

RECORDING REQUESTED BY
AND WHEN RECORDED RETURN TO:

San Francisco Real Estate Division
25 Van Ness Avenue, Suite 400
San Francisco, CA 94102
Attn: Director of Property

WITH A CONFORMED COPY TO:
San Francisco Public Utilities Commission
City and County of San Francisco
525 Golden Gate Avenue, 10th Floor
San Francisco, CA 94102
Attn: Real Estate Director

APN: 7303-001; 7303A-002; 7308-003; 7308-002; 7309A-002; 7333C-001; 7326-003; 7326-002; 7362-001; 7364-001; 7365-001; 7366-002; 7370-002; 7330-002; 7330-003; 7331-249; 7333D-001; 7335-002

RESTATEMENT AND AMENDMENT OF WATER SYSTEM EASEMENT

THIS RESTATEMENT AND AMENDMENT OF WATER SYSTEM EASEMENT (this “Easement Agreement”) dated _____, 20__, is by and between the CITY AND COUNTY OF SAN FRANCISCO, a municipal corporation (“Grantor” or “City”), and PARKMERCED OWNER LLC, a Delaware limited liability company its successors and assigns (“Grantee”) (collectively, the “Parties”).

RECITALS

A. In 1944, the Metropolitan Life Insurance Company caused to be divided certain land known as “Parkmerced” and recorded a survey map of this land, as adopted by the Board of Supervisors in Resolution No. 3795 (Series of 1939), in the official records of the City and County of San Francisco (the “Official Records”) at Map Book O, Pages 97 to 101; and,

B. In 1945, the Metropolitan Life Insurance Company transferred certain lands to the City for public streets within Parkmerced as set forth in a deed recorded in the Official Records at Book 4252, Pages 85 to 89 (the “Street Dedication Deed”); and,

C. The City’s Board of Supervisors approved the aforementioned map, accepted the transferred property for street areas, and dedicated certain City-owned property as open public streets and changed the name of certain streets by Resolution No. 4807 (Series of 1939) recorded in the Official Records at Book 4252, Pages 89 to 90; and,

D. The Street Dedication Deed excluded from the conveyance to the City and reserved to the Metropolitan Life Insurance Company title to the water distribution system (including all pipes, conduits, valves, meters, fittings, appurtenances, and appliances attached or incident to any such systems) located within the public streets within Parkmerced (the “Low-Pressure Water System”) and reserved to the Metropolitan Life Insurance Company, its successors and assigns, a

right of way easement in, over, across and upon the lands conveyed, to install, operate, patrol, repair, and replace the Low-Pressure Water System (the “Water System Easement”); and,

E. In 2014, Grantee acquired the property known as Parkmerced by deed recorded November 10, 2014 as, **DOC-2014-J970575-00**, in the Official Records of the City and County of San Francisco, California (the “Official Records”); and,

F. In 2017, Grantee and the City executed a quitclaim deed (recorded on September 1, 2017 as, **DOC-2017-K509960-00**, in the Official Records) affirming the City’s fee ownership of the public streets in Parkmerced (the “Parkmerced Public Streets” or the “Easement Area”), as well as Grantee’s title to the Low-Pressure Water System and the Water System Easement within the Parkmerced Public Streets; and,

G. The Easement Area is more particularly described in Exhibit A and shown on Exhibit B attached hereto; and,

H. Grantee is the project sponsor of the Parkmerced Mixed-Use Development Project (the “Project”), which Project involves the construction of thousands of net new residential dwelling units at Parkmerced, as well as the construction of new open space and park areas and commercial buildings. On June 7, 2011, at a duly noticed public hearing, the Board of Supervisors considered the Project’s approvals, which included amendments to the City’s General Plan (approved by Ordinance No. 92-11), Zoning Map (approved by Ordinance No. 91-11), and Planning Code (approved by Ordinance No. 90-11), as well as approval of a Development Agreement, approved on June 7, 2011 by Ordinance No. 89-11 (the “Development Agreement”) (collectively, the “Project Approvals”). Ordinance No. 89-11 is on file with the Clerk of the Board in File No. 110300 and is incorporated herein by reference. The SFPUC Commission on June 14, 2011 adopted a consent to the Development Agreement (SFPUC Commission Resolution No. 11-0091); and,

I. As a component of the Project and in order to serve the additional dwelling units and other improvements constructed by the Project, Grantee will be upgrading, supplementing, and replacing the Low-Pressure Water System within the Easement Area for future dedication to the City, including the installation of new potable water distribution facilities (the “Future City Low Pressure Water System Improvements”) and non-potable “recycled water” (the “Recycled Water System Improvements”), all installed and completed per certain Street Improvement Permits granted by the City. For purposes of clarity, the Future City Low Pressure Water System Improvements shall not include portions of the pipes and other components of the Low-Pressure Water System and, the Future City Low Pressure Water System Improvements may be connected to portions of the low-pressure water system owned by San Francisco State University. This Easement Agreement does not place any requirement on Grantee to upgrade, replace or maintain San Francisco State University’s low-pressure water system; and,

