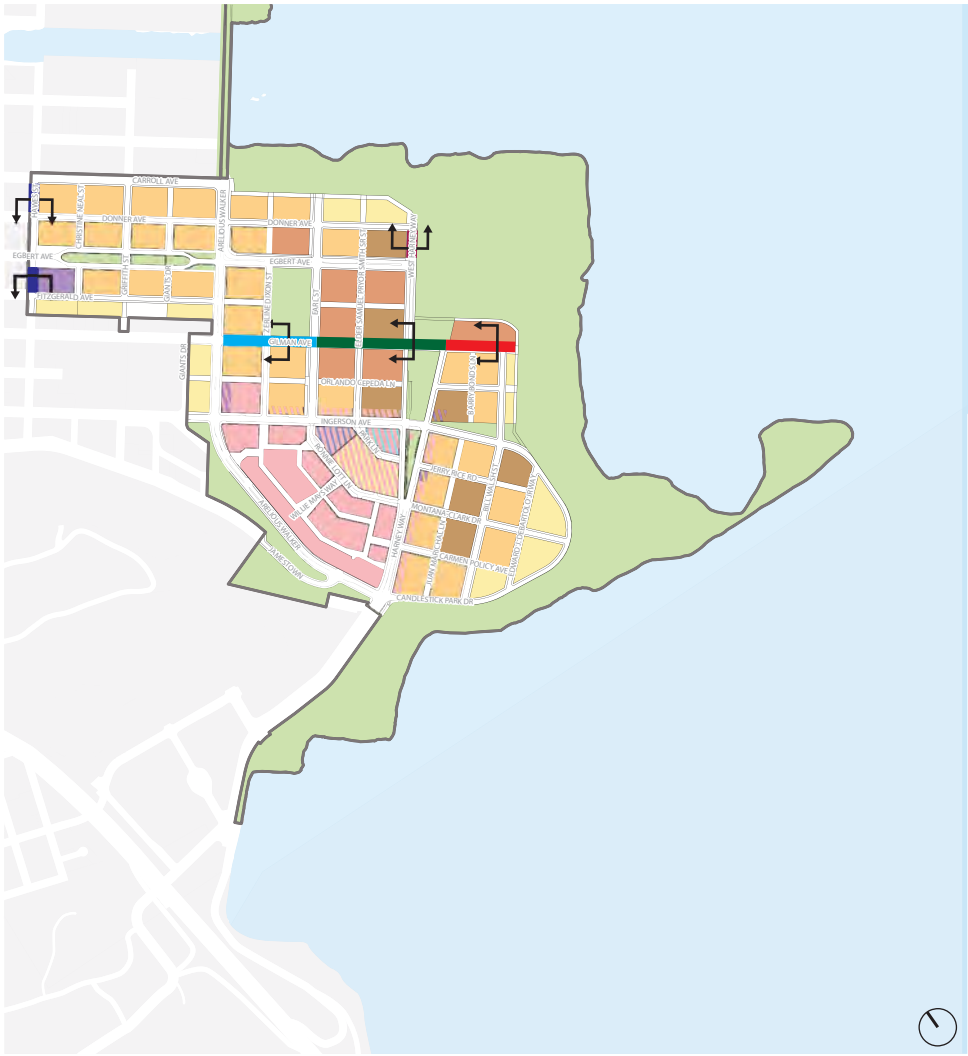
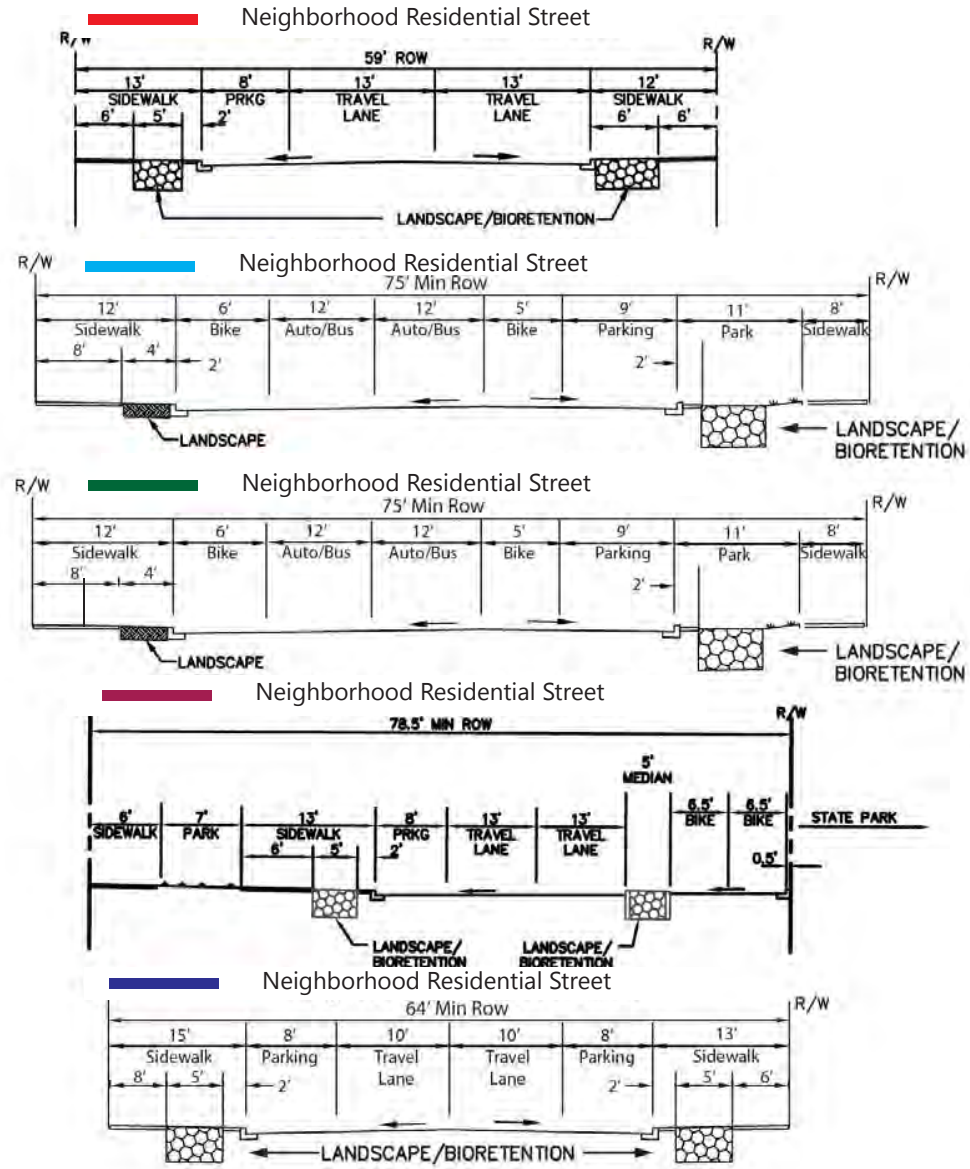


Figure 17

Candlestick Point Development: On-Site Street Network





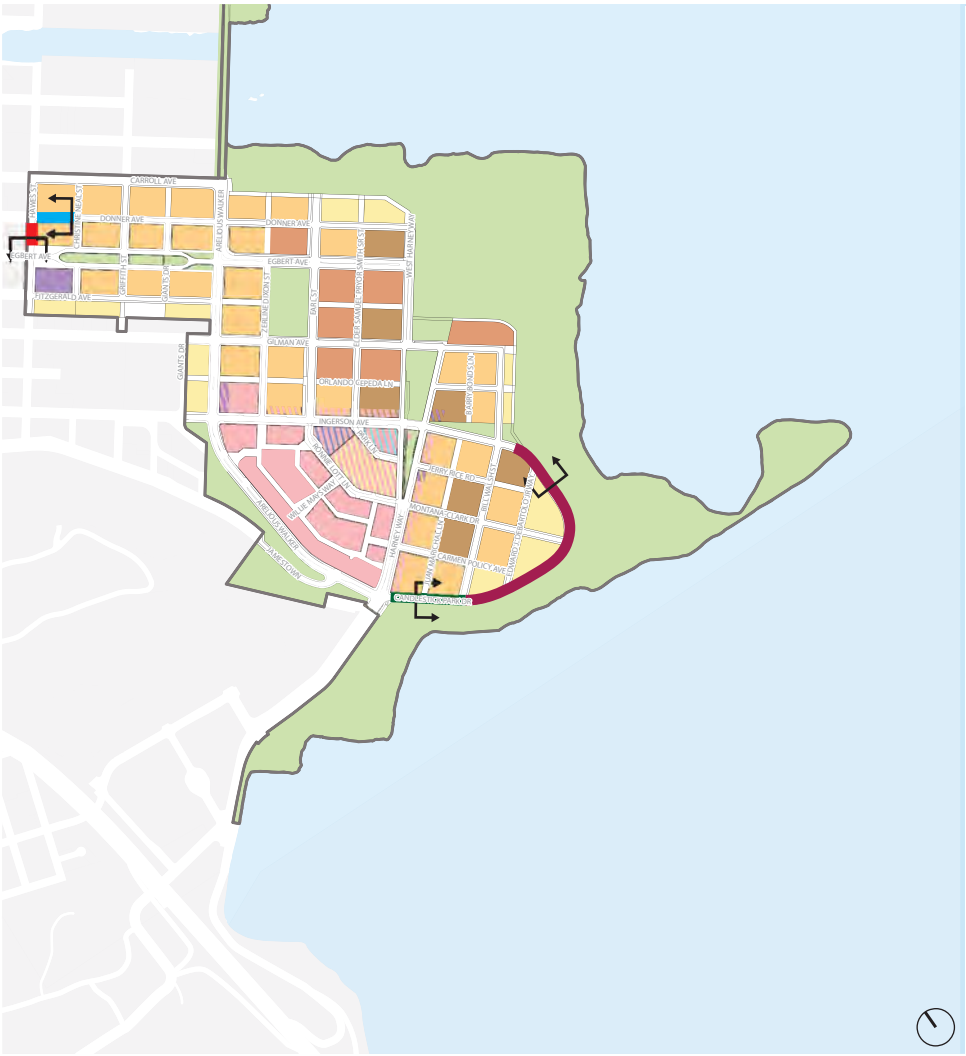
LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 18

Candlestick Point Development: On-Site Street Network

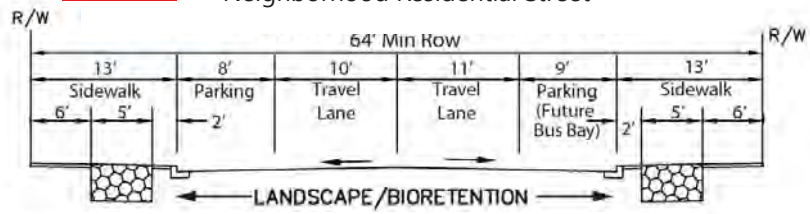


LAND USE

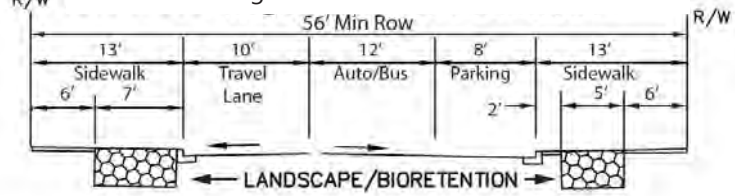
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

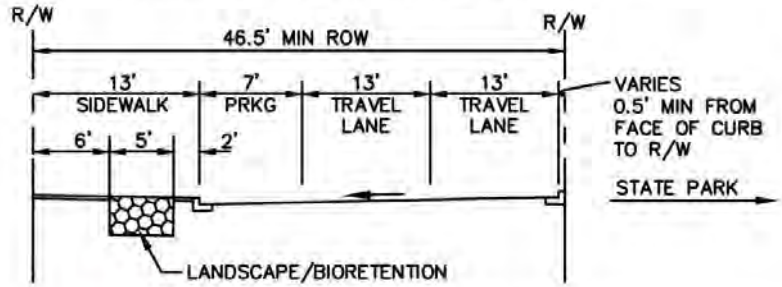
Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street



Neighborhood Residential Street

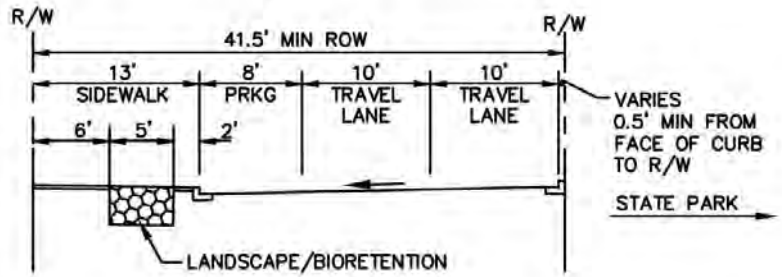
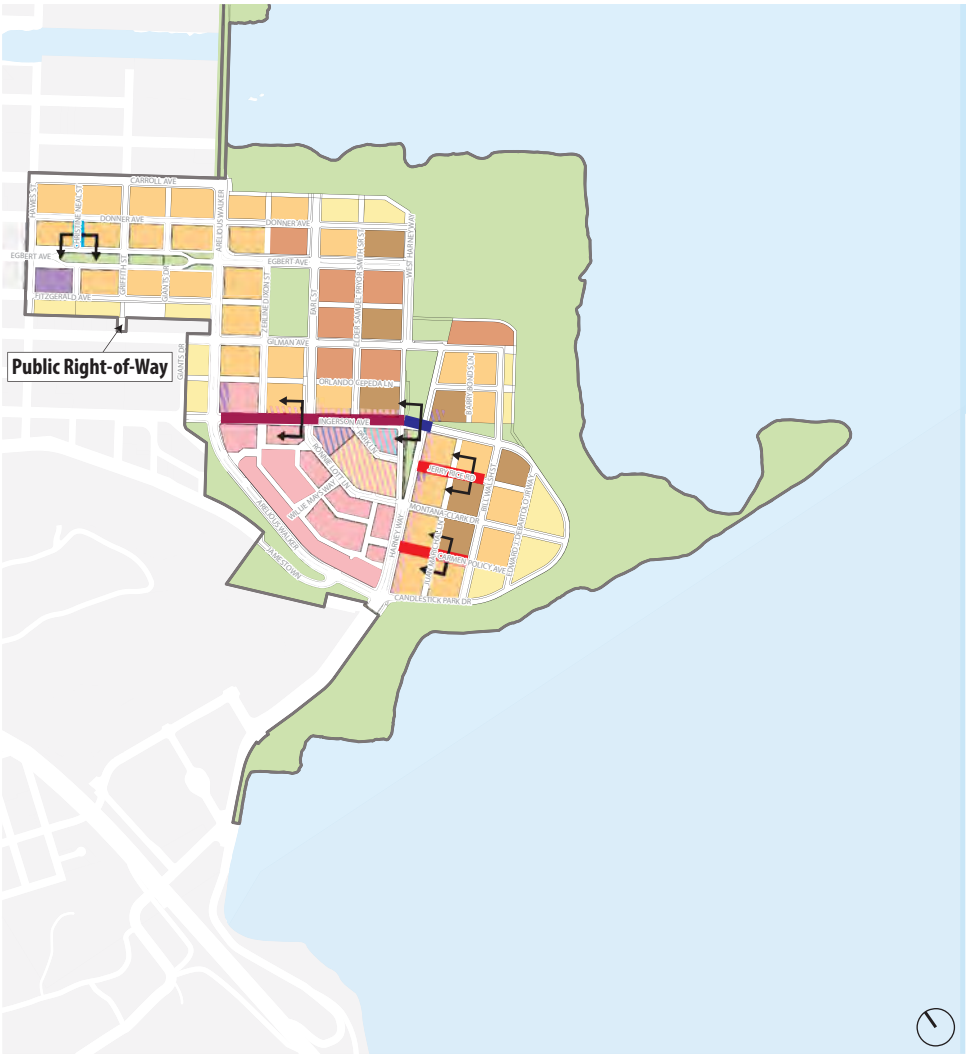


Figure 19

Candlestick Point Development: On-Site Street Network

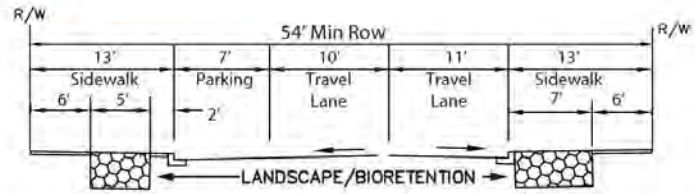


LAND USE

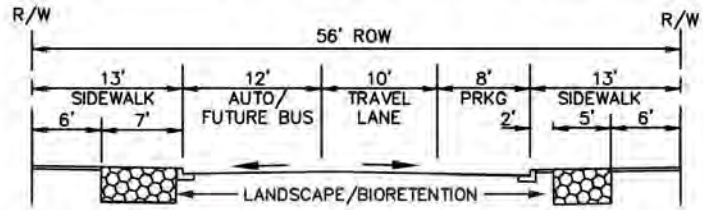
- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

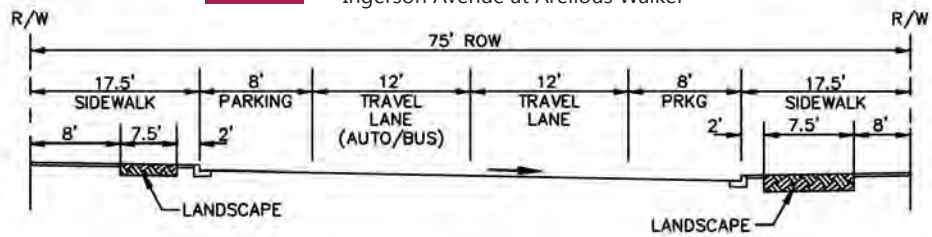
Neighborhood Residential Street



Neighborhood Residential Street



Ingerson Avenue at Arelious Walker



Ingerson Avenue at Harney Way

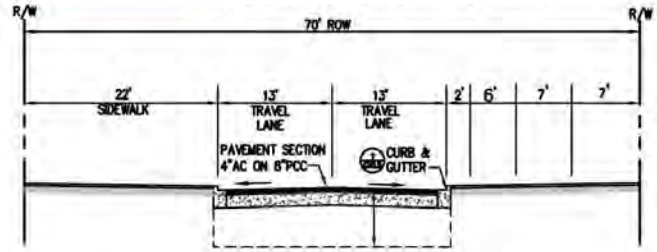
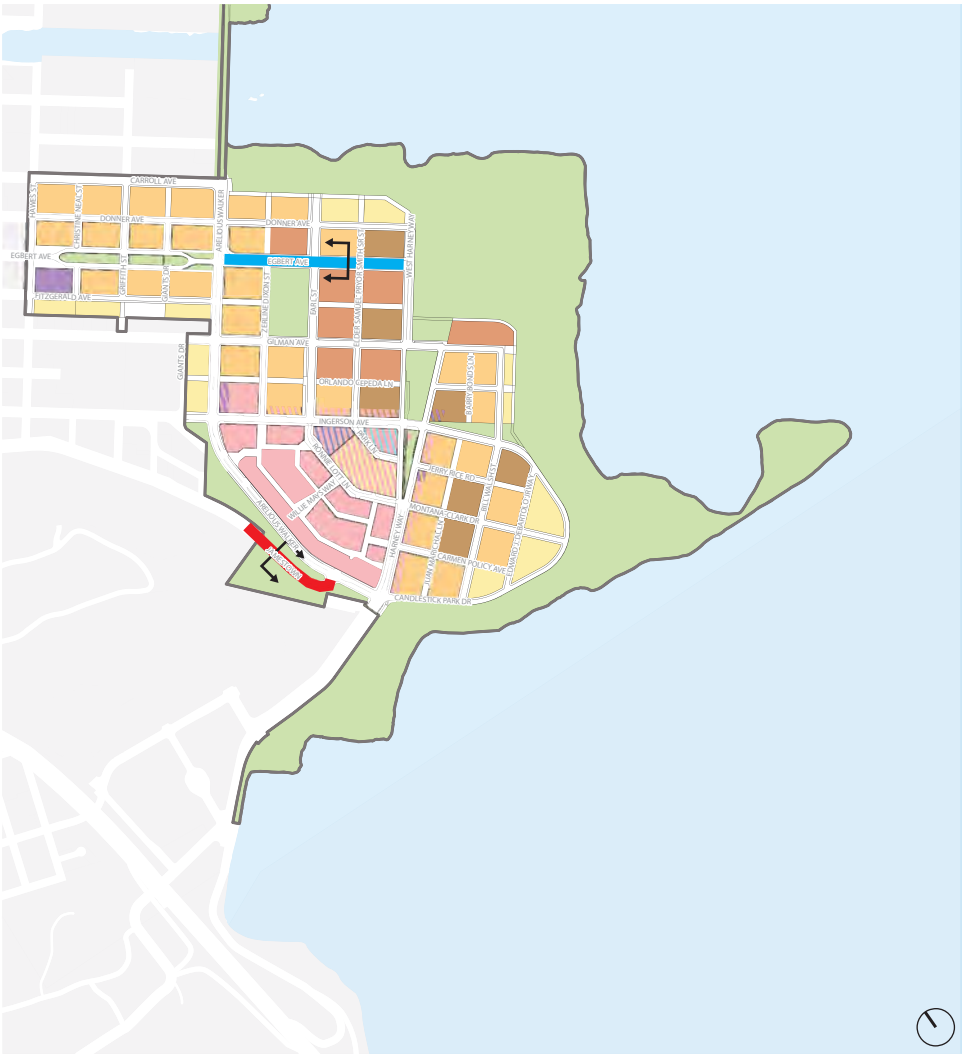
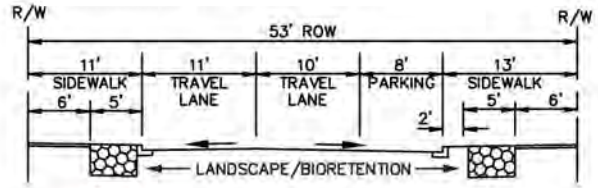


Figure 20

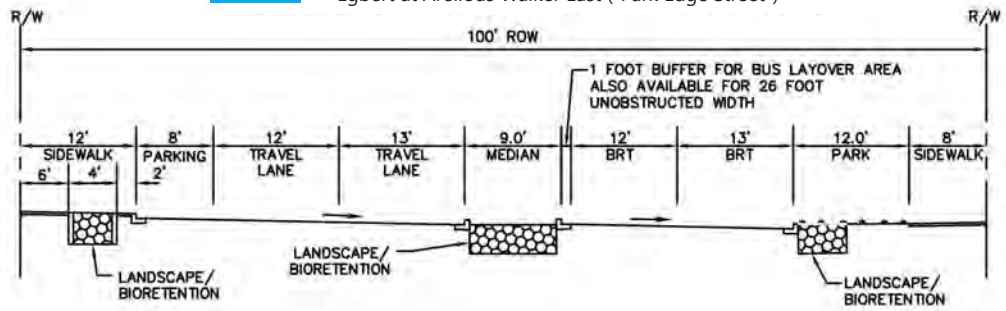
Candlestick Point Development: On-Site Street Network



Jamestown Avenue



Egbert at Arelious Walker East ("Park Edge Street")



LAND USE

- *RESIDENTIAL DENSITY I* (15-75) UNITS PER ACRE)
- *RESIDENTIAL DENSITY II* (50-125) UNITS PER ACRE)
- *RESIDENTIAL DENSITY III* (100-175) UNITS PER ACRE)
- *RESIDENTIAL DENSITY IV* (175-285) UNITS PER ACRE)
- *ARTIST* (ART)
- *COMMERCIAL* (CM) (INCLUDES R&D, OFFICE, HOTEL)
- *INFRASTRUCTURE / UTILITY* (I / U)
- *PARKING* (SP)
- *COMMUNITY USE* (CU)
- *PARKS AND OPEN SPACE*
- *RETAIL** (RT)
- *HOTEL* (HT)
- *PERFORMANCE VENUE* (PV)

NOTE:
1. GROUND FLOOR NEIGHBORHOOD RETAIL / MAKER PDR SPACE IS ALLOWED PER REDEVELOPMENT PLAN.
2. TO THE EXTENT PERMITTED BY THE HUNTERS POINT SHIPYARD REDEVELOPMENT PLAN AND UNDERLYING SITE CONDITIONS, INSTITUTIONAL USES MAY BE DEVELOPED ON ANY BLOCK WITHIN HUNTERS POINT SHIPYARD.
3. HATCHING INDICATES MULTIPLE LANE USES PERMITTED.
** GREATER DETAIL FOR SPECIFIC LAND USES IS SHOWN IN APPROVED SUB-PHASES (CP-01 THROUGH CP-04)*

Figure 21

Candlestick Point Development: On-Site Street Network

APPENDIX E

LOS Calculations

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:14:56                 Page 1-1
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1004 3rd St / Evans Ave
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.586
Loss Time (sec):      12                Average Delay (sec/veh):       274.1
Optimal Cycle:       102                Level Of Service:                  F
********************************************************************************
Street Name:              3rd St                          Evans Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Ovl              Ovl
Min. Green:    12   46    46    12   46    46     6   20    20    12   26    26
Y+R:          5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     270 1214   427   789 1215    30    30  642    80   262  479   429
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  270 1214   427   789 1215    30    30  642    80   262  479   429
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   276 1239   436   805 1240    31    31  655    82   267  489   438
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  276 1239   436   805 1240    31    31  655    82   267  489   438
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  276 1239   436   805 1240    31    31  655    82   267  489   438
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.83  0.83  0.86 0.86  0.86  0.90 0.87  0.87  0.90 0.90  0.78
Lanes:       1.00 1.48  0.52  1.00 1.95  0.05  1.00 1.78  0.22  1.00 2.00  1.00
Final Sat.:  1641 2333   821  1641 3190    79  1718 2944   367  1718 3437  1476
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.53  0.53  0.49 0.39  0.39  0.02 0.22  0.22  0.16 0.14  0.30
Crit Moves:       ****        ****                   ****        ****
Green/Cycle: 0.12 0.45  0.57  0.12 0.45  0.51  0.06 0.20  0.31  0.12 0.25  0.37
Volume/Cap:  1.43 1.18  0.93  4.17 0.86  0.76  0.30 1.13  0.71  1.32 0.56  0.80
Uniform Del: 45.0 28.0  20.2  45.0 25.1  20.0  46.0 41.0  30.9  45.0 33.0  28.5
IncremntDel:219.6 87.5  10.5  1439  6.9   3.4   7.6 78.7   4.1 175.3  2.6  11.4
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  264.6  116  30.7  1484 32.0  23.4  53.5  120  35.0 220.3 35.6  39.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 264.6  116  30.7  1484 32.0  23.4  53.5  120  35.0 220.3 35.6  39.9
LOS by Move:    F    F     C     F    C     C     D    F     C     F    D     D
HCM2kAvgQ:     18   42    24    99   18    16     1   17    10    19    8    14
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:18:17                    Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1006 3rd St / Palou Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         2.469
Loss Time (sec):      12                Average Delay (sec/veh):       402.7
Optimal Cycle:       102                Level Of Service:                  F
******************************************************************************
Street Name:              3rd St                          Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:    15   69    69     0   49    49    21   21    21    21   21    21
Y+R:          5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0
Lanes:        1  0  1  1  0    0  1  0  1  0    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      40 1618   332   291 1287    73   149  234    40   189  185   116
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   40 1618   332   291 1287    73   149  234    40   189  185   116
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    41 1651   339   297 1313    74   152  239    41   193  189   118
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   41 1651   339   297 1313    74   152  239    41   193  189   118
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   41 1651   339   297 1313    74   152  239    41   193  189   118
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.77  0.77  0.42 0.42  0.42  0.21 0.21  0.21  0.53 0.53  0.63
Lanes:       1.00 1.66  0.34  0.35 1.56  0.09  0.35 0.56  0.09  0.51 0.49  1.00
Final Sat.:  1718 2427   498   282 1245    71   138  217    37   512  501  1190
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.68  0.68  1.05 1.05  1.05  1.10 1.10  1.10  0.38 0.38  0.10
Crit Moves:  ****                 ****             ****
Green/Cycle: 0.15 0.63  0.63  0.48 0.48  0.48  0.25 0.25  0.25  0.25 0.25  0.25
Volume/Cap:  0.16 1.08  1.08  2.20 2.20  2.20  4.31 4.31  4.31  1.48 1.48  0.39
Uniform Del: 38.0 19.0  19.0  26.5 26.5  26.5  38.0 38.0  38.0  38.0 38.0  31.4
IncremntDel:  1.4 47.8  47.8 542.4  542 542.4  1514 1514  1514 234.9  235   3.7
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   39.4 66.8  66.8 568.9  569 568.9  1552 1552  1552 272.9  273  35.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  39.4 66.8  66.8 568.9  569 568.9  1552 1552  1552 272.9  273  35.2
LOS by Move:    D    E     E     F    F     F     F    F     F     F    F     D
HCM2kAvgQ:      1   41    41    86   86    86    55   55    55    28   28     3
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

HCM Signalized Intersection Capacity Analysis
26: Third Street & Gilman Avenue

03/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	752	20	49	512	144	39	1503	60	100	898	183
Future Volume (vph)	140	752	20	49	512	144	39	1503	60	100	898	183
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		1.00		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1843		1770	1863	1583	1770	3519		1770	3449	
Flt Permitted		0.59		0.25	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1091		469	1863	1583	1770	3519		1770	3449	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	143	767	20	50	522	147	40	1534	61	102	916	187
RTOR Reduction (vph)	0	1	0	0	0	34	0	3	0	0	17	0
Lane Group Flow (vph)	0	929	0	50	522	113	40	1592	0	102	1086	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		2			6	3	7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)		49.0		49.0	49.0	55.0	2.4	30.0		6.0	33.6	
Effective Green, g (s)		49.0		49.0	49.0	55.0	2.4	30.0		6.0	33.6	
Actuated g/C Ratio		0.49		0.49	0.49	0.55	0.02	0.30		0.06	0.34	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		534		229	912	949	42	1055		106	1158	
v/s Ratio Prot					0.28	0.01	0.02	c0.45		0.06	c0.31	
v/s Ratio Perm		c0.85		0.11		0.06						
v/c Ratio		1.74		0.22	0.57	0.12	0.95	1.51		0.96	0.94	
Uniform Delay, d1		25.5		14.6	18.1	10.8	48.7	35.0		46.9	32.2	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		340.6		0.5	0.9	0.1	119.7	234.1		74.9	15.2	
Delay (s)		366.1		15.0	18.9	10.9	168.5	269.1		121.8	47.4	
Level of Service		F		B	B	B	F	F		F	D	
Approach Delay (s)		366.1			17.0			266.6			53.7	
Approach LOS		F			B			F			D	

Intersection Summary			
HCM 2000 Control Delay	190.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.63		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	141.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:19:35                    Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1029 Harney Way / Jamestown Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.594
Loss Time (sec):      12                Average Delay (sec/veh):        21.9
Optimal Cycle:        48                Level Of Service:                  C
******************************************************************************
Street Name:            Harney Way                      Jamestown Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include           Ovl             Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    0  0  0  1  0    0  1  0  0  2    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     566  363     0     0  473    70    90    0   410     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  566  363     0     0  473    70    90    0   410     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   578  370     0     0  483    71    92    0   418     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  578  370     0     0  483    71    92    0   418     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  578  370     0     0  483    71    92    0   418     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.98  1.00  1.00 0.96  0.96  0.93 1.00  0.73  1.00 1.00  1.00
Lanes:       2.00 1.00  0.00  0.00 0.87  0.13  1.00 0.00  2.00  0.00 1.00  0.00
Final Sat.:  3432 1862     0     0 1594   236  1773    0  2786     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.17 0.20  0.00  0.00 0.30  0.30  0.05 0.00  0.15  0.00 0.00  0.00
Crit Moves:  ****                  ****        ****
Green/Cycle: 0.28 0.79  0.00  0.00 0.51  0.51  0.09 0.00  0.37  0.00 0.00  0.00
Volume/Cap:  0.59 0.25  0.00  0.00 0.59  0.59  0.59 0.00  0.41  0.00 0.00  0.00
Uniform Del: 30.9  2.7   0.0   0.0 17.3  17.3  43.9  0.0  23.3   0.0  0.0   0.0
IncremntDel:  1.0  0.1   0.0   0.0  1.0   1.0   6.1  0.0   0.3   0.0  0.0   0.0
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Delay/Veh:   31.9  2.8   0.0   0.0 18.3  18.3  50.0  0.0  23.6   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.9  2.8   0.0   0.0 18.3  18.3  50.0  0.0  23.6   0.0  0.0   0.0
LOS by Move:    C    A     A     A    B     B     D    A     C     A    A     A
HCM2kAvgQ:      9    3     0     0   12    12     4    0     6     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:15:35                    Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1030 Crisp Rd / Palou Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.121
Loss Time (sec):      12                Average Delay (sec/veh):        87.2
Optimal Cycle:       100                Level Of Service:                  F
******************************************************************************
Street Name:             Crisp Rd                         Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  1    0  0  1! 0  0    1  0  0  1  0    1  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20   90   434    10  180   170    50  793    10   253  331    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20   90   434    10  180   170    50  793    10   253  331    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20   92   443    10  184   173    51  809    10   258  338    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20   92   443    10  184   173    51  809    10   258  338    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20   92   443    10  184   173    51  809    10   258  338    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.84 0.84  0.84  0.92 0.92  0.92  0.90 0.95  0.95  0.96 0.96  0.96
Lanes:       0.06 0.28  1.66  0.03 0.50  0.47  1.00 0.99  0.01  1.27 0.71  0.02
Final Sat.:    97  437  2643    48  871   822  1718 1783    22  2309 1287    39
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.21  0.17  0.21 0.21  0.21  0.03 0.45  0.45  0.11 0.26  0.26
Crit Moves:  ****                 ****             ****        ****
Green/Cycle: 0.19 0.19  0.19  0.19 0.19  0.19  0.05 0.40  0.40  0.10 0.45  0.45
Volume/Cap:  1.12 1.12  0.89  1.12 1.12  1.12  0.58 1.12  1.12  1.12 0.58  0.58
Uniform Del: 40.6 40.6  39.7  40.6 40.6  40.6  46.4 29.8  29.8  45.0 20.3  20.3
IncremntDel: 78.1 78.1  15.4  86.6 86.6  86.6   9.3 71.9  71.9  76.5  0.8   0.8
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  118.7  119  55.1 127.2  127 127.2  55.7  102 101.6 121.6 21.1  21.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 118.7  119  55.1 127.2  127 127.2  55.7  102 101.6 121.6 21.1  21.1
LOS by Move:    F    F     E     F    F     F     E    F     F     F    C     C
HCM2kAvgQ:     18   18    11    20   20    20     2   36    36    12   11    11
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

HCM Signalized Intersection Capacity Analysis
1: Arelious Walker & Gilman Avenue

03/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	251	160	322	10	89	149	261	392	10	122	341	345
Future Volume (vph)	251	160	322	10	89	149	261	392	10	122	341	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.93	1.00	1.00	0.83	1.00	0.99		1.00	0.87	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1471	1770	1863	1322	1770	3502		1770	2834	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1471	1770	1863	1322	1770	3502		1770	2834	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	264	168	339	11	94	157	275	413	11	128	359	363
RTOR Reduction (vph)	0	0	148	0	0	134	0	2	0	0	194	0
Lane Group Flow (vph)	264	168	191	11	94	23	275	422	0	128	528	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			30			10			10
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	18.8	28.8	53.6	3.8	13.8	13.8	24.8	30.3		14.1	19.6	
Effective Green, g (s)	18.8	28.8	53.6	3.8	13.8	13.8	24.8	30.3		14.1	19.6	
Actuated g/C Ratio	0.20	0.30	0.56	0.04	0.15	0.15	0.26	0.32		0.15	0.21	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	350	564	829	70	270	192	462	1116		262	584	
v/s Ratio Prot	c0.15	0.09	0.06	0.01	c0.05		c0.16	0.12		0.07	c0.19	
v/s Ratio Perm			0.07			0.02						
v/c Ratio	0.75	0.30	0.23	0.16	0.35	0.12	0.60	0.38		0.49	0.90	
Uniform Delay, d1	35.9	25.4	10.4	44.1	36.6	35.3	30.7	25.1		37.1	36.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	8.9	0.3	0.1	1.1	0.8	0.3	5.6	0.2		1.4	17.3	
Delay (s)	44.8	25.7	10.5	45.1	37.3	35.6	36.3	25.3		38.6	54.1	
Level of Service	D	C	B	D	D	D	D	C		D	D	
Approach Delay (s)		25.6			36.6			29.6			51.7	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	36.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:13:04                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1046 Innes Ave/Fitch St
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.487
Loss Time (sec):       8                Average Delay (sec/veh):         5.0
Optimal Cycle:        31                Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    39    0    60    30 1144     0     0 1046    42
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    39    0    60    30 1144     0     0 1046    42
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    40    0    61    31 1167     0     0 1067    43
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    40    0    61    31 1167     0     0 1067    43
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    40    0    61    31 1167     0     0 1067    43
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.88 1.00  0.88  0.81 0.81  1.00  1.00 0.90  0.90
Lanes:       0.00 0.00  0.00  0.39 0.00  0.61  0.05 1.95  0.00  0.00 1.92  0.08
Final Sat.:     0    0     0   661    0  1016    79 3007     0     0 3284   132
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.06 0.00  0.06  0.39 0.39  0.00  0.00 0.32  0.32
Crit Moves:                   ****                    ****
Green/Cycle: 0.00 0.00  0.00  0.12 0.00  0.12  0.80 0.80  0.00  0.00 0.80  0.80
Volume/Cap:  0.00 0.00  0.00  0.49 0.00  0.49  0.49 0.49  0.00  0.00 0.41  0.41
Uniform Del:  0.0  0.0   0.0  40.9  0.0  40.9   3.4  3.4   0.0   0.0  3.1   3.1
IncremntDel:  0.0  0.0   0.0   1.8  0.0   1.8   0.2  0.2   0.0   0.0  0.1   0.1
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
Delay/Veh:    0.0  0.0   0.0  42.7  0.0  42.7   3.5  3.5   0.0   0.0  3.2   3.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  42.7  0.0  42.7   3.5  3.5   0.0   0.0  3.2   3.2
LOS by Move:    A    A     A     D    A     D     A    A     A     A    A     A
HCM2kAvgQ:      0    0     0     4    0     4     7    7     0     0    6     6
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************


  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:12:03                 Page 1-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #1047 Innes Ave/Earl St
*******************************************************************************
Average Delay (sec/veh):      1.3       Worst Case Level Of Service: C[ 24.2]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    20    0    80    40 1103     0     0  888    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0    80    40 1103     0     0  888    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    20    0    82    41 1126     0     0  906    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    20    0    82    41 1126     0     0  906    10
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.8  6.5   6.9   4.2 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.3 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  1556 2118   458   916 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx   104   50   550   722 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    99   47   550   722 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.21 0.00  0.15  0.06 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   0.2 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  10.3 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  288 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  1.5 xxxxx   0.2 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 24.2 xxxxx  10.3 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    C     *     B    *     *     *    *     *
ApproachDel:    xxxxxx             24.2           xxxxxx           xxxxxx
ApproachLOS:         *               C                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:14:01                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1048 Middle Point Rd / Evans Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.153
Loss Time (sec):      10                Average Delay (sec/veh):        64.2
Optimal Cycle:       100                Level Of Service:                  E
******************************************************************************
Street Name:         Middle Point Rd                      Evans Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    1  0  0  1  0    0  1  1  0  1    0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     130  130    10   527  190    30    80 1497   160    20  964   309
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  130  130    10   527  190    30    80 1497   160    20  964   309
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   133  133    10   538  194    31    82 1528   163    20  984   315
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  133  133    10   538  194    31    82 1528   163    20  984   315
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  133  133    10   538  194    31    82 1528   163    20  984   315
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.64 0.64  0.64  0.68 0.96  0.96  0.68 0.68  0.81  0.74 0.74  0.81
Lanes:       0.48 0.48  0.04  1.00 0.86  0.14  0.10 1.90  1.00  0.04 1.96  1.00
Final Sat.:   589  589    45  1290 1576   249   131 2460  1537    57 2754  1537
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.23  0.23  0.42 0.12  0.12  0.62 0.62  0.11  0.36 0.36  0.21
Crit Moves:                   ****                    ****
Green/Cycle: 0.36 0.36  0.36  0.36 0.36  0.36  0.54 0.54  0.54  0.54 0.54  0.54
Volume/Cap:  0.62 0.62  0.62  1.15 0.34  0.34  1.15 1.15  0.20  0.66 0.66  0.38
Uniform Del: 26.3 26.3  26.3  31.9 23.2  23.2  23.1 23.1  11.9  16.6 16.6  13.4
IncremntDel:  2.8  2.8   2.8  90.9  0.3   0.3  77.5 77.5   0.1   1.1  1.1   0.3
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   29.1 29.1  29.1 122.8 23.6  23.6 100.6  101  12.0  17.7 17.7  13.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  29.1 29.1  29.1 122.8 23.6  23.6 100.6  101  12.0  17.7 17.7  13.7
LOS by Move:    C    C     C     F    C     C     F    F     B     B    B     B
HCM2kAvgQ:      8    8     8    29    5     5    43   43     3    12   12     6
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:16:37                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1054 Ingalls St. / Palou Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.773
Loss Time (sec):       8                Average Delay (sec/veh):        21.7
Optimal Cycle:        59                Level Of Service:                  C
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30  177    97    68  150    60    80  697    20    56  380    54
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30  177    97    68  150    60    80  697    20    56  380    54
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    31  181    99    69  153    61    82  711    20    57  388    55
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   31  181    99    69  153    61    82  711    20    57  388    55
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   31  181    99    69  153    61    82  711    20    57  388    55
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.89 0.89  0.89  0.70 0.70  0.70  0.86 0.86  0.86  0.80 0.80  0.80
Lanes:       0.10 0.58  0.32  0.24 0.54  0.22  0.10 0.87  0.03  0.11 0.78  0.11
Final Sat.:   166  981   538   326  720   288   164 1427    41   174 1180   168
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.18  0.18  0.21 0.21  0.21  0.50 0.50  0.50  0.33 0.33  0.33
Crit Moves:                         ****             ****
Green/Cycle: 0.28 0.28  0.28  0.28 0.28  0.28  0.64 0.64  0.64  0.64 0.64  0.64
Volume/Cap:  0.67 0.67  0.67  0.77 0.77  0.77  0.77 0.77  0.77  0.51 0.51  0.51
Uniform Del: 32.2 32.2  32.2  33.4 33.4  33.4  12.6 12.6  12.6   9.4  9.4   9.4
IncremntDel:  3.7  3.7   3.7   9.8  9.8   9.8   3.6  3.6   3.6   0.4  0.4   0.4
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   35.9 35.9  35.9  43.1 43.1  43.1  16.2 16.2  16.2   9.8  9.8   9.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  35.9 35.9  35.9  43.1 43.1  43.1  16.2 16.2  16.2   9.8  9.8   9.8
LOS by Move:    D    D     D     D    D     D     B    B     B     A    A     A
HCM2kAvgQ:      9    9     9    10   10    10    18   18    18     8    8     8
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************


  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:17:32                  Page 1-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1055 Keith St. / Palou Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.583
Loss Time (sec):       8                Average Delay (sec/veh):         8.9
Optimal Cycle:        37                Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   50    10    20   60    20    29  767    20    10  490    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30   50    10    20   60    20    29  767    20    10  490    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    31   51    10    20   61    20    30  783    20    10  500    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   31   51    10    20   61    20    30  783    20    10  500    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   31   51    10    20   61    20    30  783    20    10  500    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.78 0.78  0.78  0.88 0.88  0.88  0.92 0.92  0.92  0.93 0.93  0.93
Lanes:       0.33 0.56  0.11  0.20 0.60  0.20  0.04 0.94  0.02  0.02 0.94  0.04
Final Sat.:   494  823   165   336 1007   336    62 1649    43    34 1670    68
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.06  0.06  0.06 0.06  0.06  0.47 0.47  0.47  0.30 0.30  0.30
Crit Moves:       ****                            ****
Green/Cycle: 0.11 0.11  0.11  0.11 0.11  0.11  0.81 0.81  0.81  0.81 0.81  0.81
Volume/Cap:  0.58 0.58  0.58  0.57 0.57  0.57  0.58 0.58  0.58  0.37 0.37  0.37
Uniform Del: 42.6 42.6  42.6  42.5 42.5  42.5   3.3  3.3   3.3   2.5  2.5   2.5
IncremntDel:  5.5  5.5   5.5   4.4  4.4   4.4   0.6  0.6   0.6   0.2  0.2   0.2
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   48.1 48.1  48.1  47.0 47.0  47.0   3.9  3.9   3.9   2.6  2.6   2.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  48.1 48.1  48.1  47.0 47.0  47.0   3.9  3.9   3.9   2.6  2.6   2.6
LOS by Move:    D    D     D     D    D     D     A    A     A     A    A     A
HCM2kAvgQ:      4    4     4     4    4     4     8    8     8     4    4     4
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************


  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:23:35                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1004 3rd St / Evans Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.647
Loss Time (sec):      12                Average Delay (sec/veh):       250.5
Optimal Cycle:       102                Level Of Service:                  F
******************************************************************************
Street Name:              3rd St                          Evans Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl              Ovl              Ovl              Ovl
Min. Green:    12   46    46    12   46    46     6   20    20    12   26    26
Y+R:          5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0
Lanes:        1  0  1  1  0    1  0  1  1  0    1  0  1  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     260 1472   309   599 1541    20    40  459   250   480  621   841
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  260 1472   309   599 1541    20    40  459   250   480  621   841
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   265 1502   315   611 1572    20    41  468   255   490  634   858
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  265 1502   315   611 1572    20    41  468   255   490  634   858
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  265 1502   315   611 1572    20    41  468   255   490  634   858
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.84  0.84  0.86 0.86  0.86  0.90 0.84  0.84  0.90 0.90  0.78
Lanes:       1.00 1.65  0.35  1.00 1.97  0.03  1.00 1.29  0.71  1.00 2.00  1.00
Final Sat.:  1641 2642   555  1641 3233    42  1718 2065  1125  1718 3437  1476
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.57  0.57  0.37 0.49  0.49  0.02 0.23  0.23  0.29 0.18  0.58
Crit Moves:        ****        ****                   ****        ****
Green/Cycle: 0.14 0.45  0.57  0.12 0.43  0.49  0.06 0.20  0.34  0.12 0.25  0.37
Volume/Cap:  1.14 1.26  1.00  3.17 1.14  1.00  0.40 1.16  0.67  2.42 0.72  1.56
Uniform Del: 43.8 28.0  22.0  45.0 29.2  26.2  46.3 41.0  28.9  45.0 34.7  32.0
IncremntDel:101.8  123  21.1 988.4 72.0  23.0  11.6 87.7   3.3 655.1  5.2 261.1
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  145.6  151  43.1  1033  101  49.2  57.8  129  32.2 700.1 39.9 293.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 145.6  151  43.1  1033  101  49.2  57.8  129  32.2 700.1 39.9 293.1
LOS by Move:    F    F     D     F    F     D     E    F     C     F    D     F
HCM2kAvgQ:     12   52    31    70   37    27     1   18    10    51   11    65
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:26:49                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1006 3rd St / Palou Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         6.647
Loss Time (sec):      12                Average Delay (sec/veh):      1307.9
Optimal Cycle:       102                Level Of Service:                  F
******************************************************************************
Street Name:              3rd St                          Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected         Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:    15   69    69     0   49    49    21   21    21    21   21    21
Y+R:          5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0   5.0  5.0   5.0
Lanes:        1  0  1  1  0    0  1  0  1  0    0  0  1! 0  0    0  1  0  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     110 1593   278   135 2052   160    73  335   120   300  421   240
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  110 1593   278   135 2052   160    73  335   120   300  421   240
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   112 1626   284   138 2094   163    74  342   122   306  430   245
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  112 1626   284   138 2094   163    74  342   122   306  430   245
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  112 1626   284   138 2094   163    74  342   122   306  430   245
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.77  0.77  0.39 0.39  0.39  0.07 0.07  0.07  0.33 0.33  0.63
Lanes:       1.00 1.70  0.30  0.11 1.75  0.14  0.14 0.63  0.23  0.42 0.58  1.00
Final Sat.:  1718 2498   436    86 1304   102    18   82    29   257  361  1190
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.65  0.65  1.61 1.61  1.61  4.19 4.19  4.19  1.19 1.19  0.21
Crit Moves:  ****                 ****             ****
Green/Cycle: 0.15 0.63  0.63  0.48 0.48  0.48  0.25 0.25  0.25  0.25 0.25  0.25
Volume/Cap:  0.44 1.04  1.04  3.34 3.34  3.34 16.45 16.45 16.45  4.67 4.67  0.81
Uniform Del: 39.7 19.0  19.0  26.5 26.5  26.5  38.0 38.0  38.0  38.0 38.0  35.6
IncremntDel:  5.6 31.2  31.2  1058 1058  1058  7012 7012  7012  1665 1665  20.2
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   45.3 50.2  50.2  1084 1084  1084  7050 7050  7050  1703 1703  55.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  45.3 50.2  50.2  1084 1084  1084  7050 7050  7050  1703 1703  55.8
LOS by Move:    D    D     D     F    F     F     F    F     F     F    F     E
HCM2kAvgQ:      3   35    35   146  146   146    80   80    80    93   93     8
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