J. Pursuant to the Development Agreement and certain Public Improvement Agreements executed by and between the City and Grantee, Grantee will own and operate the Low-Pressure Water System and Future City Low-Pressure Water System Improvements, unless and until Grantee completes all Development Phases (as defined in the Development Agreement)

of the Project, and Grantee offers the Future City Low-Pressure Water System Improvements to the City for acceptance and dedication, and the City accepts such offer; and,

K. Pursuant to negotiations between the City and Grantee, Grantee agrees to own and operate the Recycled Water System Improvements unless and until Grantee completes Development Phase 1 (as defined in the approved Development Phase Application for Development Phase 1), and offers the Recycled Water System Improvements to the City, and the City accepts such offer; and

L. The Parties now wish to amend and restate the Water System Easement in order to clarify the purpose and extent of the Water System Easement and to provide for the termination of the Water System Easement upon the acceptance and dedication of the Future City Low-Pressure Water System Improvements and the Recycled Water System Improvements (collectively, the “Future Dedicated Infrastructure”) by the City.

AGREEMENT

Now therefore, incorporating the foregoing Recitals, the Parties agree as follows:

1. For valuable consideration, receipt of which is hereby acknowledged, Grantor hereby grants to Grantee, and the Parties hereby agree to amend and restate the Water System Easement over, across and under the Easement Area, legally described in Exhibit A and generally shown on Exhibit B, both attached hereto and made a part hereof for utility purposes, as further described below. The Easement Area is located within the project site of the Project, as described in the Development Agreement. Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to such terms in the Development Agreement.

2. **Nature of Easement.** The Water System Easement is a nonexclusive easement and includes (i) the right to install, construct, reconstruct, operate, maintain, repair, inspect, remove and replace, from time to time, the Low Pressure Water System, Future City Low Pressure Water System Improvements and Recycled Water System Improvements approved by City prior to acceptance by the City to serve (a) the existing buildings and improvements at Parkmerced and (b) all future buildings and improvements constructed by the Project and (ii) the right of access over, across or under (including via surface entry) the Easement Area for all such purposes. The Water System Easement includes the right of ingress to and egress from the Easement Area across adjacent lands of City over any available roadways or such routes as may be agreed upon, to the extent necessary for the convenience of Grantee in the enjoyment of its rights hereunder. Grantee shall obtain necessary permits from City prior to performing any work within the Easement Area, in accordance with Section 3 (Restrictions on Surface Use) of this Easement Agreement. Grantee’s rights under this Easement Agreement may be exercised by Grantee’s agents, contractors, subcontractors, suppliers, consultants, employees, or representatives, or by other authorized persons acting for or on behalf of Grantee. The Water System Easement shall terminate upon the satisfaction of certain conditions described in Section 9 (Termination of Easement) below.

3. **Restrictions on Surface Use.** Grantor and Grantee acknowledge and understand that the Easement Area is located on public streets owned by Grantor and accordingly that Grantee’s

exercise of its rights under this Easement Agreement will require disturbance of the Easement Area, including excavation of and construction of improvements within and around the Easement Area (“Grantee’s Work”). Grantee’s Work shall be subject to duly issued street closure permits issued by the San Francisco Municipal Transportation Agency and excavation and tree permits issued by San Francisco Public Works. For so long as the Water System Easement remains in effect, Grantor shall keep the Easement Area open and free from structures of any kind that may damage or interfere with the proper use, function, maintenance, repair, or replacement of the Low-Pressure Water System, Future City Low-Pressure Water System Improvements, Recycled Water System Improvements, or Grantee’s rights under this Easement Agreement. If the surface is disturbed by Grantee’s use of the Water System Easement, Grantee shall restore the surface to meet City’s then-current standards, including, but not limited to, roads and utilities.

4. **Maintenance Requirements.** In order for the City to accept the Future City Low-Pressure Water System Improvements and the Recycled Water System Improvements, Grantee must (a) install and maintain the Future City Low-Pressure Water System Improvements to agreed-upon standards unless and until they are offered to and accepted by the City at full project build-out per the Development Agreement; and (b) install and maintain the Recycled Water System Improvements to agreed-upon standards unless and until they are offered to and accepted by the City upon completion of Development Phase 1. Under this Easement Agreement the Grantee shall operate, maintain and inspect the Future Dedicated Infrastructure to the standards shown in the attached Operations and Maintenance Manual (as amended from time-to time, “O&M Manual”) (Exhibit C), including but not limited to routine maintenance, repairs, inspections and reporting to the City.

5. **Nonexclusive.** The Easement granted herein is nonexclusive, and Grantor may convey additional easements and rights and install additional subsurface utility lines within the Easement Area provided that such additional easements, rights and lines do not interfere with the Low-Pressure Water System and this Water System Easement, and provided further that any additional subsurface utility lines in the Easement Area shall meet City’s standards for separation of utilities.

6. **Abandonment of Easement.** No temporary non-use of the Easement Area or other conduct shall be deemed abandonment of the Water System Easement.

7. **Acceptance of Improvements.** Neither the provisions of this Easement Agreement nor Grantor’s grant of the Water System Easement shall be construed as acceptance of any infrastructure improvements by City.

- a. **Low Pressure Water Acceptance.** Consistent with the Development Agreement, the Grantee intends to offer for dedication the Future City Low Pressure Water System Improvements to the City upon completion of all Development Phases (as such term is defined in the Development Agreement). The City shall accept the Future City Low Pressure Water System Improvements, for public ownership, operation and maintenance subject to (i) the Grantee making an irrevocable offer of dedication to the City of the entire Future City Low Pressure Water System Improvements following completion of all development phases, (ii) the City’s Public Works

Director determining that the entire Future City Low Pressure Water System Improvements are ready for their intended use and completed substantially in conformity with the applicable plans and specifications, (iii) the Grantee completing both permanent connections between the Future City Low Pressure Water System Improvements and the City's existing water distribution system, (iv) the Grantee ensuring any connections between the Future City Low Pressure Water System Improvements and the private San Francisco State University water distribution system include any necessary appurtenances on the Future City Low Pressure Water System Improvements as required by the SFPUC at the time of construction, (v) the Grantee operating and maintaining all Future City Low Pressure Water System Improvements per Section 4 (Maintenance Requirements) of this Easement Agreement, and providing all records memorializing such operation and maintenance with the offer of dedication to the City.

b. **Recycled Water Acceptance.** The Grantee intends to offer for dedication all of (including, for example, the portion of the system located in Development Subphase 1A or 1B) the Recycled Water System Improvements to the City upon completion of Development Phase 1 (as such term is defined in the Development Agreement). The City shall accept the Recycled Water System Improvements for public ownership, operation and maintenance subject to (i) the Grantee making an irrevocable offer of dedication to the City of all of the Recycled Water System Improvements at completion of Development Phase 1, (ii) the City's Public Works Director determining that the Recycled Water System Improvements are ready for their intended use and completed substantially in conformity with the applicable plans and specifications, (iii) the Grantee completing all required permanent inter-connections between the Recycled Water System Improvements and the City's existing potable water distribution system (including necessary backflow preventer assemblies), and (iv) the Grantee operating and maintaining the Recycled Water System Improvements per Section 4 (Maintenance Requirements) of this Easement Agreement, and providing all records memorializing such operation and maintenance with the offer of dedication to the City. Nothing herein shall prohibit the City from accepting the Recycled Water System (or portions thereof) after the completion of Development Phase 1.

8. **Underground Service Alert ("USA").** Grantee shall apply for and obtain membership with USA North 811 and maintain its membership, at Grantee's sole cost, unless and until the Water System Easement terminates in accordance with Section 9 (Termination of Easement) below. Grantee shall ensure that Grantee and its employees, contractors, agents and/or subcontractors comply with the requirements of Government Code section 4216 et al and shall keep all information relating to activities on or within the Easement Area up to date with USA North 811. Penalties for failure to comply with this Section 8 shall be in accordance with State law.

9. **Termination of Easement.** The Water System Easement shall terminate upon (i) the completion of all Development Phases (as such term is defined in the Development Agreement) of the Project and (ii) the City's formal acceptance of title to the Future City Low-Pressure Water System Improvements per Section 7 (Acceptance of Improvements) above. The Water System Easement shall terminate automatically with respect to the Recycled Water System Improvements upon City acceptance of the Recycled Water System Improvements.