HCM Signalized Intersection Capacity Analysis
26: Third Street & Gilman Avenue

03/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	959	130	60	652	221	81	1312	60	266	1810	230
Future Volume (vph)	167	959	130	60	652	221	81	1312	60	266	1810	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.99		1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected		0.99		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1825		1770	1863	1583	1770	3516		1770	3479	
Flt Permitted		0.38		0.17	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		703		324	1863	1583	1770	3516		1770	3479	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	170	979	133	61	665	226	83	1339	61	271	1847	235
RTOR Reduction (vph)	0	4	0	0	0	34	0	4	0	0	10	0
Lane Group Flow (vph)	0	1278	0	61	665	192	83	1397	0	271	2072	0
Turn Type	Perm	NA		Perm	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases		2			6	3	7	4		3	8	
Permitted Phases	2			6		6						
Actuated Green, G (s)		48.0		48.0	48.0	55.0	4.0	30.0		7.0	33.0	
Effective Green, g (s)		48.0		48.0	48.0	55.0	4.0	30.0		7.0	33.0	
Actuated g/C Ratio		0.48		0.48	0.48	0.55	0.04	0.30		0.07	0.33	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		337		155	894	949	70	1054		123	1148	
v/s Ratio Prot					0.36	0.01	0.05	c0.40		0.15	c0.60	
v/s Ratio Perm		c1.82		0.19		0.11						
v/c Ratio		3.79		0.39	0.74	0.20	1.19	1.32		2.20	1.80	
Uniform Delay, d1		26.0		16.7	21.0	11.4	48.0	35.0		46.5	33.5	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1263.5		1.6	3.4	0.1	166.1	152.9		567.1	365.7	
Delay (s)		1289.5		18.3	24.4	11.5	214.1	187.9		613.6	399.2	
Level of Service		F		B	C	B	F	F		F	F	
Approach Delay (s)		1289.5			21.0			189.4			423.9	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	486.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.94		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	180.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:28:15                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1029 Harney Way / Jamestown Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.944
Loss Time (sec):      12                Average Delay (sec/veh):        36.1
Optimal Cycle:       100                Level Of Service:                  D
******************************************************************************
Street Name:            Harney Way                      Jamestown Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected       Split Phase      Split Phase
Rights:           Include          Include           Ovl             Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  0  1  0    0  0  0  1  0    0  1  0  0  2    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     492  956     0     0  972    60    90    0   712     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  492  956     0     0  972    60    90    0   712     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   502  976     0     0  992    61    92    0   727     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  502  976     0     0  992    61    92    0   727     0    0     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  502  976     0     0  992    61    92    0   727     0    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.90 0.98  1.00  1.00 0.97  0.97  0.93 1.00  0.73  1.00 1.00  1.00
Lanes:       2.00 1.00  0.00  0.00 0.94  0.06  1.00 0.00  2.00  0.00 1.00  0.00
Final Sat.:  3432 1862     0     0 1740   107  1773    0  2786     0 1900     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.52  0.00  0.00 0.57  0.57  0.05 0.00  0.26  0.00 0.00  0.00
Crit Moves:  ****                  ****                    ****
Green/Cycle: 0.15 0.76  0.00  0.00 0.60  0.60  0.12 0.00  0.28  0.00 0.00  0.00
Volume/Cap:  0.94 0.69  0.00  0.00 0.94  0.94  0.43 0.00  0.94  0.00 0.00  0.00
Uniform Del: 41.8  6.1   0.0   0.0 18.3  18.3  40.7  0.0  35.4   0.0  0.0   0.0
IncremntDel: 25.8  1.5   0.0   0.0 15.4  15.4   1.4  0.0  20.1   0.0  0.0   0.0
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  0.00  0.00 1.00  1.00  1.00 0.00  1.00  0.00 0.00  0.00
Delay/Veh:   67.6  7.6   0.0   0.0 33.7  33.7  42.1  0.0  55.5   0.0  0.0   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  67.6  7.6   0.0   0.0 33.7  33.7  42.1  0.0  55.5   0.0  0.0   0.0
LOS by Move:    E    A     A     A    C     C     D    A     E     A    A     A
HCM2kAvgQ:     12   16     0     0   35    35     3    0    17     0    0     0
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:24:12                  Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1030 Crisp Rd / Palou Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.207
Loss Time (sec):      12                Average Delay (sec/veh):        98.6
Optimal Cycle:       100                Level Of Service:                  F
******************************************************************************
Street Name:             Crisp Rd                         Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  1    0  0  1! 0  0    1  0  0  1  0    1  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  160   326    10  170   110   150  466    10   600  732    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20  160   326    10  170   110   150  466    10   600  732    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20  163   333    10  173   112   153  476    10   612  747    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20  163   333    10  173   112   153  476    10   612  747    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20  163   333    10  173   112   153  476    10   612  747    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.86 0.86  0.86  0.93 0.93  0.93  0.90 0.95  0.95  0.96 0.96  0.96
Lanes:       0.06 0.47  1.47  0.03 0.59  0.38  1.00 0.98  0.02  1.28 0.70  0.02
Final Sat.:    95  760  2405    61 1034   669  1718 1765    38  2336 1265    35
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.21 0.21  0.14  0.17 0.17  0.17  0.09 0.27  0.27  0.26 0.59  0.59
Crit Moves:  ****                 ****        ****                    ****
Green/Cycle: 0.18 0.18  0.18  0.14 0.14  0.14  0.07 0.29  0.29  0.28 0.49  0.49
Volume/Cap:  1.21 1.21  0.78  1.21 1.21  1.21  1.21 0.94  0.94  0.94 1.21  1.21
Uniform Del: 41.1 41.1  39.2  43.0 43.0  43.0  46.3 34.9  34.9  35.3 25.5  25.5
IncremntDel:113.4  113   5.8 125.1  125 125.1 146.0 26.2  26.2  12.6  102 101.6
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  154.5  154  45.0 168.1  168 168.1 192.3 61.2  61.2  47.9  127 127.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 154.5  154  45.0 168.1  168 168.1 192.3 61.2  61.2  47.9  127 127.2
LOS by Move:    F    F     D     F    F     F     F    E     E     D    F     F
HCM2kAvgQ:     21   21     9    18   18    18     8   16    16    19   58    58
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

HCM Signalized Intersection Capacity Analysis
1: Arelious Walker & Gilman Avenue

03/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	437	421	10	230	183	332	514	10	220	718	201
Future Volume (vph)	225	437	421	10	230	183	332	514	10	220	718	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.90	1.00	1.00	0.81	1.00	0.99		1.00	0.93	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1430	1770	1863	1285	1770	3506		1770	3181	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1430	1770	1863	1285	1770	3506		1770	3181	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	460	443	11	242	193	349	541	11	232	756	212
RTOR Reduction (vph)	0	0	158	0	0	160	0	2	0	0	22	0
Lane Group Flow (vph)	237	460	285	11	242	33	349	550	0	232	946	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			30			10			10
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6						
Actuated Green, G (s)	19.4	35.6	59.8	4.1	20.3	20.3	24.2	23.6		38.7	38.1	
Effective Green, g (s)	19.4	35.6	59.8	4.1	20.3	20.3	24.2	23.6		38.7	38.1	
Actuated g/C Ratio	0.16	0.30	0.50	0.03	0.17	0.17	0.20	0.20		0.32	0.32	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	286	552	766	60	315	217	356	689		570	1009	
v/s Ratio Prot	0.13	c0.25	0.07	0.01	c0.13		c0.20	0.16		0.13	c0.30	
v/s Ratio Perm			0.12			0.03						
v/c Ratio	0.83	0.83	0.37	0.18	0.77	0.15	0.98	0.80		0.41	0.94	
Uniform Delay, d1	48.7	39.4	18.5	56.3	47.6	42.5	47.7	45.9		31.7	39.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.6	10.4	0.3	1.5	10.7	0.3	43.0	6.4		0.5	15.4	
Delay (s)	66.3	49.8	18.8	57.8	58.3	42.8	90.7	52.4		32.2	55.2	
Level of Service	E	D	B	E	E	D	F	D		C	E	
Approach Delay (s)		41.2			51.6			67.2			50.7	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:21:48                 Page 1-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1046 Innes Ave/Fitch St
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.608
Loss Time (sec):       8                Average Delay (sec/veh):         5.6
Optimal Cycle:        39                Level Of Service:                  A
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected         Permitted        Permitted
Rights:           Include          Include           Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    52    0    60    80 1086     0     0 1403    60
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    52    0    60    80 1086     0     0 1403    60
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    53    0    61    82 1108     0     0 1432    61
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    53    0    61    82 1108     0     0 1432    61
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    53    0    61    82 1108     0     0 1432    61
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.89 1.00  0.89  0.64 0.64  1.00  1.00 0.90  0.90
Lanes:       0.00 0.00  0.00  0.46 0.00  0.54  0.14 1.86  0.00  0.00 1.92  0.08
Final Sat.:     0    0     0   784    0   904   166 2253     0     0 3276   140
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.07 0.00  0.07  0.49 0.49  0.00  0.00 0.44  0.44
Crit Moves:                   ****                    ****
Green/Cycle: 0.00 0.00  0.00  0.11 0.00  0.11  0.81 0.81  0.00  0.00 0.81  0.81
Volume/Cap:  0.00 0.00  0.00  0.61 0.00  0.61  0.61 0.61  0.00  0.00 0.54  0.54
Uniform Del:  0.0  0.0   0.0  42.4  0.0  42.4   3.6  3.6   0.0   0.0  3.3   3.3
IncremntDel:  0.0  0.0   0.0   5.7  0.0   5.7   0.6  0.6   0.0   0.0  0.2   0.2
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
Delay/Veh:    0.0  0.0   0.0  48.0  0.0  48.0   4.2  4.2   0.0   0.0  3.5   3.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  48.0  0.0  48.0   4.2  4.2   0.0   0.0  3.5   3.5
LOS by Move:    A    A     A     D    A     D     A    A     A     A    A     A
HCM2kAvgQ:      0    0     0     4    0     4     8    8     0     0    9     9
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************


  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:21:07                 Page 1-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
*******************************************************************************
Intersection #1047 Innes Ave/Earl St
*******************************************************************************
Average Delay (sec/veh):      3.7       Worst Case Level Of Service: F[ 76.7]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign       Uncontrolled     Uncontrolled
Rights:           Include          Include          Include          Include
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    20    0    70   130  909     0     0 1253    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0    70   130  909     0     0 1253    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    20    0    71   133  928     0     0 1279    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:    0    0     0    20    0    71   133  928     0     0 1279    20
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:xxxxx xxxx xxxxx   6.8  6.5   6.9   4.2 xxxx xxxxx xxxxx xxxx xxxxx
FollowUpTim:xxxxx xxxx xxxxx   3.5  4.0   3.3   2.3 xxxx xxxxx xxxxx xxxx xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol: xxxx xxxx xxxxx  2018 2482   649  1299 xxxx xxxxx  xxxx xxxx xxxxx
Potent Cap.: xxxx xxxx xxxxx    51   29   412   513 xxxx xxxxx  xxxx xxxx xxxxx
Move Cap.:   xxxx xxxx xxxxx    40   21   412   513 xxxx xxxxx  xxxx xxxx xxxxx
Volume/Cap:  xxxx xxxx  xxxx  0.51 0.00  0.17  0.26 xxxx  xxxx  xxxx xxxx  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:   xxxx xxxx xxxxx  xxxx xxxx xxxxx   1.0 xxxx xxxxx  xxxx xxxx xxxxx
Control Del:xxxxx xxxx xxxxx xxxxx xxxx xxxxx  14.4 xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    *    *     *     *    *     *     B    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx  134 xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx  3.8 xxxxx   1.0 xxxx xxxxx xxxxx xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx 76.7 xxxxx  14.4 xxxx xxxxx xxxxx xxxx xxxxx
Shared LOS:     *    *     *     *    F     *     B    *     *     *    *     *
ApproachDel:    xxxxxx             76.7           xxxxxx           xxxxxx
ApproachLOS:         *               F                *                *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:22:34                  Page 1-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1048 Middle Point Rd / Evans Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.959
Loss Time (sec):      10                Average Delay (sec/veh):        30.3
Optimal Cycle:       100                Level Of Service:                  C
*******************************************************************************
Street Name:         Middle Point Rd                      Evans Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    1  0  0  1  0    0  1  1  0  1    0  1  1  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     130  140    10   378  260    80    30  990   240    20 1662   581
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  130  140    10   378  260    80    30  990   240    20 1662   581
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:   133  143    10   386  265    82    31 1010   245    20 1696   593
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  133  143    10   386  265    82    31 1010   245    20 1696   593
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  133  143    10   386  265    82    31 1010   245    20 1696   593
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.46 0.46  0.46  0.69 0.95  0.95  0.66 0.66  0.81  0.84 0.84  0.81
Lanes:       0.46 0.50  0.04  1.00 0.76  0.24  0.06 1.94  1.00  0.02 1.98  1.00
Final Sat.:   405  436    31  1316 1374   423    74 2442  1537    38 3168  1537
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.33 0.33  0.33  0.29 0.19  0.19  0.41 0.41  0.16  0.54 0.54  0.39
Crit Moves:        ****                                          ****
Green/Cycle: 0.34 0.34  0.34  0.34 0.34  0.34  0.56 0.56  0.56  0.56 0.56  0.56
Volume/Cap:  0.96 0.96  0.96  0.86 0.57  0.57  0.74 0.74  0.29  0.96 0.96  0.69
Uniform Del: 32.2 32.2  32.2  30.7 26.9  26.9  16.6 16.6  11.6  21.0 21.0  15.9
IncremntDel: 40.9 40.9  40.9  15.1  1.2   1.2   2.1  2.1   0.2  12.9 12.9   2.4
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   73.1 73.1  73.1  45.7 28.1  28.1  18.8 18.8  11.8  33.8 33.8  18.3
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  73.1 73.1  73.1  45.7 28.1  28.1  18.8 18.8  11.8  33.8 33.8  18.3
LOS by Move:    E    E     E     D    C     C     B    B     B     C    C     B
HCM2kAvgQ:     13   13    13    14    9     9    14   14     4    32   32    14
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:25:12                    Page 1-1
--------------------------------------------------------------------------------
--------------------------------------------------------------------------------
                        Level Of Service Computation Report
              2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1054 Ingalls St. / Palou Ave
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.962
Loss Time (sec):       8                Average Delay (sec/veh):        36.7
Optimal Cycle:       100                Level Of Service:                  D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  221    69    77  228   100    80  498    30   110  712    70
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20  221    69    77  228   100    80  498    30   110  712    70
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20  226    70    79  233   102    82  508    31   112  727    71
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20  226    70    79  233   102    82  508    31   112  727    71
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20  226    70    79  233   102    82  508    31   112  727    71
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.91 0.91  0.91  0.74 0.74  0.74  0.76 0.76  0.76  0.81 0.81  0.81
Lanes:       0.06 0.72  0.22  0.19 0.56  0.25  0.13 0.82  0.05  0.12 0.80  0.08
Final Sat.:   112 1236   386   269  796   349   190 1183    71   189 1225   120
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.18 0.18  0.18  0.29 0.29  0.29  0.43 0.43  0.43  0.59 0.59  0.59
Crit Moves:                        ****                                  ****
Green/Cycle: 0.30 0.30  0.30  0.30 0.30  0.30  0.62 0.62  0.62  0.62 0.62  0.62
Volume/Cap:  0.60 0.60  0.60  0.96 0.96  0.96  0.70 0.70  0.70  0.96 0.96  0.96
Uniform Del: 29.6 29.6  29.6  34.2 34.2  34.2  12.9 12.9  12.9  18.1 18.1  18.1
IncremntDel:  1.9  1.9   1.9  33.7 33.7  33.7   2.5  2.5   2.5  20.6 20.6  20.6
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   31.6 31.6  31.6  67.9 67.9  67.9  15.4 15.4  15.4  38.7 38.7  38.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.6 31.6  31.6  67.9 67.9  67.9  15.4 15.4  15.4  38.7 38.7  38.7
LOS by Move:    C    C     C     E    E     E     B    B     B     D    D     D
HCM2kAvgQ:      9    9     9    18   18    18    13   13    13    25   25    25
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************


  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:25:53                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1055 Keith St. / Palou Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.588
Loss Time (sec):       8                Average Delay (sec/veh):         7.6
Optimal Cycle:        37                Level Of Service:                  A
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted        Permitted        Permitted
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      30   40    10    10   50    20    59  588    30    10  822    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   30   40    10    10   50    20    59  588    30    10  822    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    31   41    10    10   51    20    60  600    31    10  839    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   31   41    10    10   51    20    60  600    31    10  839    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   31   41    10    10   51    20    60  600    31    10  839    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.78 0.78  0.78  0.92 0.92  0.92  0.83 0.83  0.83  0.94 0.94  0.94
Lanes:       0.37 0.51  0.12  0.12 0.63  0.25  0.09 0.87  0.04  0.01 0.97  0.02
Final Sat.:   553  738   184   217 1087   435   137 1368    70    21 1726    42
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.06 0.06  0.06  0.05 0.05  0.05  0.44 0.44  0.44  0.49 0.49  0.49
Crit Moves:        ****                                          ****
Green/Cycle: 0.09 0.09  0.09  0.09 0.09  0.09  0.83 0.83  0.83  0.83 0.83  0.83
Volume/Cap:  0.59 0.59  0.59  0.50 0.50  0.50  0.53 0.53  0.53  0.59 0.59  0.59
Uniform Del: 43.4 43.4  43.4  43.1 43.1  43.1   2.7  2.7   2.7   2.9  2.9   2.9
IncremntDel:  6.5  6.5   6.5   2.4  2.4   2.4   0.4  0.4   0.4   0.6  0.6   0.6
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   49.9 49.9  49.9  45.4 45.4  45.4   3.1  3.1   3.1   3.6  3.6   3.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  49.9 49.9  49.9  45.4 45.4  45.4   3.1  3.1   3.1   3.6  3.6   3.6
LOS by Move:    D    D     D     D    D     D     A    A     A     A    A     A
HCM2kAvgQ:      3    3     3     3    3     3     6    6     6     8    8     8
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************


  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VWed Mar 28, 2018 10:40:14                  Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1030 Crisp Rd / Palou Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.857
Loss Time (sec):      12                Average Delay (sec/veh):        33.1
Optimal Cycle:        93                Level Of Service:                  C
******************************************************************************
Street Name:             Crisp Rd                         Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  1    0  1  0  0  1    1  0  0  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20   90   437    10  180   170    50  796    10   260  340    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20   90   437    10  180   170    50  796    10   260  340    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20   92   446    10  184   173    51  812    10   265  347    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20   92   446    10  184   173    51  812    10   265  347    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20   92   446    10  184   173    51  812    10   265  347    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.82 0.82  0.79  0.97 0.97  0.83  0.90 0.95  0.95  0.90 0.98  0.98
Lanes:       0.06 0.27  1.67  0.05 0.95  1.00  1.00 0.99  0.01  2.00 0.97  0.03
Final Sat.:    92  416  2504    97 1741  1583  1718 1783    22  3432 1802    53
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.22 0.22  0.18  0.11 0.11  0.11  0.03 0.46  0.46  0.08 0.19  0.19
Crit Moves:       ****                                 ****        ****
Green/Cycle: 0.26 0.26  0.26  0.26 0.26  0.26  0.08 0.53  0.53  0.09 0.54  0.54
Volume/Cap:  0.86 0.86  0.69  0.41 0.41  0.43  0.36 0.86  0.86  0.86 0.36  0.36
Uniform Del: 35.3 35.3  33.5  30.8 30.8  30.9  43.3 20.1  20.1  44.8 13.2  13.2
IncremntDel: 10.9 10.9   2.6   0.6  0.6   0.7   1.5  7.7   7.7  20.3  0.2   0.2
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   46.2 46.2  36.1  31.4 31.4  31.6  44.9 27.8  27.8  65.2 13.4  13.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  46.2 46.2  36.1  31.4 31.4  31.6  44.9 27.8  27.8  65.2 13.4  13.4
LOS by Move:    D    D     D     C    C     C     D    C     C     E    B     B
HCM2kAvgQ:     13   13     9     5    5     5     1   22    22     7    6     6
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VWed Mar 28, 2018 10:45:09                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1047 Innes Ave/Earl St
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.745
Loss Time (sec):      10                Average Delay (sec/veh):        17.6
Optimal Cycle:        61                Level Of Service:                  B
******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    20    0    80    40 1107     0     0  888    10
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0    80    40 1107     0     0  888    10
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    20    0    82    41 1130     0     0  906    10
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    20    0    82    41 1130     0     0  906    10
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    20    0    82    41 1130     0     0  906    10
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.87 1.00  0.87  0.90 0.90  1.00  1.00 0.90  0.90
Lanes:       0.00 0.00  0.00  0.20 0.00  0.80  0.07 1.93  0.00  0.00 1.98  0.02
Final Sat.:     0    0     0   329    0  1315   120 3310     0     0 3392    38
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.06 0.00  0.06  0.34 0.34  0.00  0.00 0.27  0.27
Crit Moves:                   ****              ****                   ****
Green/Cycle: 0.00 0.00  0.00  0.08 0.00  0.08  0.46 0.82  0.00  0.00 0.36  0.36
Volume/Cap:  0.00 0.00  0.00  0.74 0.00  0.74  0.74 0.42  0.00  0.00 0.74  0.74
Uniform Del:  0.0  0.0   0.0  44.8  0.0  44.8  22.3  2.6   0.0   0.0 28.1  28.1
IncremntDel:  0.0  0.0   0.0  19.7  0.0  19.7   2.0  0.1   0.0   0.0  2.5   2.5
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
Delay/Veh:    0.0  0.0   0.0  64.5  0.0  64.5  24.3  2.7   0.0   0.0 30.6  30.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  64.5  0.0  64.5  24.3  2.7   0.0   0.0 30.6  30.6
LOS by Move:    A    A     A     E    A     E     C    A     A     A    C     C
HCM2kAvgQ:      0    0     0     5    0     5    17    5     0     0   14    14
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************


  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VWed Mar 28, 2018 10:51:35                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1030 Crisp Rd / Palou Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.852
Loss Time (sec):      12                Average Delay (sec/veh):        36.0
Optimal Cycle:        91                Level Of Service:                  D
******************************************************************************
Street Name:             Crisp Rd                         Palou Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:         Permitted        Permitted       Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  1    0  1  0  0  1    1  0  0  1  0    2  0  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20  160   345    10  170   110   150  496    10   624  764    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20  160   345    10  170   110   150  496    10   624  764    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    20  163   352    10  173   112   153  506    10   637  780    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   20  163   352    10  173   112   153  506    10   637  780    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   20  163   352    10  173   112   153  506    10   637  780    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.84 0.84  0.81  0.96 0.96  0.83  0.90 0.95  0.95  0.90 0.98  0.98
Lanes:       0.06 0.44  1.50  0.06 0.94  1.00  1.00 0.98  0.02  2.00 0.97  0.03
Final Sat.:    89  712  2299   102 1729  1583  1718 1768    36  3432 1807    47
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.23 0.23  0.15  0.10 0.10  0.07  0.09 0.29  0.29  0.19 0.43  0.43
Crit Moves:        ****                        ****                    ****
Green/Cycle: 0.27 0.27  0.27  0.27 0.27  0.27  0.10 0.37  0.37  0.24 0.51  0.51
Volume/Cap:  0.85 0.85  0.57  0.37 0.37  0.26  0.85 0.77  0.77  0.77 0.85  0.85
Uniform Del: 34.6 34.6  31.5  29.7 29.7  28.7  44.0 27.8  27.8  35.4 21.4  21.4
IncremntDel: 10.8 10.8   0.8   0.5  0.5   0.3  30.3  5.6   5.6   4.6  7.6   7.6
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:   45.5 45.5  32.4  30.2 30.2  29.1  74.3 33.3  33.3  40.0 29.0  29.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  45.5 45.5  32.4  30.2 30.2  29.1  74.3 33.3  33.3  40.0 29.0  29.0
LOS by Move:    D    D     C     C    C     C     E    C     C     D    C     C
HCM2kAvgQ:     14   14     7     5    5     3     5   14    14    11   24    24
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

```
MITIG8 - Proposed Project-VWed Mar 28, 2018 10:52:23                 Page 1-1
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
*******************************************************************************
Intersection #1047 Innes Ave/Earl St
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.860
Loss Time (sec):      10                Average Delay (sec/veh):        21.5
Optimal Cycle:        89                Level Of Service:                  C
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  0  0  0    0  0  1! 0  0    0  1  1  0  0    0  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       0    0     0    20    0    70   130  960     0     0 1301    20
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:    0    0     0    20    0    70   130  960     0     0 1301    20
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:     0    0     0    20    0    71   133  980     0     0 1328    20
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:    0    0     0    20    0    71   133  980     0     0 1328    20
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:    0    0     0    20    0    71   133  980     0     0 1328    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  1.00 1.00  1.00  0.87 1.00  0.87  0.90 0.90  1.00  1.00 0.90  0.90
Lanes:       0.00 0.00  0.00  0.22 0.00  0.78  0.24 1.76  0.00  0.00 1.97  0.03
Final Sat.:     0    0     0   366    0  1282   407 3009     0     0 3378    52
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.00 0.00  0.00  0.06 0.00  0.06  0.33 0.33  0.00  0.00 0.39  0.39
Crit Moves:                   ****              ****                    ****
Green/Cycle: 0.00 0.00  0.00  0.06 0.00  0.06  0.38 0.84  0.00  0.00 0.46  0.46
Volume/Cap:  0.00 0.00  0.00  0.86 0.00  0.86  0.86 0.39  0.00  0.00 0.86  0.86
Uniform Del:  0.0  0.0   0.0  46.3  0.0  46.3  28.6  2.0   0.0   0.0 24.3  24.3
IncremntDel:  0.0  0.0   0.0  46.4  0.0  46.4   6.1  0.1   0.0   0.0  5.1   5.1
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   0.00 0.00  0.00  1.00 0.00  1.00  1.00 1.00  0.00  0.00 1.00  1.00
Delay/Veh:    0.0  0.0   0.0  92.7  0.0  92.7  34.7  2.1   0.0   0.0 29.4  29.4
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:   0.0  0.0   0.0  92.7  0.0  92.7  34.7  2.1   0.0   0.0 29.4  29.4
LOS by Move:    A    A     A     F    A     F     C    A     A     A    C     C
HCM2kAvgQ:      0    0     0     5    0     5    19    5     0     0   22    22
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************


  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

HCM Signalized Intersection Capacity Analysis
1: Arelious Walker & Gilman Avenue

03/30/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	306	295	10	161	128	232	360	10	154	503	141
Future Volume (vph)	158	306	295	10	161	128	232	360	10	154	503	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.84	1.00	1.00	0.69	1.00	1.00	0.68	1.00	0.93	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1327	1770	1863	1085	1770	1863	1074	1770	1675	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1327	1770	1863	1085	1770	1863	1074	1770	1675	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	322	311	11	169	135	244	379	11	162	529	148
RTOR Reduction (vph)	0	0	154	0	0	113	0	0	7	0	9	0
Lane Group Flow (vph)	166	322	157	11	169	23	244	379	4	162	668	0
Confl. Peds. (#/hr)	100		100	100		100	100		100	100		100
Confl. Bikes (#/hr)			10			30			10			10
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	14.2	31.4	52.7	2.8	20.0	20.0	21.3	39.3	39.3	28.5	46.5	
Effective Green, g (s)	14.2	31.4	52.7	2.8	20.0	20.0	21.3	39.3	39.3	28.5	46.5	
Actuated g/C Ratio	0.12	0.26	0.44	0.02	0.17	0.17	0.18	0.33	0.33	0.24	0.39	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	209	487	632	41	310	180	314	610	351	420	649	
v/s Ratio Prot	c0.09	c0.17	0.04	0.01	c0.09		c0.14	0.20		0.09	c0.40	
v/s Ratio Perm			0.07			0.02			0.00			
v/c Ratio	0.79	0.66	0.25	0.27	0.55	0.12	0.78	0.62	0.01	0.39	1.03	
Uniform Delay, d1	51.5	39.6	21.2	57.6	45.8	42.6	47.1	34.1	27.2	38.4	36.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	18.5	3.4	0.2	3.5	2.0	0.3	17.1	2.0	0.0	0.6	43.2	
Delay (s)	69.9	42.9	21.4	61.1	47.8	42.9	64.2	36.0	27.2	39.0	80.0	
Level of Service	E	D	C	E	D	D	E	D	C	D	E	
Approach Delay (s)		40.1			46.1			46.7			72.1	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	52.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	92.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

```
MITIG8 - Proposed Project-VFri Mar 30, 2018 08:51:20                 Page 1-1
------------------------------------------------------------------------------
------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
******************************************************************************
Intersection #1032 Ingalls St / Carroll Ave
******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.978
Loss Time (sec):      12                Average Delay (sec/veh):        52.7
Optimal Cycle:       100                Level Of Service:                  D
******************************************************************************
Street Name:            Ingalls St                        Carrol Ave
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase        Permitted        Permitted
Rights:         WideBypass       WideBypass         Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  1  0  1  0    0  1  0  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      17  160    17   646  156    10     9  325    18    42  306   394
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   17  160    17   646  156    10     9  325    18    42  306   394
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    17  163    17   659  159    10     9  332    18    43  312   402
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   17  163    17   659  159    10     9  332    18    43  312   402
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   17  163    17   659  159    10     9  332    18    43  312   402
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.94 0.94  0.94  0.91 0.91  0.91  0.85 0.85  0.85  0.78 0.78  0.78
Lanes:       0.09 0.82  0.09  0.80 0.19  0.01  0.05 1.85  0.10  0.12 0.88  1.00
Final Sat.:   156 1468   156  1382  334    21    83 2988   165   178 1299  1478
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.11  0.11  0.48 0.48  0.48  0.11 0.11  0.11  0.24 0.24  0.27
Crit Moves:        ****        ****                                        ****
Green/Cycle: 0.11 0.11  0.11  0.49 0.49  0.49  0.28 0.28  0.28  0.28 0.28  0.28
Volume/Cap:  0.98 0.98  0.98  0.98 0.98  0.98  0.40 0.40  0.40  0.86 0.86  0.98
Uniform Del: 44.2 44.2  44.2  25.1 25.1  25.1  29.3 29.3  29.3  34.3 34.3  35.8
IncremntDel: 56.6 56.6  56.6  25.4 25.4  25.4   0.3  0.3   0.3   8.9  8.9  26.8
InitQueuDel:  0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0
Delay Adj:   1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Delay/Veh:  100.8  101 100.8  50.5 50.5  50.5  29.6 29.6  29.6  43.2 43.2  62.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 100.8  101 100.8  50.5 50.5  50.5  29.6 29.6  29.6  43.2 43.2  62.6
LOS by Move:    F    F     F     D    D     D     C    C     C     D    D     E
HCM2kAvgQ:     10   10    10    32   32    32     5    5     5    14   14    18
******************************************************************************
Note: Queue reported is the number of cars per lane.
******************************************************************************

  Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to FEHR & PEERS  WALNUT CRK
```

APPENDIX F

Auto and Transit Trip Generation by Year and Transit Phasing Comparison

Candlestick Point

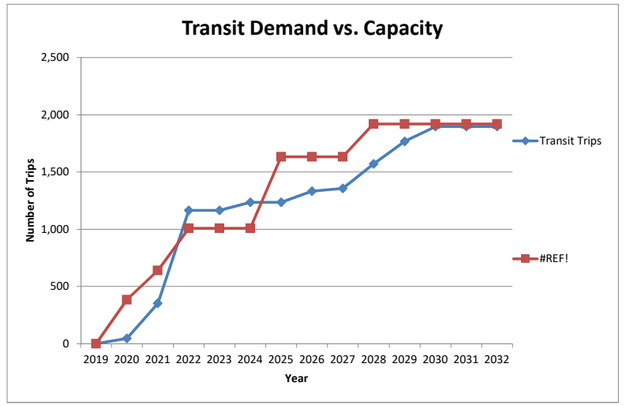
DRAFT CONSTRUCTION SCHEDULE
3/23/2018

Major Phase	Sub Phase	Block	Use	Entitlement Statistics			Horizontal Duration		Vertical Duration		
				SQ FT	UNITS	PARKING	START	FINISH	START[1]	Finish A[2]	Finish B[3]
1 CP	**CP-1**	AG1, AG2, AG4, AG5	Apartment		337	337	**2014**	**2017**	**2015**		**2020**
			Alice Griffith		209						
			OCII		128						
	CP-2	CPC 1, 2, 3	Apartment	0	419	419			2020	2022	2023
			Inclusionary		43						
		FAC, CP-2 HOTEL	Hotel	150,000	0	55					
			Regional Retail	635,000	0	1,715					
			Office	150,000		150			2020	2022	2022
			Community Use	1,000	0	1					
			FAC	75,000	0	667					
				1,011,000	**419**	**3,006**	**2016**	**2019**	**2020**	**2022**	**2023**
		Bayview Hillside OS	Park				2019	2021			
		Jamestown Walker	Street				2019	2021			
		Harney Way 1	Park				2019	2021			
		Wedge Park 1	Park				2019	2021			
		Gilman Ave	Street				2019	2021			
		Last Port	Park				2019	2022			
		The Neck	Park				2019	2022			
							2019	**2022**			
	CP-3	CPN1A, CPN2A, CPN11A	Apartment	0	843	843			2020	2021	2024
			OCII		120						
			Inclusionary		73						
		CPN2A, CPN10A, CPN11A	Neighborhood Retail	62,500	0	63			2019	2021	2023
				62,500	**843**	**906**	**2016**	**2019**	**2019**	**2021**	**2024**
		Wedge Park 2A	Park				**2019**	**2022**			
	CP-4	CPS6A, CPS8A, CPS9A	Apartment	0	489	489			2019	2021	2023
			OCII		110						
			Inclusionary		38						
		CPS6A, CPS8A, CPS9A, CPS11A	Neighborhood Retail	62,500	0	63			2019	2021	2023
			Community Use	5,000	0	3					
				67,500	**489**	**554**	**2016**	**2019**	**2019**	**2021**	**2023**
	CP-5	AG6, AG13	Apartment	0	351	351	2018	2021	2024	2026	2027
			Alice Griffith		47						
			OCII		180						
			Inclusionary		13						
			Community Use	41,000	0	21					
				41,000	**351**	**372**	**2018**	**2021**	**2024**	**2026**	**2027**
		AG Neighborhood P1	Park				**2022**	**2023**			
2 CP	**CP-6**	8B, 9B, 10A, 10B, 11B	Apartment	**0**	**522**	**522**	**2020**	**2023**	**2022**	**2024**	**2028**
			Inclusionary		29						
			Workforce		237						
		Harney Way 2	Park				**2021**	**2023**			
	CP-7	AG17, AG19, AG20	Apartment	**0**	**408**	**408**	**2021**	**2024**	**2026**	**2028**	**2030**
			Inclusionary		41						
		Ingerson Ave	Street				2023	2024			
		Jamestown Ave	Street				2023	2024			
		AG Neighborhood 2	Park				2023	2024			
		Ing/Thom/Carl/Grifth	Street				2024	2025			
							2021	**2025**			
	CP-8	CPS6B, CPS 8B	Apartment	**0**	**567**	**567**	**2021**	**2024**	**2022**		**2028**
			OCII		165						
			Inclusionary		41						
		Mini Wedge Park 1	Park				**2024**	**2026**			
	CP-9	CPS12A, CPS12B, CPS71A	Apartment		**122**	**122**	**2022**	**2025**	**2024**	**2026**	**2030**
			Inclusionary		12						
		The Heart of Park	Park				2024	2026			
		The Point	Park				2024	2026			
							2024	**2026**			
	CP-10	CPS4A, CPS5	Apartment	0	323	323	2023	2026	2027	2029	2034
			Inclusionary		33						
			Community Use	3,000	0	2					
				3,000	**323**	**325**	**2023**	**2026**	**2027**	**2029**	**2034**
		Mini Wedge 2	Park				**2026**	**2027**			
3 CP	**CP-11**	CPN1B, CPN2B	Apartment	**0**	**240**	**240**	**2024**	**2027**	**2026**		**2029**
			OCII		130						
			Workforce		110						
		Earl Blvd Park 1 & 2	Street				**2016**	**2027**			
	CP-12	CPN10B, CPN11B	Apartment	**0**	**188**	**188**	**2024**	**2027**	**2025**	**2027**	**2027**
			Inclusionary		19						
		Wedge Park 2B	Park				**2028**	**2029**			
	CP-13	CPS1, CPS2A, CPS2B, CPS3	Apartment	**0**	**589**	**589**	**2025**	**2028**	**2026**	**2028**	**2029**
			OCII		90						
			Inclusionary		51						
		The Last Rubble	Park				2027	2029			
		Wind Meadow	Park				2027	2029			
							2027	**2029**			
	CP-14	CPN 3A, 3B	Apartment	**0**	**234**	**234**	**2026**	**2029**	**2027**	**2029**	**2029**
			Inclusionary		24						
		CP Neighborhood Park	Park				**2028**	**2029**			
	CP-15	CPN8A, CPN8B, CPN9A, CPN9B	Apartment		**629**	**629**	**2026**	**2029**	**2027**	**2029**	**2035**
			Inclusionary		64						
		Wedge Park 3	Park				2030	2031			
		Bayview Gardens	Park				2030	2031			
							2030	**2031**			
	CP-16	CPN4B, CPN 5A	Apartment	**0**	**477**	**477**	**2027**	**2030**	2028	2030	2030
			OCII		110						
			Inclusionary		15						
			Workforce		220						
		Earl Blvd Park 3	Park				2030	2031			
		Grasslands S1	Park				2032	2033			
							2030	**2033**			
	CP-17	CNP8A, CPN6B, CPN7B	Podium/Townhome	**0**	**480**	**480**	**2027**	**2030**	**2028**	**2030**	**2033**
			Inclusionary		37						
			Workforce		120						
		Grasslands S2	Park				**2032**	**2033**			
	UNALLOCATED		Performance Venue	**0**	0	0					
			TOTAL	**1,185,000**	**7,218**	**9,954**					
		USE SUBTOTAL	Artist Studio	0	0						
			Community Use	50,000	0						
			FAC/Performance Venue	75,000	0						
			Hotel	150,000	0						
			Marina	0	0						
			Neighbourhood Retail/Maker Space	125,000	0						
			Office	150,000	0						
			Regional Retail	635,000	0						
			School/Institution	0	0						
			Residential	0	7,218						
				1,185,000	**7,218**						

[1] Earliest Start Date
[2] Earliest Closing Start Date
[3] Last Closing Start Date
[4] Entitled 150,000 SF, however Business Plan projects 130,000 SF for Hotel
[5] 46,000 SF of PAC allocated to CP-3. Performance Venue entitlement (29,000 SF) is currently unallocated.
[6] Entitled 131,000 SF, however Business Plan projects 129,188 SF for Neighborhood Retail with balance to be relocated elsewhere within CP
[7] Entitled for 2,630 parking spaces

ASSUMPTIONS
Horizontal duration includes abatement, demolition, grading and horizontal infrastructure
Vertical duration includes foundation, piles, structure, rough in, interior and exterior finishes, through full occupancy
Shoreline construction will be done concurrently with adjacent park improvements

Candlestick Point Transit Trips by Year



Average Trip Generation Rate Calculation					
Land Uses	Size	Transit Trips	Auto Trips	Transit Rate	Vehicle Rate
Residential (DU)	6962	946	2,094	0.14	0.30
Arena (office)	25	30	61	1.20	2.45
FAC (seats)	0	0	0	0.00	0.00
Retail (ksf)	760	742	2,617	0.98	3.44
Hotel (rooms)	220	35	75	0.16	0.34
Office (ksf)	150	69	140	0.46	0.94
Community Facilities (ksf)	50	38	77	0.75	1.53
Parks (acres)	97	2	4	0.02	0.04

Land Use (By Year)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total	Check	
Residential (DU)		337	1,332	419		522		473	188	1,564	1,426	957			7218	256	includes AC
PAC Office (ksf)				25											25	0	
FAC (seats)				0											0	0	
Retail (ksf)			125	635											760	0	
Hotel (rooms)				220											220	0	
Community Facilities (ksf)			5	1				41			3				50	0	
Office (ksf)				150											150	0	
Parks (acres)								97							97	0	

Source: Draft Construction Schedule provided by FivePoint. "Vertical Duration, Finish A" was used as the year of implementation. (See "CP Phasing" tab)

Land Use (Cumulative)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	337	1669	2088	2088	2610	2610	3083	3271	4835	6261	7218	7218	7218
PAC Office (ksf)	0	0	0	25	25	25	25	25	25	25	25	25	25	25
PAC (seats)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail (ksf)	0	0	125	760	760	760	760	760	760	760	760	760	760	760
Hotel (rooms)	0	0	0	220	220	220	220	220	220	220	220	220	220	220
Community Facilities (ksf)	0	0	5	6	6	6	6	47	47	47	50	50	50	50
Office (ksf)	0	0	0	150	150	150	150	150	150	150	150	150	150	150
Parks (acres)	0	0	0	0	0	0	0	97	97	97	97	97	97	97

Transit Trips (Cumulative)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	46	227	284	284	355	355	419	444	657	851	981	981	981
PAC Office (ksf)	0	0	0	30	30	30	30	30	30	30	30	30	30	30
PAC (seats)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail (ksf)	0	0	122	742	742	742	742	742	742	742	742	742	742	742
Hotel (rooms)	0	0	0	35	35	35	35	35	35	35	35	35	35	35
Community Facilities (ksf)	0	0	4	5	5	5	5	35	35	35	38	38	38	38
Office (ksf)	0	0	0	69	69	69	69	69	69	69	69	69	69	69
Parks (acres)	0	0	0	0	0	0	0	2	2	2	2	2	2	2
Total	**0**	**46**	**353**	**1,165**	**1,165**	**1,236**	**1,236**	**1,332**	**1,357**	**1,570**	**1,767**	**1,897**	**1,897**	**1,897**

Vehicle Trips (Cumulative)

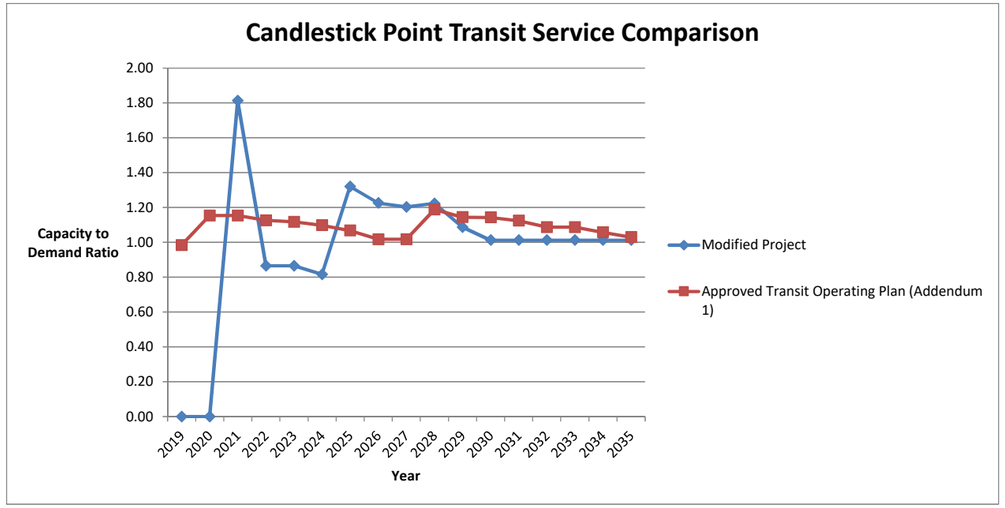
Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	101	502	628	628	785	785	927	984	1,454	1,883	2,171	2,171	2,171
PAC Office (ksf)	0	0	0	61	61	61	61	61	61	61	61	61	61	61
PAC (seats)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Retail (ksf)	0	0	430	2,617	2,617	2,617	2,617	2,617	2,617	2,617	2,617	2,617	2,617	2,617
Hotel (rooms)	0	0	0	75	75	75	75	75	75	75	75	75	75	75
Community Facilities (ksf)	0	0	8	9	9	9	9	72	72	72	77	77	77	77
Office (ksf)	0	0	0	140	140	140	140	140	140	140	140	140	140	140
Parks (acres)	0	0	0	0	0	0	0	4	4	4	4	4	4	4
Total	**0**	**101**	**940**	**3,530**	**3,530**	**3,687**	**3,687**	**3,896**	**3,953**	**4,423**	**4,857**	**5,145**	**5,145**	**5,145**
	0%	2%	18%	69%	69%	72%	72%	76%	77%	86%	94%	100%	100%	100%

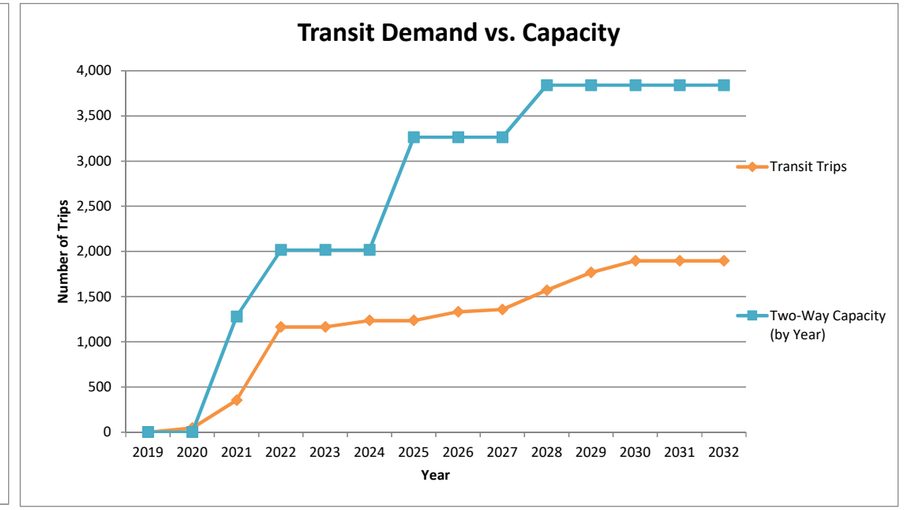
Transit Capacity (One-way)

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	0	384	640	1008	1008	1008	1632	1632	1632	1920	1920	1920	1920	1920

** Although no changes are proposed for the 29 Sunset in 2020, the development slated to occur in 2020 is in Alice Griffith and is adequately served by the existing service on the 29 Sunset, and therefore, caapcity is provided to that develoment.*

Candlestick Point
Transit Phasing Plan (2018)





Proposed Transit Phasing (2018)

		Frequency (min)	One-Way Capacity Serving Project Site (pax/hr)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Candlestick Point	**Begin Candlestick Point Express (CPX)**	15	256			256														
		10	384				384	384	384	384	384	384	384	384	384	384	384	384	384	384
	Extend 29-Sunset	10	384			384	384	384	384											
		5	768							768	768	768	768	768	768	768	768	768	768	768
	New Shuttle (30 pax @ 7.5 min freq)	7.5	240				240	240	240											
	Begin/Extend 28L/BRT	8	480							480	480	480								
		5	768										768	768	768	768	768	768	768	768
			Available One-Way Capacity (by Year)	0	0	640	1008	1008	1008	1632	1632	1632	1920	1920	1920	1920	1920	1920	1920	1920
			Estimated Transit Demand (by Year)	0	46	353	1,165	1,165	1,236	1,236	1,332	1,357	1,570	1,767	1,897	1,897	1,897	1,897	1,897	1,897
			Capacity-to-Demand Ratio	#DIV/0!	0.00	1.81	0.87	0.87	0.82	1.32	1.23	1.20	1.22	1.09	1.01	1.01	1.01	1.01	1.01	1.01
			Two-Way Capacity (by Year)	0	0	1280	2016	2016	2016	3264	3264	3264	3840	3840	3840	3840	3840	3840	3840	3840

Old Transit Phasing (December 2013)

		Frequency (min)	One-Way Capacity Serving Project Site (pax/hr)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Candlestick Point	**Begin Candlestick Point Express (CPX)**	15	256		256	256	256	256	256	256	256	256	256	256						
		10	384												384	384	384	384	384	384
	Extend 29-Sunset	10	384																	
		5	768	768	768	768	768	768	768	768	768	768	768	768	768	768	768	768	768	768
	Extend 56-Rutland	20	135	135	135	135	135													
	Extra Bus		45	45	45	45	45													
	New Shuttle (30 pax @ 7.5 min freq)	7.5	240	240	240	240	240													
	Begin/Extend 28L/BRT	8	480					480	480	480	480	480								
		5	768										768	768	768	768	768	768	768	768
			Available One-Way Capacity (by Year)	1188	1444	1444	1444	1504	1504	1504	1504	1504	1792	1792	1920	1920	1920	1920	1920	1920
			Estimated Transit Demand (by Year)	1,207	1,252	1,252	1,282	1,346	1,370	1,409	1,478	1,478	1,508	1,566	1,680	1,708	1,766	1,766	1,816	1,865
			Capacity-to-Demand Ratio	0.98	1.15	1.15	1.13	1.12	1.10	1.07	1.02	1.02	1.19	1.14	1.14	1.12	1.09	1.09	1.06	1.03

Hunters Point

DRAFT CONSTRUCTION SCHEDULE

3/23/2018

Major Phase	Sub Phase	Block	Use	Entitlement Statistics			Horizontal Duration			Vertical Duration					
				SQ FT	UNITS	PARKING	Start		Finish	Start[1]		Finish A[2]		Finish B[3]
1 HP	**HP-1**	37, 38	Apartment	0	450	450				2020	-	2022	;	2023
			Inclusionary		45									
		1, 2, 3, 36, 40, 44	R&D	1,967,655	0	2,558				2021	-	2023	;	2026
		4, 5, 36, 37, 38, 40, 43, 44	Artist Studio	255,000	0	128				2017	-	2019	;	2019
			Neighborhood Retail/Maker Space	183,000	0	549				2020		2021		2025
		3	School	65,000	0	9				2022	-	2024	;	2024
			Community Facility: Fire Station	0	0	0				2024	-	2026		2026
		1	Parking Garage							2020	-	2022	;	2024
		35, 43	Recycled Water Treatment Plan	0	0	0				2019	-	2024	;	2024
				2,470,655	**450**	**3,693**	**2019**	**-**	**2024**	**2017**	**-**	**2019**	**;**	**2026**
		Shipyard Hillside OS	Park				2022	-	2023					
		Green Room	Park				2022	-	2023					
							2022	**-**	**2023**					
	HP-2	6, 7, 9, 8, 10, 11, 12	Apartment	0	799	799				2020	-	2022	;	2024
			OCII		130									
			Inclusionary		67									
		Northside Park	Neighborhood Retail/Maker Space	500	0	2				2024	-	2025	;	2025
				500	**799**	**801**	**2019**	**-**	**2023**	**2020**	**-**	**2022**	**;**	**2025**
		Northside Park	Park				2023	-	2024					
		Innes Ave	Street				2023	-	2024					
		Horne Blvd 1	Street				2023	-	2024					
							2023	**-**	**2024**					
2 HP	**HP-3**	13, 15, 16, 17, 18, 19, 20	Apartment	0	754	754				2023	-	2025	;	2026
			OCII		90									
			Inclusionary		58									
			Workforce		100									
			Parking Garage	0	0	0				2023	-	2025	;	2026
				0	**754**	**754**	**2021**	**-**	**2024**	**2023**	**-**	**2025**	**;**	**2026**
		Waterfront Prom N	Park				2024	-	2025					
		YS Bridge	Bridge				2020	-	2025					
							2024	**-**	**2025**					
	HP-4	31	Apartment	0	150	150				2024	-	2025	;	2025
			Inclusionary		15									
		21, 32, 33	R&D	1,101,745	0	1,432				2026	-	2028	;	2030
		30	Hotel	120,000	0	44				2027	-	2029	;	2029
		21, 31, Water Room	Neighborhood Retail/Maker Space	44,500	0	134				2023	-	2025	;	2029
			Regional Retail	100,000		300				2023	-	2025		2028
		32	Parking Garage							2027	-	2029	;	2029
		Marina South	Slips	0	0	90								
				1,366,245	**150**	**2,150**	**2021**	**-**	**2025**	**2023**	**-**	**2025**	**;**	**2030**
		Palou Ave					2028	-	2030					
		Park: Community SFC					2029	-	2032					
		Wr Room/DD4/Bridge	Park				2026	-	2027					
		Waterfront Prom SP	Park				2026	-	2027					
		Waterfront R&E Park	Park				2026	-	2027					
		Regun Crane Pier	Park				2026	-	2027					
							2025	**-**	**2032**					
3 HP	**HP-5**	23	Apartment	0	317	317				2026	-	2029	;	2029
			Inclusionary		32									
		25, 26, 27, 28, 29	R&D	1,195,600	0	1,554				2028	-	2029	;	2031
		22, 24, 27, 28, 29, Heritage Park	Neighborhood Retail/Maker Space	51,500	0	155				2024	-	2026	;	2030
		22, 27, 28, 29	Regional Retail	0	0	0								
		22, 24	Parking Garage							2024	-	2026	;	2026
		Marina North	Slips	0	0	90								
				1,247,100	**317**	**2,116**	**2023**	**-**	**2027**	**2024**	**-**	**2026**	**;**	**2031**
		Heritage Park	Park				2030	-	2031					
		Waterfront Prom NP	Park				2031	-	2034					
							2030	**-**	**2034**					
	HP-6	45, 46, 47, 48, 49, 50, 51, 52, 53	Apartment		984	984				2026	-	2028	;	2030
			OCII		135									
			Inclusionary		76									
			Workforce		105									
		45, 46	Neighborhood Retail/Maker Space	21,500	0	65				2025	-	2029	;	2029
		54	Community Use	50,000	0	25				2025	-	2027		2027
		55	Institution	345,000	0	20				2025	-	2026		2026
				416,500	**984**	**1,094**	**2023**	**-**	**2028**	**2025**	**-**	**2026**	**;**	**2030**
		Maintenance Yard	Park				2031	-	2033					
		Grassland EP	Park				2031	-	2032					
		Multiuse OS	Park				2030	-	2031					
							2030	**-**	**2033**					
			TOTAL	**5,501,000**	**3,454**	**10,607**								
		USE SUBTOTAL	Artist Studio	255,000	0	128								
			Community Use	50,000		25								
			FAC/Performance Venue	0	0	0								
			Hotel	120,000	0	44								
			Marina	0	0	180								
			Neighborhood Retail/Maker Space	301,000	0	903								
			R&D	4,265,000	0	5,545								
			Regional Retail	100,000	0	300								
			School/Institution	410,000	0	29								
			Residential	0	3,454	3,454								
			OCII		355									
			Inclusionary		293									
			Workforce		205									
				5,501,000	**3,454**	**10,607**								

[1] Earliest Start Date

[2] Earliest Closing Start Date

[3] Last Closing Start Date

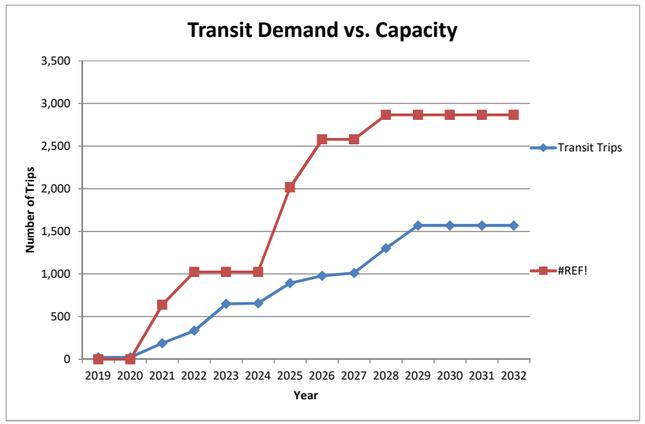
ASSUMPTIONS

Horizontal duration includes abatement, demolition, grading and horizontal infrastructure

Vertical duration includes foundation, piles, structure, rough in, interior and exterior finishes, through full occupancy

Shoreline construction will be done concurrently with adjacent park improvements

Hunters Point Transit Trips by Year



Average Trip Generation Rate Calculation					
Land Uses	Size	Transit Trips	Auto Trips	Transit Rate	Auto Rate
Residential (DU)	3454	406	900	0.12	0.26
Community Facilities (ksf)	50	32	66	0.65	1.33
Hotel (rooms)	175	21	53	0.12	0.31
Retail/Maker Space (ksf)	401	363	1207	0.90	3.01
R&D (ksf)	4265	674	1388	0.16	0.33
School (students)	1035	47	117	0.05	0.11
Parks (acres)	238	4	7	0.02	0.03
Artist Studio (ksf)	15	23	48	1.56	3.18

Land Use (By Year)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total	Check
Residential (DU)				1249			904			984	317				3454	0
Community Facilities (ksf)									50						50	0
Hotel (rooms)											175				175	0
Retail (ksf)			183				145	52			22				401	0
R&D (ksf)					1968					1102	1196				4265	0
School						164		871							1035	0
Parks (acres)					238										238	0
Artist Studio (ksf)	15														15	0

Source: Draft Construction Schedule provided by FivePoint. "Vertical Duration, Finish A" was used as the year of implementation. (See "HP Phasing" tab)

Land Use (Cumulative)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	0	0	1249	1249	1249	2153	2153	2153	3137	3454	3454	3454	3454
Community Facilities (ksf)	0	0	0	0	0	0	0	0	50	50	50	50	50	50
Hotel (rooms)	0	0	0	0	0	0	0	0	0	0	175	175	175	175
Retail (ksf)	0	0	183	183	183	183	328	379.5	379.5	379.5	401	401	401	401
R&D (ksf)	0	0	0	0	1968	1968	1968	1968	1968	3070	4266	4266	4266	4266
School	0	0	0	0	0	164.0854	164.0854	1035	1035	1035	1035	1035	1035	1035
Parks (acres)	0	0	0	0	238	238	238	238	238	238	238	238	238	238
Artist Studio (ksf)	15	15	15	15	15	15	15	15	15	15	15	15	15	15

Transit Trips (Cumulative)

Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	0	0	147	147	147	253	253	253	369	406	406	406	406
Community Facilities (ksf)	0	0	0	0	0	0	0	0	32	32	32	32	32	32
Hotel (rooms)	0	0	0	0	0	0	0	0	0	0	21	21	21	21
Retail (ksf)	0	0	166	166	166	166	297	343	343	343	363	363	363	363
R&D (ksf)	0	0	0	0	311	311	311	311	311	485	674	674	674	674
School	0	0	0	0	0	7	7	47	47	47	47	47	47	47
Parks (acres)	0	0	0	0	4	4	4	4	4	4	4	4	4	4
Artist Studio (ksf)	23	23	23	23	23	23	23	23	23	23	23	23	23	23
Total	**23**	**23**	**189**	**336**	**651**	**658**	**895**	**981**	**1,013**	**1,303**	**1,570**	**1,570**	**1,570**	**1,570**

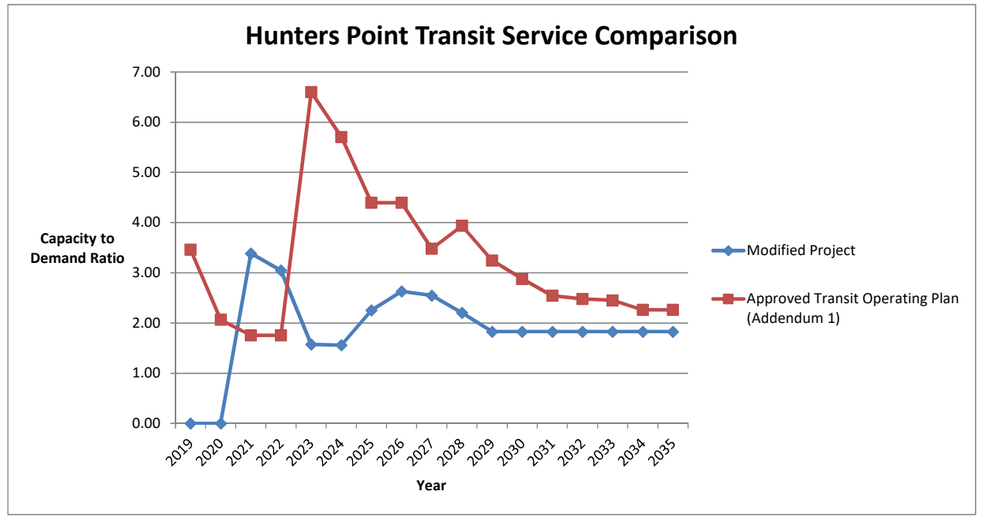
Auto Trips (Cumulative)

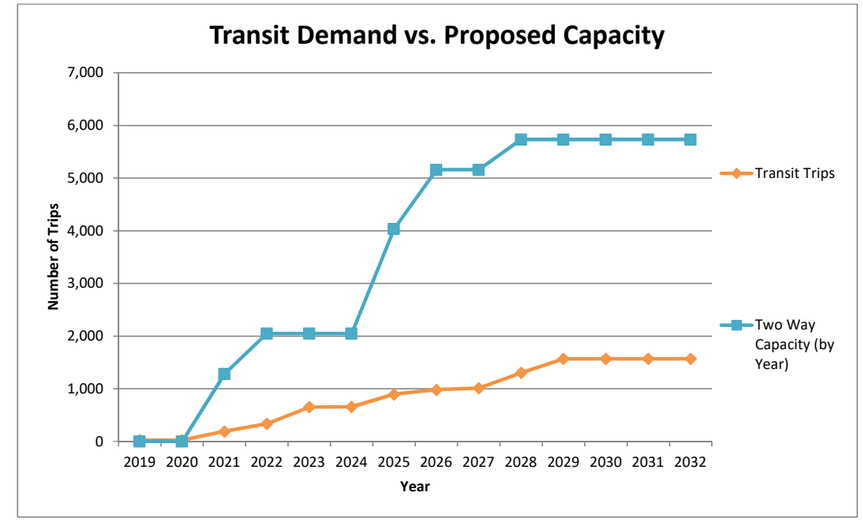
Year / Land Use	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Residential (DU)	0	0	0	325	325	325	561	561	561	817	900	900	900	900
Community Facilities (ksf)	0	0	0	0	0	0	0	0	66	66	66	66	66	66
Hotel (rooms)	0	0	0	0	0	0	0	0	0	0	53	53	53	53
Retail (ksf)	0	0	551	551	551	551	987	1,142	1,142	1,142	1,207	1,207	1,207	1,207
R&D (ksf)	0	0	0	0	641	641	641	641	641	999	1,389	1,389	1,389	1,389
School	0	0	0	0	0	19	19	117	117	117	117	117	117	117
Parks (acres)	0	0	0	0	7	7	7	7	7	7	7	7	7	7
Artist Studio (ksf)	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Total	**48**	**48**	**599**	**924**	**1,572**	**1,591**	**2,263**	**2,516**	**2,582**	**3,196**	**3,787**	**3,787**	**3,787**	**3,787**

Transit Capacity (One-way)

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	0	0	640	1024	1024	1024	2016	2579	2579	2867	2867	2867	2867	2867

Hunters Point
Transit Phasing Plan (2018)





Proposed Transit Phasing (2018)

		Frequency (min)	One-Way Capacity Serving Project Site (pax/hr)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Hunters Point	**Begin Hunters Point Express (HPX)**	20	192			192	192	192	192											
		10	384							384										
		6	740								740	740	740	740	740	740	740	740	740	740
	Extend 23-Monterey	20	192			192	192	192	192											
	Extend 23-Monterey	15	256							256										
	Extend 24-Divisadero/23-Montery	10	384								384	384	384	384	384	384	384	384	384	384
		7.5	512																	
	Extend 48-Quintara (Replace 19)	15	256			256	256	256	256											
		10	384							384	384	384	384	384	384	384	384	384	384	384
		10	384				384	384	384											
	Extend 44-O'Shaughnessy	7.5	512							512										
		6.5	591								591	591	591	591	591	591	591	591	591	591
Candlestick Point	**Begin/Extend 28L/BRT**	8	480							480	480	480								
		5	768										768	768	768	768	768	768	768	768
			Available One-Way Capacity (by Year)	0	0	640	1024	1024	1024	2016	2579	2579	2867	2867	2867	2867	2867	2867	2867	2867
			Estimated Transit Demand (by Year)	23	23	189	336	651	658	895	981	1,013	1,303	1,570	1,570	1,570	1,570	1,570	1,570	1,570
			Capacity-to-Demand Ratio	0.00	0.00	3.39	3.05	1.57	1.56	2.25	2.63	2.55	2.20	1.83	1.83	1.83	1.83	1.83	1.83	1.83
			Two Way Capacity (by Year)	0	0	1280	2048	2048	2048	4032	5158	5158	5734	5734	5734	5734	5734	5734	5734	5734

Old Transit Phasing (December 2013)

		Frequency (min)	One-Way Capacity Serving Project Site (pax/hr)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Hunters Point	**Begin Hunters Point Express (HPX)**	20	192					192												
		12	320						320	320	320	320	320	320	320	320	320	320	320	320
	Extend 23-Monterey	15	256					256	256	256	256	256	256							
	Extend 24-Divisadero	10	384											384						
		7.5	512												512	512	512	512	512	512
	Extend 48-Quintara	15	256	256	256	256	256	256												
		10	384						384	384	384	384	384	384	384	384	384	384	384	384
	Extend 44-O'Shaughnessy	7.5	512					512												
		6.5	591						591	591	591	591	591	591	591	591	591	591	591	591
Candlestick Point	**Begin/Extend 28L/BRT**	8	480					480	480	480	480	480								
		5	768										768	768	768	768	768	768	768	768
			Available One-Way Capacity (by Year)	256	256	256	256	1696	2031	2031	2031	2031	2319	2447	2575	2575	2575	2575	2575	2575
			Estimated Transit Demand (by Year)	74	124	146	146	257	356	462	462	584	589	754	895	1013	1039	1051	1139	1139
			Capacity-to-Demand Ratio	3.46	2.06	1.75	1.75	6.60	5.71	4.40	4.40	3.48	3.94	3.25	2.88	2.54	2.48	2.45	2.26	2.26

Appendix E

Public Trust View Corridors Visual Simulations

ESA

State Lands Visual Analysis Map

View 1: Existing

View 1: Proposed

View 2: Existing

View 2: Proposed. [The bridges and seating plan are illustrative only (for environmental review purposes). No final designs have been prepared.]

View 3: Existing

View 3: Proposed

Appendix F1

Air Quality Construction Methods Memorandum

ESA

ENVIRONMENT
& HEALTH

MEMO

Date	**March 6, 2018**
To	**Jose Campos,** **Office of Community Investment and Infrastructure** **Joy Navarette** **Planning Department, City and County of San Francisco**
From	**Michael Keinath** **Sarah Manzano**
Subject	**Air Quality Analysis and Health Risk Assessment for the Refinements to the Candlestick Point-Hunter Point Shipyard Phase II Development Plan**

Ramboll
201 California Street
Suite 1200
San Francisco, CA 94111
USA

T +1 415 796 1950
F +1 415 398 5812
www.ramboll.com

INTRODUCTION

In 2009, Ramboll, known at the time as ENVIRON International Corporation, performed four ambient air quality (AAQ) human health risk assessments (HHRA) as part of the Environmental Impact Report (EIR) for the proposed Candlestick Point – Hunters Point Shipyard Phase II Development Plan (herein referred to as "Project"; also known as San Francisco Planning Department Case Number 2007.0946E). The EIR for the Project was certified in July 2010 and since that time the Project proponent, FivePoint, formerly Lennar Urban, and the City and County of San Francisco, have been working to implement the Project plan. However, during that time, the Project has been modified to include revisions to proposed land uses, adjusted locations for two high-rise towers, redesign of parks and open spaces, refinements to the street network, additional water taxi infrastructure and two pedestrian bridges, and revisions to the utility network. As such, the phasing of the Project and the uses for particular parcels has changed from what was originally evaluated in 2009. A map showing this revised phasing is presented as Attachment A. To reflect this new phasing, TRC prepared a Construction Workers and Equipment Phasing Plan for the Project dated 02/26/2018 (included as Attachment B).

Ramboll has conducted a construction HHRA of the revised phasing plan (designated herein as the "2018 Phasing Plan") to determine if the modified project would result in any new significant impacts not identified in the EIR or substantially increase the severity of an impact. Because the major changes to construction occur on the Hunters Point Shipyard section of the Project, the construction HHRA is focused only on this portion of the Project. The 2018 Project Modification Variant reduces the land use of CP and thus would reduce construction impacts. Therefore, construction at CP was not evaluated quantitatively.

Section III.H.4 of the EIR identified the construction thresholds of significance for toxic air contaminants as:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 1 x 10^{-5} (10 in one million)
- Ground level concentrations of non-carcinogenic air contaminants/pollutants resulting in a HI greater than 1 for the MEI

As discussed in Impact AQ-2 of the EIR, all impacts were determined to be less than Significant with Mitigation, namely Mitigation Measures AQ 2.1 and 2.2, listed below:

- MM AQ 2.1 Implement Emission Control Device Installation on Construction. To reduce DPM [diesel particulate matter] emissions during Project construction, the Project Applicant shall require construction equipment used for the Project to utilize emission control technology such that 50% of the fleet will meet US EPA Tier 2 standards outfitted with California ARB [Air Resources Board] Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) during the first two years of construction activities, increasing to 75% of the fleet in the third year and 100% of the fleet starting in the fourth year and for the duration of the Project.
- MM AQ 2.2 Implement Accelerated Emission Control Device Installation on Construction Equipment Used for Alice Griffith Parcels. In addition to mitigation measure MM AQ 2.1, in order to minimize the potential impacts to residents living in Alice Griffith from the construction activities in that area, the Project Applicant will require that all construction equipment used in the Alice Griffith parcels (CP01 though CP06) would utilize equipment which meets the US EPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) throughout the entire duration of construction activities on those parcels.

Below we describe the methods used in this screening level HHRA to determine whether the proposed modifications to the Project Phasing Schedule would result in any new significant impact on air quality beyond those identified in the FEIR or substantially increase the severity of a significant impact.

APPROACH

Other than modifications detailed below, for this updated HHRA, Ramboll followed the methods outlined in Section III.H Air Quality of the EIR. As discussed there, the methods used to analyze the human health effects from emissions of DPM associated with Project construction equipment were developed consistent with Bay Area Air Quality Management District (BAAQMD), California Environmental Protection Agency (Cal/EPA), and United States Environmental Protection Agency (USEPA) risk assessment guidance. The analysis incorporates conservative (i.e., health protective) methodologies for the following: (1) the estimation of emissions, (2) the calculation of airborne concentrations of DPM during construction activities at receptor locations, and (3) the estimation of excess lifetime cancer risks and non-cancer health effects or hazard indices (HIs).

Revised Construction Phasing

As discussed earlier, TRC prepared an updated construction phasing schedule (dated 02/26/2018) which included phase duration, construction equipment list and usage, number of construction workers, and number of construction truck trips for:

- Hunter's Point Shipyard
- Candlestick Point
- Development of Shoreline of Hunter's Point Shipyard and Candlestick Point
- Field management for the construction of Hunter's Point Shipyard and Candlestick Point

Emissions Calculation

Emissions from off-road construction equipment associated with Project development as identified by TRC were calculated using the same equipment horsepower, load factor, and emission factors as used in the EIR. Emission factors were developed based on ARB's 2007 In-Use Off-road Equipment Inventory Model, consistent with the EIR.[1] Construction began in 2013, rather than in 2010 as assumed in the original analysis. Therefore, implementation of MM AQ-2.1 has been adjusted to reflect the current construction schedule assuming that the Project would require construction equipment used for the Project to utilize emission control technology such that 50% of the fleet will meet US EPA Tier 2 standards outfitted with California ARB Level 3 VDECS (Verified Diesel Emission Control Strategies) for particulate matter control (or equivalent) during the first two years of construction activities (2014 and 2015), increasing to 75% of the fleet in the third year (2016), and 100% of the fleet starting in the fourth year (2017) and for the remaining duration of the Project. Since the 2018 Phasing Plan occurs after this phase-in period, it is assumed that 100% of the construction equipment meets US EPA Tier 2 standards outfitted with California ARB Level 3 VDECS. Greenhouse gas (GHG) emissions from off-road trucks were excluded from the total construction GHG emissions in the 2010 EIR. Therefore, GHG emissions from off-road trucks were not included in calculating the total construction GHG emissions in this analysis.

Emissions from on-road mobile sources, particularly the running, idling, and starting emissions from worker commute trips and haul truck trips making deliveries and removing materials, were calculated using the same emission factors as were used in the 2010 EIR. The emission factors were developed based on ARB's EMFAC2007 model.[2] The worker vehicles were assumed to be 50% light duty vehicles (LDA) and 50% light duty trucks (25% LDT1 and 25% LDT2). The haul trucks were assumed to be 100% medium heavy-duty trucks (MHDT). These are the same assumptions used in the 2010 EIR. The distance that the workers and haul trucks would travel along the hauling roads was assumed to be the same as the 2010 EIR. Since the distance that the workers and hauling trips originating from the Field Management phase was unknown, Ramboll assumed an average travel distance based on the length of the other haul roads. Idling and starting emissions from on-road activity were allotted to the construction parcels. Running emissions from on-road activity were attributed to the hauling roads.

Air Dispersion Modeling

The air dispersion models (using the USEPA AERMOD, version 16216) were run for the revised emissions as a method of comparing the impact of the revised phasing plan to the previously modeled receptor locations (as before, ground level receptors were assumed). The modeled receptor grid is presented in Attachment C and is the same grid used for the 2010 EIR. However, some locations that were analyzed as worker exposure in the EIR were analyzed as residential exposure as these locations will be developed into residential areas. Conversely, some locations analyzed as residents in the EIR were instead analyzed as workers because there are no plans to develop these locations into residential areas. Residential exposure assumptions are more conservative because residents are assumed to be exposed to all the construction emissions. A 20 meter by 20 meter grid of volume sources was developed for the revised construction emissions, with emissions within each parcel evenly distributed throughout the volume sources. The models used the same meteorological and terrain data as were used in the 2010 EIR. Mobile source starting and idling emissions associated with each parcel development were modeled along with the construction off-road equipment emissions through the volume sources. On-road mobile running emissions which occur off-site were not

[1] http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

[2] http://www.arb.ca.gov/msei/categories.htm#onroad_motor_vehicles

modeled considering the running emissions are likely to be lower due to cleaner engines as a result of the construction beginning in 2017, 7 years later than that assumed in the 2010 EIR.

Health Risk Assessment

The HHRA was conducted in the same way described in the EIR, including the assumption that all PM_{10} from diesel fueled construction equipment was assumed to be DPM. For this screening level update, the cancer risk was calculated using the total construction DPM emissions. The adult was assumed to be exposed to all 15 years of construction activity. To be conservative, the child was also assumed to be exposed to all construction as a child. Since the release of the FEIR, the Office of Environmental Health Hazards Assessment (OEHHA) released new guidance on how to estimate health impacts from toxic air contaminants. However, in order to compare to the EIR, this new guidance was not taken into account. The risk assessment methods used for the EIR were also used for this addendum.

RESULTS

The modified Project with the new phasing schedule, beginning four years later than that assumed in the EIR and with the application of mitigation measures MM AQ-2.1 and 2.2, approved in the EIR, results in an excess cancer risk at the maximally exposed sensitive receptor location of less than 3 in a million and would not exceed the threshold of >10.0 in 1 million. The non-cancer impacts would be less than the Chronic Hazard Index (HI) threshold of >1 at the maximally exposed individual location. With mitigation, the results for the modified Project are below the significance thresholds for determining whether construction activities would expose sensitive receptors to substantial levels of DPM.

Attachment D compares the results of the 2018 Project Modification Variant compared to the results for Hunters Point Shipyard in the 2010 EIR. As shown in the table, impacts from the 2018 Project Modification Variant are lower than that of the 2010 EIR. Because the construction impacts from Hunter's Point Shipyard have decreased and construction at Candlestick Point is similar to or lower than what was analyzed previously, the combined impact of Hunter's Point Shipyard and Candlestick Point construction is expected to be lower than reported in the 2010 EIR.

Implementation of the modified construction schedule would not result in any new significant effects related to emissions of DPM beyond those identified in the EIR or a substantial increase in the severity of a significant impact because:

1. The construction will begin eight years later than what was assumed in the EIR. All equipment is required to be 100% Tier 2 plus DPF.
2. The shift of a substantial portion of emissions from the perimeter of the site near sensitive locations to the center near the large hill. For example, the location of the residential MEI moved from a point along Innes Avenue near the perimeter of the site to a point along the hillside closer to the center of the site.

Therefore, no new mitigation measures would be required.

ATTACHMENT A:
PROJECT OVERVIEW

RAMBOLL ENVIRON

DRAFTED BY:

DATE: 11/29/2017

Project Overview
Candlestick Point-Hunters Point Shipyard
Phase II Development Plan
San Francisco, California

ATTACHMENT

A

PROJECT: 1690001656

RAMBOLL ENVIRON

DRAFTED BY:

DATE: 11/29/2017

Project Overview
Candlestick Point-Hunters Point Shipyard
Phase II Development Plan
San Francisco, California

ATTACHMENT

A

PROJECT: 1690001656

ATTACHMENT B:
CONSTRUCTION WORKERS AND EQUIPMENT PHASING PLAN

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2017	0	Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	5	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
2018	1	Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	6	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
2019	2	Site Preparation	Abatement	HP-01	2	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-02	3	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1) Water Truck			26	20	16	8	13
				HP-01 WWTP	1	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
			Demolition	HP-01	2	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-02	2	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
			Grading & Infrastructure	HP-01 (Surcharge)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HPS-01A (Geothermal)	10	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
2020	3	Site Preparation	Abatement	HP-01	4	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
			Demolition	HP-01	10	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-02	3	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
			Grading & Infrastructure	HP-01	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(4) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	44	35	32	16	22
				HP-02	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(2) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	34	26	13	7	17
				HP-02 (Surcharge)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-01 WWTP	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(1) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	16	8	18
				HP-03(Surcharge)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-04 (Geothermal)	8	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
				HP-01 (Geothermal)	4	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	12	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	10	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-03	2	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2021	4	Site Preparation	Abatement	HP-04	3	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-03 (Roadway-YSB Connection)	2	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
				HP-01 Parks (Shipyard Hillside OS & Green Room)	1	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
			Demolition	HP-03	4	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-04	6	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-03 (Roadway-YSB Connection)	3	(2) Man Lifts, (2)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (2)Water Trucks, (1) Crane			25	20	24	16	13
			Grading & Infrastructure	HP-01	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	8	6	18
				HP-03	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (2) Off Road Dump Trucks, (1) Dozer	(1) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	40	32	24	12	20
				HP-04(Surchage)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-04 (Geothermal)	4	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
				HP-02	8	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	10	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-02	5	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
			Abatement	HP-03	4	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-04	2	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-01 Parks (Shipyard Hillside OS & Green Room)	3	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
			Demolition	HP-03	4	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-04	2	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-01 Parks (Shipyard Hillside OS & Green Room)	3	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Dozer, (1)Loaders, (1)Water Trucks	(1) Crane		20	16	8	4	10

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2022	5	Site Preparation	Grading & Infrastructure	HP-01	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	8	6	18
				HP-03	8	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	38	26	8	4	19
				HP-04	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(2) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	40	30	32	16	20
				HP-04 (Geothermal)	4	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
				HP-03 (Roadway-YSB Connection)	8	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(1) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	16	8	18
				HP-01 Parks (Shipyard Hillside OS & Green Room)	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(2) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	44	35	16	8	22
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-01	8	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
				HP-02	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	20	16	16	8	10
				HP-01 Parks (Shipyard Hillside OS & Green Room)	2	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	10	8	8	4	5
			Interior and Exterior Finishes	HP-01	12	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-02	8	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-01 Parks (Shipyard Hillside OS & Green Room)	2	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
			Abatement	HP-05	5	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-06	3	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	1	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	8	4	7
			Demolition	HP-03	2	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-05	5	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-06	4	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	3	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Dozer, (1)Loaders, (1)Water Trucks	(1) Crane		20	16	8	4	10

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2023	6	Site Preparation	Grading & Infrastructure	HP-01	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	8	6	18
				HP-03	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	38	26	8	4	19
				HP-04	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	36	28	8	6	18
				HP-05	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(3) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	42	33	32	16	21
				HP-05(Surcharge)	1	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-06(Surcharge)	2	(1)Bottom-drive wick inserter, (1)Dozer, (1)Loader			16	12	10	5	8
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	7	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(1) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	35	28	16	8	18
				Deep Soil Mixing	6	(2) Drill Rigs, (1) Bobcat, (1) Loader, (2) Support Trucks, (1) Water Truck, (1) Dump Truck			16	12	8	4	8
				HP-06 (Geothermal)	8	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-03	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	40	32	16	8	20
				HP-04	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
			Interior and Exterior Finishes	HP-01	12	(1)Excavator, (1)Loader,(1)Water Truck, (1)Crane, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-03	3	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			20	16	8	4	10
				HP-04	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
		Roadway	Improvements	HP-03 (YS Bridge)	8	(1)Excavators, (2)Loaders, (2) Off Road Dump Truck, (1) Dozer, (4) barges, (4) Cranes, (1) Drill Rig, (1)Water Truck	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck, (1) Pile Driver	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (2) Pump Trucks	78	62	24	16	39
				HP-02 (Innes Ave)	10	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers	30	24	12	8	15
		Site Preparation	Abatement	HP-05	4	(4) Man Lifts, (2)Loader, (2) Rough Terrain Fork lift, (1)Water Truck			26	20	16	8	13
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	1	(1) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		10	8	8	4	5
			Demolition	HP-05	5	(4) Man Lifts, (4)Excavators,(2) Off Road Dump Truck, (2)Loaders, (2)Dozer, (4)Water Trucks, (2) Crane			50	40	48	32	25
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	3	(1) Man Lifts, (1)Excavator, (1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks		(1) Crane	18	14	8	4	9
			Grading & Infrastructure	HP-05	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	36	28	16	8	18
				HP-06	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer	(4) Scraper	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	44	35	32	16	22

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2024	7			HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	6		(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
				HP-06 (Geothermal)	8	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-03	12	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-04	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-05	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	2	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	10	8	8	4	5
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	1	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck		18	14	16	8	9
			Interior and Exterior Finishes	HP-03	10	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			20	16	8	4	10
				HP-04	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-05	8	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-02 Parks (Northside Park + Horne Blvd Streetscape 1)	6	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	10		(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader	15	12	8	4	8
		Roadway	Improvements	HP-03 (YS Bridge)	8	(1)Excavators, (2)Loaders, (2) Off Road Dump Truck, (1) Dozer, (4) barges, (4) Cranes, (1) Drill Rig, (1)Water Truck	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck, (1) Pile Driver	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (2) Pump Trucks	78	62	24	16	39
				HP-02 (Innes Ave.)	6	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers	30	24	12	8	15
		Site Preparation	Demolition	HP-05	3	(2) Man Lifts, (2)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (2)Water Trucks, (1) Crane			25	20	24	16	13
			Grading & Infrastructure	HP-05	4	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	36	28	16	8	18
				HP-06	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	38	30	8	6	19
				HP-06 (Geothermal)	8	(2) Drill Rigs, (1)Bobcat		(1)Excavator	10	8	8	4	5
				HP-03 (Roadway-YSB Connection)	6	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	5		(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
				HP-03	9	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2025	8	Building Construction	Foundation Piles/Structure/ Rough-In	HP-04	4	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-05	8	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-06	12	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-03	6	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-04	8	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-05	10	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-06	8	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-03 Parks (Waterfront Promenade North, Horn Blvd Streetscape 2)	12		(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift	18	12	8	4	9
		Roadway	Improvements	HP-03 (YS Bridge)	8	(1)Excavators, (2)Loaders, (2) Off Road Dump Truck, (1) Dozer, (4) barges, (4) Cranes, (1) Drill Rig, (1)Water Truck	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck, (1) Pile Driver	(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (2) Pump Trucks	78	62	24	16	39
2026	9	Site Preparation	Abatement	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	4	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	16	8	7
			Demo	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	8	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks		(1) Crane	20	16	24	16	10
			Grading	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	9		(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-05	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
				HP-06	11	(1)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Scraper, (2) Off Road Dump Trucks, (1) Dozer		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1) Barge	20	16	16	8	10
			Interior and Exterior Finishes	HP-03	10	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-05	10	(1)Loader, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift			10	8	8	4	5
				HP-06	10	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	6	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,		25	20	8	4	13
		Site Preparation	Demo	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	2	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks		(1) Crane	20	16	24	16	10

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2027	10	Site Preparation	Grading	HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	6		(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
		Building Construction	Foundation Piles/Structure/ Rough-In	HP-04 Bridges	5	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift		(1) Cement Truck, (1) Pump Truck, (1) Pile Driver	20	16	16	8	10
			Interior and Exterior Finishes	HP-06	6	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-04 Bridges	5	(1)Excavators, (1)Loaders,(1)Water Trucks, (1)Cranes, (1) Man Lift	(1) Cement Truck, (1) Pump Truck	(1) Pile Driver	10	8	8	4	5
				HP-04 Parks (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck, (1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,		25	20	8	4	13
2028	11	Roadway	Improvements	HP-04 Palou Ave.	6	(2)Excavators, (1)Loaders, (1)Bobcat, (1)Compactors, (1)Water Truck, (1) Off Road Dump Truck		(1) Grader, (1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers	30	24	12	8	15
2029	12	Site Preparation	Abatement	HP-04 Parks (Community SFC)	4	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	16	8	7
			Demo	HP-04 Parks (Community SFC)	8	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10
2030	13	Site Preparation	Abatement	HP-06 Parks (Grassland EP, Multiuse OS)	7		(1) Water Truck		13	10	16	8	7
			Demo	HP-05 Parks (Heritage Park, WF Prom NP)	7	(1) Man Lifts, (1)Excavator, (1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks			15	12	8	4	8
				HP-06 Parks (Grassland EP, Multiuse OS)	6	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10
			Grading	HP-04 Parks (Community SFC)	7	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1) Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
				HP-05 Parks (Heritage Park, WF Prom NP)	10	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	24	16	13
			Interior and Exterior Finishes	HP-04 Parks (Community SFC)	9	(1) Excavator, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		18	14	16	8	9
2031	14	Site Preparation	Abatement	HP-06 Parks (Maint. Yard)	4	(2) Man Lifts, (1)Loader, (1) Rough Terrain Fork lift	(1) Water Truck		13	10	16	8	7
			Demo	HP-05 Parks (Heritage Park, WF Prom NP)	2	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1)Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	24	16	13
				HP-06 Parks (Grassland EP, Multiuse OS)	4	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10
				HP-06 Parks (Maint. Yard)	4	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10
			Grading	HP-05 Parks (Heritage Park, WF Prom NP)	8	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1)Water Truck	Soil stabilizer, (1)	25	20	24	16	13
				HP-06 Parks (Maint. Yard)	2	(1)Excavators, (1)Loaders, (1)Bobcat, (1) Off Road Dump Truck	(1) Water Truck	(1) Asphalt Layer, (1) Soil stabilizer, (1) Roller, (1) Dozers, (1)Compactors,	25	20	8	4	13
		Building Construction	Interior and Exterior Finishes	HP-06 Parks (Maint. Yard)	3	(1) Excavator, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		18	14	16	8	9
		Site Preparation	Demo	HP-06 Parks (Grassland EP, Multiuse OS)	5	(2) Man Lifts, (1)Excavators,(1) Off Road Dump Truck, (1)Loaders, (1)Dozer, (1)Water Trucks	(1) Crane		20	16	24	16	10

DRAFT: CPHPSII Project: Construction Workers and Equipment for Hunters Point Shipyard Construction Phase (Revision Date: 2/26/2018 based on Construction Schedule received 02/21/18)
Prepared by TRC for EIR Analysis

Major Phase Indicator

Subphase Color Coding

1 HPS
2 HPS
3 HPS

Year	Project Year	Horizontal (Site Prep) or Vertical Duration (Building Const.)	Construction Phase Type	Project Sub Phase	Duration (Months)	Construction Equipment			Daily Construction Workers		Daily Construction Truck Trips		
						Full Time	1/2 Time	1/4 Time	Max Number of Workers	Avg. Number of Workers	Max Number of Truck Trips	Avg. Number of Truck Trips	Number of On Site Equipment
2032	15		Grading	HP-06 Parks (Grassland EP, Multiuse OS)	9	(2)Excavators, (4)Loaders, (2)Bobcat, (4) Off Road Dump Truck, (2)Water Truck		(1) Barge	40	32	140	120	20
		Building Construction	Interior and Exterior Finishes	HP-05 Parks (Heritage Park, WF Prom NP)	8	(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		15	12	8	4	8
				HP-06 Parks (Grassland EP, Multiuse OS)	3	(1) Excavator, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		18	14	16	8	9
2033	16	Building Construction	Interior and Exterior Finishes	HP-05 Parks (Heritage Park, WF Prom NP)	8	(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		15	12	8	4	8