10. **Grantee's Indemnity.** Grantee, on behalf of itself and its successors and assigns, shall indemnify, defend and hold harmless ("Indemnify") City including, but not limited to, all of its boards, commissions, departments, agencies and other subdivisions, including, without limitation, its Department of Public Works and Public Utilities Commission, and all of its and their agents, and their respective heirs, legal representatives, successors and assigns (individually and collectively, the "Indemnified Parties"), and each of them, from and against any and all liabilities, losses, costs, claims, judgments, settlements, damages, liens, fines, penalties and expenses, including, without limitation, direct and vicarious liability of every kind (collectively, "Claims"), incurred in connection with or arising in whole or in part from: (a) any accident, injury to or death of a person, including, without limitation, employees of Grantee, or loss of or damage to property, howsoever or by whomsoever caused, occurring in or about the Easement Area; (b) any default by Grantee in the observation or performance of any of the terms, covenants or conditions of this Easement Agreement to be observed or performed on Grantee's part; (c) the use or occupancy or manner of use or occupancy of the Easement Area by Grantee, its agents or invitees or any person or entity claiming through or under any of them; (d) the condition of the Easement Area; (e) any construction or other work undertaken by Grantee on the Easement Area whether before or during the term of this Easement Agreement; or (f) any acts, omissions or gross negligence of Grantee, its agents or invitees, in, on or about the Easement Area, all regardless of the active or passive negligence of, and regardless of whether liability without fault is imposed or sought to be imposed on, the Indemnified Parties, except to the extent that such indemnity is void or otherwise unenforceable under applicable law in effect on or validly retroactive to the date of this Water System Easement and further except only such Claims as are caused exclusively by the willful misconduct or gross negligence of the Indemnified Parties. The foregoing indemnity shall include, without limitation, reasonable fees of attorneys, consultants and experts and related costs and City's costs of investigating any Claim. Grantee specifically acknowledges and agrees that it has an immediate and independent obligation to defend the City from any claim which actually or potentially falls within this indemnity provision even if such allegation is or may be groundless, fraudulent or false, which obligation arises at the time such claim is tendered to Grantee by City and continues at all times thereafter. Grantee's obligations under this Section shall survive the termination of this Easement Agreement.

11. **Grantee's Environmental Indemnity.** If Grantee breaches any of its obligations contained in this Section, or, if any act or omission of Grantee, its agents or invitees, results in any Release of Hazardous Material in, on, under or about the Easement Area in violation of any applicable Environmental Laws, then, without limiting Grantee's indemnity contained in Section 10 (Grantee's Indemnity), Grantee shall, on behalf of itself and its successors and assigns, Indemnify the Indemnified Parties, and each of them, from and against all Claims (including, without limitation, damages for decrease in value of the Easement Area, the loss or restriction of the use of rentable or usable space or of any amenity of the Easement Area and sums paid in settlement of claims, attorneys' fees, consultants' fees and experts' fees and costs) arising during or after the Term of this Easement Agreement and relating to such Release. The foregoing indemnity includes, without limitation, costs incurred in connection with activities undertaken to Investigate and Remediate Hazardous Material and to restore the Easement Area to its prior condition, fines and penalties assessed for the violation of any applicable Environmental Laws, and any natural resource damages. Without limiting the foregoing, if Grantee or any of its agents or invitees, causes or permits the Release of any Hazardous Materials in, on, under or about the Easement Area, Grantee

shall immediately and at no expense to City take any and all appropriate actions to return the Easement Area affected thereby to the condition existing prior to such Release and otherwise Investigate and Remediate the Release in accordance with all Environmental Laws. Grantee specifically acknowledges and agrees that it has an immediate and independent obligation to defend the City from any claim which actually or potentially falls within this indemnity provision even if such allegation is or may be groundless, fraudulent or false, which obligation arises at the time such claim is tendered to Grantee by the City and continues at all times thereafter. Grantee shall afford City a full opportunity to participate in any discussions with governmental regulatory agencies regarding any settlement agreement, cleanup or abatement agreement, consent decree, or other compromise or proceeding involving Hazardous Material.

For purposes of this Section 11, the following terms are defined as:

“Environmental Laws” means any present or future federal, state, or local Laws or policies relating to Hazardous Material (including its use, handling, transportation, production, disposal, discharge, Release, clean-up, or storage) or to human health and safety, industrial hygiene, or environmental conditions in, on, under, or about the Easement Area, including soil, air, and groundwater conditions.

“Hazardous Material” means any material that, because of its quantity, concentration, or physical or chemical characteristics, is deemed by any federal, state, or local governmental authority to pose a present or potential hazard to human health or safety or to the environment. Hazardous Material includes any material or substance defined as a “hazardous substance,” “pollutant,” or “contaminant” pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (“CERCLA,” also commonly known as the “Superfund” law), as amended, (42 U.S.C. Sections 9601 et seq.) or pursuant to Section 25281 of the California Health & Safety Code; any “hazardous waste” listed pursuant to Section 25140 of the California Health & Safety Code; any asbestos and asbestos containing materials whether or not such materials are part of the structure of any existing improvements on the Easement Area, any alterations to be constructed on the Easement Area by or on behalf of Grantee, or are naturally occurring substances on, in, or about the Easement Area; and petroleum, including crude oil or any crude-oil fraction, and natural gas or natural gas liquids.

“Investigation” when used with reference to Hazardous Material means any activity undertaken to determine the nature and extent of Hazardous Material that may be located in, on, under, or about any portion of the Easement Area or any alterations or that have been, are being, or threaten to be Released into the environment. Investigation shall include preparation of site history reports and sampling and analysis of environmental conditions in, on, under, or about the Easement Area or any improvements.