				HP-06 Parks (Grassland EP, Multiuse OS)	8	(1) Excavator, (1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		18	14	16	8	9
2034	17	Building Construction	Interior and Exterior Finishes	HP-05 Parks (Heritage Park, WF Prom NP)	8	(1) Man Lift, (1) Sweeper, (1) Rough Terrain Fork Lift, (1)Bobcat	(1) Water Truck, (1)Loader		15	12	8	4	8

CPHPSII Project - Construction Workers and Equipment for Field Managment by Year (Revision Date: 2/26/2018)
Prepared by TRC for EIR analysis

Construction Phase	Yearly Average Duration (months)	Daily Construction Workers		Daily Construction Truck Trips [1]			Construction Equipment [3]	Construction Equipment [3]	Construction Equipment [3]
		Max. Number of workers	Avg. Number of workers	Max. Number of truck trips	Avg. Number of truck trips	Number of on site equipment	Full Time	1 / 2 Time	1 / 4 Time
Field Management 2014	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2015	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2016	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2017	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2018	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2019	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2020	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2021	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2022	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2023	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2024	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2025	12	25	20	8	4	10		(6)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2026	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2027	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2028	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2029	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2030	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2031	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2032	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2033	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	
Field Management 2034	12	15	12	8	4	10		(2)Onsite Field Trucks, Backup Equipment (see note 2): (1)Loaders, (1)Haul Trucks, (1)Water Trucks, (1) Man Lift	

Note:

1. Number of truck trips making deliveries, and number of truck trips required for materials removal, see assumptions for trip details.
2. Back up equipment is kept onsite to minimize downtime if a piece of equipment breaks down and needs replacement. Typically this equipment will not be used on a day to day basis.
3. It should be assumed that all Man Lifts referenced in the "Construction Equipment" columns will be propane or electric powered.
4. Hunters Point and Candlestick Point will each utilize a new dedicated crushing plant located near the Bay. The crushing plants will be comprised of 1 loader, 1 hammer, 1 screener, 1 crusher and an adjacent batch plant. Each crushing plant will operate ½ time.

(2) = Number of pieces of specified equipment.

Assumptions

Max. number of round trips to 8 total trips
Each truck will be able to carry 20 tons of material
Personal vehicle trips to and from the construction site were not included in the truck trip calculations and are estimated to be 1 trip for every 2 workers as incentives will be offered for use of mass transit and car/van pooling.
Import fill will be brought onto the site through two primary modes; Trucks (60%) and Barge (40%).
Quantities do not account for concurrent remediation work occurring at Hunters Point Shipyard.

CPHPSII Project - Construction Workers and Equipment for Shoreline Improvements by Construction Phase (Revision Date: 2/26/18)
Prepared by TRC for EIR analysis

	Yearly Average Duration (months)	Daily Construction Workers Max. Number of workers	Daily Construction Workers Avg. Number of workers	Daily Construction Truck Trips [1] Max. Number of truck trips	Daily Construction Truck Trips [1] Avg. Number of truck trips	Yearly Barge Trips Number of Round Trips	Number of on site equipment	Construction Equipment [2,3] Full Time	Construction Equipment [2] 1/2 Time	Construction Equipment [2] 1/4 Time
Hunters Point Shipyard										
2019 Shoreline										
HP-02 (Outfalls A, B, and H)	6	21	18	0	0	6	5	(1) Floating Platforms, (1) Bobcat	(1) Cranes, (1)Barge, (1) Bobcat	
2020 Shoreline										
HP-01 (Outfalls D and E)	6	21	18	0	0	6	5	(1) Floating Platforms, (1) Bobcat	(1) Cranes, (1)Barge, (1) Bobcat	
2021 Shoreline										
2022 Shoreline										
2023 Shoreline										
2024 Shoreline										
Demolition and Improvements (Waterfront Prom N)	8	21	18	0	0	6	2	(1) Floating Platforms, (1) Bobcat		
2025 Shoreline										
Demolition and Improvements (Waterfront Prom N)	6	21	18	0	0	6	5	(1) Floating Platforms, (1) Bobcat	(1) Cranes, (1)Barge, (1) Bobcat	
2026 Shoreline										
Demolition and Improvements (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	7	21	18	0	0	15	9	(2) Floating Platforms, (2) Cranes, (2) Excavator, (2) Bobcat	(1)Barge	
2027 Shoreline										
Demolition and Improvements (WF Prom SP, WF R&E, Regun Crane Pier, WR/DD4)	6	21	18	0	0	15	9	(2) Floating Platforms, (2) Cranes, (2) Excavator, (2) Bobcat	(1)Barge	
2030 Shoreline										
Demolition and Improvements (Heritage Park, Waterfront Prom NP)	6	21	18	0	0	20	7	(2) Floating Platforms, (2) Cranes, (1) Excavator, (2) Bobcat	(1)Barge	
2031 Shoreline										
Demolition and Improvements (Heritage Park, Waterfront Prom NP)	6	21	18	0	0	20	7	(2) Floating Platforms, (2) Cranes, (1) Excavator, (2) Bobcat	(1)Barge	
2032 Shoreline										
Demolition and Improvements (Grassslands Ecology Park, Multiuse Open Space)	7	21	18	0	0	10	7	(2) Floating Platforms, (2) Cranes, (1) Excavator, (2) Bobcat	(1)Barge	
Candlestick Point										
2021 Shoreline										
Improvements (Last Port + The Neck)	4	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge
2025 Shoreline										
Improvements (The Point + The Heart of the Park)	4	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge
2027 Shoreline										
Improvements (The Last Rubble and Wind Meadow)	4	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge
2030 Shoreline										
Improvements (Bayview Gardens)	2	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge
2032 Shoreline										
Improvements (Grasslands S1, Grasslands S2)	4	7	5	0	0	2	3	(1) Excavator		(1) Crane, (1) Barge

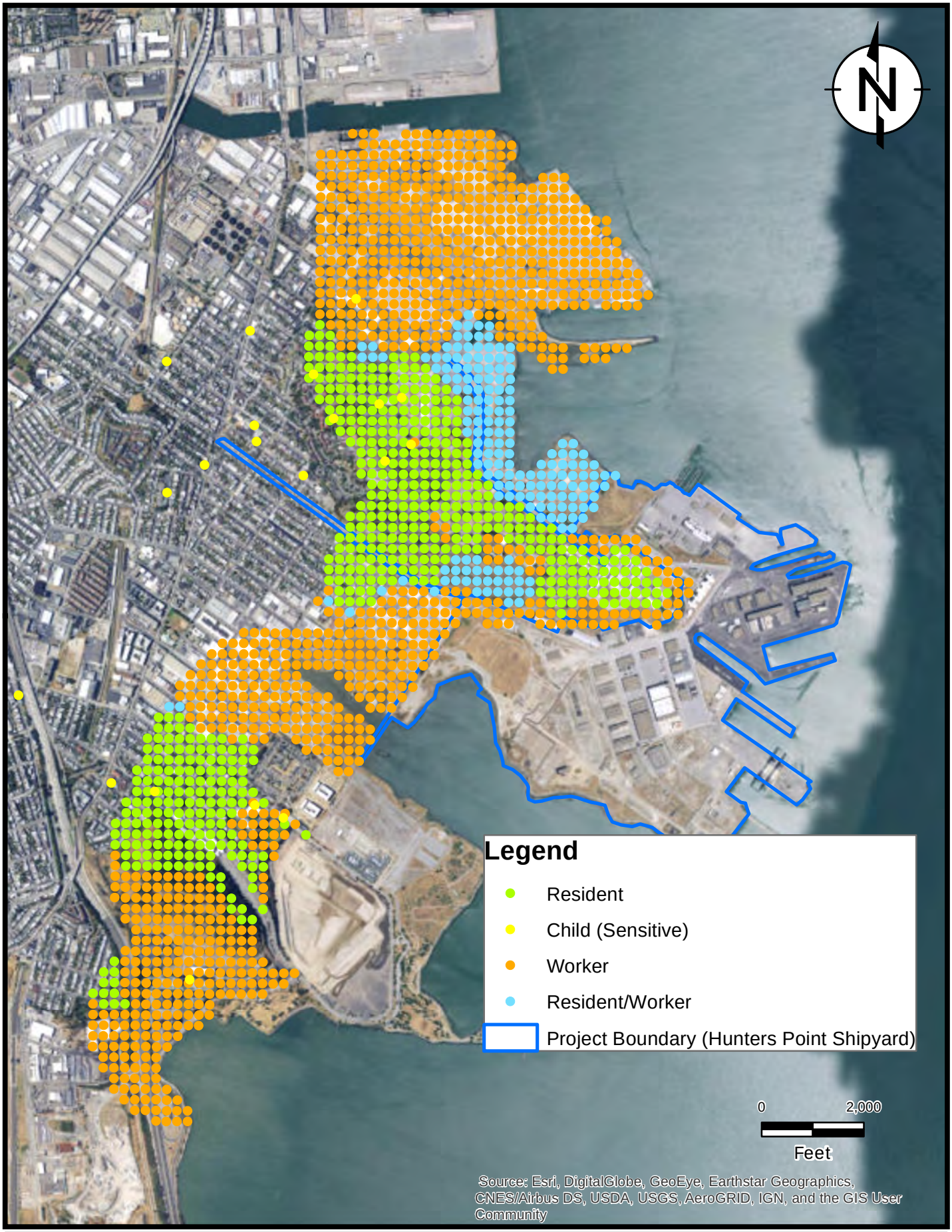
Note:
1. Number of truck trips making deliveries, and number of truck trips required for materials removal, see assumptions for trip details.
2. The construction equipment in this table identifies what will be required in addition to the equipment already onsite performing infrastructure work.
3. It should be assumed that all Floating Platforms referenced in the "Construction Equipment" columns will be propane or electric powered.

(2) = Number of pieces of specified equipment.

Assumptions

Each truck will be able to carry 15 cy of material
Each barge will be able to carry 2500 tons of material
Hunters Point Shipyard import fill will be brought on site by barge (100%)
Candlestick Point import fill will be brought on site by barge (50%), and sourced on site (50%).
Quantities do not account for work performed by Navy.

ATTACHMENT C:
RECEPTOR LOCATIONS



RAMBOLL ENVIRON

DRAFTED BY:

DATE: 12/7/2017

Receptor Locations
Candlestick Point-Hunters Point Shipyard
Phase II Development Plan
San Francisco, California

ATTACHMENT

C

PROJECT 1690001656

ATTACHMENT D:
SUMMARY OF CANCER RISKS AT THE MAXIMALLY EXPOSED INDIVIDUALS

Attachment D
Summary of Cancer Risks[1] at the Maximally Exposed Individuals (MEI)[2]
Candlestick Point - Hunters Point Shipyard Phase II Development Plan
San Francisco, California

Project Analysis	School Child	Offsite Worker	Resident			
			Adult		Child	
			High End	Average	High End	Average
2010 EIR	2.34E-07	3.82E-06	1.64E-06	1.47E-06	3.15E-06	2.45E-06
2017 Addendum	2.12E-07	3.48E-06	8.76E-07	7.86E-07	1.69E-06	1.31E-06

Notes:

1. Cancer risks were estimated using the following equation:

Riskinh =Ci x CF x IFinh x CPFi x ASF

Where:

Riskinh = Cancer Risk for the Inhalation Pathway (unitless)
Ci = Annual Average Air Concentration for Chemical "i" (µg/m3)
CF = Conversion Factor (mg/µg)
IFinh = Intake Factor for Inhalation (m3/kg-day)
CPFi = Cancer Potency Factor for Chemical "i" (mg/kg-day)-1
ASF = Age Sensitivity Factor (unitless)

2. Latitude/Longitude coordinates of the MEI (same location for 2010 EIR and 2017 Addendum unless otherwise specified):

School Child: 37.717974, -122.387394
Offsite Worker: 37.721275, -122.382757
Resident (2010 EIR): 37.731126, -122.370760
Resident (2017 Addendum): 37.727501, -122.366819

Appendix F2

Air Quality Operational Emissions Data

ESA

RAMBOLL

ENVIRONMENT
& HEALTH

MEMO

To **Jose Campos,**
Office of Community Investment and Infrastructure

Joy Navarette
Planning Department, City and County of San Francisco

From **Michael Keinath**
Sarah Manzano

Subject **OPERATIONAL AIR QUALITY AND GREENHOUSE GAS EMISSIONS AND $PM_{2.5}$ CONCENTRATION EVALUATIONS FOR CANDLESTICK POINT- HUNTERS POINT SHIPYARD PHASE II, SAN FRANCISCO, CALIFORNIA**

Date March 30, 2018

Ramboll
201 California Street
Suite 1200
San Francisco, CA 94111
USA

T +1 415 796 1950
F +1 415 398 5812
www.ramboll.com

Ramboll US Corporation (Ramboll) conducted an evaluation of criteria air pollutant (CAP) and greenhouse gas (GHG) emissions and $PM_{2.5}$ concentration associated with the operation of Candlestick Point – Hunters Point Shipyard Phase II, San Francisco, California (the "Project") in support of Addendum #5 to the Environmental Impact Report (EIR 2007.0946E). This memorandum provides background and a description of the emissions evaluation methodology and results for the operation of the Project.

PROJECT BACKGROUND

The Candlestick Point (CP) – Hunters Points Shipyard II (HPS2) project is located along the southeastern waterfront in San Francisco, and covers an area of approximately 702 acres. The HPS2 site includes residences, hotels, offices, schools, retail/shared amenities, parks and open spaces, a marina and structured parking land uses. The CP site includes a performance venue, residences, hotel, retail/shared amenities and structured parking lots. The project land use summary for CP and HPS2 is presented in **Tables 1a** and **1b** respectively.

OPERATIONAL EMISSIONS METHODOLOGY AND RESULTS

Ramboll primarily utilized the California Emission Estimator Model version 2016.3.2 (CalEEMod®)[1] to assist in quantifying the criteria pollutant and greenhouse gas emissions for Project operational phases. Emissions associated with the construction phase for HPS2 were estimated separately and described in a separate memorandum. CalEEMod® provides a simple platform to calculate emissions from a land use project. It calculates both the daily maximum and annual average emissions for criteria pollutants and greenhouse gases. The model also provides default values for water, wastewater, solid waste, energy use, and mobile and area sources.

Criteria air pollutants and greenhouse gas emissions for Project operation were estimated from mobile sources, areas sources, and energy usage, while emissions of greenhouse gases were estimated for water use and solid waste in addition. Consistent with the FEIR, emissions of Reactive Organic Gases (ROG) and Nitrogen

[1] CAPCOA. 2017. California Emissions Estimator Model. Version 2016.3.2. Available at: http://www.caleemod.com/.

Oxides (NO_x) were calculated under summer conditions and emissions of Particulate Matter PM_{10} and $PM_{2.5}$ were calculated under winter conditions. CalEEMod® does not calculate emissions for public lighting or transit service, so greenhouse gas emissions from these categories were added directly from the 2010 FEIR. This is conservative, as lighting and transit are likely to be more efficient than when the 2010 FEIR was published.

Operational emissions were based on land use specific CalEEMod® default values for building energy use and consumer products. The carbon intensity of electricity was based on the projected electricity intensity in 2030, based on the State's Renewables Portfolio Standard (RPS) target of 50 percent in 2030, using the average of PG&E's 2013, 2014, and 2015 emissions data as a base, as shown in **Table 2**. All default woodstoves and wood-fired fireplaces in CalEEMod® were assumed to be replaced by natural gas fireplaces.[2]

Daily mobile trip rate totals were obtained from a traffic study by Fehr & Peers[3] for both CP and HPS2. Total trip rates were allocated to specific land uses using the ratio of CalEEMod® default trip rates for each land use. The Saturday and Sunday total trip rates were calculated using the same ratio as CalEEMod® default weekday to weekend trip rates. Trip rates are shown in **Table 3**. Trip lengths for CAP and GHG emissions for CP and HPS2 were consistent with the trip lengths in the 2010 FEIR for CAP emissions and GHG emissions, respectively.[4] CalEEMod® land use specific default values were used for other mobile source parameters such as trip purposes, vehicle emission factors, and fleet mix.

Water demand for each land use class was obtained from the 2010 FEIR where available. Water demand was allocated between indoor and outdoor usage using CalEEMod default percentages. When water demand from a specific land use was not available from the 2010 FEIR, CalEEMod® default demand was used. Similarly, solid waste generation rate for each land use class was obtained from the 2010 FEIR or CalEEMod® defaults, as shown in Attachment A.[5]

The proposed site also includes 10,000 new trees within the project boundary that will sequester carbon, consistent with the EIR. As discussed in the 2010 FEIR, planting 10,000 new trees in the project site will result in a sequestration of 7,000 tonnes of CO_2 over a 20 year active growing period. Consistent with the 2010 FEIR, this reduction was conservatively not included in the sum of GHG emissions, but was provided for informational purposes.

The average daily emissions estimated due to Project operations for CAP and GHGs are summarized in **Table 4** and **Table 5**, respectively. The estimated emissions sources include area sources (landscaping equipment, consumer products, and architectural coatings), building energy use, mobile sources (vehicle trips from workers, customers, residents, hotel guests, and delivery vehicles), emissions from water usage and solid waste disposal, and emissions from transit and public lighting.

---

[2] BAAQMD. 2008. Regulation 6, Rule 3, Particulate Matter and Visible Emissions: Wood-Burning Devices. July. Available at: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/Particulate%20Matter/rg0603.ashx

[3] Trip generation rates are project specific and were provided by the Project Applicant. Total daily trips were calculated by summing the AM and PM peak trips and multiplying by 5, based on the methodology described by the Fehr and Peers.

[4] Trip lengths were obtained from the Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, Appendix H1, PBS&J Air Quality Model Input/Output July 2009 for CAP emissions and from the Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, GHG Appendix S (Table 3-20) for GHG emissions.

[5] CalEEMod® default water and solid waste generation rates were used for different types of schools and hotels for Hunters Point Shipyard Phase II since these land uses were not modelled in the EIR.

$PM_{2.5}$ CONCENTRATION FROM TRAFFIC

Ramboll also analyzed the change in $PM_{2.5}$ concentration from traffic for the 2017 Modified Project Variant by scaling results from the 2010 FEIR by the change in traffic volume and emission factor. Figure 4-3 of Attachment IV of Appendix H3 of the 2010 FEIR shows the roadways and receptors modelled.

Traffic volumes for the 2017 Modified Project Variant were provided by Fehr and Peers and compared against traffic volumes analyzed in the 2010 FEIR for each roadway. AADT generally increased along Innes and Palou Avenue, but AADT generally decreased on Third Street and Gilman Avenue. $PM_{2.5}$ concentrations from the 2010 FEIR were scaled by the percent change in traffic volumes. The changes ranged from a 15% decrease in traffic volumes to a 29% increase in traffic volumes.

$PM_{2.5}$ concentrations were also scaled by the change in emission rates. Since the 2010 FEIR, exhaust emissions of $PM_{2.5}$ have decreased as a result of emissions control requirements. Fleet wide average emission rates for exhaust, tirewear and brakewear were obtained from ARB's EMission FACtor model, EMFAC2014, for year 2030 and compared against emission rates used in the 2010 FEIR. The $PM_{2.5}$ concentrations from the 2010 FEIR were also scaled by this percent change in emission rates, which was a 17% reduction in emissions.

After the scaling, the maximum $PM_{2.5}$ concentration from Project traffic was 0.211 µg/m^3. This location is on Innes Avenue, near the intersection with Arelious Walker and is on the roadway segment with the maximum percent increase in AADT.

The background $PM_{2.5}$ concentration at this location was obtained from the City of San Francisco's modelling for the Community Risk Reduction Plan (CRRP). The modeling is documented in *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*.[6] The background concentration is 8.6 µg/m^3.

When the Project traffic $PM_{2.5}$ concentration is combined with background $PM_{2.5}$ concentration, the total $PM_{2.5}$ concentration at this location is 8.8 µg/m^3. However, this is a conservative addition because we understand the modelling for the CRRP included impacts from the traffic volumes from the 2010 FEIR.

[6] BAAQMD. 2012. *The San Francisco Community Risk Reduction Plan*: Technical Support Documentation. December.

TABLES

Table 1a
CalEEMod® Land Uses for Candlestick Point
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

Actual Land Use[1]	Land Use Type	Land Use Subtype[2]	Unit Amount	Size Metric	Lot Acreages (acres)[3]
Additional On - Street parking	Parking	Parking Lot	1,360	spaces	6.04
Community Use	Recreational	Health Club	50	ksf	0.57
FAC/Performance Venue	Recreational	Arena	75	ksf	11.90
Hotel	Recreational	Hotel	150	ksf	3.62
Neighborhood Retail	Retail	Strip Mall	125	ksf	1.42
Parking - Commercial (Structured)	Parking	Unenclosed parking structure	2,189	spaces	9.72
Parking - Residential (Structured)	Parking	Enclosed parking structure	7,218	spaces	32.06
Parks and Open Space	Recreational	City Park	112	acres	112.4
Regional Retail	Retail	Regional Shopping Center	635	ksf	7.82
Research & Development/Office	Commercial	Research and Development	150	ksf	1.70
Residential	Residential	Apartment Mid-rise	7,218	DU	93.75
Total acreage					**281.0**

Notes:

[1] Land uses associated with 2018 Modified Project Variant.

[2] Land uses as defined in CalEEMod®. When an exact mapping of a land use was not available in CalEEMod® relative to the project land use type, a category with similar emission characteristics was chosen.

[3] Non-default land acreage is based on a total acreage of 281 acres from EIR. CalEEMod® default acres (expect acreage for Parks and Open Spaces) are scaled down so that total land acreage adds up to this number.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel

DU - dwelling units

ksf - thousand square feet

Table 1b
CalEEMod® Land Uses for Hunters Point Shipyard Phase II
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

Actual Land Use[1]	Land Use Type	Land Use Subtype[2]	Unit Amount	Size Metric	Lot Acreages (acres)[3]
Additional On - Street parking	Parking	Parking Lot	1,487	spaces	7.1
Artist Studio	Commercial	General Office Building	255	ksf	3.1
Community Use	Recreational	Health Club	50	ksf	0.6
Hotel	Recreational	Hotel	120	ksf	3.1
Neighborhood Retail and Maker Space	Retail	Strip Mall	301	ksf	3.7
Parking - Commercial (Structured)	Parking	Unenclosed parking structure	7,119	spaces	34.1
Parking - Residential (Structured)	Parking	Enclosed parking structure	3,454	spaces	16.5
Parks and Open Space	Recreational	City Park	249	acres	249.0
Research & Development/Office	Commercial	Research & Development	4,265	ksf	52.1
Regional Retail	Retail	Regional Shopping Center	100	ksf	1.2
Residential	Residential	Apartment Mid-rise	3,454	DU	48.3
School/Institution	Educational	High School	28	ksf	0.5
School/Institution	Educational	Junior High School	345	ksf	1.5
School/Institution	Educational	Junior College	37	ksf	0.2
Total acreage					**421.0**

Notes:

[1] Land uses associated with 2018 Modified Project Variant.

[2] Land uses as defined in CalEEMod®. When an exact mapping of a land use was not available in CalEEMod® relative to the project land use type, a category with similar emission characteristics was chosen.

[3] Non-default land acreage is based on a total acreage of 421 acres from EIR. CalEEMod® defaults are scaled down so that total land acreage adds up to this number.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel

DU - dwelling units

ksf - thousand square feet

Table 2
PG&E Electricity Intensity Factor Derivations
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

	2013[1,2]	2014[1,3]	2015[1,4]	Average[5]	Units
CO_2 Intensity Factor per Total Energy Delivered	427.3	434.9	405.0	422.4	lbs CO_2/MWh delivered
% of Total Energy From Renewables	22.5%	27%	29.5%	26.3%	
CO_2 Intensity Factor per Total Non-Renewable Energy[6]	551	596	574	573.4	lbs CO_2/MWh delivered
Estimated Intensity Factor for Total Energy Delivered[7,8]					
2030 RPS (50%)[9]	275.7	297.9	287.2	286.7	lbs CO_2/MWh delivered
	278.2	300.5	289.8	289.3	lbs CO_2e/MWh delivered

Notes:

[1] Total CO_2 emission factor from The Climate Registry. Available at: https://www.theclimateregistry.org/our-members/cris-public-reports/. Accessed: October 2017.

[2] Percent of total energy from eligible renewables is from the PGE 2014 Corporate Responsibility Report. Available at: http://www.pgecorp.com/corp_responsibility/reports/2014/PGE_CRSR_2014.pdf.

[3] Percent of total energy from eligible renewables is from the PGE 2015 Corporate Responsibility Report. Available at: http://www.pgecorp.com/corp_responsibility/reports/2015/PGE_CRSR_2015.pdf.

[4] Percent of total energy from eligible renewables is from the PGE 2016 Corporate Responsibility Report. Available at: http://www.pgecorp.com/corp_responsibility/reports/2016/PGE_CRSR_Environment.pdf.

[5] This average uses the most recent three years of data available.

[6] The emissions metric presented here is calculated based on the total CO_2 intensity factor divided by the percent of energy delivered from non-renewable sources.

[7] The intensity factor for total energy delivered is estimated by multiplying the percentage of energy delivered from non-renewable energy by the CO_2 emissions per total non-renewable energy metric calculated above. The estimate provided here and the energy reports issued by PGE assume that renewable energy sources do not result in any CO_2 emissions.

[8] Global Warming Potentials (GWP) are based on the IPCC Fourth Assessment Report. CH_4 and N_2O emission factors are from the CalEEMod version 2016.3.2 defaults for PGE, and are conservatively assumed not to change from these estimates. As more renewable energy is integrated into the electricity grid, these intensity factors will also decrease.

[9] Emission factor presented here is based on a 50% projected RPS target for 2030 consistent with SB 350. Available at: http://www.energy.ca.gov/sb350/. Accessed: October 2017.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CARB - California Air Resources Board
CO_2 - carbon dioxide
GHG - greenhouse gases
lbs - pounds
MWh - megawatt-hour
RPS - Renewable Portfolio Standards
PGE - Pacific Gas & Electric
SB - Senate Bill
USEPA - US Environmental Protection Agency

Table 3
Adjusted Trip Rates for Project Operation
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

Phase	CalEEMod® Land Use Subtype	Units	Size Metric	Percent of Trips in Phase Group[1]	Adjusted Total Trips[2]			Trip rate (/size/day)		
					Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
CP	Apartment Mid-rise	7,218	DU	56%	20,222	19,431	17,819	2.75	2.64	2.43
	Arena	75	ksf	1%	338	338	338	4.43	4.43	4.43
	City Park	112	acres	0%	89	1,077	793	0.78	9.42	6.93
	Enclosed parking structure	7,218	spaces	0%	0	0	0	0.00	0.00	0.00
	Health Club	50	ksf	2%	694	23	563	13.63	0.46	11.06
	Hotel	150	rooms	2%	757	759	551	3.38	3.39	2.46
	Parking Lot	1,360	spaces	0%	0	0	0	0.00	0.00	0.00
	Research and Development	150	ksf	1%	512	120	70	3.36	0.79	0.46
	Regional Shopping Center	635	ksf	31%	11,423	13,368	6,752	17.7	20.68	10.45
	Strip Mall	125	ksf	6%	2,334	2,214	1,076	18.3	17.40	8.46
	Unenclosed parking structure	2,189	spaces	0%	0	0	0	0.00	0.00	0.00
	Total[3]	-	-	100%	36,370	37,331	27,963	-	-	-
HPS Phase II	Apartment Mid-rise	3,454	DU	27%	9,354	8,989	8,243	2.71	2.60	2.39
	City Park	249	acres	1%	192	2,310	1,700	0.77	9.27	6.82
	Enclosed parking structure	3,454	spaces	0%	0	0	0	0.00	0.00	0.00
	General Office Building	255	ksf	3%	1,145	255	109	4.49	1.00	0.43
	Health Club	50	ksf	2%	671	425	544	13.41	8.50	10.89
	High School	300	students	1%	209	75	31	0.70	0.25	0.10
	Hotel	175	rooms	2%	582	584	424	3.33	3.34	2.42
	Junior College	400	students	1%	200	68	0	0.50	0.17	0.00
	Junior High School	1,012	students	2%	668	0	0	0.66	0.00	0.00
	Parking Lot	1,487	spaces	0%	0	0	0	0.00	0.00	0.00
	Regional Shopping Center	100	ksf	5%	1,739	2,035	1,028	17.39	20.35	10.28
	Research & Development	4,265	ksf	41%	14,087	3,300	1,928	3.30	0.77	0.45
	Strip Mall	301	ksf	16%	5,433	5,153	2,504	18.05	17.12	8.32
	Unenclosed parking structure	7,119	spaces	0%	0	0	0	0.00	0.00	0.00
	Total[3]	-	-	100%	34,280	23,194	16,511	-	-	-

Notes:

[1] CalEEMod® default weekday trip generation rates for each land use were used to allocate the Project-specific total trips among each land use for modeling.

[2] Adjusted total weekday trips are calculated by multiplying the percent of trips in each phase group by the total trips for that phase group. Saturday and Sunday trip rates are adjusted based on the the ratio of default Saturday and Sunday to weekday CalEEMod® default total trips.

[3] Trip generation rates were provided by the Project Applicant. Total daily trips were calculated by summing the AM and PM peak trips and multiplying by 5.

Abbreviations:

CalEEMod® - CALifornia Emissions Estimator MODel
CP - Candlestick Point
DU - dwelling unit
HPS - Hunters Point Shipyard
ksf - thousand square feet

Table 4
Operational CAP Emissions
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

Operational Emissions for Project, Buildout (2032)[1]															
Category	**HPS Phase II[2]**					**CP[2]**					**Total Project - HPS Phase II + CP[2]**				
	ROG	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**
	(lb/day)					(lb/day)					(lb/day)				
Area[3]	176	3	33	6.2	6.2	178	7	68	12.9	12.9	354	10	100	19.1	19.1
Natural Gas Use	4.6	41.3	31.5	3.2	3.2	2.3	20.1	10.3	1.6	1.6	6.9	61	42	4.8	4.8
Mobile[4]	33	131	354	184	50	34	137	366	189	51	67	268	720	373	102
Total	**213**	**176**	**418**	**193**	**59**	**215**	**164**	**444**	**203**	**66**	**428**	**340**	**862**	**397**	**125**
Emissions from EIR[5]	255	119	947	424	81	666	265	2,276	1,029	197	921	384	3,223	1,453	278
										Exceeds EIR?	**No**	**No**	**No**	**No**	**No**

Notes:

[1] Operational emissions calculated with CalEEMod® version 2016.3.2.

[2] Daily ROG and NO_x emissions are reported under summer conditions and daily PM_{10} and $PM_{2.5}$ emissions are reported under winter conditions. Emissions from fireplaces during summer are not included for ROG and NOx emissions since the EIR does not report hearth emissions in summer.

[3] For consumer products, ROG emissions were calculated based on the average emissions factor for the City of San Francisco. San Francisco's ROG emissions from consumer products was 5.30 tons (Ref:https://www.arb.ca.gov/app/emsinv/emssumcat.php). San Francisco's square footage was 703,541,231 square feet (Ref: 2011 Land Use data). Therefore, the emission factor was updated as follows: (5.30 tons/day * 2000 lbs/ton)/703,541,231 sq. ft. = 1.51 x 10-5 lbs/(sq. ft.-day).

[4] Trip rates for Candlestick Point and Hunters Point are based on a study by F&P. The total daily trip rates were calculated based on CalEEMod® default trip generation rates. Trip lengths for CAP emissions are from the EIR AQ section (Appendix H1).

[5] Emissions from Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, Section III.H Air Quality, Table III.H-5 (2009).

Abbreviations:

AQ - Air Quality
CAP - criteria air pollutant
CO - Carbon monoxide
CP - Candlestick Point
EIR- Environmental Impact Report
F&P - Fehr and Peers
HPS - Hunters Point Shipyard
lb/day - pounds per day
NOx - nitrogen oxides
PM_{10} - particulate matter less than 10 micrometers in diameter
$PM_{2.5}$ - particulate matter less than 2.5 micrometers in diameter
ROG - reactive organic gases

References:

BAAQMD. 2017. California Environmental Quality Act Air Quality Guidelines. May. Available online at: www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

RAMBOLL

Table 5
Operational GHG Emissions
Candlestick Point Hunters Point Shipyard Phase II 2018 Modified Project Variant
San Francisco, California

GHG Emissions[1]	HPS Phase II	CP	Total Project - HPS Phase II + CP
Category	**CO_2e** (MT/yr)		
Area	2,268	4,739	7,008
Natural Gas Use	8,348	4,230	12,578
Electricity Use	9,266	7,850	17,115
Mobile	29,111	32,153	61,264
Water Use	719	426	1,145
Waste Disposal	4,651	4,491	9,141
Public Lighting[2]	227	651	878
Transit Service[2]	865	865	1,730
Total	**55,455**	**55,405**	**110,859**
GHG Emissions from EIR[3]	52,842	101,798	154,639
		Exceeds EIR?	**No**

Notes:

[1] Operational emissions calculated with CalEEMod® version 2016.3.2.

[2] Emissions from public lighting and transit service are not calculated in CalEEMod®. These emissions were conservatively included from the Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, GHG Appendix S. Public lighting emissions are from Table 3-28 therein, while transit service emissions are from Table 3-36.

[3] GHG emissions from Candlestick Point-Hunters Point Shipyard Phase II Development Plan EIR, Section III.S Greenhouse Gas Emissions, Table III.S-4 (2009) and from GHG Appendix S, Table 3-36.

Abbreviations:

CP - Candlestick Point
CO2e - Carbon dioxide equivalent
EIR - Environmental Impact Report
GHG - greenhouse gas
HPS - Hunters Point Shipyard
MT - metric ton
yr - year

ATTACHMENT A
CalEEMod® Output

Candlestick Point - Operational - CAP Analysis

San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	150.00	1000sqft	1.70	150,000.00	0
Enclosed Parking Structure	7,218.00	Space	32.06	2,887,200.00	0
Parking Lot	1,360.00	Space	6.04	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.72	875,600.00	0
Arena	75.00	1000sqft	11.90	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.57	50,000.00	0
Hotel	220.00	Room	3.62	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.75	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.82	635,000.00	0
Strip Mall	125.00	1000sqft	1.42	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	3.44	1.70
tblLandUse	LotAcreage	64.96	32.06
tblLandUse	LotAcreage	12.24	6.04
tblLandUse	LotAcreage	19.70	9.72
tblLandUse	LotAcreage	24.11	11.90
tblLandUse	LotAcreage	1.15	0.57
tblLandUse	LotAcreage	7.33	3.62
tblLandUse	LotAcreage	189.95	93.75
tblLandUse	LotAcreage	14.58	7.82
tblLandUse	LotAcreage	2.87	1.42
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	11.40	164.25
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40

tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.64
tblVehicleTrips	ST_TR	10.71	4.43
tblVehicleTrips	ST_TR	22.75	9.42
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.39
tblVehicleTrips	ST_TR	49.97	20.68
tblVehicleTrips	ST_TR	1.90	0.79
tblVehicleTrips	ST_TR	42.04	17.40

tblVehicleTrips	SU_TR	5.86	2.43
tblVehicleTrips	SU_TR	10.71	4.43
tblVehicleTrips	SU_TR	16.74	6.93
tblVehicleTrips	SU_TR	26.73	11.06
tblVehicleTrips	SU_TR	5.95	2.46
tblVehicleTrips	SU_TR	25.24	10.45
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.46
tblVehicleTrips	WD_TR	6.65	2.75
tblVehicleTrips	WD_TR	10.71	4.43
tblVehicleTrips	WD_TR	1.89	0.78
tblVehicleTrips	WD_TR	32.93	13.63
tblVehicleTrips	WD_TR	8.17	3.38
tblVehicleTrips	WD_TR	42.70	17.67
tblVehicleTrips	WD_TR	8.11	3.36
tblVehicleTrips	WD_TR	44.32	18.34
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	73,754,092.08	7,774,500.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00
tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00

tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1447	0.0000	0.0000	2.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1447	0.0000	0.0000	2.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Energy	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
Mobile	34.2793	136.7115	362.4319	1.6908	187.7460	1.1868	188.9328	50.3403	1.1057	51.4460		172,754.6645	172,754.6645	6.3744		172,914.0246
Total	**233.5490**	**323.3634**	**1,035.8497**	**2.8684**	**187.7460**	**19.0095**	**206.7555**	**50.3403**	**18.9285**	**69.2688**	**0.0000**	**403,029.1818**	**403,029.1818**	**11.7958**	**4.2020**	**404,576.2715**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Energy	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
Mobile	34.2793	136.7115	362.4319	1.6908	187.7460	1.1868	188.9328	50.3403	1.1057	51.4460		172,754.6645	172,754.6645	6.3744		172,914.0246
Total	**233.5490**	**323.3634**	**1,035.8497**	**2.8684**	**187.7460**	**19.0095**	**206.7555**	**50.3403**	**18.9285**	**69.2688**	**0.0000**	**403,029.1818**	**403,029.1818**	**11.7958**	**4.2020**	**404,576.2715**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.82

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,777,500; Non-Residential Outdoor: 592,500; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Candlestick Point - Operational - CAP Analysis - San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	34.2793	136.7115	362.4319	1.6908	187.7460	1.1868	188.9328	50.3403	1.1057	51.4460		172,754.6645	172,754.6645	6.3744		172,914.0246
Unmitigated	34.2793	136.7115	362.4319	1.6908	187.7460	1.1868	188.9328	50.3403	1.1057	51.4460		172,754.6645	172,754.6645	6.3744		172,914.0246

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	19,849.50	19,055.52	17539.74	53,265,026	53,265,026
Arena	332.25	332.25	332.25	654,038	654,038
City Park	87.67	1,058.81	778.93	699,951	699,951
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	681.50	23.00	553.00	993,795	993,795
Hotel	743.60	745.80	541.20	1,372,610	1,372,610
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,220.45	13,131.80	6635.75	19,210,480	19,210,480
Research & Development	504.00	118.50	69.00	977,469	977,469
Strip Mall	2,292.50	2,175.00	1057.50	3,268,020	3,268,020
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	35,711.47	36,640.68	27,507.37	80,441,390	80,441,390

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
Arena	9.50	7.40	7.40	0.00	81.00	19.00	66	28	6
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
NaturalGas Unmitigated	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5085.62	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15004.1	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8002.74	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	10171.2	0.1097	0.9972	0.8376	5.9800e-003		0.0758	0.0758		0.0758	0.0758		1,196.6156	1,196.6156	0.0229	0.0219	1,203.7265
Strip Mall	1575.34	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.3281**	**20.1488**	**10.3306**	**0.1270**		**1.6085**	**1.6085**		**1.6085**	**1.6085**		**25,397.2583**	**25,397.2583**	**0.4868**	**0.4656**	**25,548.1815**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172.647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5.08562	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15.0041	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.00274	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	10.1712	0.1097	0.9972	0.8376	5.9800e-003		0.0758	0.0758		0.0758	0.0758		1,196.6156	1,196.6156	0.0229	0.0219	1,203.7265
Strip Mall	1.57534	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.3281**	**20.1488**	**10.3306**	**0.1270**		**1.6085**	**1.6085**		**1.6085**	**1.6085**		**25,397.2583**	**25,397.2583**	**0.4868**	**0.4656**	**25,548.1815**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Unmitigated	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	31.7193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	128.6630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8774	6.8579	595.1532	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9061	1,074.9061	1.0284		1,100.6170
Total	**196.9416**	**166.5031**	**663.0873**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2591**	**204,877.2591**	**4.9346**	**3.7364**	**206,114.0654**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	31.7193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	128.6630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8774	6.8579	595.1532	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9061	1,074.9061	1.0284		1,100.6170
Total	**196.9416**	**166.5031**	**663.0873**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2591**	**204,877.2591**	**4.9346**	**3.7364**	**206,114.0654**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Candlestick Point - Operational - CAP Analysis

San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	150.00	1000sqft	1.70	150,000.00	0
Enclosed Parking Structure	7,218.00	Space	32.06	2,887,200.00	0
Parking Lot	1,360.00	Space	6.04	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.72	875,600.00	0
Arena	75.00	1000sqft	11.90	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.57	50,000.00	0
Hotel	220.00	Room	3.62	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.75	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.82	635,000.00	0
Strip Mall	125.00	1000sqft	1.42	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	3.44	1.70
tblLandUse	LotAcreage	64.96	32.06
tblLandUse	LotAcreage	12.24	6.04
tblLandUse	LotAcreage	19.70	9.72
tblLandUse	LotAcreage	24.11	11.90
tblLandUse	LotAcreage	1.15	0.57
tblLandUse	LotAcreage	7.33	3.62
tblLandUse	LotAcreage	189.95	93.75
tblLandUse	LotAcreage	14.58	7.82
tblLandUse	LotAcreage	2.87	1.42
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	11.40	164.25
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40

tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.64
tblVehicleTrips	ST_TR	10.71	4.43
tblVehicleTrips	ST_TR	22.75	9.42
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.39
tblVehicleTrips	ST_TR	49.97	20.68
tblVehicleTrips	ST_TR	1.90	0.79
tblVehicleTrips	ST_TR	42.04	17.40

tblVehicleTrips	SU_TR	5.86	2.43
tblVehicleTrips	SU_TR	10.71	4.43
tblVehicleTrips	SU_TR	16.74	6.93
tblVehicleTrips	SU_TR	26.73	11.06
tblVehicleTrips	SU_TR	5.95	2.46
tblVehicleTrips	SU_TR	25.24	10.45
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.46
tblVehicleTrips	WD_TR	6.65	2.75
tblVehicleTrips	WD_TR	10.71	4.43
tblVehicleTrips	WD_TR	1.89	0.78
tblVehicleTrips	WD_TR	32.93	13.63
tblVehicleTrips	WD_TR	8.17	3.38
tblVehicleTrips	WD_TR	42.70	17.67
tblVehicleTrips	WD_TR	8.11	3.36
tblVehicleTrips	WD_TR	44.32	18.34
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	73,754,092.08	7,774,500.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00
tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00

tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1832	0.0000	0.0000	2.0523	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1832	0.0000	0.0000	2.0523	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Energy	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
Mobile	31.3330	142.9407	365.6197	1.6132	187.7460	1.1898	188.9358	50.3403	1.1087	51.4489		164,915.5202	164,915.5202	6.4691		165,077.2484
Total	**230.6027**	**329.5926**	**1,039.0376**	**2.7907**	**187.7460**	**19.0126**	**206.7586**	**50.3403**	**18.9314**	**69.2717**	**0.0000**	**395,190.0375**	**395,190.0375**	**11.8906**	**4.2020**	**396,739.4952**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Energy	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
Mobile	31.3330	142.9407	365.6197	1.6132	187.7460	1.1898	188.9358	50.3403	1.1087	51.4489		164,915.5202	164,915.5202	6.4691		165,077.2484
Total	**230.6027**	**329.5926**	**1,039.0376**	**2.7907**	**187.7460**	**19.0126**	**206.7586**	**50.3403**	**18.9314**	**69.2717**	**0.0000**	**395,190.0375**	**395,190.0375**	**11.8906**	**4.2020**	**396,739.4952**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.82

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,777,500; Non-Residential Outdoor: 592,500; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	31.3330	142.9407	365.6197	1.6132	187.7460	1.1898	188.9358	50.3403	1.1087	51.4489		164,915.5202	164,915.5202	6.4691		165,077.2484
Unmitigated	31.3330	142.9407	365.6197	1.6132	187.7460	1.1898	188.9358	50.3403	1.1087	51.4489		164,915.5202	164,915.5202	6.4691		165,077.2484

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	19,849.50	19,055.52	17539.74	53,265,026	53,265,026
Arena	332.25	332.25	332.25	654,038	654,038
City Park	87.67	1,058.81	778.93	699,951	699,951
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	681.50	23.00	553.00	993,795	993,795
Hotel	743.60	745.80	541.20	1,372,610	1,372,610
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,220.45	13,131.80	6635.75	19,210,480	19,210,480
Research & Development	504.00	118.50	69.00	977,469	977,469
Strip Mall	2,292.50	2,175.00	1057.50	3,268,020	3,268,020
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	35,711.47	36,640.68	27,507.37	80,441,390	80,441,390

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
Arena	9.50	7.40	7.40	0.00	81.00	19.00	66	28	6
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815
NaturalGas Unmitigated	2.3281	20.1488	10.3306	0.1270		1.6085	1.6085		1.6085	1.6085		25,397.2583	25,397.2583	0.4868	0.4656	25,548.1815

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5085.62	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15004.1	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8002.74	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	10171.2	0.1097	0.9972	0.8376	5.9800e-003		0.0758	0.0758		0.0758	0.0758		1,196.6156	1,196.6156	0.0229	0.0219	1,203.7265
Strip Mall	1575.34	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.3281**	**20.1488**	**10.3306**	**0.1270**		**1.6085**	**1.6085**		**1.6085**	**1.6085**		**25,397.2583**	**25,397.2583**	**0.4868**	**0.4656**	**25,548.1815**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172.647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5.08562	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15.0041	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.00274	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	10.1712	0.1097	0.9972	0.8376	5.9800e-003		0.0758	0.0758		0.0758	0.0758		1,196.6156	1,196.6156	0.0229	0.0219	1,203.7265
Strip Mall	1.57534	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.3281**	**20.1488**	**10.3306**	**0.1270**		**1.6085**	**1.6085**		**1.6085**	**1.6085**		**25,397.2583**	**25,397.2583**	**0.4868**	**0.4656**	**25,548.1815**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654
Unmitigated	196.9416	166.5031	663.0873	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2591	204,877.2591	4.9346	3.7364	206,114.0654

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	31.7193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	128.6630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8774	6.8579	595.1532	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9061	1,074.9061	1.0284		1,100.6170
Total	**196.9416**	**166.5031**	**663.0873**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2591**	**204,877.2591**	**4.9346**	**3.7364**	**206,114.0654**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	31.7193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	128.6630					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8774	6.8579	595.1532	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9061	1,074.9061	1.0284		1,100.6170
Total	**196.9416**	**166.5031**	**663.0873**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2591**	**204,877.2591**	**4.9346**	**3.7364**	**206,114.0654**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hunters Point Shipyard Phase II - Operational - CAP Analysis

San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,265.00	1000sqft	52.10	4,265,000.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.50	1,381,600.00	0
Parking Lot	1,487.00	Space	7.10	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.10	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.30	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on traffic data from F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths
are from EIR AQ section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00

tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	97.91	52.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.50
tblLandUse	LotAcreage	13.38	7.10
tblLandUse	LotAcreage	64.07	34.10
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.30
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70

tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	324.11	4,670.18
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40

tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.50
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.35
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.12
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82
tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10

tblVehicleTrips	SU_TR	5.95	2.42
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.28
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.32
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.49
tblVehicleTrips	WD_TR	32.93	13.41
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.39
tblVehicleTrips	WD_TR	8.11	3.30
tblVehicleTrips	WD_TR	44.32	18.05
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00
tblWater	IndoorWaterUseRate	2,097,074,684.82	221,054,950.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00

tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.5717	0.0000	0.0000	2.4209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.5717	0.0000	0.0000	2.4209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Energy	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
Mobile	32.9219	131.3792	351.6770	1.6463	182.9812	1.1531	184.1343	49.0627	1.0745	50.1371		168,195.5356	168,195.5356	6.1944		168,350.3948
Total	**222.2150**	**252.3535**	**701.8634**	**2.3997**	**182.9812**	**12.0916**	**195.0728**	**49.0627**	**12.0129**	**61.0756**	**0.0000**	**316,363.9876**	**316,363.9876**	**9.5240**	**2.7069**	**317,408.7556**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Energy	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
Mobile	32.9219	131.3792	351.6770	1.6463	182.9812	1.1531	184.1343	49.0627	1.0745	50.1371		168,195.5356	168,195.5356	6.1944		168,350.3948
Total	**222.2150**	**252.3535**	**701.8634**	**2.3997**	**182.9812**	**12.0916**	**195.0728**	**49.0627**	**12.0129**	**61.0756**	**0.0000**	**316,363.9876**	**316,363.9876**	**9.5240**	**2.7069**	**317,408.7556**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 57.7

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,251,499; Non-Residential Outdoor: 2,750,500; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.9219	131.3792	351.6770	1.6463	182.9812	1.1531	184.1343	49.0627	1.0745	50.1371		168,195.5356	168,195.5356	6.1944		168,350.3948
Unmitigated	32.9219	131.3792	351.6770	1.6463	182.9812	1.1531	184.1343	49.0627	1.0745	50.1371		168,195.5356	168,195.5356	6.1944		168,350.3948

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,360.34	8,980.40	8255.06	25,109,480	25,109,480
City Park	191.73	2,308.23	1698.18	1,526,867	1,526,867
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,144.95	255.00	109.65	2,096,224	2,096,224
Health Club	670.50	425.00	544.50	1,078,243	1,078,243
High School	210.00	75.00	30.00	433,060	433,060
Hotel	582.75	584.50	423.50	1,075,531	1,075,531
Junior College (2Yr)	200.00	68.00	0.00	392,334	392,334
Junior High School	667.92	0.00	0.00	1,075,852	1,075,852
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,739.00	2,035.00	1028.00	2,977,164	2,977,164
Research & Development	14,074.50	3,284.05	1919.25	27,284,592	27,284,592
Strip Mall	5,433.05	5,153.12	2504.32	7,744,217	7,744,217
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	34,274.74	23,168.30	16,512.46	70,793,563	70,793,563

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.40	7.40	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
High School	9.50	7.40	7.40	77.80	17.20	5.00	75	19	6
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	9.50	7.40	7.40	6.40	88.60	5.00	92	7	1
Junior High School	9.50	7.40	7.40	72.80	22.20	5.00	63	25	12
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
NaturalGas Unmitigated	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82616.2	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13504.5	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12003.3	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3480.15	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15567.5	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1260.27	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	289202	3.1189	28.3531	23.8166	0.1701		2.1548	2.1548		2.1548	2.1548		34,023.7712	34,023.7712	0.6521	0.6238	34,225.9574
Strip Mall	3793.42	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5949**	**41.2861**	**31.5247**	**0.2506**		**3.1747**	**3.1747**		**3.1747**	**3.1747**		**50,126.4517**	**50,126.4517**	**0.9608**	**0.9190**	**50,424.3281**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82.6162	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13.5045	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1.257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12.0033	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3.48015	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15.5675	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.26027	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	289.202	3.1189	28.3531	23.8166	0.1701		2.1548	2.1548		2.1548	2.1548		34,023.7712	34,023.7712	0.6521	0.6238	34,225.9574
Strip Mall	3.79342	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5949**	**41.2861**	**31.5247**	**0.2506**		**3.1747**	**3.1747**		**3.1747**	**3.1747**		**50,126.4517**	**50,126.4517**	**0.9608**	**0.9190**	**50,424.3281**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Unmitigated	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.5915					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	137.4880					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6790	3.2939	286.1535	0.0152		1.5872	1.5872		1.5872	1.5872		517.2944	517.2944	0.4997		529.7862
Total	**184.6982**	**79.6883**	**318.6617**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,042.0003**	**98,042.0003**	**2.3689**	**1.7880**	**98,634.0326**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.5915					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	137.4880					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6790	3.2939	286.1535	0.0152		1.5872	1.5872		1.5872	1.5872		517.2944	517.2944	0.4997		529.7862
Total	**184.6982**	**79.6883**	**318.6617**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,042.0003**	**98,042.0003**	**2.3689**	**1.7880**	**98,634.0326**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hunters Point Shipyard Phase II - Operational - CAP Analysis

San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,265.00	1000sqft	52.10	4,265,000.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.50	1,381,600.00	0
Parking Lot	1,487.00	Space	7.10	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.10	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.30	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on traffic data from F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths
are from EIR AQ section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00

tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	97.91	52.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.50
tblLandUse	LotAcreage	13.38	7.10
tblLandUse	LotAcreage	64.07	34.10
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.30
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70

tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	324.11	4,670.18
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40

tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.50
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.35
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.12
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82
tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10

tblVehicleTrips	SU_TR	5.95	2.42
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.28
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.32
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.49
tblVehicleTrips	WD_TR	32.93	13.41
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.39
tblVehicleTrips	WD_TR	8.11	3.30
tblVehicleTrips	WD_TR	44.32	18.05
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00
tblWater	IndoorWaterUseRate	2,097,074,684.82	221,054,950.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00

tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.6315	0.0000	0.0000	2.4781	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.6315	0.0000	0.0000	2.4781	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Energy	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
Mobile	30.1250	137.4525	354.2433	1.5707	182.9812	1.1561	184.1373	49.0627	1.0772	50.1399		160,565.6474	160,565.6474	6.2836		160,722.7363
Total	**219.4182**	**258.4268**	**704.4297**	**2.3241**	**182.9812**	**12.0945**	**195.0757**	**49.0627**	**12.0157**	**61.0784**	**0.0000**	**308,734.0994**	**308,734.0994**	**9.6132**	**2.7069**	**309,781.0970**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Energy	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
Mobile	30.1250	137.4525	354.2433	1.5707	182.9812	1.1561	184.1373	49.0627	1.0772	50.1399		160,565.6474	160,565.6474	6.2836		160,722.7363
Total	**219.4182**	**258.4268**	**704.4297**	**2.3241**	**182.9812**	**12.0945**	**195.0757**	**49.0627**	**12.0157**	**61.0784**	**0.0000**	**308,734.0994**	**308,734.0994**	**9.6132**	**2.7069**	**309,781.0970**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 57.7

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,251,499; Non-Residential Outdoor: 2,750,500; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	30.1250	137.4525	354.2433	1.5707	182.9812	1.1561	184.1373	49.0627	1.0772	50.1399		160,565.6474	160,565.6474	6.2836		160,722.7363
Unmitigated	30.1250	137.4525	354.2433	1.5707	182.9812	1.1561	184.1373	49.0627	1.0772	50.1399		160,565.6474	160,565.6474	6.2836		160,722.7363

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,360.34	8,980.40	8255.06	25,109,480	25,109,480
City Park	191.73	2,308.23	1698.18	1,526,867	1,526,867
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,144.95	255.00	109.65	2,096,224	2,096,224
Health Club	670.50	425.00	544.50	1,078,243	1,078,243
High School	210.00	75.00	30.00	433,060	433,060
Hotel	582.75	584.50	423.50	1,075,531	1,075,531
Junior College (2Yr)	200.00	68.00	0.00	392,334	392,334
Junior High School	667.92	0.00	0.00	1,075,852	1,075,852
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,739.00	2,035.00	1028.00	2,977,164	2,977,164
Research & Development	14,074.50	3,284.05	1919.25	27,284,592	27,284,592
Strip Mall	5,433.05	5,153.12	2504.32	7,744,217	7,744,217
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	34,274.74	23,168.30	16,512.46	70,793,563	70,793,563

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.40	7.40	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
High School	9.50	7.40	7.40	77.80	17.20	5.00	75	19	6
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	9.50	7.40	7.40	6.40	88.60	5.00	92	7	1
Junior High School	9.50	7.40	7.40	72.80	22.20	5.00	63	25	12
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281
NaturalGas Unmitigated	4.5949	41.2861	31.5247	0.2506		3.1747	3.1747		3.1747	3.1747		50,126.4517	50,126.4517	0.9608	0.9190	50,424.3281

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82616.2	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13504.5	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12003.3	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3480.15	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15567.5	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1260.27	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	289202	3.1189	28.3531	23.8166	0.1701		2.1548	2.1548		2.1548	2.1548		34,023.7712	34,023.7712	0.6521	0.6238	34,225.9574
Strip Mall	3793.42	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5949**	**41.2861**	**31.5247**	**0.2506**		**3.1747**	**3.1747**		**3.1747**	**3.1747**		**50,126.4517**	**50,126.4517**	**0.9608**	**0.9190**	**50,424.3281**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82.6162	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13.5045	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1.257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12.0033	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3.48015	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15.5675	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.26027	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	289.202	3.1189	28.3531	23.8166	0.1701		2.1548	2.1548		2.1548	2.1548		34,023.7712	34,023.7712	0.6521	0.6238	34,225.9574
Strip Mall	3.79342	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5949**	**41.2861**	**31.5247**	**0.2506**		**3.1747**	**3.1747**		**3.1747**	**3.1747**		**50,126.4517**	**50,126.4517**	**0.9608**	**0.9190**	**50,424.3281**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326
Unmitigated	184.6982	79.6883	318.6617	0.5028		7.7638	7.7638		7.7638	7.7638	0.0000	98,042.0003	98,042.0003	2.3689	1.7880	98,634.0326

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.5915					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	137.4880					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6790	3.2939	286.1535	0.0152		1.5872	1.5872		1.5872	1.5872		517.2944	517.2944	0.4997		529.7862
Total	**184.6982**	**79.6883**	**318.6617**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,042.0003**	**98,042.0003**	**2.3689**	**1.7880**	**98,634.0326**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.5915					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	137.4880					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6790	3.2939	286.1535	0.0152		1.5872	1.5872		1.5872	1.5872		517.2944	517.2944	0.4997		529.7862
Total	**184.6982**	**79.6883**	**318.6617**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,042.0003**	**98,042.0003**	**2.3689**	**1.7880**	**98,634.0326**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Candlestick Point - Operational - GHG Analysis

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	150.00	1000sqft	1.70	150,000.00	0
Enclosed Parking Structure	7,218.00	Space	32.06	2,887,200.00	0
Parking Lot	1,360.00	Space	6.04	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.72	875,600.00	0
Arena	75.00	1000sqft	11.90	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.57	50,000.00	0
Hotel	220.00	Room	3.62	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.75	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.82	635,000.00	0
Strip Mall	125.00	1000sqft	1.42	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	3.44	1.70
tblLandUse	LotAcreage	64.96	32.06
tblLandUse	LotAcreage	12.24	6.04
tblLandUse	LotAcreage	19.70	9.72
tblLandUse	LotAcreage	24.11	11.90
tblLandUse	LotAcreage	1.15	0.57
tblLandUse	LotAcreage	7.33	3.62
tblLandUse	LotAcreage	189.95	93.75
tblLandUse	LotAcreage	14.58	7.82
tblLandUse	LotAcreage	2.87	1.42
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	11.40	164.25
tblVehicleTrips	CC_TL	7.30	9.10
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50

tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90

tblVehicleTrips	HO_TL	5.70	9.10
tblVehicleTrips	HS_TL	4.80	9.50
tblVehicleTrips	HW_TL	10.80	14.90
tblVehicleTrips	ST_TR	6.39	2.64
tblVehicleTrips	ST_TR	10.71	4.43
tblVehicleTrips	ST_TR	22.75	9.42
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.39
tblVehicleTrips	ST_TR	49.97	20.68
tblVehicleTrips	ST_TR	1.90	0.79
tblVehicleTrips	ST_TR	42.04	17.40
tblVehicleTrips	SU_TR	5.86	2.43
tblVehicleTrips	SU_TR	10.71	4.43
tblVehicleTrips	SU_TR	16.74	6.93
tblVehicleTrips	SU_TR	26.73	11.06
tblVehicleTrips	SU_TR	5.95	2.46
tblVehicleTrips	SU_TR	25.24	10.45
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.46
tblVehicleTrips	WD_TR	6.65	2.75
tblVehicleTrips	WD_TR	10.71	4.43
tblVehicleTrips	WD_TR	1.89	0.78
tblVehicleTrips	WD_TR	32.93	13.63
tblVehicleTrips	WD_TR	8.17	3.38
tblVehicleTrips	WD_TR	42.70	17.67
tblVehicleTrips	WD_TR	8.11	3.36
tblVehicleTrips	WD_TR	44.32	18.34

tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	73,754,092.08	7,774,500.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00
tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.3458	4.6083	55.2621	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9221	4,709.9221	0.1726	0.0847	4,739.4885
Energy	0.4249	3.6772	1.8853	0.0232		0.2936	0.2936		0.2936	0.2936	0.0000	11,986.2668	11,986.2668	0.8677	0.2399	12,079.4604
Mobile	5.8475	26.4061	72.3049	0.3464	39.1447	0.2492	39.3939	10.5303	0.2323	10.7626	0.0000	32,122.7189	32,122.7189	1.2135	0.0000	32,153.0570
Waste						0.0000	0.0000		0.0000	0.0000	1,812.5733	0.0000	1,812.5733	107.1200	0.0000	4,490.5736
Water						0.0000	0.0000		0.0000	0.0000	57.3097	178.7647	236.0744	5.9043	0.1427	426.2161
Total	**37.6181**	**34.6916**	**129.4524**	**0.3979**	**39.1447**	**1.1631**	**40.3078**	**10.5303**	**1.1462**	**11.6765**	**1,869.8830**	**48,997.6725**	**50,867.5555**	**115.2781**	**0.4674**	**53,888.7955**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.3458	4.6083	55.2621	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9221	4,709.9221	0.1726	0.0847	4,739.4885
Energy	0.4249	3.6772	1.8853	0.0232		0.2936	0.2936		0.2936	0.2936	0.0000	11,986.2668	11,986.2668	0.8677	0.2399	12,079.4604
Mobile	5.8475	26.4061	72.3049	0.3464	39.1447	0.2492	39.3939	10.5303	0.2323	10.7626	0.0000	32,122.7189	32,122.7189	1.2135	0.0000	32,153.0570
Waste						0.0000	0.0000		0.0000	0.0000	1,812.5733	0.0000	1,812.5733	107.1200	0.0000	4,490.5736
Water						0.0000	0.0000		0.0000	0.0000	57.3097	178.7647	236.0744	5.9043	0.1427	426.2161
Total	**37.6181**	**34.6916**	**129.4524**	**0.3979**	**39.1447**	**1.1631**	**40.3078**	**10.5303**	**1.1462**	**11.6765**	**1,869.8830**	**48,997.6725**	**50,867.5555**	**115.2781**	**0.4674**	**53,888.7955**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,670.0000
Total	**3,670.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.82

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,777,500; Non-Residential Outdoor: 592,500; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.8475	26.4061	72.3049	0.3464	39.1447	0.2492	39.3939	10.5303	0.2323	10.7626	0.0000	32,122.7189	32,122.7189	1.2135	0.0000	32,153.0570
Unmitigated	5.8475	26.4061	72.3049	0.3464	39.1447	0.2492	39.3939	10.5303	0.2323	10.7626	0.0000	32,122.7189	32,122.7189	1.2135	0.0000	32,153.0570

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	19,849.50	19,055.52	17539.74	68,718,465	68,718,465
Arena	332.25	332.25	332.25	804,123	804,123
City Park	87.67	1,058.81	778.93	968,917	968,917
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	681.50	23.00	553.00	1,324,021	1,324,021
Hotel	743.60	745.80	541.20	1,840,645	1,840,645
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,220.45	13,131.80	6635.75	25,552,800	25,552,800
Research & Development	504.00	118.50	69.00	1,353,294	1,353,294
Strip Mall	2,292.50	2,175.00	1057.50	4,348,889	4,348,889
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	35,711.47	36,640.68	27,507.37	104,911,153	104,911,153

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.90	9.50	9.10	31.00	15.00	54.00	86	11	3
Arena	14.90	9.10	9.10	0.00	81.00	19.00	66	28	6
City Park	14.90	9.50	9.10	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Health Club	14.90	9.50	9.10	16.90	64.10	19.00	52	39	9
Hotel	14.90	9.50	9.10	19.40	61.60	19.00	58	38	4
Parking Lot	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.90	9.50	9.10	16.30	64.70	19.00	54	35	11
Research & Development	14.90	9.50	9.10	33.00	48.00	19.00	82	15	3
Strip Mall	14.90	9.50	9.10	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,781.4658	7,781.4658	0.7871	0.1629	7,849.6724
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,781.4658	7,781.4658	0.7871	0.1629	7,849.6724
NaturalGas Mitigated	0.4249	3.6772	1.8853	0.0232		0.2936	0.2936		0.2936	0.2936	0.0000	4,204.8009	4,204.8009	0.0806	0.0771	4,229.7880
NaturalGas Unmitigated	0.4249	3.6772	1.8853	0.0232		0.2936	0.2936		0.2936	0.2936	0.0000	4,204.8009	4,204.8009	0.0806	0.0771	4,229.7880

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.30162e+007	0.3398	2.9037	1.2356	0.0185		0.2348	0.2348		0.2348	0.2348	0.0000	3,362.7868	3,362.7868	0.0645	0.0617	3,382.7701
Arena	1.85625e+006	0.0100	0.0910	0.0764	5.5000e-004		6.9200e-003	6.9200e-003		6.9200e-003	6.9200e-003	0.0000	99.0566	99.0566	1.9000e-003	1.8200e-003	99.6452
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
Hotel	5.4765e+006	0.0295	0.2685	0.2255	1.6100e-003		0.0204	0.0204		0.0204	0.0204	0.0000	292.2469	292.2469	5.6000e-003	5.3600e-003	293.9836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.921e+006	0.0158	0.1432	0.1203	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.8757	155.8757	2.9900e-003	2.8600e-003	156.8020
Research & Development	3.7125e+006	0.0200	0.1820	0.1529	1.0900e-003		0.0138	0.0138		0.0138	0.0138	0.0000	198.1131	198.1131	3.8000e-003	3.6300e-003	199.2904
Strip Mall	575000	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.6842	30.6842	5.9000e-004	5.6000e-004	30.8665
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4249**	**3.6772**	**1.8853**	**0.0232**		**0.2936**	**0.2936**		**0.2936**	**0.2936**	**0.0000**	**4,204.8009**	**4,204.8009**	**0.0806**	**0.0771**	**4,229.7880**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.30162e+007	0.3398	2.9037	1.2356	0.0185		0.2348	0.2348		0.2348	0.2348	0.0000	3,362.7868	3,362.7868	0.0645	0.0617	3,382.7701
Arena	1.85625e+006	0.0100	0.0910	0.0764	5.5000e-004		6.9200e-003	6.9200e-003		6.9200e-003	6.9200e-003	0.0000	99.0566	99.0566	1.9000e-003	1.8200e-003	99.6452
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
Hotel	5.4765e+006	0.0295	0.2685	0.2255	1.6100e-003		0.0204	0.0204		0.0204	0.0204	0.0000	292.2469	292.2469	5.6000e-003	5.3600e-003	293.9836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.921e+006	0.0158	0.1432	0.1203	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.8757	155.8757	2.9900e-003	2.8600e-003	156.8020
Research & Development	3.7125e+006	0.0200	0.1820	0.1529	1.0900e-003		0.0138	0.0138		0.0138	0.0138	0.0000	198.1131	198.1131	3.8000e-003	3.6300e-003	199.2904
Strip Mall	575000	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.6842	30.6842	5.9000e-004	5.6000e-004	30.8665
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4249**	**3.6772**	**1.8853**	**0.0232**		**0.2936**	**0.2936**		**0.2936**	**0.2936**	**0.0000**	**4,204.8009**	**4,204.8009**	**0.0806**	**0.0771**	**4,229.7880**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	3.04743e+007	3,963.0314	0.4009	0.0829	3,997.7684
Arena	567000	73.7355	7.4600e-003	1.5400e-003	74.3818
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	1.63704e+007	2,128.8907	0.2153	0.0446	2,147.5510
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
Hotel	1.2255e+006	159.3701	0.0161	3.3400e-003	160.7670
Parking Lot	190400	24.7606	2.5000e-003	5.2000e-004	24.9776
Regional Shopping Center	6.6548e+006	865.4230	0.0875	0.0181	873.0087
Research & Development	1.134e+006	147.4710	0.0149	3.0900e-003	148.7636
Strip Mall	1.31e+006	170.3589	0.0172	3.5700e-003	171.8521
Unenclosed Parking Structure	1.5323e+006	199.2679	0.0202	4.1700e-003	201.0145
Total		**7,781.4658**	**0.7871**	**0.1629**	**7,849.6724**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	3.04743e+007	3,963.0314	0.4009	0.0829	3,997.7684
Arena	567000	73.7355	7.4600e-003	1.5400e-003	74.3818
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	1.63704e+007	2,128.8907	0.2153	0.0446	2,147.5510
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
Hotel	1.2255e+006	159.3701	0.0161	3.3400e-003	160.7670
Parking Lot	190400	24.7606	2.5000e-003	5.2000e-004	24.9776
Regional Shopping Center	6.6548e+006	865.4230	0.0875	0.0181	873.0087
Research & Development	1.134e+006	147.4710	0.0149	3.0900e-003	148.7636
Strip Mall	1.31e+006	170.3589	0.0172	3.5700e-003	171.8521
Unenclosed Parking Structure	1.5323e+006	199.2679	0.0202	4.1700e-003	201.0145
Total		**7,781.4658**	**0.7871**	**0.1629**	**7,849.6724**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.3458	4.6083	55.2621	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9221	4,709.9221	0.1726	0.0847	4,739.4885
Unmitigated	31.3458	4.6083	55.2621	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9221	4,709.9221	0.1726	0.0847	4,739.4885

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.7888					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	23.4810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4671	3.9911	1.6984	0.0255		0.3227	0.3227		0.3227	0.3227	0.0000	4,622.1596	4,622.1596	0.0886	0.0847	4,649.6268
Landscaping	1.6090	0.6172	53.5638	2.8400e-003		0.2976	0.2976		0.2976	0.2976	0.0000	87.7625	87.7625	0.0840	0.0000	89.8617
Total	**31.3458**	**4.6083**	**55.2621**	**0.0283**		**0.6203**	**0.6203**		**0.6203**	**0.6203**	**0.0000**	**4,709.9221**	**4,709.9221**	**0.1726**	**0.0847**	**4,739.4885**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.7888					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	23.4810					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4671	3.9911	1.6984	0.0255		0.3227	0.3227		0.3227	0.3227	0.0000	4,622.1596	4,622.1596	0.0886	0.0847	4,649.6268
Landscaping	1.6090	0.6172	53.5638	2.8400e-003		0.2976	0.2976		0.2976	0.2976	0.0000	87.7625	87.7625	0.0840	0.0000	89.8617
Total	**31.3458**	**4.6083**	**55.2621**	**0.0283**		**0.6203**	**0.6203**		**0.6203**	**0.6203**	**0.0000**	**4,709.9221**	**4,709.9221**	**0.1726**	**0.0847**	**4,739.4885**

7.0 Water Detail

7.1 Mitigation Measures Water

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	236.0744	5.9043	0.1427	426.2161
Unmitigated	236.0744	5.9043	0.1427	426.2161

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	125.565 / 79.1597	164.2226	4.1041	0.0992	296.3909
Arena	3.431 / 0.219	3.6025	0.1121	2.6900e-003	7.2062
City Park	0 / 19.5735	8.9090	9.0000e-004	1.9000e-004	8.9871
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
Hotel	16.4247 / 1.82526	17.5992	0.5365	0.0129	34.8537
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	18.1041 / 11.0959	23.5333	0.5917	0.0143	42.5883
Research & Development	7.7745 / 0	7.9372	0.2539	6.1000e-003	16.1010
Strip Mall	7.08102 / 0.218977	7.3289	0.2313	5.5500e-003	14.7654
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**236.0744**	**5.9043**	**0.1427**	**426.2161**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	125.565 / 79.1597	164.2226	4.1041	0.0992	296.3909
Arena	3.431 / 0.219	3.6025	0.1121	2.6900e-003	7.2062
City Park	0 / 19.5735	8.9090	9.0000e-004	1.9000e-004	8.9871
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
Hotel	16.4247 / 1.82526	17.5992	0.5365	0.0129	34.8537
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	18.1041 / 11.0959	23.5333	0.5917	0.0143	42.5883
Research & Development	7.7745 / 0	7.9372	0.2539	6.1000e-003	16.1010
Strip Mall	7.08102 / 0.218977	7.3289	0.2313	5.5500e-003	14.7654
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**236.0744**	**5.9043**	**0.1427**	**426.2161**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,812.5733	107.1200	0.0000	4,490.5736
Unmitigated	1,812.5733	107.1200	0.0000	4,490.5736

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	7062.81	1,433.6866	84.7285	0.0000	3,551.8979
Arena	645	130.9292	7.7377	0.0000	324.3715
City Park	10.12	2.0543	0.1214	0.0000	5.0894
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
Hotel	202.4	41.0854	2.4281	0.0000	101.7873
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	666.75	135.3442	7.9986	0.0000	335.3096
Research & Development	164.25	33.3413	1.9704	0.0000	82.6016
Strip Mall	131.25	26.6426	1.5745	0.0000	66.0058
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,812.5733**	**107.1200**	**0.0000**	**4,490.5736**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	7062.81	1,433.6866	84.7285	0.0000	3,551.8979
Arena	645	130.9292	7.7377	0.0000	324.3715
City Park	10.12	2.0543	0.1214	0.0000	5.0894
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
Hotel	202.4	41.0854	2.4281	0.0000	101.7873
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	666.75	135.3442	7.9986	0.0000	335.3096
Research & Development	164.25	33.3413	1.9704	0.0000	82.6016
Strip Mall	131.25	26.6426	1.5745	0.0000	66.0058
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,812.5733**	**107.1200**	**0.0000**	**4,490.5736**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	3,670.0000	0.0000	0.0000	3,670.0000

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	5000	3,670.0000	0.0000	0.0000	3,670.0000
Total		**3,670.0000**	**0.0000**	**0.0000**	**3,670.0000**

Hunters Point Shipyard Phase II - Operational - GHG Analysis

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,265.00	1000sqft	52.10	4,265,000.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.50	1,381,600.00	0
Parking Lot	1,487.00	Space	7.10	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.10	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.30	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates provided by F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR GHG section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00
tblConstructionPhase	NumDays	550.00	0.00

tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	97.91	52.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.50
tblLandUse	LotAcreage	13.38	7.10
tblLandUse	LotAcreage	64.07	34.10
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.30
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7

tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	324.11	4,670.18
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10

tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	HO_TL	5.70	9.10
tblVehicleTrips	HS_TL	4.80	9.50
tblVehicleTrips	HW_TL	10.80	14.90
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27

tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.50
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.35
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.12
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82
tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10
tblVehicleTrips	SU_TR	5.95	2.42
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.28
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.32
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.49
tblVehicleTrips	WD_TR	32.93	13.41
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.39

tblVehicleTrips	WD_TR	8.11	3.30
tblVehicleTrips	WD_TR	44.32	18.05
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00
tblWater	IndoorWaterUseRate	2,097,074,684.82	221,054,950.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00
tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.4966	2.2063	26.5665	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0585	2,254.0585	0.0832	0.0406	2,268.2221
Energy	0.8386	7.5347	5.7533	0.0457		0.5794	0.5794		0.5794	0.5794	0.0000	17,484.0259	17,484.0259	1.0881	0.3444	17,613.8518
Mobile	5.1972	23.4704	65.0777	0.3136	35.4883	0.2251	35.7134	9.5467	0.2098	9.7565	0.0000	29,083.3650	29,083.3650	1.0956	0.0000	29,110.7554
Waste						0.0000	0.0000		0.0000	0.0000	1,877.2097	0.0000	1,877.2097	110.9399	0.0000	4,650.7075
Water						0.0000	0.0000		0.0000	0.0000	101.3352	281.5309	382.8660	10.4366	0.2517	718.7718
Total	**37.5324**	**33.2115**	**97.3975**	**0.3729**	**35.4883**	**1.1017**	**36.5900**	**9.5467**	**1.0864**	**10.6331**	**1,978.5448**	**49,102.9802**	**51,081.5250**	**123.6434**	**0.6366**	**54,362.3086**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.4966	2.2063	26.5665	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0585	2,254.0585	0.0832	0.0406	2,268.2221
Energy	0.8386	7.5347	5.7533	0.0457		0.5794	0.5794		0.5794	0.5794	0.0000	17,484.0259	17,484.0259	1.0881	0.3444	17,613.8518
Mobile	5.1972	23.4704	65.0777	0.3136	35.4883	0.2251	35.7134	9.5467	0.2098	9.7565	0.0000	29,083.3650	29,083.3650	1.0956	0.0000	29,110.7554
Waste						0.0000	0.0000		0.0000	0.0000	1,877.2097	0.0000	1,877.2097	110.9399	0.0000	4,650.7075
Water						0.0000	0.0000		0.0000	0.0000	101.3352	281.5309	382.8660	10.4366	0.2517	718.7718
Total	**37.5324**	**33.2115**	**97.3975**	**0.3729**	**35.4883**	**1.1017**	**36.5900**	**9.5467**	**1.0864**	**10.6331**	**1,978.5448**	**49,102.9802**	**51,081.5250**	**123.6434**	**0.6366**	**54,362.3086**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,670.0000
Total	**3,670.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 57.7

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,251,499; Non-Residential Outdoor: 2,750,500; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1972	23.4704	65.0777	0.3136	35.4883	0.2251	35.7134	9.5467	0.2098	9.7565	0.0000	29,083.3650	29,083.3650	1.0956	0.0000	29,110.7554
Unmitigated	5.1972	23.4704	65.0777	0.3136	35.4883	0.2251	35.7134	9.5467	0.2098	9.7565	0.0000	29,083.3650	29,083.3650	1.0956	0.0000	29,110.7554

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,360.34	8,980.40	8255.06	32,394,331	32,394,331
City Park	191.73	2,308.23	1698.18	2,113,585	2,113,585
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,144.95	255.00	109.65	2,902,056	2,902,056
Health Club	670.50	425.00	544.50	1,436,530	1,436,530
High School	210.00	75.00	30.00	655,660	655,660
Hotel	582.75	584.50	423.50	1,442,267	1,442,267
Junior College (2Yr)	200.00	68.00	0.00	511,625	511,625
Junior High School	667.92	0.00	0.00	1,614,901	1,614,901
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,739.00	2,035.00	1028.00	3,960,071	3,960,071
Research & Development	14,074.50	3,284.05	1919.25	37,775,169	37,775,169
Strip Mall	5,433.05	5,153.12	2504.32	10,305,547	10,305,547
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	34,274.74	23,168.30	16,512.46	95,111,743	95,111,743

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.90	9.50	9.10	31.00	15.00	54.00	86	11	3
City Park	14.90	9.50	9.10	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
General Office Building	14.90	9.50	9.10	33.00	48.00	19.00	77	19	4
Health Club	14.90	9.50	9.10	16.90	64.10	19.00	52	39	9
High School	14.90	9.50	9.10	77.80	17.20	5.00	75	19	6
Hotel	14.90	9.50	9.10	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	14.90	9.50	9.10	6.40	88.60	5.00	92	7	1
Junior High School	14.90	9.50	9.10	72.80	22.20	5.00	63	25	12
Parking Lot	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.90	9.50	9.10	16.30	64.70	19.00	54	35	11
Research & Development	14.90	9.50	9.10	33.00	48.00	19.00	82	15	3
Strip Mall	14.90	9.50	9.10	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9,185.0296	9,185.0296	0.9291	0.1922	9,265.5388
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9,185.0296	9,185.0296	0.9291	0.1922	9,265.5388
NaturalGas Mitigated	0.8386	7.5347	5.7533	0.0457		0.5794	0.5794		0.5794	0.5794	0.0000	8,298.9963	8,298.9963	0.1591	0.1522	8,348.3130
NaturalGas Unmitigated	0.8386	7.5347	5.7533	0.0457		0.5794	0.5794		0.5794	0.5794	0.0000	8,298.9963	8,298.9963	0.1591	0.1522	8,348.3130

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - GHG Analysis - San Francisco County, Annual

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.01549e+007	0.1626	1.3895	0.5913	8.8700e-003		0.1123	0.1123		0.1123	0.1123	0.0000	1,609.1806	1,609.1806	0.0308	0.0295	1,618.7431
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	4.92915e+006	0.0266	0.2416	0.2030	1.4500e-003		0.0184	0.0184		0.0184	0.0184	0.0000	263.0382	263.0382	5.0400e-003	4.8200e-003	264.6013
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
High School	458805	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4836	24.4836	4.7000e-004	4.5000e-004	24.6291
Hotel	4.3812e+006	0.0236	0.2148	0.1804	1.2900e-003		0.0163	0.0163		0.0163	0.0163	0.0000	233.7975	233.7975	4.4800e-003	4.2900e-003	235.1869
Junior College (2Yr)	1.27026e+006	6.8500e-003	0.0623	0.0523	3.7000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	67.7857	67.7857	1.3000e-003	1.2400e-003	68.1885
Junior High School	5.68215e+006	0.0306	0.2785	0.2340	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.2212	303.2212	5.8100e-003	5.5600e-003	305.0231
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	460000	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5474	24.5474	4.7000e-004	4.5000e-004	24.6932
Research & Development	1.05559e+008	0.5692	5.1745	4.3465	0.0311		0.3933	0.3933		0.3933	0.3933	0.0000	5,633.0169	5,633.0169	0.1080	0.1033	5,666.4911
Strip Mall	1.3846e+006	7.4700e-003	0.0679	0.0570	4.1000e-004		5.1600e-003	5.1600e-003		5.1600e-003	5.1600e-003	0.0000	73.8875	73.8875	1.4200e-003	1.3500e-003	74.3266
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.8386**	**7.5347**	**5.7533**	**0.0457**		**0.5794**	**0.5794**		**0.5794**	**0.5794**	**0.0000**	**8,298.9963**	**8,298.9963**	**0.1591**	**0.1521**	**8,348.3130**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.01549e+007	0.1626	1.3895	0.5913	8.8700e-003		0.1123	0.1123		0.1123	0.1123	0.0000	1,609.1806	1,609.1806	0.0308	0.0295	1,618.7431
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	4.92915e+006	0.0266	0.2416	0.2030	1.4500e-003		0.0184	0.0184		0.0184	0.0184	0.0000	263.0382	263.0382	5.0400e-003	4.8200e-003	264.6013
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
High School	458805	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4836	24.4836	4.7000e-004	4.5000e-004	24.6291
Hotel	4.3812e+006	0.0236	0.2148	0.1804	1.2900e-003		0.0163	0.0163		0.0163	0.0163	0.0000	233.7975	233.7975	4.4800e-003	4.2900e-003	235.1869
Junior College (2Yr)	1.27026e+006	6.8500e-003	0.0623	0.0523	3.7000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	67.7857	67.7857	1.3000e-003	1.2400e-003	68.1885
Junior High School	5.68215e+006	0.0306	0.2785	0.2340	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.2212	303.2212	5.8100e-003	5.5600e-003	305.0231
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	460000	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5474	24.5474	4.7000e-004	4.5000e-004	24.6932
Research & Development	1.05559e+008	0.5692	5.1745	4.3465	0.0311		0.3933	0.3933		0.3933	0.3933	0.0000	5,633.0169	5,633.0169	0.1080	0.1033	5,666.4911
Strip Mall	1.3846e+006	7.4700e-003	0.0679	0.0570	4.1000e-004		5.1600e-003	5.1600e-003		5.1600e-003	5.1600e-003	0.0000	73.8875	73.8875	1.4200e-003	1.3500e-003	74.3266
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.8386**	**7.5347**	**5.7533**	**0.0457**		**0.5794**	**0.5794**		**0.5794**	**0.5794**	**0.0000**	**8,298.9963**	**8,298.9963**	**0.1591**	**0.1521**	**8,348.3130**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.45828e+007	1,896.4132	0.1918	0.0397	1,913.0357
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	7.83367e+006	1,018.7294	0.1031	0.0213	1,027.6588
General Office Building	3.1824e+006	413.8550	0.0419	8.6600e-003	417.4825
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
High School	123685	16.0846	1.6300e-003	3.4000e-004	16.2256
Hotel	980400	127.4961	0.0129	2.6700e-003	128.6136
Junior College (2Yr)	379591	49.3639	4.9900e-003	1.0300e-003	49.7966
Junior High School	1.5318e+006	199.2028	0.0202	4.1700e-003	200.9489
Parking Lot	208180	27.0728	2.7400e-003	5.7000e-004	27.3101
Regional Shopping Center	1.048e+006	136.2871	0.0138	2.8500e-003	137.4817
Research & Development	3.22434e+007	4,193.0908	0.4241	0.0878	4,229.8443
Strip Mall	3.15448e+006	410.2241	0.0415	8.5900e-003	413.8199
Unenclosed Parking Structure	4.9833e+006	648.0529	0.0656	0.0136	653.7333
Total		**9,185.0296**	**0.9291**	**0.1922**	**9,265.5388**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.45828e+007	1,896.4132	0.1918	0.0397	1,913.0357
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	7.83367e+006	1,018.7294	0.1031	0.0213	1,027.6588
General Office Building	3.1824e+006	413.8550	0.0419	8.6600e-003	417.4825
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
High School	123685	16.0846	1.6300e-003	3.4000e-004	16.2256
Hotel	980400	127.4961	0.0129	2.6700e-003	128.6136
Junior College (2Yr)	379591	49.3639	4.9900e-003	1.0300e-003	49.7966
Junior High School	1.5318e+006	199.2028	0.0202	4.1700e-003	200.9489
Parking Lot	208180	27.0728	2.7400e-003	5.7000e-004	27.3101
Regional Shopping Center	1.048e+006	136.2871	0.0138	2.8500e-003	137.4817
Research & Development	3.22434e+007	4,193.0908	0.4241	0.0878	4,229.8443
Strip Mall	3.15448e+006	410.2241	0.0415	8.5900e-003	413.8199
Unenclosed Parking Structure	4.9833e+006	648.0529	0.0656	0.0136	653.7333
Total		**9,185.0296**	**0.9291**	**0.1922**	**9,265.5388**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.4966	2.2063	26.5665	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0585	2,254.0585	0.0832	0.0406	2,268.2221
Unmitigated	31.4966	2.2063	26.5665	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0585	2,254.0585	0.0832	0.0406	2,268.2221

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.4005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	25.0916					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2235	1.9099	0.8127	0.0122		0.1544	0.1544		0.1544	0.1544	0.0000	2,211.8231	2,211.8231	0.0424	0.0406	2,224.9669
Landscaping	0.7811	0.2965	25.7538	1.3700e-003		0.1429	0.1429		0.1429	0.1429	0.0000	42.2353	42.2353	0.0408	0.0000	43.2553
Total	**31.4966**	**2.2063**	**26.5665**	**0.0136**		**0.2973**	**0.2973**		**0.2973**	**0.2973**	**0.0000**	**2,254.0585**	**2,254.0585**	**0.0832**	**0.0406**	**2,268.2221**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.4005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	25.0916					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2235	1.9099	0.8127	0.0122		0.1544	0.1544		0.1544	0.1544	0.0000	2,211.8231	2,211.8231	0.0424	0.0406	2,224.9669
Landscaping	0.7811	0.2965	25.7538	1.3700e-003		0.1429	0.1429		0.1429	0.1429	0.0000	42.2353	42.2353	0.0408	0.0000	43.2553
Total	**31.4966**	**2.2063**	**26.5665**	**0.0136**		**0.2973**	**0.2973**		**0.2973**	**0.2973**	**0.0000**	**2,254.0585**	**2,254.0585**	**0.0832**	**0.0406**	**2,268.2221**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	382.8660	10.4366	0.2517	718.7718
Unmitigated	382.8660	10.4366	0.2517	718.7718

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	64.1933 / 40.4694	83.9567	2.0982	0.0507	151.5259
City Park	0 / 57.3323	26.0952	2.6400e-003	5.5000e-004	26.3239
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.526 / 2.774	5.8833	0.1479	3.5800e-003	10.6470
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
High School	1.3215 / 3.3981	2.8958	0.0433	1.0700e-003	4.2971
Hotel	4.43923 / 0.493325	4.7567	0.1450	3.4900e-003	9.4202
Junior College (2Yr)	0.8564 / 1.3396	1.4841	0.0280	6.8000e-004	2.3887
Junior High School	2.45309 / 6.30881	5.3759	0.0804	1.9800e-003	7.9770
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.4073 / 4.5399	9.6287	0.2421	5.8500e-003	17.4250
Research & Development	221.055 / 0	225.6810	7.2188	0.1733	457.8053
Strip Mall	10.8987 / 6.67974	14.1671	0.3562	8.6100e-003	25.6381
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**382.8660**	**10.4366**	**0.2517**	**718.7718**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	64.1933 / 40.4694	83.9567	2.0982	0.0507	151.5259
City Park	0 / 57.3323	26.0952	2.6400e-003	5.5000e-004	26.3239
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.526 / 2.774	5.8833	0.1479	3.5800e-003	10.6470
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
High School	1.3215 / 3.3981	2.8958	0.0433	1.0700e-003	4.2971
Hotel	4.43923 / 0.493325	4.7567	0.1450	3.4900e-003	9.4202
Junior College (2Yr)	0.8564 / 1.3396	1.4841	0.0280	6.8000e-004	2.3887
Junior High School	2.45309 / 6.30881	5.3759	0.0804	1.9800e-003	7.9770
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.4073 / 4.5399	9.6287	0.2421	5.8500e-003	17.4250
Research & Development	221.055 / 0	225.6810	7.2188	0.1733	457.8053
Strip Mall	10.8987 / 6.67974	14.1671	0.3562	8.6100e-003	25.6381
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**382.8660**	**10.4366**	**0.2517**	**718.7718**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,877.2097	110.9399	0.0000	4,650.7075
Unmitigated	1,877.2097	110.9399	0.0000	4,650.7075

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	3379.74	686.0567	40.5448	0.0000	1,699.6764
City Park	22.44	4.5551	0.2692	0.0000	11.2851
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
General Office Building	238.43	48.3991	2.8603	0.0000	119.9068
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
High School	54	10.9615	0.6478	0.0000	27.1567
Hotel	161	32.6816	1.9314	0.0000	80.9671
Junior College (2Yr)	72	14.6154	0.8637	0.0000	36.2089
Junior High School	182.16	36.9768	2.1853	0.0000	91.6085
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	4670.18	948.0043	56.0255	0.0000	2,348.6406
Strip Mall	316.05	64.1553	3.7915	0.0000	158.9420
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,877.2097**	**110.9399**	**0.0000**	**4,650.7075**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	3379.74	686.0567	40.5448	0.0000	1,699.6764
City Park	22.44	4.5551	0.2692	0.0000	11.2851
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
General Office Building	238.43	48.3991	2.8603	0.0000	119.9068
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
High School	54	10.9615	0.6478	0.0000	27.1567
Hotel	161	32.6816	1.9314	0.0000	80.9671
Junior College (2Yr)	72	14.6154	0.8637	0.0000	36.2089
Junior High School	182.16	36.9768	2.1853	0.0000	91.6085
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	4670.18	948.0043	56.0255	0.0000	2,348.6406
Strip Mall	316.05	64.1553	3.7915	0.0000	158.9420
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,877.2097**	**110.9399**	**0.0000**	**4,650.7075**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	3,670.0000	0.0000	0.0000	3,670.0000

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	5000	3,670.0000	0.0000	0.0000	3,670.0000
Total		**3,670.0000**	**0.0000**	**0.0000**	**3,670.0000**

Appendix F3

Recycled Water Facility Location and Odor Control

ESA

Memorandum

Date: November 27, 2017
To: Mark Luckhardt - FivePoint
From: Andre Zinkevich, P.E & Zach Gallagher, P.E. - NSU

Re: Hunters Point Water Reclamation Plant Siting: Location and Odor Control

Mr. Luckhardt,

The purpose of this memorandum is to confirm that the proposed Hunters Point water reclamation facility **will not** have any objectionable or detectable odor at the perimeter of the facility that would be noticed by the public.

Natural Systems Utilities (NSU) can commit to controlling odor at our sites because we have completed this previously at many of our facilities over the past thirty (30) years. NSU operates over 200 onsite facilities from coast to coast. The facilities range in technology and requirements based on local codes and varying requirements for the intended uses. NSU has been heavily involved in guiding the San Francisco Public Utilities Commission (SFPUC) with their current local reuse ordinance and supplied our in-building water reuse practices as a reference during SFPUC code formation and adoption.

The proposed Hunters Point facility will most closely represent some of our east coast facilities like:

1. **Battery Park, NYC**: Six (6) complete water reuse systems located inside the buildings of high-end residential apartment complexes where odor cannot be present.
2. **Queset Commons, Easton MA**: Wastewater treatment plant for a mixed used development located directly adjacent to homes and commercial establishments.
3. **Gillette Stadium, Foxboro MA**: Onsite water reuse facility for the New England Patriots with the treatment facility located within the commercial district and immediately adjacent to surrounding restaurants.

Aerial images for these three examples have been included as **Attachment A** to illustrate how close the systems can be located to residential and commercial uses as long as the following principles are applied:

1. NSU encloses all unit processes in buildings and under covers
2. NSU collects gases in unit process tank head spaces
3. NSU does not digest or dewater sludge on site where odor is a concern
4. NSU provides carbon scrubbers or other suitable odor control units

Single page case studies have also been included as **Attachment B** and a video tour for the in building systems referenced above can be found at http://www.nsuwater.com/solutions/water-reuse/. These in-building systems have **been in operation for over 15 years now without a single odor complaint**. We are confident that the location proposed for the Hunters Point water reuse facility is appropriate and that odor can be adequately managed there.

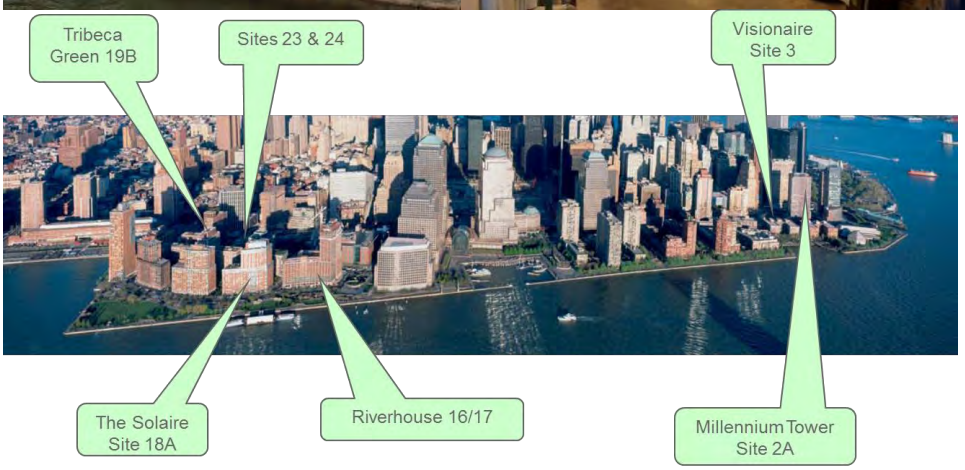
Please let us know if you have questions or need additional information.

Regards,

Andre Zinkevich & Zach Gallagher

Attachment A: Aerial Images

1. **Battery Park, NYC**
   - Wastewater System in Basement of luxury high-rise buildings
   - All unit processes are enclosed
   - No sludge processing
   - Tank headspace gas captured
   - Carbon odor control provided
   - In operation for over 15 years without a single odor complaint



2. Queset Commons – North Easton, Massachusetts

- Nearby homes and businesses
- All unit processes are enclosed
- No sludge processing
- Tank headspace gas captured
- Carbon odor control provided

3. Gillette Stadium – Foxboro, MA

- Onsite water reuse system for the New England Patriots
- Located within the stadium parking lot within the commercial district and adjacent to restaurants
- Carbon odor control provided
- In operation for over 15 years without a single odor complaint

Washington St
Patriot Pl
Bass Pro Dr
P8 Gate Gillette Stadium
Gillette Stadium: Lot 14
Gillette Stadium: Lot 13
Off Broadway Shoe Warehouse
Trader Joe's
Olive Garden Italian
Blue Fin Lounge
Bass Pro Shops
Mann Pond
Google

Attachment B: Case Studies

Battery Park City Water Reuse

New York City, NY

Battery Park City is a redevelopment area of 92 acres under the control of the Battery Park City Authority (BPCA) of New York City. Natural Systems Utilities (NSU) designed, built and currently operates six onsite water treatment and reuse systems serving Battery Park City.

The BPCA adopted a mission of sustainable urban development for the redevelopment of this land, including water reuse objectives, more advanced than LEED requirements. Currently, these six onsite water treatment and reuse systems service eight buildings:

- The Solaire
- Tribeca Green
- Millennium Tower
- The Visionaire
- Riverhouse
- Liberty Luxe
- Liberty View
- The Verdesian

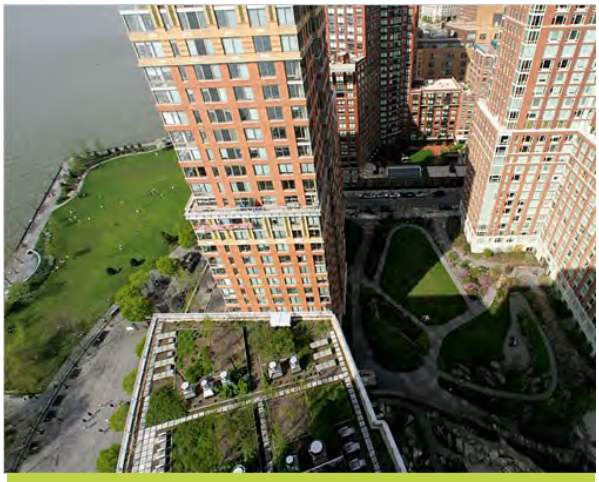
Systems include treatment with hollow fiber micro-filtration membranes, ultraviolet light disinfection, and biological nitrogen removal to comply with New York City Department of Buildings direct water reuse standards. The total design flow for these systems is 165,000 gallons per day (gpd).

The Soliare

The first project in NYC to incorporate wastewater reuse was the Solaire Building, which began operation in 2003 The treated water is reused for flushing toilets in the 293-unit apartment building, cooling tower make-up and for green roof irrigation. The latest systems in Battery Park City also reuse water for laundry.

Achievements

These systems have consistently achieved greater than 50% water consumption reduction and a greater than 60% reduction in wastewater discharge (compared to similar base residential buildings in NYC). Water and wastewater savings are the direct result of wastewater reuse and water conservation. Battery Park City has been developed as a model for scaling water conservation and reuse projects in urban redevelopment and campus scale settings.



The Solaire:
Green roof (L) and Teardrop Park (R)

2 Clerico Lane, Building 1, Hillsborough, New Jersey 08844 | T: 908.359.5501 | F: 908.359.8286 | W: NSUwater.com

QUESET COMMONS

Easton, MA

Owner: Douglas A. King, Builders, Inc.

Wastewater Treatment Plant

Design-Build-Operate

Queset Commons is a new mixed use development also located in Easton, Massachusetts. The project is on a 68.7 acre property is within a designated smart growth zoning area, set back from the shoreline of Queset Pond. Existing uses adjacent to Queset Common and on land owned by DAKB include: a 99-unit "active adult apartment community"; and a 240-seat.

Proposed new uses in Queset Commons include: 197 residential units (a mix of condominiums and apartments); 116,000 square feet of retail and commercial space; and an 83-unit assisted living facility. These existing and proposed units will be served by a wastewater treatment facility that has been preliminary designed by AWM. Phase 1 of the project will have design flows of 76,000 gpd; phase 2 will have additional design flows of 24,000 gpd; and phase 3 will have design flows of an additional 50,000 gpd. DAKB has had the wastewater treatment plant building exterior designed by an architect to incorporate historic architect, H.H. Richardson's design elements, with expansion capacity to the total of 150,000 gpd design flow.

In July, 2013, NSU and DAKB executed a design-build agreement for final design and construction of the first phase of the project providing 76,000 gallons per day of wastewater reclamation capacity. Construction was completed in the summer of 2015, and NSU commenced operation and maintenance under a five-year operating agreement with DAKB, with initial flows limited to 50,000 gpd discharge to a single leachfield.

The Town of Easton has established the Queset Sewer District, which will collect up to 50,000 gpd of wastewater along public rights of way and convey it to the Queset Commons WWTP. The next step is the expansion of the plant and leachfield capacity to 100,000 gpd, which is scheduled to be completed prior to July 1, 2017, to allow for onsite treatment of the private and public wastewater and dispersal. The Town will operate the collection system and DAKB/NSU will operate the WWTP. The town will collect betterment and operating fees from the users of the municipal WWTP and pay DAKB for their share of the capital construction of the WWTP, another leachfield, and the town's share of the WWTP operating costs. DAKB will eventually increase WWTP and leachfield capacity to 150,000 gpd, when they need that last 50,000 gpd for the build out of the mixed-use smart-growth project.

NATURAL SYSTEMS UTILITIES

A BETTER WAY

ONSITE WATER REUSE SYSTEM

Gillette Stadium

Foxborough, Massachusetts

NSU designed, built, and currently operates the water reuse system for Gillette Stadium and Patriot Place; home of the New England Patriots Football Team.

Challenge

In 2001, during the design phases of the new stadium, it was determined that, due to the projected water usage required for the arena, the Town of Foxborough's water infrastructure would not be able to supply the required peak demand on game day. It was also apparent that the municipal wastewater treatment facility in place would not be able to handle the excess wastewater flow. Additional services necessary for the stadium and the Town of Foxborough included managing the water reuse system, repair and maintenance, customer services and capital planning.

Collaboration for Results

The municipality and the owner cooperated in the construction of a water reuse system that resolved both problems. NSU worked closely with the Town of Foxborough, the owner, an infrastructure engineering firm and the Massachusetts Department of Environmental Protection to ensure that the facility design exceeded the Town's, the Commonwealth's and the stadium's requirements and was constructed within budget and on schedule. The water reuse system was upgraded in 2007 to provide additional capacity. The current system includes: two pumping stations; force mains; almost 1,000,000 gallons of pre-treatment storage volume to capture the wastewater flows generated by fans; a 250,000 gallons per day membrane bioreactor (MBR) treatment plant that generates water suitable for reuse; a leachfield for replenishing groundwater when reuse water is not needed; and a 500,000 gallon elevated storage tank for reclaimed water. The recycled water is used for toilet flushing.

Sustainable Communities

The goal was to create a sustainable and environmentally friendly system to produce high-quality reuse water for the stadium's 68,000 fans during peak half-time flush periods – without creating additional demands on the community's existing infrastructure. The implemented system returns high-quality treated wastewater both to the stadium and the adjacent Patriot Place.

21 Father DeValles Blvd, Suite 107, Fall River, MA 02723 | T: 508.675.5755 | F: 508.675.5599 | W: nsuwater.com

Appendix F4

Water Recycling Facility Odor Control Measures

ESA

December 28, 2017

Mr. Daniel Hansen
FivePoint
1 Sansome Street, Suite 3200
San Francisco, CA 94104

Via electronic mail: Daniel.Hansen@fivepoint.com

Subject: **Hunters Point Odor Control Measures for Water Recycling Facility**

Dear Mr. Hansen,

Continuing on our discussions of managing odor at water recycling facilities, below, please find information on how each potential source of odor will be controlled to reduce odor impacts on the community at the proposed Hunters Point Water Recycling Facility.

1) General – The process tanks that can cause odors are those that are gravity tanks containing partially process wastewater where there is an air space above the tank. The primary odor control mechanism is a carbon scrubber system which works as follows.
   a) We enclose/cover process tanks
   b) The air in the area above the water line is captured via a suction blower capturing air from one or more unit processes
   c) Captured air is conveyed to a common granular activated carbon scrubber system
   d) In the scrubber system air enters a dry tank and passes through a carbon bed
   e) Carbon is periodically removed and replaced (usually once per year or as needed)
2) Screen Box: Screens garbage out
   a) Box is small and is enclosed
   b) Screenings so straight to a bag
   c) Air goes to Scrubber system
3) Equalization Tanks: Raw sewage
   a) Tank is covered
   b) Air goes to the scrubber system
4) Anoxic Tanks: This tank treats the fluid at a relatively low oxygen concentration
   a) The tank is mixed and covered
   b) Air goes to the scrubber system
5) Aeration and Membrane tanks. These tanks are process tanks that work by passing a lot of air through the water to activate the biological process and to scour membranes.
   a) We will cover the tanks
   b) Air goes to the scrubber system

6) Finished water tanks
   a) Not an odor issue
   b) We will enclose the tank
7) Sludge Processing. Waste activated sludge
   a) We will not process sludge on site
   b) Our plan is to waste sludge directly to the SFPUC sewer system

Please let me know if you have questions or need additional information.

Respectfully,

Andre Zinkevich, P.E.
Vice President
Natural Systems Utilities-CA, Inc.

Appendix G
Noise Data

ESA

Table G-1. Project Related Construction Equipment

Project Equipment [1]	*FTA Equipment* [2]	*Construction Activities Requiring Equipment*	*Typical Noise Level (dBA)*	
			50 Feet from Source [3]	*100 Feet from Source* [4]
Compactors	Compactor	Site Preparation, Building Construction, and Roadway Improvements	82	76
Cement Truck	Concrete Mixer	Building Construction	85	79
Pump Trucks	Concrete Pump	Building Construction, Roadway Improvements	82	76
Cranes	Crane, Mobile	Site Preparation, Building Construction, and Roadway Improvements	83	77
Dozers	Dozer	Site Preparation, Building Construction, and Roadway Improvements	85	79
Grader	Grader	Site Preparation, Building Construction, and Roadway Improvements	85	79
Pavement Crusher	Grader	Roadway Improvements	85	79
Soil stabilizer	Grader	Site Preparation, Building Construction, and Roadway Improvements	85	79
Loaders	Loader	Site Preparation, Building Construction, and Roadway Improvements	85	79
Excavators	Loader	Site Preparation, Building Construction, and Roadway Improvements	85	79
Rough Terrain Fork lift	Loader	Site Preparation and Building Construction	85	79
Asphalt Layer	Paver	Site Preparation, Building Construction, and Roadway Improvements	89	83
Pile Driver	Pile-driver (Impact)	Building Construction and Roadway Improvements	101	95
Drill Rig Truck	Drill Rig Truck [5]	Site Preparation (boreholes) and Roadway Improvements	79	73
Roller	Roller	Site Preparation, Building Construction, and Roadway Improvements	74	68
Man Lifts	Roller	Site Preparation and Building Construction	74	68
Bobcat	Roller	Site Preparation, Building Construction, and Roadway Improvements	74	68
Sweeper	Roller	Site Preparation and Building Construction	74	68
Scrapers	Scraper	Site Preparation and Building Construction	89	83
Dump Truck	Truck	Site Preparation	88	82
Off Road Dump Trucks	Truck	Site Preparation, Building Construction, and Roadway Improvements	88	82
Support Trucks	Truck	Site Preparation	88	82
Water Trucks	Truck	Site Preparation, Building Construction, and Roadway Improvements	88	82

SOURCE: Noise levels for FTA equipment from FTA, *Transit Noise and Vibration Guidance Handbook*, May 2006. Project equipment and activities from 2017 Modified Project Variant Construction Phasing, revised September 2017.

NOTES:

[1] Project equipment categories for 2017 Modified Project Variant construction.