“Release” when used with respect to Hazardous Material means any actual or imminent spilling, leaking, migrating, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into or inside any existing improvements or any alterations constructed by or on behalf of Grantee, or in, on, under, or about any portion of the Easement Area or any of the Recycled Water System Improvements or Low-Pressure Water System Improvements.

“Remediation” when used with reference to Hazardous Material means any activities undertaken to clean up, remove, contain, treat, stabilize, monitor, or otherwise control any Hazardous Material located in, on, under, or about the Easement Area or any of the Recycled Water System Improvements or Low-Pressure Water System Improvements or that have been, are being, or threaten to be Released into the environment. Remediate includes those actions included within the definition of “remedy” or “remedial action” in California Health and Safety Code Section 25322 and “remove” or “removal” in California Health and Safety Code Section 25323.

12. **Survival of Indemnities.** Termination of this Easement Agreement shall not affect the right of either party to enforce any and all indemnities and representations and warranties given or made to the other party under this Water System Easement, nor shall it affect any provision of this Water System Easement that expressly states it shall survive termination hereof.

13. **Grantee’s Insurance.**

a. Grantee, at no cost to the City, shall procure and keep in effect at all times during the term insurance as follows:

i. Commercial general liability insurance with limits not less than Two Million Dollars (\$2,000,000) each occurrence combined single limit for bodily injury and property damage, including contractual liability, independent contractors, broad-form property damage, fire damage legal liability (of not less than Fifty Thousand Dollars (\$50,000)), personal injury, products and completed operations, and explosion, collapse and underground (XCU).

ii. Intentionally Omitted.

iii. Business automobile liability insurance with limits not less than One Million Dollars (\$1,000,000) each occurrence combined single limit for bodily injury and property damage, including owned and non-owned and hired vehicles, as applicable, if Grantee uses automobiles in connection with its use of the Easement Area.

iv. Licensed professionals (i.e., architects, engineers, certified public accountants, etc.) shall provide professional liability insurance with limits not less than \$1,000,000 each claim with respect to negligent acts, errors or omissions in connection with professional services to be provided under this Water System Easement or to the Easement Area.

b. Should any of the required insurance be provided under a claims-made form, Grantee shall maintain such coverage continuously throughout the term and, without lapse, for a period of three (3) years beyond the expiration or termination of this Water System Easement, to the effect that, should occurrences during the term give rise to claims made after expiration or termination of this Water System Easement, such claims shall be covered by such claims-made policies.

c. Should any of the required insurance be provided under a form of coverage that includes a general annual aggregate limit or provides that claims investigation or legal defense costs

be included in such general annual aggregate limit, such general aggregate limit shall double the occurrence or claims limits specified above.

d. All liability insurance policies shall be endorsed to provide the following:

i. Name as additional insured the City and County of San Francisco, its officers, agents and employees.

ii. That such policies are primary insurance to any other insurance available to the additional insureds, with respect to any claims arising out of this Water System Easement, and that insurance applies separately to each insured against whom claim is made or suit is brought.

e. Each insurance policy required pursuant to Section 13.1(a) above shall be issued by an insurance company licensed in the State of California and with a general policyholders' rating of "A-" or better and a financial size ranking of "Class VIII" or higher in the most recent edition of Best's Insurance Guide.

f. All insurance policies required to be maintained by Grantee hereunder shall be endorsed to provide thirty (30) days' prior written notice of cancellation for any reason, intended non-renewal, or reduction in coverage to both Grantee and City. Notice to City shall be mailed to: San Francisco Public Utilities Commission, City and County of San Francisco, 525 Golden Gate Avenue, 10th Floor, San Francisco, CA 94102, Attn: Real Estate Director.

g. Grantee shall deliver to City certificates of insurance and additional insured policy endorsements from insurers in a form satisfactory to City, evidencing the coverage required hereunder, on or before the dated date of this Easement Agreement, together with complete copies of the policies promptly upon City's request, and Grantee shall provide City with certificates or policies thereafter at least thirty (30) days before the expiration dates of expiring policies. In the event Grantee shall fail to procure such insurance, or to deliver such policies or certificates, City may procure, at its option, without waiving any rights or remedies which City may have for Grantee's default hereunder, the same for the account of Grantee, and the cost thereof shall be paid to City within five (5) days after delivery to Grantee of bills therefor.

h. Upon City's request, Grantee and City shall periodically review the limits and types of insurance carried pursuant to this Section. If the general commercial practice in the City and County of San Francisco is to carry liability insurance in an amount or coverage materially greater than the amount or coverage then being carried by Grantee for risks comparable to those associated with the Easement Area, then Grantee shall, at City's request, increase the amounts or coverage carried by Grantee to conform to such general commercial practice.

i. Grantee's compliance with the provisions of this Section shall in no way relieve or decrease Grantee's liability under Section 10 (Grantee's Indemnity), or any of Grantee's other obligations under this Water System Easement.

j. Notwithstanding anything to the contrary in this Water System Easement, if any of the required insurance coverage lapses, this Water System Easement shall terminate upon ten (10)

days' notice to Grantee at Grantor's option, unless Grantee renews the insurance coverage within the notice period.

k. Grantee or its agents shall ensure that any agent of Grantee's performing work in the Easement Area maintains Worker's Compensation Insurance with Employer's Liability Limits in a commercially reasonable amount.

14. **Amendments.** The City's Director of Real Estate has the authority to amend this Easement Agreement to add new facilities and/or expand or relocate the Easement Area within the City's right-of-way, in consultation with the City's Public Works Director and pursuant to any issued street improvement permit, without the written consent or agreement of Grantee; provided that, no such amendment shall materially impact Grantee's rights, duties and responsibilities as set forth in this Grant Agreement without Grantee's consent, which consent shall not be unreasonably withheld.

15. **Run with the Land.** The provisions of this Easement Agreement shall run with the land, burden the Easement Area, and bind and inure to the benefit of the respective successors and assigns of Grantee and Grantor.

16. **Counterparts.** This Easement Agreement may be signed in counterparts, each of which shall be an original and all of which together shall constitute one instrument.

17. **Authority.** The person executing this Easement Agreement on behalf of Grantee does hereby covenant and warrant that Grantee is a duly formed and existing Delaware limited liability company, that Grantee has full right and authority to enter into this Easement Agreement, and that the person signing on behalf of Grantee is authorized to do so.

18. **Exhibits.** The exhibits attached to and referenced in this Easement Agreement are incorporated into and made a part of this Easement Agreement.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

In witness whereof this Easement Agreement is executed as of the _____ day of _____, 2017.


GRANTOR:

CITY AND COUNTY OF SAN FRANCISCO,
a municipal corporation

By: _____
John Updike
Director of Property


GRANTEE:

PARKMERCED OWNER LLC,
a Delaware limited liability company

By:  _____
Seth Mallen
Vice President

APPROVED AS TO FORM:

DENNIS J. HERRERA, City Attorney,

By:  _____
Shari Geller Diamant
Deputy City Attorney

NOTARY ACKNOWLEDGMENT

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)SS
COUNTY OF San Francisco)

On 11.3.17

before me, Grace Simpson, a Notary Public, personally
appeared Seth Mallen

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 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.

Grace Simpson
Signature of Notary Public



(THIS AREA FOR OFFICIAL NOTARIAL SEAL)



EXHIBIT A

All those public streets as shown on the record of survey map prepared by BKF and recorded in the Official Records on August 24, 2015 as Book FF of Survey Maps, at Pages 110-129, in the office of the Recorder of the City and County of San Francisco;

Together with:

All of those parcels described in that certain "Irrevocable Offer of Dedication and Grant Deed" recorded on September 1, 2017 as Document No. 2017-K509962.

Excepting Therefrom,

All of those certain portions of public street shown of SUR Map 2015-006 and vacated by San Francisco Board of Supervisors' Ordinance 183-16, and more particularly described in that certain "Quitclaim Deed" recorded on September 1, 2017 as Document No. 2017-K509961, reserving to the Grantor existing abutter's rights, including access rights in and to the public streets.

This description was prepared by me or under my direction in conformance with the Professional Land Surveyors' Act.