[2] FTA equipment category with similar noise emissions to project equipment.

[3] Typical noise levels for Project equipment based on similar FTA equipment operating at 50 feet.

[4] Typical noise level at 100 feet calculated assuming 6 dBA reduction per doubling of distance.

[4] "Drill Rig Truck" noise level not found in FTA manual; sound level data from Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). Sound level data found online at https://www.fhwa.dot.gov/Environment/noise/construction_noise/handbook/handbook09.cfm.

Table G-2. Construction-related Noise Results, by Activity and Area

Construction Activity[1]	*Construction Project Area*[2]	*Max Construction-Related Noise Levels without Pile-Driving (dBA)*		*Max Construction-Related Noise Levels with Pile-Driving (dBA)*	
		Off-site Receiver[3]	*On-site Receiver*[4]	*Off-site Receiver*[3,5]	*On-site Receiver*[4,5]
Abatement	HP-01	68	-	-	-
Abatement	HP-01 Parks	66	84	-	-
Abatement	Waste Water Treatment Plant	65	76	-	-
Abatement	HP-02	69	-	-	-
Abatement	HP-02 Parks	89	94	-	-
Abatement	HP-03	63	59	-	-
Abatement	HP-03 Parks	63	86	-	-
Abatement	HP-03 Roadway Improvements	79	60	-	-
Abatement	HP-04	60	64	-	-
Abatement	HP-04 Parks	61	87	-	-
Abatement	HP-05	59	65	-	-
Abatement	HP-06	67	76	-	-
Abatement	HP-06 Community SFC and Maintenance Yard	69	85	-	-
Abatement	HP-06 Grassland EP and Multiuse Open Space	71	87	-	-
Demolition	HP-01	68	-	-	-
Demolition	HP-01 Parks	66	84	-	-
Demolition	Waste Water Treatment Plant	65	76	-	-
Demolition	HP-02	69	-	-	-
Demolition	HP-02 Parks	89	94	-	-
Demolition	HP-03	63	60	-	-
Demolition	HP-03 Parks	63	86	-	-
Demolition	HP-03 Roadway Improvements	79	60	-	-
Demolition	HP-04	60	64	-	-
Demolition	HP-04 Parks	61	87	-	-
Demolition	HP-05	59	65	-	-
Demolition	HP-05 Parks	58	85	-	-
Demolition	HP-06	67	76	-	-
Demolition	HP-06 Community SFC and Maintenance Yard	69	85	-	-
Demolition	HP-06 Grassland EP and Multiuse Open Space	71	87	-	-
Foundation Piles/Structure/Rough-In	HP-01	71	51	-	-
Foundation Piles/Structure/Rough-In	HP-01 Parks	66	84	79	98
Foundation Piles/Structure/Rough-In	HP-02	69	61	82	75
Foundation Piles/Structure/Rough-In	HP-02 Parks	89	94	101	101
Foundation Piles/Structure/Rough-In	HP-03	63	79	76	92
Foundation Piles/Structure/Rough-In	HP-03 Parks	63	86	-	-
Foundation Piles/Structure/Rough-In	HP-04	60	76	73	89
Foundation Piles/Structure/Rough-In	HP-04 Bridges	56	77	70	90
Foundation Piles/Structure/Rough-In	HP-05	59	77	72	90
Foundation Piles/Structure/Rough-In	HP-06	69	79	-	-
Grading & Infrastructure	HP-01	71	49	-	-
Grading & Infrastructure	HP-01 Parks	69	87	-	-
Grading & Infrastructure	HP-01 Surcharge	64	14	-	-
Grading & Infrastructure	Waste Water Treatment Plant	67	79	-	-
Grading & Infrastructure	HP-02	72	-	-	-
Grading & Infrastructure	HP-02 Parks	91	96	-	-
Grading & Infrastructure	HP-03	66	62	-	-
Grading & Infrastructure	HP-03 Parks	63	86	-	-
Grading & Infrastructure	HP-03 Roadway Improvements	82	63	-	-
Grading & Infrastructure	HP-03 Surcharge	63	46	-	-
Grading & Infrastructure	HP-04	62	76	-	-
Grading & Infrastructure	HP-04 Geothermal	56	58	-	-
Grading & Infrastructure	HP-04 Parks	61	87	-	-
Grading & Infrastructure	HP-04 Surcharge	58	64	-	-
Grading & Infrastructure	HP-05	62	66	-	-
Grading & Infrastructure	HP-05 Parks	58	85	-	-
Grading & Infrastructure	HP-05 Surcharge	57	60	-	-
Grading & Infrastructure	HP-06	69	79	-	-
Grading & Infrastructure	HP-06 Community SFC and Maintenance Yard	69	85	-	-
Grading & Infrastructure	HP-06 Grassland EP and Multiuse Open Space	71	87	-	-

Table G-2. Construction-related Noise Results, by Activity and Area

Construction Activity[1]	*Construction Project Area*[2]	*Max Construction-Related Noise Levels without Pile-Driving (dBA)*		*Max Construction-Related Noise Levels with Pile-Driving (dBA)*	
		Off-site Receiver[3]	*On-site Receiver*[4]	*Off-site Receiver*[3,5]	*On-site Receiver*[4,5]
Grading & Infrastructure	HP-06 Surcharge	64	83	-	-
Grading & Infrastructure	HPS2 Site	86	58	-	-
Grading & Infrastructure	HP-06 Sports	51	57	-	-
Grading & Infrastructure	HPS-01A Geothermal	77	-	-	-
Roadway Improvements	HP-03 YS Bridge	56	71	69	85
Roadway Improvements	Innes Ave. Improvements	94	67	-	-
Roadway Improvements	Palou Ave. Improvements	91	55	-	-
Interior & Exterior Finishes	HP-01	68	71	81	84
Interior & Exterior Finishes	HP-01 Parks	66	84	-	-
Interior & Exterior Finishes	HP-02	69	61	-	-
Interior & Exterior Finishes	HP-02 Parks	89	94	-	-
Interior & Exterior Finishes	HP-03	63	79	-	-
Interior & Exterior Finishes	HP-03 Parks	63	86	-	-
Interior & Exterior Finishes	HP-04	60	76	73	89
Interior & Exterior Finishes	HP-04 Bridges	56	77	70	90
Interior & Exterior Finishes	HP-04 Parks	61	87	-	-
Interior & Exterior Finishes	HP-05	59	77	-	-
Interior & Exterior Finishes	HP-05 Parks	56	82	-	-
Interior & Exterior Finishes	HP-06	67	76	80	89
Interior & Exterior Finishes	HP-06 Community SFC and Maintenance Yard	69	85	-	-
Interior & Exterior Finishes	HP-06 Grassland EP and Multiuse Open Space	71	87	-	-

SOURCE: Noise levels for FTA equipment from FTA, *Transit Noise and Vibration Guidance Handbook* , May 2006. Project equipment activities and schedule from 2017 Modified Project Variant Construction Schedule and Resources, revised October 2017. Calculations by Ramboll, December 2017.

NOTES:

Noise levels were calculated at the nearest noise-sensitive receiving location assuming the top two loudest equipment (with and without pile driving) operate simultaneously.

[1] See Table G-1 for typical equipment associated with Site Preparation (Abatement, Demolition, and Grading), Building Construction (Foundation Piles/Structure/Rough-In and Interior & Exterior Finishes), and Roadway Improvements.

[2] Construction project areas based on the 2017 Modified Project Variant.

[3] Off-site noise-sensitive uses include existing residences and places of worship in the Bayview and Hunters Point neighborhoods.

[4] On-site noise-sensitive uses include future residential units, the hotel, and two schools proposed under the 2017 Modified Project Variant. A dash (-) indicates no on-site noise-sensitive use would be occupied during construction.

[5] Dashes (-) indicate sustained pile driving would not be utilized.

Table G-3. Traffic Volumes, Composition, and Speeds Assumed for Operational Impact Assessment

Roadway Segment	*Model Scenario*	*Total PM-Peak Period Traffic Volume (vph)*	*Traffic Composition (vph)* [1]				*Speed Limit (mph)* [2]
			LDV	*MDV*	*HDV*	*Bus*	
Palou Avenue east of 3rd Street	Existing	457	434	9	4	10	25
Gilman Avenue east of 3rd Street	Existing	431	412	9	4	6	25
Jamestown Ave north of Harney Way	Existing	204	198	4	2	0	35
Harney Way west of Jamestown Ave	Existing	146	142	3	1	0	40
Innes south of Earl Street	Existing	170	159	3	2	6	35
Palou Avenue east of 3rd Street	Existing + Project	1,483	1,423	29	15	16	25
Gilman Avenue east of 3rd Street	Existing + Project	2,353	2,277	47	23	6	25
Jamestown Ave north of Harney Way	Existing + Project	966	937	19	10	0	35
Harney Way west of Jamestown Ave	Existing + Project	2,607	2,529	52	26	0	40
Innes south of Earl Street	Existing + Project	2,057	1,982	41	20	14	35
Palou Avenue east of 3rd Street	Future Background	1,170	1,125	23	12	10	25
Gilman Avenue east of 3rd Street	Future Background	910	877	18	9	6	25
Jamestown Ave north of Harney Way	Future Background	940	912	19	9	0	35
Harney Way west of Jamestown Ave	Future Background	1,690	1,639	34	17	0	40
Innes south of Earl Street	Future Background	1,500	1,449	30	15	6	35
Palou Avenue east of 3rd Street	Future Background + Project	1,762	1,694	35	17	16	25
Gilman Avenue east of 3rd Street	Future Background + Project	2,247	2,174	45	22	6	25
Jamestown Ave north of Harney Way	Future Background + Project	1,392	1,350	28	14	0	35
Harney Way west of Jamestown Ave	Future Background + Project	3,197	3,101	64	32	0	40
Innes south of Earl Street	Future Background + Project	2,301	2,218	46	23	14	35
Onsite Bus Routes	Future Background + Project	0	0	0	0	14	30

SOURCE: Total Existing and Future Background PM-peak period traffic volumes from 2010 FEIR. Total Future Background + Project PM-peak period traffic volumes from 2017 Modified Project Variant Traffic Impact Analysis.

NOTES:

[1] Traffic composition assumes 97% light-duty vehicles (LDV), 2% medium duty vehicles (MDV), and 1% heavy duty vehicles (HDV). Buses based on existing and proposed transit revisions for the 2017 Modified Project Variant.

[2] Speed limits based on existing signage, assessed with Google Street View, December 2017.

Appendix H

Historic Resources Memorandum

ESA

ESA

233 Wilshire Boulevard
Suite 150
Santa Monica, CA 90401
310.451.4488 phone
310.451.5279 fax

www.esassoc.com

Historic Resources Memorandum

CP-HPS2 2010 FEIR Addendum 5: Potential Impacts Analysis for Dry Dock 4

December 26, 2017

As described on 2010 FEIR p. III.J-21, two historical resources are situated within the vicinity of the HPS Phase II project site, including the Hunter's Point Commercial Dry Dock and Naval Shipyard Historic District (District), and Dry Dock 4 that is an individual resource.

The District consists of 11 contributing buildings, structures and objects associated with the area's "transition from early commercial dry-dock operation to high tech naval repair and Radiological research" (Circa Historic Property Development, *Hunter's Point Commercial Dry Dock and Naval Shipyard Historic District DPR Form*, October 31, 2008).

Dry Dock 4 and six buildings and structures in the District were previously determined eligible for the National Register of Historic Places (National Register) by consensus through the Section 106 process and are, therefore, automatically listed in the California Register of Historical Resources by act of law (Bonnie I. Baumberg, Urban Programmers, *Historical Overview of Hunters Point Annex, Treasure Island Naval Base and Descriptions of Properties that Appear to Qualify for Listing in the National Register of Historic Places*, 1988; Letter, Louis S. Wall, Department of the Navy to Lee Keatings, Advisory Council on Historic Preservation, October 15, 1998—findings of May 29, 1998, letter from SHPO to Navy are stated in this letter). Later, five additional structures were identified as contributors to the District in the 2008 survey.

Of these, only Dry Dock 4, described below, would be potentially impacted by the proposed project under the Addendum 5 scope of work. However, the Project would include Preservation Guidelines for Dry Dock 4 that would ensure the proposed improvements would conform with the SOI Standards; therefore, potential impacts would be less than significant pursuant to CEQA.

District Description

This District description is based on a review of the National Register nomination form and HAER Report, and a site visit conducted by ESA's qualified architectural historian, Dr. Margarita Jerabek, on Thursday November 2, 2017.

The District is sited at the easternmost point of Hunters Point Shipyard and is generally bounded by Lockwood Street to the west, and Spear and Fisher Avenues to the south and southwest, respectively. The historic district includes 11 contributing buildings and structures constructed between 1901 and 1947 shown in Table 1 that are

present within the boundaries of the historic district. Remnants of capstans and bollards are present and the area has been paved with asphalt. Two concrete dry docks, sited parallel to one another, form the core of the historic district. Buildings 205, 204, and 207 are located between Dry Docks 2 and 3, while Building 140 is located on the north side of Dry Dock 3. Generally, the buildings contributing to the historic district are of concrete or brick construction, with gable roofs and concrete foundations and are designed in Neoclassical Revival style. The exception is Building 207, which is utilitarian in design.

Table 1 Identified Historical Resources

Structure	Date	CRHR Status Code	Eligibility	Resources Affected under Addendum 5
140	1918	2D2*	NR/CR District Contributor	No Adverse Impact
204	1901	2D2*	NR/CR District Contributor	No Adverse Impact
205	1901	2D2*	NR/CR District Contributor	No Adverse Impact
207	ca. 1930 (remod. 1942)	2D2*	NR/CR District Contributor	No Adverse Impact
208	ca. 1930 (remod. 1942)	3CD**	CR District Contributor	No Adverse Impact
211	1942	3CD**	CR District Contributor	No Adverse Impact
224	1944	3CD**	CR District Contributor	No Adverse Impact
231	1942–45	3CD**	CR District Contributor	No Adverse Impact
253	1947	3CD**	CR District Contributor	No Adverse Impact
Dry Dock 2	1903	2D2*	NR/CR District Contributor	No Adverse Impact
Dry Dock 3	1918	2D2*	NR/CR District Contributor	No Adverse Impact
Dry Dock 4	1943	2S2***	NR/CR Individual Property	Potential Impact that is Less Than Significant

* Contributor to district determined eligible for NR by consensus through Section 106 process. Listed in the CR.
** Appears eligible for CR as a contributor to a CR eligible district through survey evaluation.
*** Individual property determined eligible for NR by a consensus through Section 106 process. Listed in the CR.

Dry Dock 2, just south of Building 205, is a 750-foot-long, 89-foot-wide, and 28-foot-10-inch-deep graving dock. This dry dock is currently open to the bay; therefore, only approximately 6 feet of the dry-dock chamber was visible between the water line and dry-dock coping. The basin is sheathed in concrete, smooth around the bow and at the entrance (stern) end. The top five of twelve altars (steps in the wall of a dry dock) beneath the coping are currently visible.

A series of fourteen service galleries line each side of Dry Dock 2, just beneath the curb. Each gallery has a metal railing around the perimeter. Two sets of metal flush-mounted staircases on each wall descend into the water. A chain handrail consisting of posts with an eye at the top, and at mid-level support two chains, stretch around the dry dock, with breaks at access points.

Original capstans, some electric, some hand-operated, were replaced by the Navy, and remnants of the replacements remain around the perimeter of Dry Dock 2. Original crane tracks have been removed from the perimeter as well and/or pave over with asphalt. The floating caisson, a replacement built by Pacific Coast Engineering Company of Alameda in 1952, remains afloat at the bow end of the dry dock. Eight valves flood the dry dock through the caisson, and two valves flood the caisson to sink it in place. The caisson deck is enclosed by the same type of chain handrail around the perimeter of the dry dock. Cleats and capstans are also present on deck level of the caisson.

Dry Dock 3, also filled with water to about 6 feet beneath the coping, is larger, measuring 1,005 feet long, 114 feet wide and 39 feet 10 inches deep. It was constructed in 1916–1918. The basin is sheathed in concrete, smooth around the bow and at the entrance end. The top five of twelve altars beneath the coping are currently visible. A series of service galleries line each side of the dry dock just beneath the curb. Each gallery has a metal railing around the perimeter. Concrete staircases built into the chamber walls descend into the water. A chain handrail consisting of posts with an eye at the top, and at mid-level support two chains, and stretch around the dry dock, with breaks at access points. Remnants of crane tracks have been removed and/or paved over with asphalt. Original electrically driven capstans were present and operational around the perimeter of the dry dock until the Navy began replacing them in the 1940s.

Dry Dock 4 Description

The following description is summarized from the Hunters Point Naval Shipyard, Dry Dock 4, HAER documentation (HAER No. CA-181-A), on file in the Library of Congress.

Dry Dock 4 has a southeast to northwest orientation with the long centerline axis running in this direction. The entrance into the dry dock is at the southeast end, accomplished by removal of the caisson after flooding of the dock is completed. Dry Dock 4 was last certified for a maximum docking capacity of 91 ,400 long tons, as documented in the 1979 Facility Certification Report (FCR) for the dock.

Based upon original construction drawings, its dimensions are 1,092 feet long, 171 feet wide (at the coping), and 53 feet deep. The length is nominally measured from the face of the outer caisson seat along the dock centerline axis to the rounded northwesterly end at the coping face. As constructed, Dry Dock 4 is a fully relieved, reinforced concrete graving dock with integral flooding and dewatering systems. A utility tunnel and utility service galleries are located along both sides of the dock to provide utility services for ship-board and industrial uses.

Thirteen electrically powered capstans, built by Modern Engineering Company, are positioned around the dock, six on each side and one at the head (northwest end). The use of these capstans, bollards and fittings can be seen in some of the historic photographs.

The dock floor is typically a thin reinforced concrete slab with expansion joints at 48-foot centers, with the slab placed directly upon the serpentine bedrock. When originally constructed, longitudinal drainage gutters ran along each side of the floor and transverse bilge block bearers were spaced at 12-foot centers throughout most of the dock length. Although the bedrock beneath the floor does not readily conduct water, weep holes are provided through the floor to insure that excessive uplift pressures will not develop beneath the slab. These weep holes are 4-inch-diameter gravel filled drains capped with a thin layer of porous concrete and are typically spaced on a 12-foot by 12-foot grid pattern in the floor of the dock. The original construction drawings are somewhat unclear on the drainage construction, but it appears that transverse and longitudinal gravel filled trenches were cut into the bedrock to provide a collector system under the floor for these drains.

The lower, sloping portion of the dock walls (the section below the altar) is typically a thin reinforced concrete veneer over a steel reinforcing matt placed directly upon the surface of the serpentine rock. The slope is nominally 12 vertical increments to 3 horizontal increments. Uncapped weep holes at 12-foot centers are placed along the length of the dock walls at two levels and vertical expansion joints are spaced at 48-foot centers. The top of the lower wall section provides a continuous altar or walkway around the perimeter of the dock at 31.5 feet above the dock floor. The upper wall section, described below, is set back at this altar level by 7.25 feet.

The upper, vertical, portion of the dock wall (above the altar) is typically a counterfort retaining wall structure of reinforced concrete. Backfilled material has been placed behind the wall structures up to the level of adjacent paving.

Six large and six small utility service galleries are spaced along both sides of the dock and are integrally supported by the counterfort retaining structures. In addition, large electrical manholes are incorporated into the structure to strengthen the dock walls in the vicinities of the large galleries. Crane rail support struts (16-foot-8-inch spacing) tie the walls to a parallel crane rail beam, which in turn is anchored into the serpentine rock. Forty-foot-gauge portal crane trackage formerly ran on both sides of the dock at grade and trackage on each side of the dock was connected at the head end of the dock (trackage has been removed and the area covered with asphalt decking). Counterforts, located adjacent to the crane rail struts, are of 1-foot-6-inch-thick concrete except where thickened to accommodate vertical expansion joints. Weep holes are provided along the base of the upper wall sections, at 16-foot spacing, in order to drain the backfilled material to relieve the hydrostatic pressure on the wall structure.

PUMP ROOM: The pump room, flooding and dewatering chambers are located on the south side of the dry dock near the eastern end (entrance end) of the dock. Similar to the construction of the dock proper, serpentine rock was excavated to allow forming and placement of concrete. The pumps, sumps and chambers are located below the control room, where dewatering pump motors and all controls are located (no longer functional). Construction is essentially massive reinforced concrete formed integrally with the bedrock and the dock wall. The concrete roof structure is flush to grade and is constructed of a series of removable concrete sections, enabling pumps, motors and other large components to be removed by crane services.

CAISSON: This closure, constructed concurrently with Dry Dock 4, is a reversible, rectangular type floating caisson that can be positioned in either the inner or outer dry dock caisson seat. The Caisson still floats and is currently located within the Dry Dock. A rubber seal runs vertically on both ends of the caisson and across the bottom. Concrete ballast is placed within the ballast and trim tanks along the entire bottom. The Caisson is divided into six compartments by a watertight deck and two watertight bulkheads, these being the operating room, the center ballast tank and trim tanks. A draft range of 29.0 feet to 55.5 feet is achieved either by flooding the lower three compartments or dewatering these tanks with pumps mounted in the caisson. All equipment was controlled from the upper operating room, with communications provided by portable two-way radios. The basic construction is of structural steel plates and shapes with welded connections and seams. Shell plating varies in thickness from ⅜ inch to ⅞ inch. Horizontal girders are typically spaced 8 feet on center with intermediate breast hooks added at each end. The top deck, main deck and outer quarter panels of the typical girders are longitudinally stiffened plate girders, while the middle portions of the girders are trusses comprised of structural tee and angle shapes. Vertical (transverse) frames are made of bent plates and are spaced 2 feet on center with additional cross bracing spaced at 8-foot centers. Sacrificial zinc anode blocks are attached to the shell to provide cathodic corrosion protection. Four screened inlets exist for Caisson flooding; gate valves at these inlets have cast iron bodies. These were operated by reach rods that extend to floor stands located in the operating room. The valves for the two smaller 8-inch inlets were hand-operated while the valves for the two larger inlets were motorized. Two vertical propeller pumps were available to dewater ballast water from the central ballast tank and to provide redundancy for the ballast dewatering system. The pumps were 18-inch, 8,000-gallon-per-minute pumps powered by 75-horsepower motors. Discharge was by means of 18-inch motorized gate valves, Caisson electrical power—480 volts/3 phase/60 Hz—was obtained from a detachable umbilical cable that is connected to shore-side power connections, located on either side of the dock entrance, when the caisson is in place. A transformer was located within the Caisson to convert the 480-volt power to 120 volt /1-phase power for lighting and convenience outlets.

Modifications

a. Bilge block slots and drainage trenches in the floor of the dry dock were filled with concrete to the elevation of the original floor. Integral floor weep holes were also raised to this new elevation and capped with porous concrete. The date of this modification is uncertain.

b. In 1957, three steel pipe columns were placed in the south-side (port) utility tunnel in conjunction with the extension of the crane trackage on this side of the dock.

c. In 1972, six small (25 feet long) utility service galleries were constructed along the both sides of the dock to house fresh water services. Four of the original 12 service galleries were also lengthened.

d. Various modifications were made to the utility systems servicing the dock since built.

Most recently, additional salt water and electrical services were built (mid-1980s) to support docking of modern day, larger Navy surface ships.

These modifications did not significantly affect the primary characteristics of the dock itself.

Dry Dock 4 Significance

Dry Dock 4 is a graving dock that has been determined eligible for listing in the National Register of Historic Places by consensus through the Section 106 process and is listed in the California Register of Historical Resources for its association with the events and patterns identified in the defense of the United States during World War II and as a significant marine engineering entity. It is significant under Criterion A of the National Register and Criterion 1 of the California Register for its association with events related to the defense of the United States during World War II, and under Criterion C of the National Register and Criterion 3 of the California Register as a significant marine engineering entity. The period of significance is October of 1942 when construction began, through August 15, 1945 the end of World War II. In the context of marine architecture, Dry Dock 4 is the largest graving dry dock on the Pacific Coast and is one of the largest in the world. Within the context of stateside Naval facilities of World War II, Dry Dock 4 was one of the more important structures constructed and one of the largest topographical alterations undertaken during the 1940s to expand a naval facility. Despite recent removal of adjacent mobile cranes and trackage, Dry Dock 4 retains a high degree of integrity of materials, design, workmanship, setting, feeling, location and association (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008). The structure has been documented for the Historic American Engineering Record (HAER) by Steven R. Black in 1994 and the records are held by the Library of Congress.

The U.S. Navy was aware of a critical shortage of government controlled dry docks and had investigated sites within San Francisco Bay for a period of 40 years before Hunters Point was purchased. With the outbreak of World War II in the Pacific, the ability to service the U.S. Navy's large ships was severely hampered by the shortcomings of the existing Federally-owned dry docks on the Pacific Coast. Until Hunters Point was purchased by the Federal Government in 1939, the West Coast had federally-owned graving dry docks at Puget Sound Naval Ship Yard in Washington State and at Mare Island Naval Ship Yard in the San Francisco Bay. The Japanese attack on the United States Pacific Fleet at Pearl Harbor in the Hawaiian Islands in December of 1941 finally brought the United States into World War II. It also brought about the decision by the US Navy to purchase the dry docks and marine repair facilities from Bethlehem Steel Yard at Hunters Point and to initiate construction of what would become the largest graving dry dock on the West Coast of the United States (Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994). To rectify the shortage of dry docks for deep draft ships on the West Coast, new graving dry docks were constructed; two at Puget Sound, one 998 feet and the other 1030 feet in length, and the largest, Dry Dock 4, at 1100 feet was constructed at

Hunters Point. The Hunters Point location provided a deep water access of 40 feet where the largest ships could enter, while the protected waters of the South San Francisco Bay offered excellent anchorage (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008).

The design of Dry Dock 4 was accomplished for the Navy's Bureau of Yards and Docks by renowned naval architect and engineer Hugo Frear. Construction was completed by the Pacific Bridge Company under Mr. Frear's supervision. The construction of Dry Dock 4 required moving five million cubic yards of earth. The 290-foot tall landmark, Point Avesadero, was leveled to fill the baylands bordering Hunters Point and create the dry land area on which the necessary shops and warehouses could be constructed. The removed earth was also used to construct a coffer dam around the site which permitted the construction of Dry Dock 4 to proceed on dry land. The Dry Dock at Puget Sound required over three years (1938-1942) to complete; by comparison, Dry Dock 4 at Hunters Point required less than nine months to complete. The dry dock was officially opened on June 19, 1943 while the former luxury liner Monterey (refitted for troop transport) was in the dock for service (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008).

The engineering feat represented by Dry Dock 4 was accomplished in a short period of time and required considerable on-site supervision by Mr. Frear and his associates. Mr. Frear also designed Dry Dock 3 at Hunters Point (1918) and many other naval structures at various shipyards in the United States and around the world. An engineer of international reputation, Frear joined the Union Iron Works in San Francisco as a draftsman in 1883, after graduation from Worchester Polytechnic Institute in Massachusetts, and went on to become chief naval designer. He later became Chief Naval Architect for Bethlehem Shipbuilding Corporation. He contributed significantly to the knowledge of naval engineering practices and advanced technology in the field through his innovative designs and related articles written about his work. Mr. Frear was awarded the prestigious title of Honorary Vice-President of the Society of Naval Architects and Marine Engineers in 1945. (California Department of Parks and Recreation, Building, Structure, Object Record, June 2008; Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994).

Dry Dock 4 was placed into service in mid-1943 to repair and overhaul Navy ships, many of which were docked to repair battle damage during World War II. It was therefore a significant component of United States Navy facilities on the West Coast. The aircraft carrier USS Intrepid, one of the largest ships in the Pacific theater during World War II, was docked to repair battle damage to its hull and to receive general maintenance on three different occasions between 1942 and 1945. When not occupied by larger ships, two or more smaller ships could be simultaneously docked for servicing at the same time. This contributed significantly to the Navy's dominance in continually having a large numbers of ships committed to Pacific battle areas at any given time throughout World War II (Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994).

After World War II, Dry Dock 4 was continuously used to dock a large variety of Navy capital ships, and in some instances those of foreign nations, for repair, overhaul, maintenance and conversion. For a brief period of time, Hunters Point Naval Shipyard and Mare Island Naval Shipyard operations were combined under a single operational command known as the San Francisco Bay Naval Shipyard. On November 19,1964, Secretary of Defense Robert S. McNamara announced the merger of Hunters Point Naval Shipyard and Mare Island Naval Shipyard which was accomplished in a command ceremony on May 11, 1965, making this the largest shipyard complex in the world. This relationship existed until January 31,1970, when both shipyards returned to autonomous operations. Hunters Point Naval Shipyard was subsequently formally decommissioned by the Navy, and Navy ship repair operations were terminated in 1974. The shipyard was leased by the Navy to Triple A Machine Shop in 1976 and operated as a private marine repair yard until termination of the lease by the Government in 1986. Dry Dock 4 was continuously operated by Triple A as the primary repair facility during this period. After 1974, title to all land and facilities was held for the Navy by the Supervisor of Shipbuilding,

Conversion and Repair, San Francisco Bay until transferred to Naval Station Treasure Island, as the Hunters Point Annex, in September, 1987 (Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994).

In 1984, Mare Island Naval Shipyard personnel completed an in-depth study of Dry Dock 4 to determine the requirements to return the dry dock to a condition to support emergency dry docking of Navy nuclear surface ships. Improvements to salt water and electrical distribution utility services, previously mentioned in this report, were constructed shortly thereafter. Between November 1985 and August 1989, six separate dockings of Navy surface ships occurred, including dockings of the aircraft carriers USS Enterprise, USS Carl Vinson, the cruiser, USS Texas, and the cruiser, USS California. Upon termination of the lease to Triple A Machine Shop, title to Ex-Hunters Point Naval Shipyard and almost all facilities, passed to the Naval Station Treasure Island, with actual ownership of Dry Dock 4 and its associated facilities and utilities passing to Mare Island Naval Shipyard in 1987. After August 1989, no dockings of Navy ships occurred, and Dry Dock 4 was subsequently placed into an inactive status (Steven R. Black, Hunters Point Naval Shipyard, Dry Dock 4, HAER No. CA-181-A, 1994).

Dry Dock 4 Character-Defining Features

This description of character-defining features is based upon the Dry Dock 4 National Register nomination form, HAER Report, and a site visit conducted by ESA's qualified architectural historian, Dr. Margarita Jerabek, on Thursday, November 2, 2017.

- Dry Dock 4 is a reinforced-concrete graving dock measuring 1,096' long, 171' wide and 53' deep. Completed in June 1943, it includes a floating caisson and underground pump and control rooms, as described in greater detail above.
- The landscape immediately adjacent to the dry dock is dominated by wide expanses of concrete or asphalt with embedded crane tracks (covered with asphalt), steel bollards and capstans along the perimeter of the dry dock.
- Coping protrudes over the top portion of the dry-dock wall; service galleries with trapezoidal faces, and stairwells are built into the coping.
- Cleats are placed at even intervals along the curb.
- Chain handrails run along the curb and down the concrete stairwells.
- Crane tracks surround the dry dock (covered with asphalt).
- A series of mooring bollards border the perimeter and some of the original thirteen electrically powered capstans are also present around the perimeter, outside the location of the non-visible crane tracks.
- Two entrances to the pump room are sited on the south side of the east end of the dry dock, each with a descending staircase and sliding grates covering the opening.

Non-visible contributing character-defining features of Dry Dock 4 include:

- The cross section profile of Dry Dock 4 reveals a relatively simple reinforced concrete design. Rather than having multiple altars (steps in the wall of a dry dock) like nearby Dry Docks 2 and 3, it has one altar a few feet beneath the service galleries. Walls descend at an angle from the altar to the thin reinforced concrete slab dry-dock floor.

- Drainage tunnels beneath the floor extend along both sides of the dry dock. A utility tunnel, beneath the coping and behind the service galleries, runs along the perimeter. Dry Dock 4 floods through two 8-foot valves installed in flooding culverts, located on either side of the dry dock near the entrance. Once the valves were opened, it took one hour to flood the dry dock through the culverts. Both valves were accessible through manholes and controlled from the pump room.
- The underground pump room for Dry Dock 4 is located south of the dry dock, near the entrance (east) end. The pump and control rooms are constructed of reinforced concrete formed integrally with the bedrock and dry-dock wall. The design allowed cranes to lift equipment in and out of the rooms through a flush-to-grade concrete roof made of removable sections. Three S. Morgan Smith axial flow pumps powered by General Electric synchronous motors could dewater Dry Dock 4 in 2.5 hours, if all three pumps operated at full capacity. Byron Jackson, 150-horsepower, deep-well, turbine-type drain pumps, located in the lower level of the pump room, could be operated manually or automatically.

Non-contributing alterations include:

- Dry Dock 4 has received few major alterations over its 66-year history, the most notable include the filling of bilge block slots and drainage trenches in the dry-dock floor (date unknown); addition of three steel pipes in the south-side utility tunnel in 1957 when the crane track was extended on that side of the dry dock; addition of six small service galleries and the lengthening of four original service galleries in 1972; and construction of additional salt water and electrical services to accommodate larger ships in the 1980s.

Project Description

The CP-HPS project proposes to retain the buildings and structures in the District and Dry Dock 4 that were determined eligible for listing in the National Register and are listed in the California Register. Dry Docks 2, 3, and 4 and Buildings 140, 204, 205, and 207 would be rehabilitated in conformance with the SOI Standards. Rehabilitation of the dry docks would include repair of concrete surfaces and addition of guardrails along their perimeter.

However, the buildings that were later identified as contributors to the District in the 2008 survey and are eligible for the California Register (i.e., not determined eligible for the National Register and not listed in the California Register), Buildings 211, 224, 231, and 253, would be demolished. The 2010 FEIR found, therefore, that the project would result in a significant adverse impact to the District that would affect its eligibility for inclusion in the California Register, and two mitigation measures were included in the 2010 FEIR, provided below.

Addendum 5 Modifications

Addendum 5 of the CP-HPS2 2010 FEIR would include project modifications that may impact Dry Dock 4 including the addition of two pedestrian bridges over the dry dock, provision of water taxi service from Dry Dock 4, and creation of the Water Room Plaza surrounding the dry dock that would be programmed to serve as a central community gathering point and would have new seating.

The Water Room Bridge, a pedestrian and bicycle bridge, would be located in the western portion of Dry Dock 4. The Eastern Pedestrian Bridge, a pedestrian bridge, would be located in the eastern portion of Dry Dock 4, directly adjacent the entry point of the San Francisco Bay.

In addition, water taxi services to and from Hunters Point Shipyard would dock at a new landing at Dry Dock 4, and new infrastructure on land and water would be constructed to accommodate these services, as described in Section I, Project Description, of Addendum 5 to the CP-HPS2 2010 FEIR.

CEQA Impacts Analysis

The updated scope of work discussed in Addendum 5 includes new construction related to Dry Dock 4 that was not included in the Candlestick Point-Hunter's Point Shipyard Phase II (CP-HPS2) FEIR (2010). Previously, the only scope related to Dry Dock 4 in the 2010 FEIR was to repair the concrete and replace a fence. Under Addendum 5, new construction would occur in the vicinity of Dry Dock 4 including regrading of the site, construction of the Water Room Plaza with seating around Dry Dock 4, construction of two new pedestrian bridges over Dry Dock 4 including Water Room Bridge and Eastern Pedestrian Bridge, and installation of a water taxi ramp at Dry Dock 4. Although Dry Dock 4 would be retained intact under Addendum 5, potential adverse impacts may occur to the character-defining features, materials and contributing setting of Dry Dock 4 that could result in a potentially significant impact if they do not avoid direct physical impacts to Dry Dock 4 including its visible, subsurface and submerged features or indirect impacts to the associated setting. Current project plans are conceptual and are expected to evolve as the project progresses through design development and construction plans are finally prepared. Therefore, to protect the historic integrity and significance of Dry Dock 4, Preservation Guidelines will inform the design process, including the proposed landscape improvements, bridges, and taxi ramp to ensure they are designed and constructed in conformance with the SOI Standards as the project develops. The Preservation Guidelines have been prepared by a qualified preservation consultant and are supported by substantial available information on the history and condition of Dry Dock 4. The Preservation Guidelines shall be guided by the guiding principles, standards for preservation, and preservation guidelines provided by Table 2 to ensure conformance with the SOI Standards.

Table 2 Dry Dock 4 Preservation Guidelines

Secretary of the Interior's Standards for Preservation (Applicable Provisions)

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

Dry Dock 4: Guiding Principles

- The proposed treatment of Dry Dock 4 shall follow the requirements outlined in the Memorandum of Agreement (MOA) between the United States Navy, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer regarding the interim leasing and disposal of historic properties on the former Hunters Point Naval Shipyard in San Francisco, California, under which the lease agreements require tenants to follow the recommended practices of the SOI Standards in maintaining or adapting these historic properties for use.
- Proposed treatment of Dry Dock 4 shall follow the treatment plan and methods developed for CP-HPS2 that has been previously found to conform to the SOI Standards (Lada Kocherovsky and Richard Sucre, Memorandum regarding Secretary of the Interior's Standards Evaluation of Proposed Treatments for Dry Docks 2, 3, and 4, October 5, 2009, prepared by Page & Turnbull for Therese A. Brekke, Lennar Urban) and are outlined by Moffatt & Nichol in a series of reports:

Table 2 Dry Dock 4 Preservation Guidelines

- Moffatt & Nichol, *Candlestick Point/Hunter's Point Redevelopment Project, Proposed Shoreline Improvements* (September 2009);
- Moffat & Nichol, *Hunter's Point Shoreline Structures Rapid Reconnaissance Investigation* (June 2009); and
- Moffat & Nichol, *Hunters Point Shoreline Structures Assessment* (August 2009).

- Dry Dock 4 is identified in the National Register of Historic Places as a structural resource under the applicable criteria of "event: architecture engineering" and, more specifically, with an area of significance related to military engineering. The Standards for Preservation and Guidelines for Preserving Historic Buildings apply not only to historic buildings, but also to a variety of historic resource types eligible to be listed in the National Register of Historic Places, including buildings, sites, structures, objects, and districts. Accordingly, proposed modifications to Dry Dock 4 shall comply with the Standards for Preservation outlined in the SOI's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*,[1] which require conformance with the above Standards for Preservation.

Dry Dock 4: Preservation Guidelines

Preservation Guidelines for Dry Dock 4 have been developed to guide the preliminary design of the improvements associated with Dry Dock 4. These guidelines may be refined as part of the final design provided the following occurs:

- All character-defining features, materials, finishes, and construction techniques or examples of craftsmanship of Dry Dock 4 would be permanently retained;
- The bridge and abutment design and construction process would not permanently and irreversibly remove character-defining features or materials of the dry dock or its setting;
- The two bridge spans would not permanently and irreversibly alter character-defining features of the dry dock;
- The open visual character of Dry Dock 4 and the spaces and spatial relationships between the water-filled dry dock and adjacent deck around the dry dock whose outer limits are defined by the location of the bollards that surround the dry dock would be permanently retained;
- Grading required to protect the site from sea level rise may require that the bollards surrounding the dry dock would be temporarily removed, but they would be returned to a location that retains the horizontal, spatial relationship between the bollards and the dry dock;
- The installation of seating around the dry dock would occur on top of the land surface and would be provided in a manner that integrates the seating with a gradual raise in the proposed grade of the surrounding dry dock to accommodate sea level rise and would not permanently and irreversibly remove any character-defining materials or features;
- The seating would preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting;
- While the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting would be preserved, the design would still allow for active and passive recreational uses;
- The design would be modern in character and differentiated from the historic structure, and no changes would be made that would create a false sense of historical development or add conjectural features;
- The design would be differentiated from the old and would be contemporary and industrial in aesthetic and utilitarian in the use of materials;
- The design would be compatible with the historic materials, features, size, scale and proportion, and massing protect the integrity of the dry dock and setting;
- The design would not obscure the character-defining features, spaces, spatial relationships, or views of the dry dock; and
- The design would be reversible to allow the new construction to be removed in the future, which would ensure that the integrity and significance of Dry Dock 4 would not be materially impaired.

With inclusion of the Preservation Guidelines as part of the scope of work for Addendum 5, project conformance with the SOI Standards would be ensured, the historic significance of Dry Dock 4 would be protected and the eligibility of the historical resource after project completion would remain unimpaired. Therefore, potential impacts to historical resources would be less than significant.

The proposed project modifications included in Addendum 5 were reviewed for conformance with the Standards for Rehabilitation (Department of Interior regulations, 36 CFR 67). Generally, a project that follows the SOI Standards shall be considered mitigated to a less than significant impact on the historical resource, pursuant to CEQA.

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.

The proposed project discussed in the 2010 FEIR already changes the site and environment from a shipyard to a mixed-use housing development with associated public spaces. The Addendum 5 modifications related to Dry

[1] U.S. Department of the Interior, 2017.

Dock 4 including seating, two bridges and a water taxi landing would further change Dry Dock 4's historic purpose from a ship berth to a focal point of a large recreational landscape along the shoreline, which was proposed as part of the 2010 Project. The shipyard has been decommissioned and the Dry Dock has is not in use and is no longer in functional condition. In order to ensure its preservation, a new use that requires minimal change to the defining characteristics of the dry dock and its site and environment is, therefore, necessary. While the project plans are currently conceptual in nature, the Addendum 5 Preservation Guidelines would retain the existing character-defining features of Dry Dock 4 that are described above. Furthermore, the proposed treatment of the three dry docks under the CP-HPS2 project provide for the repair and retention of the historic elements that are consistent with Standard 1. Therefore, the modifications proposed under Addendum 5 would conform with Standard 1.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

While the project plans are currently conceptual in nature, the Addendum 5 Preservation Guidelines would ensure that proposed new use would retain the character-defining features of Dry Dock 4 that are described above. Furthermore, the proposed treatment of Dry Dock 4 under CP-HPS2, including the installation of weep holes, addition of rock/sand buttresses, and concrete repair in order to preserve the dry dock would be considered minor alterations that are necessary for the continued use of the dry dock and would retain and preserve their overall historic character. Likewise, the proposed modifications to Dry Dock 4 under Addendum 5 would be minor in nature and would involve minimal removal of materials for installation of the landing platform for the water taxi. The abutments for the two bridges would be placed away from the edge of Dry Dock 4, and the bridge and abutment construction process would not remove character-defining features or materials of the dry dock or its setting. The two bridge spans would not permanent and irreversibly alter character-defining features of the dry dock, and the open visual character of Dry Dock 4 and the spaces and spatial relationship between the water-filled dry dock and adjacent surrounding deck area (out to and including the bollards) would be retained. The installation of seating around the dry dock would occur on top of the land surface outside of the deck area so as not to remove any character defining materials or features. To preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting. The Addendum 5 modifications would respect the historic character of Dry Dock 4 and would avoid removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize the property and, therefore, would conform to Standard 2.

3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

The proposed changes that will be made to Dry Dock 4 under Addendum 5 would be modern in character and differentiated from the historic structure (see Standard 9 for more detailed analysis). No changes would be made that would create a false sense of historical development or add conjectural features. The proposed project modifications under Addendum 5 would conform to Standard 3.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

There are no changes to Dry Dock 4 that have acquired historic significance in their own right. The project modifications under Addendum 5 comply with Standard 4.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

As discussed above under Standard 2, while the project plans are currently conceptual in nature, the Addendum 5 Preservation Guidelines shall ensure that the project would retain the character-defining features, materials, finishes and construction techniques or examples of craftsmanship of Dry Dock 4 that are described above. Furthermore, the proposed treatment of Dry Dock 4 under CP-HPS2, including the installation of weep holes, addition of rock/sand buttresses, and concrete repair of the dry-dock walls in order to preserve the dry dock would be considered minor alterations and repairs that are necessary for the continued use of the dry dock and would retain and preserve its overall historic character. The proposed modifications to Dry Dock 4 under Addendum 5 would be minor in nature and would involve minimal removal of materials for installation of the landing platform for the water taxi. The installation of seating around the dry dock would occur on top of the land surface so as not to remove any character defining materials or features. To preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting. The Addendum 5 modifications would respect and preserve the distinctive character of Dry Dock 4 and would conform to Standard 5.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

The preservation treatment of Dry Dock 4 is covered in the 2010 FEIR. The proposed treatments call for the repair of exposed dry-dock walls, including patching any concrete spalls, repairing and/or replacing exposed or corroded reinforcing bars, and repairing broken concrete. The treatments are all consistent with Standard 6 since they involve repairing, not replacing, deteriorated historic features. Where deteriorated beyond repair, the proposed treatments will replace materials in-kind, keeping the character of the dock walls consistent with the original design. Where parts of the concrete walls need to be replaced due to severe deterioration, the replacement surface will be similar in texture and color to the original concrete wall finish. No other repair or replacement of deteriorated historic fabric is included in Addendum 5. Therefore, the proposed treatments for Dry Dock 4 is consistent with Standard 6.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

The proposed modifications do not involve chemical or physical treatments to historic materials or abrasive surface cleaning that may potentially damage substances. Therefore, the proposed project complies with Standard 7.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