Alex Calder
Alex Calder, PLS 8863

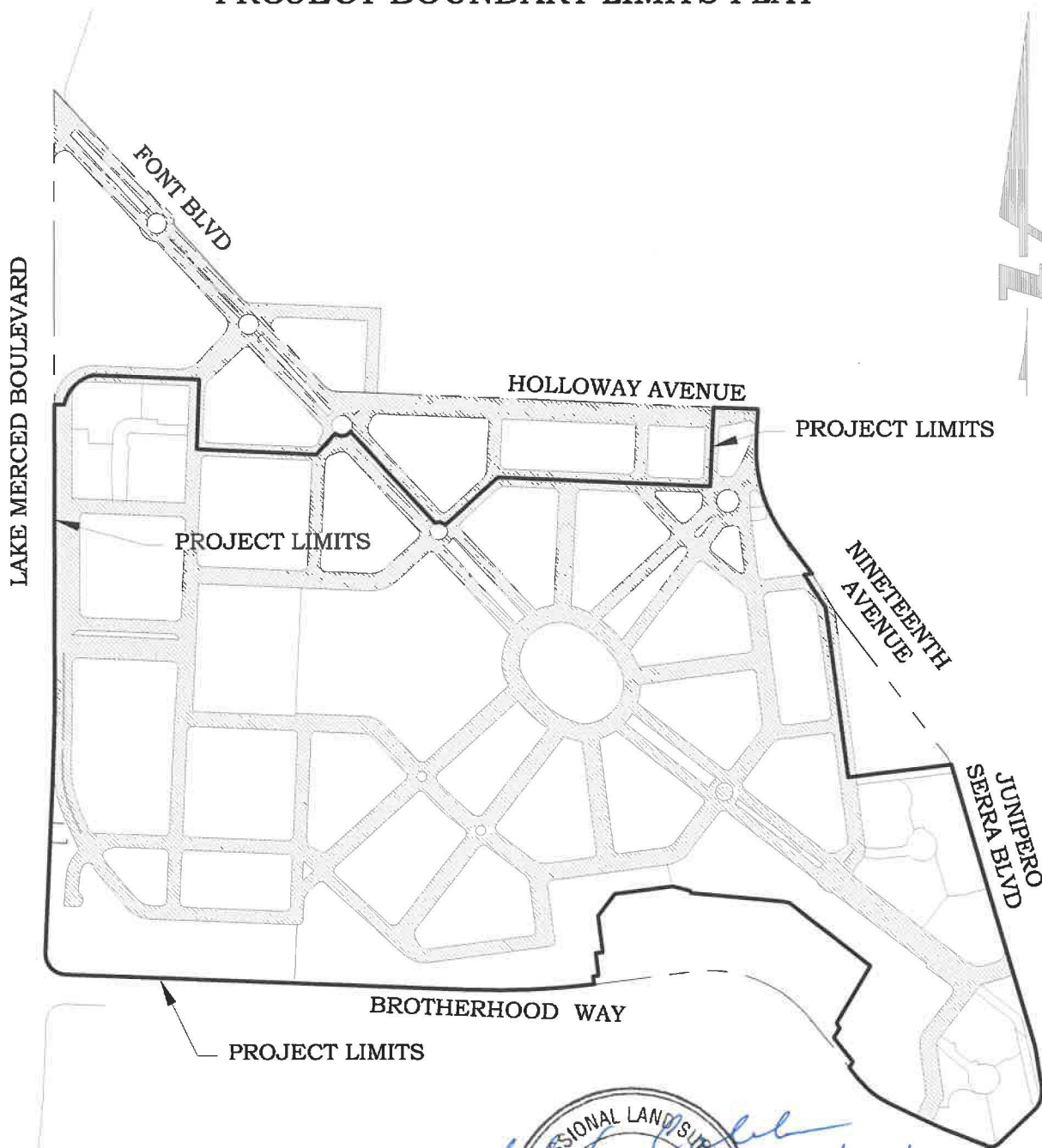
11/10/2017
Date

END OF DESCRIPTION

APPROVED LEGAL DESCRIPTION:

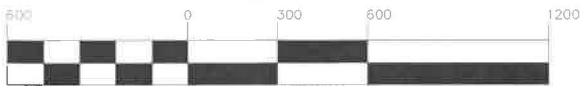
By: Bruce R. Storrs FOR
Bruce R. Storrs
City and County Surveyor

PROJECT BOUNDARY LIMITS PLAT



Alex Calder
 PROFESSIONAL LAND SURVEYOR
 ALEX CALDER
 No. 8863
 STATE OF CALIFORNIA
 11/10/2017

GRAPHIC SCALE



1 inch = 600 ft.

DRAWING NAME: C:\Users\deli\OneDrive\Local\Temp\AcPub\11sh_8092\13 - PLAT.dwg
 PLOT DATE: 11-09-17
 PLOTTED BY: deli

BKF 100+
YEARS
ENGINEERS . SURVEYORS . PLANNERS
 255 SHORELINE DR., SUITE 200 (650) 482-6300
 REDWOOD CITY, CA 94065 www.bkf.com