The proposed project modifications do not involve excavation that has not been previously analyzed in the 2010 FEIR. If standard procedures are followed in the case archaeological material would be encountered, the proposed project will be in compliance with Standard 8.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated

from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

As discussed above, the proposed modifications under Addendum 5 will not destroy historic materials, features, or spatial relationships that characterize the property. The proposed project would include new construction for the Water Room Plaza surrounding Dry Dock 4, as well as two bridges and a water taxi platform across/within the dry dock. The proposed modifications to Dry Dock 4 under Addendum 5 would be minor in nature and would involve minimal removal of materials for installation of the landing platform for the water taxi. The abutments for the two bridges would be placed away from the edge of Dry Dock 4 and the bridge and abutment construction process would not remove character-defining features or materials of the dry dock or its setting. The two bridge spans would not touch character-defining features of the dry dock and the open visual character of Dry Dock 5 and the spaces and spatial relationship between the water-filled dry dock and adjacent landscape would be retained. The installation of seating around the dry dock would occur on top of the land surface so as not to remove any character defining materials or features. To preserve the open visual character of the landscape and the spaces and spatial relationships between the dry dock and its setting.

The new construction would be contemporary/industrial in aesthetic and materials and would be differentiated from the historic dry dock. The project is in the conceptual design phase, so details of design and materials are yet unknown, but a design that is contemporary and industrial in aesthetic, utilitarian in the use of materials, and that does not obscure the character-defining features, spaces, spatial relationships or views of the dry dock, would protect the integrity of the dry dock and be considered compatible. The Addendum 5 Preservation Guidelines shall ensure that the integrity of the property and its environment would be protected. Therefore, the project complies with Standard 9.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

The proposed project modifications under Addendum 5 would retain the essential form and integrity of Dry Dock 4 and, as discussed above, the new construction will be undertaken in a manner that if removed in the future, the integrity of Dry Dock 4 would be unimpaired. Addendum 5 would conform to Standard 10.

CP-HPS2 2010 FEIR Mitigation Measures

MM CP-1b.1: Mitigation to Minimize Impacts on Historic Resources at HPS Phase II. To reduce the adverse effect on historical resources, prior to any structural demolition and removal activities, the Project Applicant shall retain a professional who meets the Secretary of the of the Interior's Professional Qualifications Standards for Architectural History to prepare written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District, as identified in the report titled *Bayview Waterfront Plan Historic Resources Evaluation, Volume II: Draft Historic Resources Survey and Technical Report*, July 2009, prepared by Circa Historic Property Development.

The documentation for the property shall be prepared based on the National Park Services' (NPS) Historic American Building Survey (HABS) / Historic American Engineering Record (HAER) Historical Report Guidelines. This type of documentation is based on a combination of both HABS/HAER standards (Levels II and III) and NPS new policy for NR-NHL photographic documentation as outlined in the National Register of Historic Places and National Historic Landmarks Survey Photo Policy Expansion (March 2005).

The written historical data for this documentation shall follow HABS / HAER Level I standards. The written data shall be accompanied by a sketch plan of the property. Efforts should also be made to locate

original construction drawings or plans of the property during the period of significance. If located, these drawings should be photographed, reproduced, and included in the dataset. If construction drawings or plans cannot be located as-built drawings shall be produced.

Either HABS/HAER standard large format or digital photography shall be used. If digital photography is used, the ink and paper combinations for printing photographs must be in compliance with NR-NHL photo expansion policy and have a permanency rating of approximately 115 years. Digital photographs will be taken as uncompressed .TIF file format. The size of each image will be 1600x1200 pixels at 300 ppi (pixels per inch) or larger, color format, and printed in black and white. The file name for each electronic image shall correspond with the index of photographs and photograph label.

Photograph views for the dataset shall include *(a)* contextual views; *(b)* views of each side of each building and interior views, where possible; *(c)* oblique views of buildings; and *(d)* detail views of character-defining features, including features on the interiors of some buildings. All views shall be referenced on a photographic key. This photograph key shall be on a map of the property and shall show the photograph number with an arrow indicate the direction of the view. Historic photographs shall also be collected, reproduced, and included in the dataset.

All written and photographic documentation of the potential Hunters Point Commercial Dry Dock and Naval Shipyard Historic District shall be approved by the SFRA, in consultation with the ERO, prior to any demolition and removal activities.

MM CP-1b.2: Interpretive Displays Depicting History of HPS. Interpretive displays related to the history of HPS shall be installed at Heritage Park at Dry Dock Nos. 2 and 3. The number and type of displays shall be approved by the SFRA, in consultation with the ERO.

Appendix I

Transportation, Air Quality/ Greenhouse Gas Emissions, and Noise Analyses of the Transfer of Nonresidential Uses from HPS2 to CP

ESA

FEHR PEERS

April 5, 2018

Mr. Jose Campos
Office of Community Investment and Infrastructure (OCII)
1 South Van Ness Avenue, #5
San Francisco, CA 94103

Ms. Joy Navarrete
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

Subject: DRAFT Supplement to Candlestick Point/Hunters Point Shipyard Phase II Redevelopment Plan Project EIR Addendum 5 – Transportation Assessment: R&D Relocation

Dear Jose and Joy:

As you know, the *Candlestick Point/Hunters Point Shipyard Phase II Redevelopment Plan Final EIR* (herein referred to simply as "EIR") was certified by the San Francisco Planning Commission and the San Francisco Redevelopment Commission in June 2010. The EIR analyzed the originally-proposed project (as described in Chapter II of the FEIR, hereinafter referred to as "FEIR Project"), several variants (as described in Chapter IV of the FEIR), and several alternatives (as described in Chapter VI of the FEIR). Since then, a number of refinements have been proposed to the FEIR Project through a series of addenda. Most recently, Addendum 4, which proposed modifications to the CP Design for Development, land use program, and transportation system changes was approved in 2016.

Currently, the Project team is preparing Addendum 5, which proposes some modifications to the Candlestick Point and at Hunters Point Shipyard (herein referred to as "CP" and "HPS," respectively) land use program, a revised transportation network and modified construction/phasing schedule at the Hunters Point Shipyard site. Fehr & Peers has completed analysis addressing the modified land use program and transportation network, which is described in a letter to OCII, dated April 4, 2018.

It is our understanding that the proposed modifications to the Project included in Addendum 5 allow for the flexibility to relocate up to 118,500 square feet of R&D/office uses from HPS to CP. Moving these uses across the site would increase trip generation in CP and reduce trip generation in HPS, compared to 2018 Modified Project Variant, as illustrated in **Table 1**.

TABLE 1: VEHICLE TRIP GENERATION COMPARISON WITH R&D RELOCATION							
Peak Hour / Site		**FEIR Variant 1 (R&D)**	**2018 Modified Project Variant**	**Difference from FEIR Variant 1 (R&D) to 2018 Modified Project Variant**	**2018 Modified Project Variant With Relocation of 118.5 ksf of R&D/Office from HPS to CP**	**Difference from FEIR Variant 1 (R&D) to 2018 Modified Project Variant with R&D/Office Relocation**	**Difference from 2018 Modified Project Variant to 2018 Modified Project Variant with R&D/Office Relocation**
AM Peak Hour	CP	2,310	2,264	-46	2,331	+21	+67
	HP	3,065	3,212	+147	3,169	+104	-43
	Total	**5,375**	**5,476**	**+101[1]**	**5,500**	**+125[1]**	**+24**
PM Peak Hour	CP	4,913	4,882	-31	4,970	+57	+88
	HP	3,134	3,644	+510	3,614	+480	-30
	Total	**8,047**	**8,526**	**+479[1]**	**8,584**	**+537[1]**	**+58**

Notes:

1. Increases in trips associated with the Modified Project include approximately 100 AM peak hour and 200 PM peak hour vehicle trips for 172 dwelling units and 71 ksf of retail space. These new trips would not affect the total amount of traffic in the area at Project buildout because they correspond to the number of units and commercial square footage approved but not built, and no longer planned to be built, as part of the adjacent HPS Phase 1 project; however, they do represent an increase in the number of trips that are considered a part of the Modified Project. Thus, although the Modified Project's contribution in traffic is expected to increase by approximately 100 to 480 vehicle trips in the AM and PM peak hours, respectively, the total traffic volume in the area is expected to be nearly identical to the FEIR in the AM peak hour and increase by approximately 280 trips in the PM peak hour, since the other vehicle trips were previously accounted for as part of Phase 1.

As shown, with the R&D/Office relocation, the CPHPS project would generate approximately 130 and 540 more trips in the AM and PM peak hour respectively, compared to FEIR Variant 1 (R&D). Compared to the 2018 Modified Project Variant, the relocation would decrease trips in HPS by 43 and increase trips in CP by 67 in the AM peak hour. In the PM peak hour, the relocation would decrease trips in HPS by 30 and increase trips in CP by 88.

Below is a discussion of the effects of the proposed changes on the impacts identified in the EIR.

IMPACT TR-1: ON-SITE AND OFF-SITE CONSTRUCTION IMPACTS

The relocation of R&D/Office form HPS to CP may result in a slight increase in construction activity in CP and a slight decrease in construction activity in HP; however, the amount of overall construction anticipated as part of the Modified Project is expected to be the same. Therefore, the relocation of R&D/Office from HPS to CP would not affect the conclusions of the analysis for the 2018 Modified Project and there would not be new or substantially more severe significant construction impacts.

IMPACTS TR-2 THROUGH TR-16: TRAFFIC IMPACTS TO REGIONAL AND LOCAL ROADWAY SYSTEM, STUDY INTERSECTIONS, AND FREEWAY FACILITIES

Consistent with the analysis completed for the 2018 Modified Project Variant summarized in Addendum 5, the 11 intersections closest to the project site were evaluated for conditions with the R&D/Office relocation. Analysis results, in terms of LOS, delay, and v/c ratios are presented in **Table 2**, below. As shown, the R&D/Office relocation results in little to no change compared to the 2018 Modified Project Variant. Intersections operating at LOS D or better, would continue to operate at LOS D or better and would not deteriorate to LOS E or F. Additionally, intersections operating at LOS E would continue to operate at LOS E. Since delay calculations are unreliable in over-capacity (i.e., LOS F) conditions using isolated intersection analysis, v/c ratios are included for those intersections operating at LOS F (greater than 80 seconds of delay). Most of the v/c ratios remain the same or are reduced when compared to the 2018 Modified Project Variant. One exception is the Gilman Avenue/Third Street intersection. The Gilman Avenue/Third Street intersection results in a v/c increase of 0.1 during the AM peak hour and 0.16 during the PM peak hour when compared to the 2018 Modified Project Variant; however, the intersection's v/c ratio is less than the v/c ratio reported under FEIR Variant 1 (R&D), and therefore, the 2018 Modified Project Variant either with or without the R&D/office relocation would result in better operations at this intersection than

analyzed in the FEIR. Therefore, since the R&D/Office relation results in about the same or better operations than the Modified Project or Variant 1 results, the relocation is not expected to generate any new impacts than those reported in the FEIR.

Of the 11 intersections, 2 included mitigation measures in the FEIR specific to FEIR Variant 1 (R&D): Crisp Road/Palou Avenue and Innes Avenue/Earl Street. As part of the 2018 Modified Project Variant analysis, some refinements to the mitigation measures at the Crisp/Palou intersection were identified. The mitigation measure at Innes Avenue/Earl Street from the FEIR was not changed as part of the 2018 Modified Project Variant analysis. The revised mitigation measure at Crisp Road/Palou Avenue and the original mitigation measure at Innes Avenue/Earl Street would continue to be required under conditions with the R&D/Office relocation. Results are presented in **Table 3**. As shown, with mitigations, the intersections will continue to operate at an acceptable LOS under conditions with the 2018 Modified Project Variant, either with or without the transfer of R&D/office from HPS to CP.

Therefore, because travel demand would be similar to that identified for the 2018 Modified Project Variant, there would be no changes to auto capacity associated with project refinements that result in additional or more severe significant impacts, and intersection LOS would be similar to that identified for the 2018 Modified Project Variant in Addendum 5. Thus, the R&D/Office Relocation would have similar impact conclusions for Impacts TR-2 through TR-16 and the FEIR mitigation measures plus refinements documented in the April 4, 2018 letter, will continue to apply.

TABLE 2: INTERSECTION OPERATIONS

Intersection[1]	FEIR Variant 1 (R&D)[2,3,4]				2018 Modified Project Variant[2,3]				2018 Modified Project Variant with 118.5 ksf of R&D/Office Relocated from HP to CP			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C	Delay / LOS	V/C
#4 – Evans / Third	**>80 / F**	**1.59**	**>80 / F**	**1.59**	**>80 / F**	**1.59**	**>80 / F**	**1.65**	**>80 / F**	**1.58**	**>80 / F**	**1.65**
#6 – Palou / Third	**>80 / F**	**2.22**	**>80 / F**	**5.97**	**>80 / F**	**2.47**	**>80 / F**	**6.65**	**> 80 / F**	**2.47**	**>80 / F**	**6.64**
#9 – Gilman / Third[5]	**>80 / F**	**2.02**	**>80 / F**	**3.40**	**>80 / F**	**1.63**	**>80 / F**	**2.94**	**>80 / F**	**1.64**	**>80 / F**	**3.10**
#29 – Harney / Arelious Walker	25 / C	--	53 / D	--	22 / C	--	36 / D	--	22 / C	--	38 / D	--
#30 – Crisp / Palou	**>80 / F**	**1.12**	**>80 / F**	**1.18**	**>80 / F**	**1.12**	**>80 / F**	**1.21**	**>80 / F**	**1.11**	**>80 / F**	**1.20**
#34 – Arelious Walker / Gilman[5]	30 / C	--	38 / D	--	36 / D	--	52 / D	--	37 / D	--	54 / D	--
#46 – Innes Ave / Fitch	5 / A	--	6 / A	--	5 / A	--	6 / A	--	5 / A	--	6 / A	--
#47 – Innes Ave / Earl	1 (21) / A (C)[5]	--	3 **(63)** / A **(F)** [6]	--	1 (24) / A (C)	--	4 **(77)** / A **(F)**	--	1 (23) / A (C)	--	4 **(73)** / A **(F)**	--
#48 – Middle Point / Evans / Jennings	**61 / E**	**1.17**	43 / D	--	**64 / E**	**1.15**	30 / C	--	**62 / E**	**1.14**	30 / C	--
#54 – Ingalls / Palou	23 / C	--	33 / C	--	22 / C	--	37 / D	--	22 / C	--	36 / D	--
#55 – Keith / Palou	9 / A	--	8 / A	--	9 / A	--	8 / A	--	9 / A	--	8 / A	--

Notes:

1. Intersection numbers are based on EIR intersection numbering for reference and comparison purposes.
2. Delay in seconds per vehicle. For side-street stop controlled intersections, delay and LOS presented for the worst approach and indicated in parenthesis. For intersections operating at LOS F, delay calculations are not relevant, based on the HCM methodology, and therefore, delay is simply reported as greater than 80 seconds per vehicle. To allow for comparison in operating conditions at intersections operating at LOS F, the volume to capacity ratio (V/C) is also shown.
3. Intersections operating at LOS E or F shown in **bold**.
4. Refer to Tables 45 and 46, on pp. 167-172 of the Project's Transportation Impact Study, included as Appendix D to the FEIR, for LOS results for FEIR Variant 1 (R&D).
5. The analysis of conditions with the Modified Project at Gilman / Third and Gilman / Arelious Walker was performed using a more detailed and sophisticated software, the Synchro platform, than what was used in the FEIR in order to capture unique features of those intersections. Analysis of Modified Project conditions at Gilman / Third also reflects updated lane configurations established by SFMTA subsequent to publication of the EIR.
6. The EIR-reported calculation of LOS for the intersection of Innes Avenue / Earl Street in Table 46 on pp. 170-172 in the Transportation Impact Study included a typographical error. The error did not affect the conclusion of the EIR with respect to significant impacts. The correct LOS is included here.

TABLE 3: INTERSECTION OPERATIONS WITH MITIGATION

Intersection[1]	2018 Modified Project Variant[2,3]				2018 Modified Project Variant With Mitigation[2,3]				2018 Modified Project Variant with 118.5 ksf of R&D/Office Relocated from HP to CP[2,3]				2018 Modified Project Variant with 118.5 ksf of R&D/Office Relocated from HP to CP With Mitigation[2,3]			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C	Delay/ LOS	V/C
#30 – Crisp / Palou	**>80 / F**	**1.12**	**>80 /F**	**1.21**	33 / C	0.86	36 / D	0.85	**>80 / F**	**1.11**	**>80 / F**	**1.20**	32 / C	0.84	34 / C	0.82
#47 – Innes Ave / Earl	1 (24) / A (C)[4]	--	4 (77) / A (F)[4]	--	18 / B	--	21 / C	--	1 (23) / A (C)	--	4 **(73)** / A **(F)**	--	17 / B	--	20 / C	--

Notes:

1. Intersection numbers are based on EIR intersection numbering for reference and comparison purposes.
2. Delay in seconds per vehicle. For side-street stop controlled intersections, delay and LOS presented for the worst approach and indicated in parenthesis. For intersections operating at LOS F, delay calculations are not relevant, based on the HCM methodology, and therefore, delay is simply reported as greater than 80 seconds per vehicle. To allow for comparison in operating conditions at intersections operating at LOS F, the volume to capacity ratio (V/C) is also shown.
3. Intersections operating at LOS E or F shown in **bold**.
4. The EIR-reported calculation of LOS for the intersection of Innes Avenue / Earl Street in Table 46 on pp. 170-172 in the Transportation Impact Study included a typographical error. The error did not affect the conclusion of the EIR with respect to significant impacts. The correct LOS is included here.

IMPACTS TR-17 THROUGH TR-30: IMPACTS TO LOCAL AND REGIONAL TRANSIT OPERATIONS AND CAPACITY

Transit demand calculations were calculated for the R&D/Office relocation and are shown in **Table 4**. The Modified Project transit demand calculations are included for comparison purposes.

TABLE 4: FEIR VARIANT 1 (R&D) AND 2018 MODIFIED PROJECT VARIANT TRANSIT TRIP GENERATION

Peak Hour / Direction		2018 Modified Project Variant			2018 Modified Project Variant with R&D/Office Relocation			Difference from 2018 Modified Project Variant		
		CP	HP	Total	CP	HP	Total	CP	HP	Total
AM Peak Hour	Inbound	300	863	1,163	327	847	1,174	27	-16	11
	Outbound	642	513	1,155	643	510	1,153	1	-3	-2
	Total	**942**	**1,376**	**2,318**	**970**	**1,357**	**2,327**	**28**	**-19**	**9**
PM Peak Hour	Inbound	1,029	573	1,602	1,038	571	1,609	9	-2	7
	Outbound	833	998	1,831	866	985	1,851	33	-13	20
	Total	**1,861**	**1,571**	**3,433**	**1,904**	**1,556**	**3,460**	**43**	**-15**	**27**

As shown, the R&D/Office relocation would result in a transit ridership increase in CP and a decrease in HPS. Overall, the relocation would result in an increase of approximately 10 trips in the AM peak hour and 30 trips in the PM peak hour. Similar to the vehicle trip generation, the transit ridership would increase by less than 1 percent compared to the 2018 Modified Project Variant.

While the R&D/Office relocation would increase the number of transit trips, the proposed transit service is expected to be sufficient to serve the added demand because the increase is very small. Therefore, with the R&D/Office relocation, the transit capacity will be adequate and there will be no additional or substantially more severe significant transit impacts beyond those described in the FEIR and the 2018 Modified Project Variant assessment. .

IMPACT TR-31 THROUGH TR-34: BICYCLE AND PEDESTRIAN CIRCULATION

The relocation of R&D/office would not change the bicycle and pedestrian circulation of the street network proposed under the 2018 Modified Project Variant. Therefore, no new or substantially more severe significant impacts beyond those identified in the FEIR or the Addendum 5 analysis of

the 2018 Modified Project Variant would result from the relocation of R&D/Office. Thus, no additional mitigation measures are required.

IMPACTS TR-35 THROUGH TR-37: PARKING & LOADING

The relocation of R&D/office would result in a slight increase in parking supply and demand at CP and a slight reduction in supply and demand at HPS, compared to the 2018 Modified Project Variant. While the overall number of parking spaces for the entire site would decrease by approximately 35 spaces, the overall parking supply would continue to be within the range identified in the FEIR. The relocation of R&D/Office would not affect the loading requirements, which were concluded adequate in the FEIR. Though relocating R&D/office would shift some of the demand and supply from HP to CP; the amount of loading provided would follow the requirements and would continue to be adequate.

Therefore, the relocation of the R&D/Office is not expected change the conclusions stated in the Addendum 5 Modified Project, such that the relocation would not result in any new significant impacts to parking and loading, and no new mitigation measures would be required.

IMPACTS TR-38 THROUGH TR-55: STADIUM IMPACTS

The FEIR included a number of impacts related to operation of the proposed new NFL stadium in the Hunters Point Shipyard site. However, the stadium is not part of the 2018 Modified Project Variant and these impacts and associated mitigation measures no longer apply.

IMPACT TR-51 THROUGH TR-55: ARENA IMPACTS

The R&D/Office relocation would slightly increase traffic generation at CP. As a result, there could be slightly more congestion during special events at the arena. However, as noted earlier, the overall increase in traffic at CP associated with the relocation would be quite small, and thus, not likely to create any new or substantially more severe significant impacts associated with events at the arena compared to what was described in the FEIR, and therefore no additional mitigation measures are required.

IMPACT TR-56: AIR TRAFFIC IMPACTS

The relocation of R&D/Office would contain the same overall land uses and general development plan, thus, would not change the conclusions regarding air traffic. The relocation would not create any new significant impacts with respect to air traffic and no additional mitigation measures are required.

IMPACT TR-57: HAZARDS DUE TO DESIGN FEATURES

The R&D/Office relocation is not expected to change the Project's transportation infrastructure; however, any changes would be designed in accordance with City standards and would be revised and approved by the City. Therefore, the relocation would not result in any new significant impacts to design features and no mitigation measures would be required.

IMPACT TR-58: EMERGENCY ACCESS

The EIR determined that the Project's transportation infrastructure would adequately facilitate emergency access and be designed to City standards, which include provisions that address emergency vehicles. The R&D/Office relocation would not affect the transportation infrastructure. Therefore, no new significant impacts to emergency access have been identified and no mitigation measures are required.

Please contact us with questions or comments.

Sincerely,

FEHR & PEERS

Chris Mitchell, PE
Principal

Sarah Chan, PE TE
Senior Transportation Engineer

SF08-0407

ENVIRONMENT
& HEALTH

MEMO

Date	**April 5, 2018**
To	**Jose Campos,** **Office of Community Investment and Infrastructure** **Joy Navarette,** **Planning Department, City and County of San Francisco**
From	**Michael Keinath** **Sarah Manzano** **Kevin Warner**
Subject	**Supplement to Candlestick Point-Hunter Point Shipyard Phase II Development Plan Air Quality and Noise Analyses for R&D Relocation**

Ramboll
201 California Street
Suite 1200
San Francisco, CA 94111
USA

T +1 415 796 1950
F +1 415 398 5812
www.ramboll.com

INTRODUCTION

In 2009, the Final Environmental Impact Report (FEIR) for the proposed Candlestick Point – Hunters Point Shipyard Phase II Development Plan (herein referred to as "Project" was published (San Francisco Planning Department Case Number 2007.0946E). The FEIR for the Project was certified in July 2010 and since that time the Project proponent, FivePoint, formerly Lennar Urban, and the City and County of San Francisco, have been working to implement the Project plan. A number of refinements have been proposed to the Project that have been analyzed through a series of addenda.

Currently, the Project has been modified to include revisions to proposed land uses, adjusted locations for two high-rise towers, redesign of parks and open spaces, refinements to the street network, additional water taxi infrastructure and two pedestrian bridges, and revisions to the utility network. The proposed modified land uses are referred to as the 2018 Modified Project Variant. Ramboll US Corporation (Ramboll) analyzed air quality, greenhouse gas, and environmental noise analyses of the 2018 Modified Project Variant in support of Addendum 5.

Ramboll understands that the Project proponent would like the flexibility to move some 2018 Modified Project Variant R&D uses from Hunters Point Shipyard (HPS) to Candlestick Point (CP), though not increase the total square footage on Candlestick Point by more than 10% of total area (or roughly 118,500 square feet of R&D uses). The memorandum addresses the expected impact of these R&D relocation on air quality, greenhouse gas, and noise.

AIR QUALITY AND GREENHOUSE GAS

Air quality and greenhouse gas construction impacts (Impact AQ-1, AQ-2, and AQ-3 and GC-1) are not expected to change. Also, the Project will still be required to comply with mitigation measures MM HZ-15, MM AQ-2.1, and MM AQ-2.2.

The relocation of 118,500 square feet of R&D land use would result in an overall increase in square footage at CP, and decrease overall square footage at HPS. However, the increase in square footage at CP is not expected to change construction impacts. The addition of the R&D space and associated construction would be in the commercial area of CP. The health risk assessment showed that health impacts from construction were significantly below thresholds; increase in R&D at CP could result in a maximum increase of 10%.

Impact from operational mass emissions (Impact AQ-4 and GC-1) is not expected to change. Table 1 shows the comparison of emissions from the 2018 Modified Project Variant with the R&D transfer to the 2010 Project. This incorporates trip information provided by Fehr and Peers. As shown in the table, emissions from all pollutants are lower than was estimated in the 2010 FEIR.

TABLE 1 EMISSIONS COMPARISON

	2010 Project (Operational Emissions for project, Build-Out 2030)[a]				*Addendum 5 with R&D (Operational Emissions for 2018 Modified Project Variant, Build-Out 2034)*[b]			
Analysis Area	***ROG (lb/day)***	***NO_x (lb/day)***	***PM_{10} (lb/day)***	***$PM_{2.5}$ (lb/day)***	***ROG (lb/day)***	***NO_x (lb/day)***	***PM_{10} (lb/day)***	***$PM_{2.5}$ (lb/day)***
Candlestick Point	666	265	1,029	197	218	168	208	67
HPS2	255	119	424	81	211	174	191	59
Project Site Total	***921***	***384***	***1,453***	***278***	***429***	***342***	***399***	***126***

Operational emissions for the 2018 Modified Project Variant with R&D transfer were calculated using the same methodology as was used in Addendum 5 and described in our memorandum Operational Air Quality and Greenhouse Gas Emissions and PM2.5 Concentration Evaluations, dated March 30, 2018

Daily ROG and NO_X emissions are calculated under summer conditions and daily PM_{10} and $PM_{2.5}$ emissions are calculated under winter conditions.

ROG = reactive organic gases; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter.

a. Emissions from *Candlestick Point–Hunters Point Shipyard Phase II Development Plan EIR*, Section III.H (Air Quality), Table III.H-5 (2009).

b. Operational emissions calculated with CalEEMod® version 2016.3.2.

Impacts from operational CO and $PM_{2.5}$ concentrations (Impact AQ-5 and AQ-7) are not expected to change. Fehr and Peers provided traffic volumes that incorporate the transfer in land uses. With the movement of the R&D land use to CP, there would be a slight increase in traffic on Gilman Avenue while traffic volumes on all other streets would decrease compared to Addendum 5.

In Addendum 5, the $PM_{2.5}$ and CO concentrations near Gilman Avenue would be below thresholds. Traffic is expected to increase on Third Street by 0.4% compared to the traffic volumes analyzed in Addendum 5. This slight increase in traffic would not increase traffic above thresholds.

The decrease in traffic along the other roads would decrease the $PM_{2.5}$ and CO concentrations when compared to Addendum 5. Thus, the impacts from $PM_{2.5}$ and CO concentrations would not change from what was discussed in Addendum 5.

It is our understanding that the CP R&D land uses would not emit toxic air contaminants (TAC) beyond typical office use, so would not affect Impact AQ-6. TAC emissions from offices are not generally analyzed for TACs. However, MM AQ-6.1 and MM AQ-6.2 would apply to CP if TAC emitting sources were located in CP.

These land use modifications do not add new odor generating sources, and so would not change Impact AQ-8. These modifications also do not change any aspect of the project that would affect consistency with the Clean Air Plan's goals, and would not change Impact AQ-9.

This R&D relocation is not expected to change the conclusions of air quality or greenhouse gas impact statements.

ENVIRONMENTAL NOISE

The relocation of 118,500 square feet of R&D would result in minimal changes to traffic along area roadways resulting in minimal changes in traffic noise, between 0 dBA and 0.2 dBA when compared with the 2018 Modified Project Variant. These very small changes in traffic noise levels are acoustically insignificant and would not affect the conclusions of Impact statement NO-6 regarding project-related traffic noise impacts or cumulative traffic noise impacts (i.e., both would remain significant and unavoidable).

Regarding noise from construction activities or during operation of the Project, the proposed relocation of R&D land use would have a negligible effect. That is, relocation of the R&D land use would result in noise impact statements and conclusions that are identical to the 2018 Modified Project Variant.

SUMMARY

In summary, moving roughly 118,500 square feet of R&D from HPS to CP would not create additional significant impacts or more substantially severe impacts to the air quality, greenhouse gas, and noise analysis.

Attachments:

A: CalEEMod® Flies

ATTACHMENT A
CALEEMOD® FLIES

Candlestick Point - Operational - CAP Analysis

San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	268.50	1000sqft	3.02	268,500.00	0
Enclosed Parking Structure	7,218.00	Space	31.81	2,887,200.00	0
Parking Lot	1,360.00	Space	5.99	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.65	875,600.00	0
Arena	75.00	1000sqft	11.81	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.56	50,000.00	0
Hotel	220.00	Room	3.59	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.01	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.76	635,000.00	0
Strip Mall	125.00	1000sqft	1.41	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - CAP Analysis - San Francisco County, Summer

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	6.16	3.02
tblLandUse	LotAcreage	64.96	31.81
tblLandUse	LotAcreage	12.24	5.99
tblLandUse	LotAcreage	19.70	9.65
tblLandUse	LotAcreage	24.11	11.81
tblLandUse	LotAcreage	1.15	0.56
tblLandUse	LotAcreage	7.33	3.59
tblLandUse	LotAcreage	189.95	93.01
tblLandUse	LotAcreage	14.58	7.76
tblLandUse	LotAcreage	2.87	1.41
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	20.40	294.01
tblTripsAndVMT	VendorTripNumber	2,494.00	2,474.00
tblTripsAndVMT	WorkerTripNumber	9,507.00	9,469.00
tblTripsAndVMT	WorkerTripNumber	1,901.00	1,894.00

tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.68
tblVehicleTrips	ST_TR	10.71	4.49
tblVehicleTrips	ST_TR	22.75	9.53
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.43

tblVehicleTrips	ST_TR	49.97	20.93
tblVehicleTrips	ST_TR	1.90	0.80
tblVehicleTrips	ST_TR	42.04	17.61
tblVehicleTrips	SU_TR	5.86	2.45
tblVehicleTrips	SU_TR	10.71	4.49
tblVehicleTrips	SU_TR	16.74	7.01
tblVehicleTrips	SU_TR	26.73	11.19
tblVehicleTrips	SU_TR	5.95	2.49
tblVehicleTrips	SU_TR	25.24	10.57
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.56
tblVehicleTrips	WD_TR	6.65	2.78
tblVehicleTrips	WD_TR	10.71	4.49
tblVehicleTrips	WD_TR	1.89	0.79
tblVehicleTrips	WD_TR	32.93	13.79
tblVehicleTrips	WD_TR	8.17	3.42
tblVehicleTrips	WD_TR	42.70	17.88
tblVehicleTrips	WD_TR	8.11	3.40
tblVehicleTrips	WD_TR	44.32	18.56
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	132,019,824.82	13,916,355.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00

tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1447	0.0000	0.0000	2.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1447	0.0000	0.0000	2.0154	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Energy	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
Mobile	35.0440	139.7646	370.6652	1.7295	192.0443	1.2138	193.2581	51.4928	1.1309	52.6237		176,702.5184	176,702.5184	6.5196		176,865.5081
Total	**236.5294**	**327.2043**	**1,044.7568**	**2.9118**	**192.0443**	**19.0964**	**211.1407**	**51.4928**	**19.0136**	**70.5063**	**0.0000**	**407,922.3880**	**407,922.3880**	**11.9592**	**4.2193**	**409,478.7265**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Energy	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
Mobile	35.0440	139.7646	370.6652	1.7295	192.0443	1.2138	193.2581	51.4928	1.1309	52.6237		176,702.5184	176,702.5184	6.5196		176,865.5081
Total	**236.5294**	**327.2043**	**1,044.7568**	**2.9118**	**192.0443**	**19.0964**	**211.1407**	**51.4928**	**19.0136**	**70.5063**	**0.0000**	**407,922.3880**	**407,922.3880**	**11.9592**	**4.2193**	**409,478.7265**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.45

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,955,250; Non-Residential Outdoor: 651,750; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Candlestick Point - Operational - CAP Analysis - San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	35.0440	139.7646	370.6652	1.7295	192.0443	1.2138	193.2581	51.4928	1.1309	52.6237		176,702.5184	176,702.5184	6.5196		176,865.5081
Unmitigated	35.0440	139.7646	370.6652	1.7295	192.0443	1.2138	193.2581	51.4928	1.1309	52.6237		176,702.5184	176,702.5184	6.5196		176,865.5081

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	20,066.04	19,344.24	17684.10	53,859,376	53,859,376
Arena	336.75	336.75	336.75	662,896	662,896
City Park	88.80	1,071.17	787.92	708,247	708,247
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	689.50	23.00	559.50	1,005,396	1,005,396
Hotel	752.40	754.60	547.80	1,388,900	1,388,900
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,353.80	13,290.55	6711.95	19,438,793	19,438,793
Research & Development	912.90	214.80	123.51	1,770,027	1,770,027
Strip Mall	2,320.00	2,201.25	1070.00	3,307,217	3,307,217
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	36,520.19	37,236.36	27,821.53	82,140,852	82,140,852

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
Arena	9.50	7.40	7.40	0.00	81.00	19.00	66	28	6
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
NaturalGas Unmitigated	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5085.62	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15004.1	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8002.74	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	18206.5	0.1963	1.7850	1.4994	0.0107		0.1357	0.1357		0.1357	0.1357		2,141.9420	2,141.9420	0.0411	0.0393	2,154.6705
Strip Mall	1575.34	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.4147**	**20.9366**	**10.9923**	**0.1317**		**1.6684**	**1.6684**		**1.6684**	**1.6684**		**26,342.5846**	**26,342.5846**	**0.5049**	**0.4830**	**26,499.1254**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172.647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5.08562	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15.0041	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.00274	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	18.2065	0.1963	1.7850	1.4994	0.0107		0.1357	0.1357		0.1357	0.1357		2,141.9420	2,141.9420	0.0411	0.0393	2,154.6705
Strip Mall	1.57534	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.4147**	**20.9366**	**10.9923**	**0.1317**		**1.6684**	**1.6684**		**1.6684**	**1.6684**		**26,342.5846**	**26,342.5846**	**0.5049**	**0.4830**	**26,499.1254**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Unmitigated	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	32.0579					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	130.4524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8785	6.8580	595.1652	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9321	1,074.9321	1.0285		1,100.6446
Total	**199.0706**	**166.5032**	**663.0993**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2850**	**204,877.2850**	**4.9347**	**3.7364**	**206,114.0930**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	32.0579					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	130.4524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8785	6.8580	595.1652	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9321	1,074.9321	1.0285		1,100.6446
Total	**199.0706**	**166.5032**	**663.0993**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2850**	**204,877.2850**	**4.9347**	**3.7364**	**206,114.0930**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Candlestick Point - Operational - CAP Analysis

San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	268.50	1000sqft	3.02	268,500.00	0
Enclosed Parking Structure	7,218.00	Space	31.81	2,887,200.00	0
Parking Lot	1,360.00	Space	5.99	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.65	875,600.00	0
Arena	75.00	1000sqft	11.81	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.56	50,000.00	0
Hotel	220.00	Room	3.59	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.01	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.76	635,000.00	0
Strip Mall	125.00	1000sqft	1.41	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	6.16	3.02
tblLandUse	LotAcreage	64.96	31.81
tblLandUse	LotAcreage	12.24	5.99
tblLandUse	LotAcreage	19.70	9.65
tblLandUse	LotAcreage	24.11	11.81
tblLandUse	LotAcreage	1.15	0.56
tblLandUse	LotAcreage	7.33	3.59
tblLandUse	LotAcreage	189.95	93.01
tblLandUse	LotAcreage	14.58	7.76
tblLandUse	LotAcreage	2.87	1.41
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	20.40	294.01
tblTripsAndVMT	VendorTripNumber	2,494.00	2,474.00
tblTripsAndVMT	WorkerTripNumber	9,507.00	9,469.00
tblTripsAndVMT	WorkerTripNumber	1,901.00	1,894.00

tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.68
tblVehicleTrips	ST_TR	10.71	4.49
tblVehicleTrips	ST_TR	22.75	9.53
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.43

tblVehicleTrips	ST_TR	49.97	20.93
tblVehicleTrips	ST_TR	1.90	0.80
tblVehicleTrips	ST_TR	42.04	17.61
tblVehicleTrips	SU_TR	5.86	2.45
tblVehicleTrips	SU_TR	10.71	4.49
tblVehicleTrips	SU_TR	16.74	7.01
tblVehicleTrips	SU_TR	26.73	11.19
tblVehicleTrips	SU_TR	5.95	2.49
tblVehicleTrips	SU_TR	25.24	10.57
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.56
tblVehicleTrips	WD_TR	6.65	2.78
tblVehicleTrips	WD_TR	10.71	4.49
tblVehicleTrips	WD_TR	1.89	0.79
tblVehicleTrips	WD_TR	32.93	13.79
tblVehicleTrips	WD_TR	8.17	3.42
tblVehicleTrips	WD_TR	42.70	17.88
tblVehicleTrips	WD_TR	8.11	3.40
tblVehicleTrips	WD_TR	44.32	18.56
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	132,019,824.82	13,916,355.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00

tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1832	0.0000	0.0000	2.0523	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.1832	0.0000	0.0000	2.0523	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0529	0.0000	0.0000	0.0493	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Energy	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
Mobile	32.0333	146.1365	373.9038	1.6500	192.0443	1.2169	193.2612	51.4928	1.1339	52.6267		168,684.3291	168,684.3291	6.6164		168,849.7378
Total	**233.5187**	**333.5762**	**1,047.9954**	**2.8323**	**192.0443**	**19.0996**	**211.1439**	**51.4928**	**19.0166**	**70.5093**	**0.0000**	**399,904.1987**	**399,904.1987**	**12.0560**	**4.2193**	**401,462.9562**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Energy	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
Mobile	32.0333	146.1365	373.9038	1.6500	192.0443	1.2169	193.2612	51.4928	1.1339	52.6267		168,684.3291	168,684.3291	6.6164		168,849.7378
Total	**233.5187**	**333.5762**	**1,047.9954**	**2.8323**	**192.0443**	**19.0996**	**211.1439**	**51.4928**	**19.0166**	**70.5093**	**0.0000**	**399,904.1987**	**399,904.1987**	**12.0560**	**4.2193**	**401,462.9562**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.45

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,955,250; Non-Residential Outdoor: 651,750; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Candlestick Point - Operational - CAP Analysis - San Francisco County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.0333	146.1365	373.9038	1.6500	192.0443	1.2169	193.2612	51.4928	1.1339	52.6267		168,684.3291	168,684.3291	6.6164		168,849.7378
Unmitigated	32.0333	146.1365	373.9038	1.6500	192.0443	1.2169	193.2612	51.4928	1.1339	52.6267		168,684.3291	168,684.3291	6.6164		168,849.7378

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	20,066.04	19,344.24	17684.10	53,859,376	53,859,376
Arena	336.75	336.75	336.75	662,896	662,896
City Park	88.80	1,071.17	787.92	708,247	708,247
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	689.50	23.00	559.50	1,005,396	1,005,396
Hotel	752.40	754.60	547.80	1,388,900	1,388,900
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,353.80	13,290.55	6711.95	19,438,793	19,438,793
Research & Development	912.90	214.80	123.51	1,770,027	1,770,027
Strip Mall	2,320.00	2,201.25	1070.00	3,307,217	3,307,217
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	36,520.19	37,236.36	27,821.53	82,140,852	82,140,852

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
Arena	9.50	7.40	7.40	0.00	81.00	19.00	66	28	6
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254
NaturalGas Unmitigated	2.4147	20.9366	10.9923	0.1317		1.6684	1.6684		1.6684	1.6684		26,342.5846	26,342.5846	0.5049	0.4830	26,499.1254

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5085.62	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15004.1	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8002.74	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	18206.5	0.1963	1.7850	1.4994	0.0107		0.1357	0.1357		0.1357	0.1357		2,141.9420	2,141.9420	0.0411	0.0393	2,154.6705
Strip Mall	1575.34	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.4147**	**20.9366**	**10.9923**	**0.1317**		**1.6684**	**1.6684**		**1.6684**	**1.6684**		**26,342.5846**	**26,342.5846**	**0.5049**	**0.4830**	**26,499.1254**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	172.647	1.8619	15.9106	6.7705	0.1016		1.2864	1.2864		1.2864	1.2864		20,311.4404	20,311.4404	0.3893	0.3724	20,432.1411
Arena	5.08562	0.0548	0.4986	0.4188	2.9900e-003		0.0379	0.0379		0.0379	0.0379		598.3078	598.3078	0.0115	0.0110	601.8633
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
Hotel	15.0041	0.1618	1.4710	1.2356	8.8300e-003		0.1118	0.1118		0.1118	0.1118		1,765.1894	1,765.1894	0.0338	0.0324	1,775.6790
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	8.00274	0.0863	0.7846	0.6591	4.7100e-003		0.0596	0.0596		0.0596	0.0596		941.4988	941.4988	0.0181	0.0173	947.0937
Research & Development	18.2065	0.1963	1.7850	1.4994	0.0107		0.1357	0.1357		0.1357	0.1357		2,141.9420	2,141.9420	0.0411	0.0393	2,154.6705
Strip Mall	1.57534	0.0170	0.1545	0.1297	9.3000e-004		0.0117	0.0117		0.0117	0.0117		185.3344	185.3344	3.5500e-003	3.4000e-003	186.4358
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.4147**	**20.9366**	**10.9923**	**0.1317**		**1.6684**	**1.6684**		**1.6684**	**1.6684**		**26,342.5846**	**26,342.5846**	**0.5049**	**0.4830**	**26,499.1254**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930
Unmitigated	199.0706	166.5032	663.0993	1.0506		16.2143	16.2143		16.2143	16.2143	0.0000	204,877.2850	204,877.2850	4.9347	3.7364	206,114.0930

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	32.0579					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	130.4524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8785	6.8580	595.1652	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9321	1,074.9321	1.0285		1,100.6446
Total	**199.0706**	**166.5032**	**663.0993**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2850**	**204,877.2850**	**4.9347**	**3.7364**	**206,114.0930**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	32.0579					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	130.4524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	18.6819	159.6452	67.9341	1.0190		12.9075	12.9075		12.9075	12.9075	0.0000	203,802.3529	203,802.3529	3.9062	3.7364	205,013.4484
Landscaping	17.8785	6.8580	595.1652	0.0315		3.3068	3.3068		3.3068	3.3068		1,074.9321	1,074.9321	1.0285		1,100.6446
Total	**199.0706**	**166.5032**	**663.0993**	**1.0506**		**16.2143**	**16.2143**		**16.2143**	**16.2143**	**0.0000**	**204,877.2850**	**204,877.2850**	**4.9347**	**3.7364**	**206,114.0930**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Candlestick Point - Operational - GHG Analysis

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	268.50	1000sqft	3.02	268,500.00	0
Enclosed Parking Structure	7,218.00	Space	31.81	2,887,200.00	0
Parking Lot	1,360.00	Space	5.99	544,000.00	0
Unenclosed Parking Structure	2,189.00	Space	9.65	875,600.00	0
Arena	75.00	1000sqft	11.81	75,000.00	0
City Park	112.40	Acre	112.40	4,896,144.00	0
Health Club	50.00	1000sqft	0.56	50,000.00	0
Hotel	220.00	Room	3.59	150,000.00	0
Apartments Mid Rise	7,218.00	Dwelling Unit	93.01	7,218,000.00	20643
Regional Shopping Center	635.00	1000sqft	7.76	635,000.00	0
Strip Mall	125.00	1000sqft	1.41	125,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

Project Characteristics - Assumed construction start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013, 2014 and 2015 as the baseline.
CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 281. Lot acreages have been sclaed down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition - Not modifying anything here since construction is modeled separately.

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on study by F&P. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR AQ section for Candlestick point.

Woodstoves - No wood-stoves in project location. Assuming there are 7218 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - ROG emissions factor for consumer products is for the city of San Francsico

Energy Use -

Water And Wastewater - Total water usage is based on EIR for Candlestick point. Indoor and outdoor water usage is calculated based on CalEEMOD ratio.

Solid Waste - Solid waste generation rate is based on EIR waste disposal rate for Candlestick point.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00

tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	1,082.70	7,218.00
tblFireplaces	NumberNoFireplace	288.72	0.00
tblFireplaces	NumberWood	1,227.06	0.00
tblGrading	AcresOfGrading	0.00	1,162.50
tblLandUse	LandUseSquareFeet	319,440.00	150,000.00
tblLandUse	LotAcreage	6.16	3.02
tblLandUse	LotAcreage	64.96	31.81
tblLandUse	LotAcreage	12.24	5.99
tblLandUse	LotAcreage	19.70	9.65
tblLandUse	LotAcreage	24.11	11.81
tblLandUse	LotAcreage	1.15	0.56
tblLandUse	LotAcreage	7.33	3.59
tblLandUse	LotAcreage	189.95	93.01
tblLandUse	LotAcreage	14.58	7.76
tblLandUse	LotAcreage	2.87	1.41
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	3,320.28	7,062.81
tblSolidWaste	SolidWasteGenerationRate	2.06	645.00
tblSolidWaste	SolidWasteGenerationRate	9.67	10.12
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	120.45	202.40
tblSolidWaste	SolidWasteGenerationRate	20.40	294.01
tblTripsAndVMT	VendorTripNumber	2,494.00	2,474.00
tblTripsAndVMT	WorkerTripNumber	9,507.00	9,469.00
tblTripsAndVMT	WorkerTripNumber	1,901.00	1,894.00

tblVehicleTrips	CC_TL	7.30	9.10
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90

tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	HO_TL	5.70	9.10
tblVehicleTrips	HS_TL	4.80	9.50
tblVehicleTrips	HW_TL	10.80	14.90
tblVehicleTrips	ST_TR	6.39	2.68
tblVehicleTrips	ST_TR	10.71	4.49
tblVehicleTrips	ST_TR	22.75	9.53
tblVehicleTrips	ST_TR	20.87	0.46
tblVehicleTrips	ST_TR	8.19	3.43
tblVehicleTrips	ST_TR	49.97	20.93
tblVehicleTrips	ST_TR	1.90	0.80
tblVehicleTrips	ST_TR	42.04	17.61
tblVehicleTrips	SU_TR	5.86	2.45
tblVehicleTrips	SU_TR	10.71	4.49
tblVehicleTrips	SU_TR	16.74	7.01
tblVehicleTrips	SU_TR	26.73	11.19
tblVehicleTrips	SU_TR	5.95	2.49
tblVehicleTrips	SU_TR	25.24	10.57
tblVehicleTrips	SU_TR	1.11	0.46
tblVehicleTrips	SU_TR	20.43	8.56
tblVehicleTrips	WD_TR	6.65	2.78
tblVehicleTrips	WD_TR	10.71	4.49
tblVehicleTrips	WD_TR	1.89	0.79
tblVehicleTrips	WD_TR	32.93	13.79
tblVehicleTrips	WD_TR	8.17	3.42

tblVehicleTrips	WD_TR	42.70	17.88
tblVehicleTrips	WD_TR	8.11	3.40
tblVehicleTrips	WD_TR	44.32	18.56
tblWater	IndoorWaterUseRate	470,281,756.94	125,564,800.00
tblWater	IndoorWaterUseRate	32,307,758.82	3,431,000.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	5,580,689.40	16,424,741.00
tblWater	IndoorWaterUseRate	47,036,051.14	18,104,088.00
tblWater	IndoorWaterUseRate	132,019,824.82	13,916,355.00
tblWater	IndoorWaterUseRate	9,259,065.19	7,081,023.00
tblWater	OutdoorWaterUseRate	296,481,977.20	79,159,747.00
tblWater	OutdoorWaterUseRate	2,062,197.37	219,000.00
tblWater	OutdoorWaterUseRate	133,922,503.70	19,573,473.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	620,076.60	1,825,259.00
tblWater	OutdoorWaterUseRate	28,828,547.47	11,095,912.00
tblWater	OutdoorWaterUseRate	5,674,910.92	218,977.00
tblWoodstoves	NumberCatalytic	144.36	0.00
tblWoodstoves	NumberNoncatalytic	144.36	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.7342	4.6084	55.2632	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9242	4,709.9242	0.1726	0.0847	4,739.4907
Energy	0.4407	3.8209	2.0061	0.0240		0.3045	0.3045		0.3045	0.3045	0.0000	12,259.2782	12,259.2782	0.8825	0.2452	12,354.4230
Mobile	5.9708	26.9631	73.8591	0.3539	39.9953	0.2546	40.2499	10.7591	0.2373	10.9964	0.0000	32,819.3212	32,819.3212	1.2397	0.0000	32,850.3144
Waste						0.0000	0.0000		0.0000	0.0000	1,838.9129	0.0000	1,838.9129	108.6766	0.0000	4,555.8289
Water						0.0000	0.0000		0.0000	0.0000	59.2583	183.0866	242.3448	6.1049	0.1475	438.9359
Total	**38.1458**	**35.3924**	**131.1284**	**0.4062**	**39.9953**	**1.1794**	**41.1747**	**10.7591**	**1.1621**	**11.9212**	**1,898.1712**	**49,971.6101**	**51,869.7812**	**117.0763**	**0.4775**	**54,938.9928**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.7342	4.6084	55.2632	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9242	4,709.9242	0.1726	0.0847	4,739.4907
Energy	0.4407	3.8209	2.0061	0.0240		0.3045	0.3045		0.3045	0.3045	0.0000	12,259.2782	12,259.2782	0.8825	0.2452	12,354.4230
Mobile	5.9708	26.9631	73.8591	0.3539	39.9953	0.2546	40.2499	10.7591	0.2373	10.9964	0.0000	32,819.3212	32,819.3212	1.2397	0.0000	32,850.3144
Waste						0.0000	0.0000		0.0000	0.0000	1,838.9129	0.0000	1,838.9129	108.6766	0.0000	4,555.8289
Water						0.0000	0.0000		0.0000	0.0000	59.2583	183.0866	242.3448	6.1049	0.1475	438.9359
Total	**38.1458**	**35.3924**	**131.1284**	**0.4062**	**39.9953**	**1.1794**	**41.1747**	**10.7591**	**1.1621**	**11.9212**	**1,898.1712**	**49,971.6101**	**51,869.7812**	**117.0763**	**0.4775**	**54,938.9928**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,670.0000
Total	**3,670.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1162.5

Acres of Paving: 47.45

Residential Indoor: 14,616,450; Residential Outdoor: 4,872,150; Non-Residential Indoor: 1,955,250; Non-Residential Outdoor: 651,750; Striped Parking Area: 258,408 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	9,469.00	2,474.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1,894.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.9708	26.9631	73.8591	0.3539	39.9953	0.2546	40.2499	10.7591	0.2373	10.9964	0.0000	32,819.3212	32,819.3212	1.2397	0.0000	32,850.3144
Unmitigated	5.9708	26.9631	73.8591	0.3539	39.9953	0.2546	40.2499	10.7591	0.2373	10.9964	0.0000	32,819.3212	32,819.3212	1.2397	0.0000	32,850.3144

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	20,066.04	19,344.24	17684.10	69,485,249	69,485,249
Arena	336.75	336.75	336.75	815,014	815,014
City Park	88.80	1,071.17	787.92	980,400	980,400
Enclosed Parking Structure	0.00	0.00	0.00		
Health Club	689.50	23.00	559.50	1,339,476	1,339,476
Hotel	752.40	754.60	547.80	1,862,490	1,862,490
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	11,353.80	13,290.55	6711.95	25,856,491	25,856,491
Research & Development	912.90	214.80	123.51	2,450,579	2,450,579
Strip Mall	2,320.00	2,201.25	1070.00	4,401,049	4,401,049
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	36,520.19	37,236.36	27,821.53	107,190,749	107,190,749

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.90	9.50	9.10	31.00	15.00	54.00	86	11	3
Arena	14.90	9.10	9.10	0.00	81.00	19.00	66	28	6
City Park	14.90	9.50	9.10	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Health Club	14.90	9.50	9.10	16.90	64.10	19.00	52	39	9
Hotel	14.90	9.50	9.10	19.40	61.60	19.00	58	38	4
Parking Lot	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.90	9.50	9.10	16.30	64.70	19.00	54	35	11
Research & Development	14.90	9.50	9.10	33.00	48.00	19.00	82	15	3
Strip Mall	14.90	9.50	9.10	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Arena	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,897.9679	7,897.9679	0.7989	0.1653	7,967.1956
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	7,897.9679	7,897.9679	0.7989	0.1653	7,967.1956
NaturalGas Mitigated	0.4407	3.8209	2.0061	0.0240		0.3045	0.3045		0.3045	0.3045	0.0000	4,361.3103	4,361.3103	0.0836	0.0800	4,387.2274
NaturalGas Unmitigated	0.4407	3.8209	2.0061	0.0240		0.3045	0.3045		0.3045	0.3045	0.0000	4,361.3103	4,361.3103	0.0836	0.0800	4,387.2274

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.30162e+007	0.3398	2.9037	1.2356	0.0185		0.2348	0.2348		0.2348	0.2348	0.0000	3,362.7868	3,362.7868	0.0645	0.0617	3,382.7701
Arena	1.85625e+006	0.0100	0.0910	0.0764	5.5000e-004		6.9200e-003	6.9200e-003		6.9200e-003	6.9200e-003	0.0000	99.0566	99.0566	1.9000e-003	1.8200e-003	99.6452
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
Hotel	5.4765e+006	0.0295	0.2685	0.2255	1.6100e-003		0.0204	0.0204		0.0204	0.0204	0.0000	292.2469	292.2469	5.6000e-003	5.3600e-003	293.9836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.921e+006	0.0158	0.1432	0.1203	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.8757	155.8757	2.9900e-003	2.8600e-003	156.8020
Research & Development	6.64538e+006	0.0358	0.3258	0.2736	1.9500e-003		0.0248	0.0248		0.0248	0.0248	0.0000	354.6225	354.6225	6.8000e-003	6.5000e-003	356.7299
Strip Mall	575000	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.6842	30.6842	5.9000e-004	5.6000e-004	30.8665
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4407**	**3.8209**	**2.0061**	**0.0240**		**0.3045**	**0.3045**		**0.3045**	**0.3045**	**0.0000**	**4,361.3103**	**4,361.3103**	**0.0836**	**0.0800**	**4,387.2274**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.30162e+007	0.3398	2.9037	1.2356	0.0185		0.2348	0.2348		0.2348	0.2348	0.0000	3,362.7868	3,362.7868	0.0645	0.0617	3,382.7701
Arena	1.85625e+006	0.0100	0.0910	0.0764	5.5000e-004		6.9200e-003	6.9200e-003		6.9200e-003	6.9200e-003	0.0000	99.0566	99.0566	1.9000e-003	1.8200e-003	99.6452
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
Hotel	5.4765e+006	0.0295	0.2685	0.2255	1.6100e-003		0.0204	0.0204		0.0204	0.0204	0.0000	292.2469	292.2469	5.6000e-003	5.3600e-003	293.9836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.921e+006	0.0158	0.1432	0.1203	8.6000e-004		0.0109	0.0109		0.0109	0.0109	0.0000	155.8757	155.8757	2.9900e-003	2.8600e-003	156.8020
Research & Development	6.64538e+006	0.0358	0.3258	0.2736	1.9500e-003		0.0248	0.0248		0.0248	0.0248	0.0000	354.6225	354.6225	6.8000e-003	6.5000e-003	356.7299
Strip Mall	575000	3.1000e-003	0.0282	0.0237	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.6842	30.6842	5.9000e-004	5.6000e-004	30.8665
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.4407**	**3.8209**	**2.0061**	**0.0240**		**0.3045**	**0.3045**		**0.3045**	**0.3045**	**0.0000**	**4,361.3103**	**4,361.3103**	**0.0836**	**0.0800**	**4,387.2274**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	3.04743e+007	3,963.0314	0.4009	0.0829	3,997.7684
Arena	567000	73.7355	7.4600e-003	1.5400e-003	74.3818
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	1.63704e+007	2,128.8907	0.2153	0.0446	2,147.5510
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
Hotel	1.2255e+006	159.3701	0.0161	3.3400e-003	160.7670
Parking Lot	190400	24.7606	2.5000e-003	5.2000e-004	24.9776
Regional Shopping Center	6.6548e+006	865.4230	0.0875	0.0181	873.0087
Research & Development	2.02986e+006	263.9730	0.0267	5.5200e-003	266.2868
Strip Mall	1.31e+006	170.3589	0.0172	3.5700e-003	171.8521
Unenclosed Parking Structure	1.5323e+006	199.2679	0.0202	4.1700e-003	201.0145
Total		**7,897.9679**	**0.7989**	**0.1653**	**7,967.1956**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	3.04743e+007	3,963.0314	0.4009	0.0829	3,997.7684
Arena	567000	73.7355	7.4600e-003	1.5400e-003	74.3818
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	1.63704e+007	2,128.8907	0.2153	0.0446	2,147.5510
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
Hotel	1.2255e+006	159.3701	0.0161	3.3400e-003	160.7670
Parking Lot	190400	24.7606	2.5000e-003	5.2000e-004	24.9776
Regional Shopping Center	6.6548e+006	865.4230	0.0875	0.0181	873.0087
Research & Development	2.02986e+006	263.9730	0.0267	5.5200e-003	266.2868
Strip Mall	1.31e+006	170.3589	0.0172	3.5700e-003	171.8521
Unenclosed Parking Structure	1.5323e+006	199.2679	0.0202	4.1700e-003	201.0145
Total		**7,897.9679**	**0.7989**	**0.1653**	**7,967.1956**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.7342	4.6084	55.2632	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9242	4,709.9242	0.1726	0.0847	4,739.4907
Unmitigated	31.7342	4.6084	55.2632	0.0283		0.6203	0.6203		0.6203	0.6203	0.0000	4,709.9242	4,709.9242	0.1726	0.0847	4,739.4907

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.8506					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	23.8076					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4671	3.9911	1.6984	0.0255		0.3227	0.3227		0.3227	0.3227	0.0000	4,622.1596	4,622.1596	0.0886	0.0847	4,649.6268
Landscaping	1.6091	0.6172	53.5649	2.8400e-003		0.2976	0.2976		0.2976	0.2976	0.0000	87.7646	87.7646	0.0840	0.0000	89.8639
Total	**31.7342**	**4.6084**	**55.2632**	**0.0283**		**0.6203**	**0.6203**		**0.6203**	**0.6203**	**0.0000**	**4,709.9242**	**4,709.9242**	**0.1726**	**0.0847**	**4,739.4907**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.8506					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	23.8076					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4671	3.9911	1.6984	0.0255		0.3227	0.3227		0.3227	0.3227	0.0000	4,622.1596	4,622.1596	0.0886	0.0847	4,649.6268
Landscaping	1.6091	0.6172	53.5649	2.8400e-003		0.2976	0.2976		0.2976	0.2976	0.0000	87.7646	87.7646	0.0840	0.0000	89.8639
Total	**31.7342**	**4.6084**	**55.2632**	**0.0283**		**0.6203**	**0.6203**		**0.6203**	**0.6203**	**0.0000**	**4,709.9242**	**4,709.9242**	**0.1726**	**0.0847**	**4,739.4907**

7.0 Water Detail

7.1 Mitigation Measures Water

Candlestick Point - Operational - GHG Analysis - San Francisco County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	242.3448	6.1049	0.1475	438.9359
Unmitigated	242.3448	6.1049	0.1475	438.9359

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	125.565 / 79.1597	164.2226	4.1041	0.0992	296.3909
Arena	3.431 / 0.219	3.6025	0.1121	2.6900e-003	7.2062
City Park	0 / 19.5735	8.9090	9.0000e-004	1.9000e-004	8.9871
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
Hotel	16.4247 / 1.82526	17.5992	0.5365	0.0129	34.8537
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	18.1041 / 11.0959	23.5333	0.5917	0.0143	42.5883
Research & Development	13.9164 / 0	14.2076	0.4545	0.0109	28.8208
Strip Mall	7.08102 / 0.218977	7.3289	0.2313	5.5500e-003	14.7654
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**242.3448**	**6.1049**	**0.1475**	**438.9359**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	125.565 / 79.1597	164.2226	4.1041	0.0992	296.3909
Arena	3.431 / 0.219	3.6025	0.1121	2.6900e-003	7.2062
City Park	0 / 19.5735	8.9090	9.0000e-004	1.9000e-004	8.9871
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
Hotel	16.4247 / 1.82526	17.5992	0.5365	0.0129	34.8537
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	18.1041 / 11.0959	23.5333	0.5917	0.0143	42.5883
Research & Development	13.9164 / 0	14.2076	0.4545	0.0109	28.8208
Strip Mall	7.08102 / 0.218977	7.3289	0.2313	5.5500e-003	14.7654
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**242.3448**	**6.1049**	**0.1475**	**438.9359**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,838.9129	108.6766	0.0000	4,555.8289
Unmitigated	1,838.9129	108.6766	0.0000	4,555.8289

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	7062.81	1,433.6866	84.7285	0.0000	3,551.8979
Arena	645	130.9292	7.7377	0.0000	324.3715
City Park	10.12	2.0543	0.1214	0.0000	5.0894
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
Hotel	202.4	41.0854	2.4281	0.0000	101.7873
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	666.75	135.3442	7.9986	0.0000	335.3096
Research & Development	294.007	59.6809	3.5270	0.0000	147.8568
Strip Mall	131.25	26.6426	1.5745	0.0000	66.0058
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,838.9129**	**108.6766**	**0.0000**	**4,555.8289**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	7062.81	1,433.6866	84.7285	0.0000	3,551.8979
Arena	645	130.9292	7.7377	0.0000	324.3715
City Park	10.12	2.0543	0.1214	0.0000	5.0894
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
Hotel	202.4	41.0854	2.4281	0.0000	101.7873
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	666.75	135.3442	7.9986	0.0000	335.3096
Research & Development	294.007	59.6809	3.5270	0.0000	147.8568
Strip Mall	131.25	26.6426	1.5745	0.0000	66.0058
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,838.9129**	**108.6766**	**0.0000**	**4,555.8289**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	3,670.0000	0.0000	0.0000	3,670.0000

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	5000	3,670.0000	0.0000	0.0000	3,670.0000
Total		**3,670.0000**	**0.0000**	**0.0000**	**3,670.0000**

Hunters Point Shipyard Phase II - Operational - CAP Analysis

San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,146.50	1000sqft	51.10	4,146,500.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.70	1,381,600.00	0
Parking Lot	1,487.00	Space	7.20	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.40	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.70	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on traffic data from F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths
are from EIR AQ section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00

tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	95.19	51.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.70
tblLandUse	LotAcreage	13.38	7.20
tblLandUse	LotAcreage	64.07	34.40
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.70
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70

tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	315.10	4,540.42
tblTripsAndVMT	VendorTripNumber	3,820.00	3,839.00
tblTripsAndVMT	WorkerTripNumber	10,849.00	10,887.00
tblTripsAndVMT	WorkerTripNumber	2,170.00	2,177.00
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40

tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.51
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.37
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.13
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82

tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10
tblVehicleTrips	SU_TR	5.95	2.43
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.29
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.33
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.50
tblVehicleTrips	WD_TR	32.93	13.42
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.40
tblVehicleTrips	WD_TR	8.11	3.31
tblVehicleTrips	WD_TR	44.32	18.06
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00

tblWater	IndoorWaterUseRate	2,038,808,952.08	214,913,095.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00
tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.5717	0.0000	0.0000	2.4209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.5717	0.0000	0.0000	2.4209	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Energy	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
Mobile	32.5878	130.0433	347.9868	1.6288	181.0342	1.1410	182.1752	48.5406	1.0631	49.6038		166,411.6572	166,411.6572	6.1291		166,564.8838
Total	**219.6653**	**250.2297**	**697.4994**	**2.3776**	**181.0342**	**12.0195**	**193.0537**	**48.5406**	**11.9416**	**60.4823**	**0.0000**	**313,634.7569**	**313,634.7569**	**9.4405**	**2.6896**	**314,672.2730**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Energy	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
Mobile	32.5878	130.0433	347.9868	1.6288	181.0342	1.1410	182.1752	48.5406	1.0631	49.6038		166,411.6572	166,411.6572	6.1291		166,564.8838
Total	**219.6653**	**250.2297**	**697.4994**	**2.3776**	**181.0342**	**12.0195**	**193.0537**	**48.5406**	**11.9416**	**60.4823**	**0.0000**	**313,634.7569**	**313,634.7569**	**9.4405**	**2.6896**	**314,672.2730**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 58.3

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,073,749; Non-Residential Outdoor: 2,691,250; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.5878	130.0433	347.9868	1.6288	181.0342	1.1410	182.1752	48.5406	1.0631	49.6038		166,411.6572	166,411.6572	6.1291		166,564.8838
Unmitigated	32.5878	130.0433	347.9868	1.6288	181.0342	1.1410	182.1752	48.5406	1.0631	49.6038		166,411.6572	166,411.6572	6.1291		166,564.8838

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,361.59	8,995.57	8249.46	25,115,682	25,115,682
City Park	191.81	2,308.80	1698.87	1,527,374	1,527,374
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,146.36	255.67	109.13	2,098,703	2,098,703
Health Club	671.07	425.30	544.72	1,079,084	1,079,084
High School	209.09	74.59	30.57	431,402	431,402
Hotel	582.73	584.15	424.39	1,075,649	1,075,649
Junior College (2Yr)	200.53	68.47	0.00	393,474	393,474
Junior High School	668.19	0.00	0.00	1,076,290	1,076,290
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,740.34	2,036.64	1028.71	2,979,454	2,979,454
Research & Development	13,705.92	3,211.00	1875.90	26,577,238	26,577,238
Strip Mall	5,437.16	5,157.45	2506.34	7,750,195	7,750,195
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	33,914.77	23,117.65	16,468.09	70,104,545	70,104,545

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.40	7.40	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
High School	9.50	7.40	7.40	77.80	17.20	5.00	75	19	6
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	9.50	7.40	7.40	6.40	88.60	5.00	92	7	1
Junior High School	9.50	7.40	7.40	72.80	22.20	5.00	63	25	12
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
NaturalGas Unmitigated	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Summer

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82616.2	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13504.5	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12003.3	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3480.15	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15567.5	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1260.27	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	281167	3.0322	27.5654	23.1549	0.1654		2.0950	2.0950		2.0950	2.0950		33,078.4448	33,078.4448	0.6340	0.6064	33,275.0135
Strip Mall	3793.42	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5083**	**40.4983**	**30.8630**	**0.2459**		**3.1148**	**3.1148**		**3.1148**	**3.1148**		**49,181.1254**	**49,181.1254**	**0.9426**	**0.9017**	**49,473.3842**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82.6162	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13.5045	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1.257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12.0033	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3.48015	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15.5675	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.26027	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	281.167	3.0322	27.5654	23.1549	0.1654		2.0950	2.0950		2.0950	2.0950		33,078.4448	33,078.4448	0.6340	0.6064	33,275.0135
Strip Mall	3.79342	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5083**	**40.4983**	**30.8630**	**0.2459**		**3.1148**	**3.1148**		**3.1148**	**3.1148**		**49,181.1254**	**49,181.1254**	**0.9426**	**0.9017**	**49,473.3842**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Unmitigated	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	135.6986					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6779	3.2938	286.1414	0.0152		1.5871	1.5871		1.5871	1.5871		517.2685	517.2685	0.4996		529.7586
Total	**182.5692**	**79.6881**	**318.6497**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,041.9743**	**98,041.9743**	**2.3688**	**1.7880**	**98,634.0050**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	135.6986					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6779	3.2938	286.1414	0.0152		1.5871	1.5871		1.5871	1.5871		517.2685	517.2685	0.4996		529.7586
Total	**182.5692**	**79.6881**	**318.6497**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,041.9743**	**98,041.9743**	**2.3688**	**1.7880**	**98,634.0050**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hunters Point Shipyard Phase II - Operational - CAP Analysis

San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,146.50	1000sqft	51.10	4,146,500.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.70	1,381,600.00	0
Parking Lot	1,487.00	Space	7.20	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.40	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.70	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates calculated based on traffic data from F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths
are from EIR AQ section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00

tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	95.19	51.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.70
tblLandUse	LotAcreage	13.38	7.20
tblLandUse	LotAcreage	64.07	34.40
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.70
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70

tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7
tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	315.10	4,540.42
tblTripsAndVMT	VendorTripNumber	3,820.00	3,839.00
tblTripsAndVMT	WorkerTripNumber	10,849.00	10,887.00
tblTripsAndVMT	WorkerTripNumber	2,170.00	2,177.00
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40
tblVehicleTrips	CC_TL	7.30	7.40

tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	CNW_TL	7.30	7.40
tblVehicleTrips	HO_TL	5.70	7.50
tblVehicleTrips	HS_TL	4.80	7.30
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.51
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.37
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.13
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82

tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10
tblVehicleTrips	SU_TR	5.95	2.43
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.29
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.33
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.50
tblVehicleTrips	WD_TR	32.93	13.42
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33
tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.40
tblVehicleTrips	WD_TR	8.11	3.31
tblVehicleTrips	WD_TR	44.32	18.06
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00

tblWater	IndoorWaterUseRate	2,038,808,952.08	214,913,095.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00
tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00
tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.6315	0.0000	0.0000	2.4781	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	4.7753	0.0000	0.0000	4.3933	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	2.6315	0.0000	0.0000	2.4781	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.1879	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0597	0.0000	0.0000	0.0555	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**4.7753**	**0.0000**	**0.0000**	**4.3933**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Energy	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
Mobile	29.8182	136.0519	350.5438	1.5540	181.0342	1.1439	182.1780	48.5406	1.0659	49.6065		158,862.6122	158,862.6122	6.2174		159,018.0474
Total	**216.8957**	**256.2383**	**700.0564**	**2.3027**	**181.0342**	**12.0224**	**193.0566**	**48.5406**	**11.9444**	**60.4850**	**0.0000**	**306,085.7119**	**306,085.7119**	**9.5289**	**2.6896**	**307,125.4366**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Energy	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
Mobile	29.8182	136.0519	350.5438	1.5540	181.0342	1.1439	182.1780	48.5406	1.0659	49.6065		158,862.6122	158,862.6122	6.2174		159,018.0474
Total	**216.8957**	**256.2383**	**700.0564**	**2.3027**	**181.0342**	**12.0224**	**193.0566**	**48.5406**	**11.9444**	**60.4850**	**0.0000**	**306,085.7119**	**306,085.7119**	**9.5289**	**2.6896**	**307,125.4366**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 58.3

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,073,749; Non-Residential Outdoor: 2,691,250; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	29.8182	136.0519	350.5438	1.5540	181.0342	1.1439	182.1780	48.5406	1.0659	49.6065		158,862.6122	158,862.6122	6.2174		159,018.0474
Unmitigated	29.8182	136.0519	350.5438	1.5540	181.0342	1.1439	182.1780	48.5406	1.0659	49.6065		158,862.6122	158,862.6122	6.2174		159,018.0474

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,361.59	8,995.57	8249.46	25,115,682	25,115,682
City Park	191.81	2,308.80	1698.87	1,527,374	1,527,374
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,146.36	255.67	109.13	2,098,703	2,098,703
Health Club	671.07	425.30	544.72	1,079,084	1,079,084
High School	209.09	74.59	30.57	431,402	431,402
Hotel	582.73	584.15	424.39	1,075,649	1,075,649
Junior College (2Yr)	200.53	68.47	0.00	393,474	393,474
Junior High School	668.19	0.00	0.00	1,076,290	1,076,290
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,740.34	2,036.64	1028.71	2,979,454	2,979,454
Research & Development	13,705.92	3,211.00	1875.90	26,577,238	26,577,238
Strip Mall	5,437.16	5,157.45	2506.34	7,750,195	7,750,195
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	33,914.77	23,117.65	16,468.09	70,104,545	70,104,545

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	7.30	7.50	31.00	15.00	54.00	86	11	3
City Park	9.50	7.40	7.40	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
General Office Building	9.50	7.40	7.40	33.00	48.00	19.00	77	19	4
Health Club	9.50	7.40	7.40	16.90	64.10	19.00	52	39	9
High School	9.50	7.40	7.40	77.80	17.20	5.00	75	19	6
Hotel	9.50	7.40	7.40	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	9.50	7.40	7.40	6.40	88.60	5.00	92	7	1
Junior High School	9.50	7.40	7.40	72.80	22.20	5.00	63	25	12
Parking Lot	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0
Regional Shopping Center	9.50	7.40	7.40	16.30	64.70	19.00	54	35	11
Research & Development	9.50	7.40	7.40	33.00	48.00	19.00	82	15	3
Strip Mall	9.50	7.40	7.40	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	9.50	7.40	7.40	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842
NaturalGas Unmitigated	4.5083	40.4983	30.8630	0.2459		3.1148	3.1148		3.1148	3.1148		49,181.1254	49,181.1254	0.9426	0.9017	49,473.3842

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - CAP Analysis - San Francisco County, Winter

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82616.2	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13504.5	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3390.41	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12003.3	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3480.15	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15567.5	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1260.27	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	281167	3.0322	27.5654	23.1549	0.1654		2.0950	2.0950		2.0950	2.0950		33,078.4448	33,078.4448	0.6340	0.6064	33,275.0135
Strip Mall	3793.42	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5083**	**40.4983**	**30.8630**	**0.2459**		**3.1148**	**3.1148**		**3.1148**	**3.1148**		**49,181.1254**	**49,181.1254**	**0.9426**	**0.9017**	**49,473.3842**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	82.6162	0.8910	7.6137	3.2399	0.0486		0.6156	0.6156		0.6156	0.6156		9,719.5504	9,719.5504	0.1863	0.1782	9,777.3089
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	13.5045	0.1456	1.3240	1.1121	7.9400e-003		0.1006	0.1006		0.1006	0.1006		1,588.7671	1,588.7671	0.0305	0.0291	1,598.2084
Health Club	3.39041	0.0366	0.3324	0.2792	1.9900e-003		0.0253	0.0253		0.0253	0.0253		398.8719	398.8719	7.6500e-003	7.3100e-003	401.2422
High School	1.257	0.0136	0.1232	0.1035	7.4000e-004		9.3700e-003	9.3700e-003		9.3700e-003	9.3700e-003		147.8823	147.8823	2.8300e-003	2.7100e-003	148.7611
Hotel	12.0033	0.1295	1.1768	0.9885	7.0600e-003		0.0894	0.0894		0.0894	0.0894		1,412.1515	1,412.1515	0.0271	0.0259	1,420.5432
Junior College (2Yr)	3.48015	0.0375	0.3412	0.2866	2.0500e-003		0.0259	0.0259		0.0259	0.0259		409.4299	409.4299	7.8500e-003	7.5100e-003	411.8630
Junior High School	15.5675	0.1679	1.5262	1.2820	9.1600e-003		0.1160	0.1160		0.1160	0.1160		1,831.4746	1,831.4746	0.0351	0.0336	1,842.3582
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.26027	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003		148.2675	148.2675	2.8400e-003	2.7200e-003	149.1486
Research & Development	281.167	3.0322	27.5654	23.1549	0.1654		2.0950	2.0950		2.0950	2.0950		33,078.4448	33,078.4448	0.6340	0.6064	33,275.0135
Strip Mall	3.79342	0.0409	0.3719	0.3124	2.2300e-003		0.0283	0.0283		0.0283	0.0283		446.2853	446.2853	8.5500e-003	8.1800e-003	448.9373
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.5083**	**40.4983**	**30.8630**	**0.2459**		**3.1148**	**3.1148**		**3.1148**	**3.1148**		**49,181.1254**	**49,181.1254**	**0.9426**	**0.9017**	**49,473.3842**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050
Unmitigated	182.5692	79.6881	318.6497	0.5028		7.7637	7.7637		7.7637	7.7637	0.0000	98,041.9743	98,041.9743	2.3688	1.7880	98,634.0050

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	135.6986					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6779	3.2938	286.1414	0.0152		1.5871	1.5871		1.5871	1.5871		517.2685	517.2685	0.4996		529.7586
Total	**182.5692**	**79.6881**	**318.6497**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,041.9743**	**98,041.9743**	**2.3688**	**1.7880**	**98,634.0050**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	29.2530					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	135.6986					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	8.9398	76.3944	32.5082	0.4876		6.1766	6.1766		6.1766	6.1766	0.0000	97,524.7059	97,524.7059	1.8692	1.7880	98,104.2465
Landscaping	8.6779	3.2938	286.1414	0.0152		1.5871	1.5871		1.5871	1.5871		517.2685	517.2685	0.4996		529.7586
Total	**182.5692**	**79.6881**	**318.6497**	**0.5028**		**7.7637**	**7.7637**		**7.7637**	**7.7637**	**0.0000**	**98,041.9743**	**98,041.9743**	**2.3688**	**1.7880**	**98,634.0050**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hunters Point Shipyard Phase II - Operational - GHG Analysis

San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	255.00	1000sqft	3.10	255,000.00	0
Research & Development	4,146.50	1000sqft	51.10	4,146,500.00	0
High School	300.00	Student	0.50	27,857.00	0
Junior College (2Yr)	400.00	Student	0.20	37,142.00	0
Junior High School	1,012.00	Student	1.50	345,000.00	0
Enclosed Parking Structure	3,454.00	Space	16.70	1,381,600.00	0
Parking Lot	1,487.00	Space	7.20	594,800.00	0
Unenclosed Parking Structure	7,119.00	Space	34.40	2,847,600.00	0
City Park	249.00	Acre	249.00	10,846,440.00	0
Health Club	50.00	1000sqft	0.60	50,000.00	0
Hotel	175.00	Room	3.10	120,000.00	0
Apartments Mid Rise	3,454.00	Dwelling Unit	48.70	3,454,000.00	9878
Regional Shopping Center	100.00	1000sqft	1.20	100,000.00	0
Strip Mall	301.00	1000sqft	3.70	301,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	4.6	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2032
Utility Company	Pacific Gas & Electric Company				

CO2 Intensity (lb/MWhr)	286.7	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on construction schedule, assumed start date is 01/01/2018.
CO2 emissions intensity for 2032 based on a 50% RPS for 2030, calculated by averaging CO2 intensity for 2013,2014 and 2015 as the baseline. CH4 and N2O intensity is similar to PG&E.

Land Use - Land uses based on information provided by Client. Total acreage in EIR is 421. Lot acreages have been scaled down accordingly. Acreage for city park remains the same. Assumed zero building area in city parks.

Construction Phase - Zero'ed out construction since this was calculated separately.

Off-road Equipment -

Trips and VMT - Not modifying anything here since construction is modeled separately.

On-road Fugitive Dust - Not modifying anything here since construction is modeled separately.

Demolition -

Grading - Not modifying anything here since construction is modeled separately.

Architectural Coating - Not modifying anything here since construction is modeled separately.

Vehicle Trips - Trip rates provided by F&P on 3/28/2018. Adjusted total trips are calculated based on CalEEMod default trip generation rates. Trip lengths are from EIR GHG section for Hunters point.

Woodstoves - No wood-stoves in project location. Assuming there are 3454 natural gas fireplaces, that operate for 4 hours a day for 50 days (200 hours/year).

Consumer Products - Consumer product emissions factor for San Francisco.

Energy Use -

Water And Wastewater - Water usage for Hunters Point is based on EIR water usage.

Solid Waste - Solid water disposal rate for Hunter's point is based on EIR disposal rates.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	550.00	0.00
tblConstructionPhase	NumDays	7,750.00	0.00
tblConstructionPhase	NumDays	500.00	0.00
tblConstructionPhase	NumDays	775.00	0.00
tblConstructionPhase	NumDays	550.00	0.00

tblConstructionPhase	NumDays	300.00	0.00
tblConsumerProducts	ROG_EF	2.14E-05	1.51E-05
tblFireplaces	FireplaceDayYear	11.14	50.00
tblFireplaces	FireplaceHourDay	3.50	4.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	518.10	3,454.00
tblFireplaces	NumberNoFireplace	138.16	0.00
tblFireplaces	NumberWood	587.18	0.00
tblGrading	AcresOfGrading	0.00	1,937.50
tblLandUse	LandUseSquareFeet	39,798.29	27,857.00
tblLandUse	LandUseSquareFeet	17,460.89	37,142.00
tblLandUse	LandUseSquareFeet	118,972.42	345,000.00
tblLandUse	LandUseSquareFeet	254,100.00	120,000.00
tblLandUse	LotAcreage	5.85	3.10
tblLandUse	LotAcreage	95.19	51.10
tblLandUse	LotAcreage	0.91	0.50
tblLandUse	LotAcreage	0.40	0.20
tblLandUse	LotAcreage	2.73	1.50
tblLandUse	LotAcreage	31.09	16.70
tblLandUse	LotAcreage	13.38	7.20
tblLandUse	LotAcreage	64.07	34.40
tblLandUse	LotAcreage	1.15	0.60
tblLandUse	LotAcreage	5.83	3.10
tblLandUse	LotAcreage	90.89	48.70
tblLandUse	LotAcreage	2.30	1.20
tblLandUse	LotAcreage	6.91	3.70
tblProjectCharacteristics	CO2IntensityFactor	641.35	286.7

tblSequestration	NumberOfNewTrees	0.00	5,000.00
tblSolidWaste	SolidWasteGenerationRate	1,588.84	3,379.74
tblSolidWaste	SolidWasteGenerationRate	21.41	22.44
tblSolidWaste	SolidWasteGenerationRate	237.15	238.43
tblSolidWaste	SolidWasteGenerationRate	285.00	46.75
tblSolidWaste	SolidWasteGenerationRate	54.75	54.00
tblSolidWaste	SolidWasteGenerationRate	95.81	161.00
tblSolidWaste	SolidWasteGenerationRate	73.00	72.00
tblSolidWaste	SolidWasteGenerationRate	184.69	182.16
tblSolidWaste	SolidWasteGenerationRate	315.10	4,540.42
tblTripsAndVMT	VendorTripNumber	3,820.00	3,839.00
tblTripsAndVMT	WorkerTripNumber	10,849.00	10,887.00
tblTripsAndVMT	WorkerTripNumber	2,170.00	2,177.00
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CC_TL	7.30	9.50
tblVehicleTrips	CNW_TL	7.30	9.10

tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CNW_TL	7.30	9.10
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	CW_TL	9.50	14.90
tblVehicleTrips	HO_TL	5.70	9.10
tblVehicleTrips	HS_TL	4.80	9.50

tblVehicleTrips	HW_TL	10.80	14.90
tblVehicleTrips	ST_TR	6.39	2.60
tblVehicleTrips	ST_TR	22.75	9.27
tblVehicleTrips	ST_TR	2.46	1.00
tblVehicleTrips	ST_TR	20.87	8.51
tblVehicleTrips	ST_TR	0.61	0.25
tblVehicleTrips	ST_TR	8.19	3.34
tblVehicleTrips	ST_TR	0.42	0.17
tblVehicleTrips	ST_TR	49.97	20.37
tblVehicleTrips	ST_TR	1.90	0.77
tblVehicleTrips	ST_TR	42.04	17.13
tblVehicleTrips	SU_TR	5.86	2.39
tblVehicleTrips	SU_TR	16.74	6.82
tblVehicleTrips	SU_TR	1.05	0.43
tblVehicleTrips	SU_TR	26.73	10.89
tblVehicleTrips	SU_TR	0.25	0.10
tblVehicleTrips	SU_TR	5.95	2.43
tblVehicleTrips	SU_TR	0.04	0.00
tblVehicleTrips	SU_TR	25.24	10.29
tblVehicleTrips	SU_TR	1.11	0.45
tblVehicleTrips	SU_TR	20.43	8.33
tblVehicleTrips	WD_TR	6.65	2.71
tblVehicleTrips	WD_TR	1.89	0.77
tblVehicleTrips	WD_TR	11.03	4.50
tblVehicleTrips	WD_TR	32.93	13.42
tblVehicleTrips	WD_TR	1.71	0.70
tblVehicleTrips	WD_TR	8.17	3.33

tblVehicleTrips	WD_TR	1.23	0.50
tblVehicleTrips	WD_TR	1.62	0.66
tblVehicleTrips	WD_TR	42.70	17.40
tblVehicleTrips	WD_TR	8.11	3.31
tblVehicleTrips	WD_TR	44.32	18.06
tblWater	IndoorWaterUseRate	225,042,004.50	64,193,343.00
tblWater	IndoorWaterUseRate	45,322,105.74	4,525,996.00
tblWater	IndoorWaterUseRate	2,957,157.20	2,262,998.00
tblWater	IndoorWaterUseRate	1,321,488.00	1,321,500.00
tblWater	IndoorWaterUseRate	4,439,184.75	4,439,225.00
tblWater	IndoorWaterUseRate	856,440.00	856,400.00
tblWater	IndoorWaterUseRate	2,453,330.88	2,453,088.00
tblWater	IndoorWaterUseRate	7,407,252.15	7,407,300.00
tblWater	IndoorWaterUseRate	2,038,808,952.08	214,913,095.00
tblWater	IndoorWaterUseRate	22,295,828.97	10,898,661.00
tblWater	OutdoorWaterUseRate	141,874,307.18	40,469,374.00
tblWater	OutdoorWaterUseRate	296,678,856.07	57,332,268.00
tblWater	OutdoorWaterUseRate	27,778,064.81	2,774,004.00
tblWater	OutdoorWaterUseRate	1,812,451.19	1,387,002.00
tblWater	OutdoorWaterUseRate	3,398,112.00	3,398,100.00
tblWater	OutdoorWaterUseRate	493,242.75	493,325.00
tblWater	OutdoorWaterUseRate	1,339,560.00	1,339,600.00
tblWater	OutdoorWaterUseRate	6,308,565.12	6,308,808.00
tblWater	OutdoorWaterUseRate	4,539,928.74	4,539,900.00
tblWater	OutdoorWaterUseRate	13,665,185.50	6,679,739.00
tblWoodstoves	NumberCatalytic	69.08	0.00
tblWoodstoves	NumberNoncatalytic	69.08	0.00

tblWoodstoves	WoodstoveDayYear	14.12	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2040	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.1082	2.2063	26.5654	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0564	2,254.0564	0.0832	0.0406	2,268.2199
Energy	0.8228	7.3909	5.6325	0.0449		0.5685	0.5685		0.5685	0.5685	0.0000	17,211.0144	17,211.0144	1.0734	0.3391	17,338.8891
Mobile	5.1476	23.2465	64.4359	0.3105	35.1319	0.2228	35.3547	9.4508	0.2077	9.6585	0.0000	28,792.2342	28,792.2342	1.0847	0.0000	28,819.3523
Waste						0.0000	0.0000		0.0000	0.0000	1,850.8691	0.0000	1,850.8691	109.3832	0.0000	4,585.4498
Water						0.0000	0.0000		0.0000	0.0000	99.3866	277.2090	376.5956	10.2360	0.2468	706.0520
Total	**37.0785**	**32.8437**	**96.6339**	**0.3689**	**35.1319**	**1.0885**	**36.2204**	**9.4508**	**1.0734**	**10.5242**	**1,950.2557**	**48,534.5140**	**50,484.7697**	**121.8605**	**0.6264**	**53,717.9630**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	31.1082	2.2063	26.5654	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0564	2,254.0564	0.0832	0.0406	2,268.2199
Energy	0.8228	7.3909	5.6325	0.0449		0.5685	0.5685		0.5685	0.5685	0.0000	17,211.0144	17,211.0144	1.0734	0.3391	17,338.8891
Mobile	5.1476	23.2465	64.4359	0.3105	35.1319	0.2228	35.3547	9.4508	0.2077	9.6585	0.0000	28,792.2342	28,792.2342	1.0847	0.0000	28,819.3523
Waste						0.0000	0.0000		0.0000	0.0000	1,850.8691	0.0000	1,850.8691	109.3832	0.0000	4,585.4498
Water						0.0000	0.0000		0.0000	0.0000	99.3866	277.2090	376.5956	10.2360	0.2468	706.0520
Total	**37.0785**	**32.8437**	**96.6339**	**0.3689**	**35.1319**	**1.0885**	**36.2204**	**9.4508**	**1.0734**	**10.5242**	**1,950.2557**	**48,534.5140**	**50,484.7697**	**121.8605**	**0.6264**	**53,717.9630**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	3,670.0000
Total	**3,670.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2018	12/31/2017	5	0	
2	Site Preparation	Site Preparation	2/23/2019	2/22/2019	5	0	
3	Grading	Grading	11/2/2019	11/1/2019	5	0	
4	Building Construction	Building Construction	8/14/2021	8/13/2021	5	0	
5	Paving	Paving	6/11/2039	6/10/2039	5	0	
6	Architectural Coating	Architectural Coating	9/15/2040	9/14/2040	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1937.5

Acres of Paving: 58.3

Residential Indoor: 6,994,350; Residential Outdoor: 2,331,450; Non-Residential Indoor: 8,073,749; Non-Residential Outdoor: 2,691,250; Striped Parking Area: 289,440 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	10,887.00	3,839.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2,177.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Grading - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Paving - 2039

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2040

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	5.1476	23.2465	64.4359	0.3105	35.1319	0.2228	35.3547	9.4508	0.2077	9.6585	0.0000	28,792.2342	28,792.2342	1.0847	0.0000	28,819.3523
Unmitigated	5.1476	23.2465	64.4359	0.3105	35.1319	0.2228	35.3547	9.4508	0.2077	9.6585	0.0000	28,792.2342	28,792.2342	1.0847	0.0000	28,819.3523

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	9,361.59	8,995.57	8249.46	32,402,332	32,402,332
City Park	191.81	2,308.80	1698.87	2,114,288	2,114,288
Enclosed Parking Structure	0.00	0.00	0.00		
General Office Building	1,146.36	255.67	109.13	2,905,488	2,905,488
Health Club	671.07	425.30	544.72	1,437,650	1,437,650
High School	209.09	74.59	30.57	653,151	653,151
Hotel	582.73	584.15	424.39	1,442,425	1,442,425
Junior College (2Yr)	200.53	68.47	0.00	513,112	513,112
Junior High School	668.19	0.00	0.00	1,615,558	1,615,558
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	1,740.34	2,036.64	1028.71	3,963,118	3,963,118
Research & Development	13,705.92	3,211.00	1875.90	36,795,846	36,795,846
Strip Mall	5,437.16	5,157.45	2506.34	10,313,502	10,313,502
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	33,914.77	23,117.65	16,468.09	94,156,470	94,156,470

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.90	9.50	9.10	31.00	15.00	54.00	86	11	3
City Park	14.90	9.50	9.10	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
General Office Building	14.90	9.50	9.10	33.00	48.00	19.00	77	19	4
Health Club	14.90	9.50	9.10	16.90	64.10	19.00	52	39	9
High School	14.90	9.50	9.10	77.80	17.20	5.00	75	19	6
Hotel	14.90	9.50	9.10	19.40	61.60	19.00	58	38	4
Junior College (2Yr)	14.90	9.50	9.10	6.40	88.60	5.00	92	7	1
Junior High School	14.90	9.50	9.10	72.80	22.20	5.00	63	25	12
Parking Lot	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.90	9.50	9.10	16.30	64.70	19.00	54	35	11
Research & Development	14.90	9.50	9.10	33.00	48.00	19.00	82	15	3
Strip Mall	14.90	9.50	9.10	16.60	64.40	19.00	45	40	15
Unenclosed Parking Structure	14.90	9.50	9.10	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
City Park	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Enclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
General Office Building	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Health Club	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Hotel	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior College (2Yr)	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Junior High School	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Parking Lot	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Regional Shopping Center	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Research & Development	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Strip Mall	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615
Unenclosed Parking Structure	0.601538	0.036054	0.193096	0.092568	0.012113	0.005314	0.035718	0.009816	0.004313	0.002228	0.005671	0.000957	0.000615

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9,068.5275	9,068.5275	0.9173	0.1898	9,148.0155
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9,068.5275	9,068.5275	0.9173	0.1898	9,148.0155
NaturalGas Mitigated	0.8228	7.3909	5.6325	0.0449		0.5685	0.5685		0.5685	0.5685	0.0000	8,142.4869	8,142.4869	0.1561	0.1493	8,190.8736
NaturalGas Unmitigated	0.8228	7.3909	5.6325	0.0449		0.5685	0.5685		0.5685	0.5685	0.0000	8,142.4869	8,142.4869	0.1561	0.1493	8,190.8736

5.2 Energy by Land Use - NaturalGas

Unmitigated

Hunters Point Shipyard Phase II - Operational - GHG Analysis - San Francisco County, Annual

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.01549e+007	0.1626	1.3895	0.5913	8.8700e-003		0.1123	0.1123		0.1123	0.1123	0.0000	1,609.1806	1,609.1806	0.0308	0.0295	1,618.7431
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	4.92915e+006	0.0266	0.2416	0.2030	1.4500e-003		0.0184	0.0184		0.0184	0.0184	0.0000	263.0382	263.0382	5.0400e-003	4.8200e-003	264.6013
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
High School	458805	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4836	24.4836	4.7000e-004	4.5000e-004	24.6291
Hotel	4.3812e+006	0.0236	0.2148	0.1804	1.2900e-003		0.0163	0.0163		0.0163	0.0163	0.0000	233.7975	233.7975	4.4800e-003	4.2900e-003	235.1869
Junior College (2Yr)	1.27026e+006	6.8500e-003	0.0623	0.0523	3.7000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	67.7857	67.7857	1.3000e-003	1.2400e-003	68.1885
Junior High School	5.68215e+006	0.0306	0.2785	0.2340	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.2212	303.2212	5.8100e-003	5.5600e-003	305.0231
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	460000	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5474	24.5474	4.7000e-004	4.5000e-004	24.6932
Research & Development	1.02626e+008	0.5534	5.0307	4.2258	0.0302		0.3823	0.3823		0.3823	0.3823	0.0000	5,476.5075	5,476.5075	0.1050	0.1004	5,509.0517
Strip Mall	1.3846e+006	7.4700e-003	0.0679	0.0570	4.1000e-004		5.1600e-003	5.1600e-003		5.1600e-003	5.1600e-003	0.0000	73.8875	73.8875	1.4200e-003	1.3500e-003	74.3266
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.8228**	**7.3909**	**5.6325**	**0.0449**		**0.5684**	**0.5684**		**0.5684**	**0.5684**	**0.0000**	**8,142.4869**	**8,142.4869**	**0.1561**	**0.1493**	**8,190.8736**

5.2 Energy by Land Use - NaturalGas

Mitigated

Hunters Point Shipyard Phase II - Operational - GHG Analysis - San Francisco County, Annual

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	3.01549e+007	0.1626	1.3895	0.5913	8.8700e-003		0.1123	0.1123		0.1123	0.1123	0.0000	1,609.1806	1,609.1806	0.0308	0.0295	1,618.7431
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
General Office Building	4.92915e+006	0.0266	0.2416	0.2030	1.4500e-003		0.0184	0.0184		0.0184	0.0184	0.0000	263.0382	263.0382	5.0400e-003	4.8200e-003	264.6013
Health Club	1.2375e+006	6.6700e-003	0.0607	0.0510	3.6000e-004		4.6100e-003	4.6100e-003		4.6100e-003	4.6100e-003	0.0000	66.0377	66.0377	1.2700e-003	1.2100e-003	66.4301
High School	458805	2.4700e-003	0.0225	0.0189	1.3000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.4836	24.4836	4.7000e-004	4.5000e-004	24.6291
Hotel	4.3812e+006	0.0236	0.2148	0.1804	1.2900e-003		0.0163	0.0163		0.0163	0.0163	0.0000	233.7975	233.7975	4.4800e-003	4.2900e-003	235.1869
Junior College (2Yr)	1.27026e+006	6.8500e-003	0.0623	0.0523	3.7000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	67.7857	67.7857	1.3000e-003	1.2400e-003	68.1885
Junior High School	5.68215e+006	0.0306	0.2785	0.2340	1.6700e-003		0.0212	0.0212		0.0212	0.0212	0.0000	303.2212	303.2212	5.8100e-003	5.5600e-003	305.0231
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	460000	2.4800e-003	0.0226	0.0189	1.4000e-004		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	24.5474	24.5474	4.7000e-004	4.5000e-004	24.6932
Research & Development	1.02626e+008	0.5534	5.0307	4.2258	0.0302		0.3823	0.3823		0.3823	0.3823	0.0000	5,476.5075	5,476.5075	0.1050	0.1004	5,509.0517
Strip Mall	1.3846e+006	7.4700e-003	0.0679	0.0570	4.1000e-004		5.1600e-003	5.1600e-003		5.1600e-003	5.1600e-003	0.0000	73.8875	73.8875	1.4200e-003	1.3500e-003	74.3266
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.8228**	**7.3909**	**5.6325**	**0.0449**		**0.5684**	**0.5684**		**0.5684**	**0.5684**	**0.0000**	**8,142.4869**	**8,142.4869**	**0.1561**	**0.1493**	**8,190.8736**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.45828e+007	1,896.4132	0.1918	0.0397	1,913.0357
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	7.83367e+006	1,018.7294	0.1031	0.0213	1,027.6588
General Office Building	3.1824e+006	413.8550	0.0419	8.6600e-003	417.4825
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
High School	123685	16.0846	1.6300e-003	3.4000e-004	16.2256
Hotel	980400	127.4961	0.0129	2.6700e-003	128.6136
Junior College (2Yr)	379591	49.3639	4.9900e-003	1.0300e-003	49.7966
Junior High School	1.5318e+006	199.2028	0.0202	4.1700e-003	200.9489
Parking Lot	208180	27.0728	2.7400e-003	5.7000e-004	27.3101
Regional Shopping Center	1.048e+006	136.2871	0.0138	2.8500e-003	137.4817
Research & Development	3.13475e+007	4,076.5887	0.4124	0.0853	4,112.3211
Strip Mall	3.15448e+006	410.2241	0.0415	8.5900e-003	413.8199
Unenclosed Parking Structure	4.9833e+006	648.0529	0.0656	0.0136	653.7333
Total		**9,068.5275**	**0.9173**	**0.1898**	**9,148.0155**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.45828e+007	1,896.4132	0.1918	0.0397	1,913.0357
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	7.83367e+006	1,018.7294	0.1031	0.0213	1,027.6588
General Office Building	3.1824e+006	413.8550	0.0419	8.6600e-003	417.4825
Health Club	378000	49.1570	4.9700e-003	1.0300e-003	49.5879
High School	123685	16.0846	1.6300e-003	3.4000e-004	16.2256
Hotel	980400	127.4961	0.0129	2.6700e-003	128.6136
Junior College (2Yr)	379591	49.3639	4.9900e-003	1.0300e-003	49.7966
Junior High School	1.5318e+006	199.2028	0.0202	4.1700e-003	200.9489
Parking Lot	208180	27.0728	2.7400e-003	5.7000e-004	27.3101
Regional Shopping Center	1.048e+006	136.2871	0.0138	2.8500e-003	137.4817
Research & Development	3.13475e+007	4,076.5887	0.4124	0.0853	4,112.3211
Strip Mall	3.15448e+006	410.2241	0.0415	8.5900e-003	413.8199
Unenclosed Parking Structure	4.9833e+006	648.0529	0.0656	0.0136	653.7333
Total		**9,068.5275**	**0.9173**	**0.1898**	**9,148.0155**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	31.1082	2.2063	26.5654	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0564	2,254.0564	0.0832	0.0406	2,268.2199
Unmitigated	31.1082	2.2063	26.5654	0.0136		0.2973	0.2973		0.2973	0.2973	0.0000	2,254.0564	2,254.0564	0.0832	0.0406	2,268.2199

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.3387					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	24.7650					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2235	1.9099	0.8127	0.0122		0.1544	0.1544		0.1544	0.1544	0.0000	2,211.8231	2,211.8231	0.0424	0.0406	2,224.9669
Landscaping	0.7810	0.2964	25.7527	1.3700e-003		0.1428	0.1428		0.1428	0.1428	0.0000	42.2332	42.2332	0.0408	0.0000	43.2530
Total	**31.1082**	**2.2063**	**26.5654**	**0.0136**		**0.2973**	**0.2973**		**0.2973**	**0.2973**	**0.0000**	**2,254.0563**	**2,254.0563**	**0.0832**	**0.0406**	**2,268.2199**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.3387					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	24.7650					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.2235	1.9099	0.8127	0.0122		0.1544	0.1544		0.1544	0.1544	0.0000	2,211.8231	2,211.8231	0.0424	0.0406	2,224.9669
Landscaping	0.7810	0.2964	25.7527	1.3700e-003		0.1428	0.1428		0.1428	0.1428	0.0000	42.2332	42.2332	0.0408	0.0000	43.2530
Total	**31.1082**	**2.2063**	**26.5654**	**0.0136**		**0.2973**	**0.2973**		**0.2973**	**0.2973**	**0.0000**	**2,254.0563**	**2,254.0563**	**0.0832**	**0.0406**	**2,268.2199**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	376.5956	10.2360	0.2468	706.0520
Unmitigated	376.5956	10.2360	0.2468	706.0520

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	64.1933 / 40.4694	83.9567	2.0982	0.0507	151.5259
City Park	0 / 57.3323	26.0952	2.6400e-003	5.5000e-004	26.3239
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.526 / 2.774	5.8833	0.1479	3.5800e-003	10.6470
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
High School	1.3215 / 3.3981	2.8958	0.0433	1.0700e-003	4.2971
Hotel	4.43923 / 0.493325	4.7567	0.1450	3.4900e-003	9.4202
Junior College (2Yr)	0.8564 / 1.3396	1.4841	0.0280	6.8000e-004	2.3887
Junior High School	2.45309 / 6.30881	5.3759	0.0804	1.9800e-003	7.9770
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.4073 / 4.5399	9.6287	0.2421	5.8500e-003	17.4250
Research & Development	214.913 / 0	219.4106	7.0182	0.1685	445.0855
Strip Mall	10.8987 / 6.67974	14.1671	0.3562	8.6100e-003	25.6381
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**376.5956**	**10.2360**	**0.2468**	**706.0520**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	64.1933 / 40.4694	83.9567	2.0982	0.0507	151.5259
City Park	0 / 57.3323	26.0952	2.6400e-003	5.5000e-004	26.3239
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
General Office Building	4.526 / 2.774	5.8833	0.1479	3.5800e-003	10.6470
Health Club	2.263 / 1.387	2.9417	0.0740	1.7900e-003	5.3235
High School	1.3215 / 3.3981	2.8958	0.0433	1.0700e-003	4.2971
Hotel	4.43923 / 0.493325	4.7567	0.1450	3.4900e-003	9.4202
Junior College (2Yr)	0.8564 / 1.3396	1.4841	0.0280	6.8000e-004	2.3887
Junior High School	2.45309 / 6.30881	5.3759	0.0804	1.9800e-003	7.9770
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.4073 / 4.5399	9.6287	0.2421	5.8500e-003	17.4250
Research & Development	214.913 / 0	219.4106	7.0182	0.1685	445.0855
Strip Mall	10.8987 / 6.67974	14.1671	0.3562	8.6100e-003	25.6381
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**376.5956**	**10.2360**	**0.2468**	**706.0520**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,850.8691	109.3832	0.0000	4,585.4498
Unmitigated	1,850.8691	109.3832	0.0000	4,585.4498

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	3379.74	686.0567	40.5448	0.0000	1,699.6764
City Park	22.44	4.5551	0.2692	0.0000	11.2851
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
General Office Building	238.43	48.3991	2.8603	0.0000	119.9068
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
High School	54	10.9615	0.6478	0.0000	27.1567
Hotel	161	32.6816	1.9314	0.0000	80.9671
Junior College (2Yr)	72	14.6154	0.8637	0.0000	36.2089
Junior High School	182.16	36.9768	2.1853	0.0000	91.6085
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	4540.42	921.6637	54.4688	0.0000	2,283.3829
Strip Mall	316.05	64.1553	3.7915	0.0000	158.9420
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,850.8691**	**109.3832**	**0.0000**	**4,585.4498**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	3379.74	686.0567	40.5448	0.0000	1,699.6764
City Park	22.44	4.5551	0.2692	0.0000	11.2851
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
General Office Building	238.43	48.3991	2.8603	0.0000	119.9068
Health Club	46.75	9.4898	0.5608	0.0000	23.5107
High School	54	10.9615	0.6478	0.0000	27.1567
Hotel	161	32.6816	1.9314	0.0000	80.9671
Junior College (2Yr)	72	14.6154	0.8637	0.0000	36.2089
Junior High School	182.16	36.9768	2.1853	0.0000	91.6085
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	4540.42	921.6637	54.4688	0.0000	2,283.3829
Strip Mall	316.05	64.1553	3.7915	0.0000	158.9420
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**1,850.8691**	**109.3832**	**0.0000**	**4,585.4498**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	3,670.0000	0.0000	0.0000	3,670.0000

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Mixed Hardwood	5000	3,670.0000	0.0000	0.0000	3,670.0000
Total		**3,670.0000**	**0.0000**	**0.0000**	**3,670.0000**