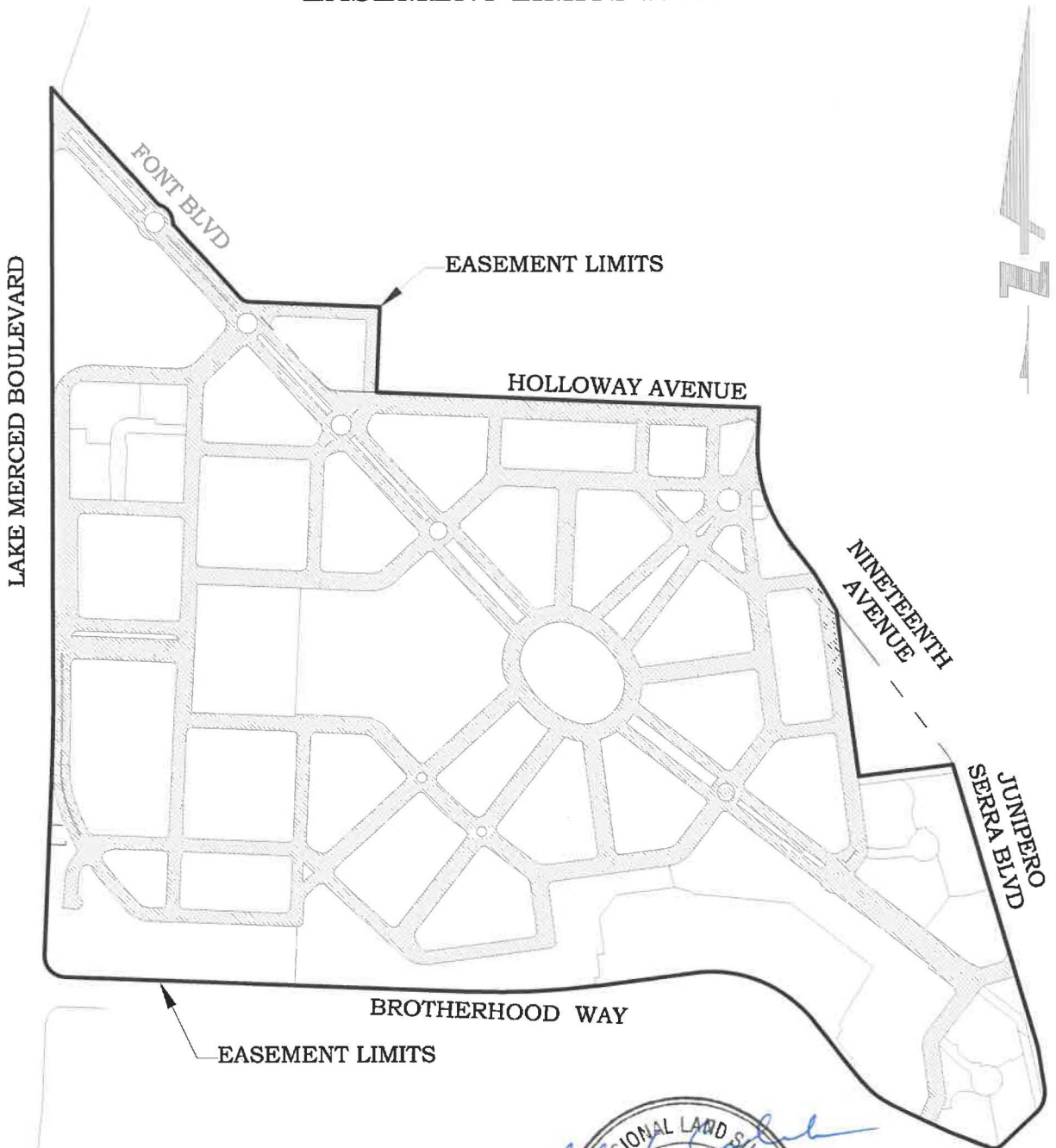
PLAT TO ACCOMPANY DESCRIPTION RESTATEMENT & AMENDMENT OF WATER EASEMENT

Drawn DIW/DCJ
 Job No. 20090086-50

Checked AMC
 Date 11/03/2017

Approved AMC
 Sheet 1 of 2

EASEMENT LIMITS PLAT



Alex Calder
PROFESSIONAL LAND SURVEYOR
ALEX CALDER
No. 8863
11/10/2017
STATE OF CALIFORNIA

GRAPHIC SCALE



1 inch = 600 ft.

DRAWING NAME: C:\Users\deli\appdata\local\temp\AcPub11.sh_8092\13 - PLAT.dwg
PLOT DATE: 11-09-17 PLOTTED BY: deli

BKF 100+
YEARS
ENGINEERS . SURVEYORS . PLANNERS
255 SHORELINE DR., SUITE 200 (650) 482-6300
REDWOOD CITY, CA 94065 www.bkf.com

PLAT TO ACCOMPANY DESCRIPTION RESTATEMENT & AMENDMENT OF WATER EASEMENT

Drawn DIW/DCJ Checked AMC Approved AMC
Job No: 20090086-50 Date 11/03/2017 Sheet 2 of 2

EXHIBIT C

O&M Manual

PARKMERCED

O&M MANUAL TEMPLATE

Version <1.0>

November 2017

VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0			PM		SIP Approved
1.0			DPW		SIP Approved
1.0			SFPUC		SIP Approved

TABLE OF CONTENTS

1 INTRODUCTION..... 4

 1.1 Purpose..... 4

 1.2 Audience..... 4

 1.3 Description of the Project..... 4

 1.4 Existing Water Meter and Billing Operations..... 5

2 MAINTENANCE STANDARDS AND REPORTING..... 5

 2.1 Intentionally Omitted 6

 2.2 Maintenance of Low Pressure Water System 6

 2.3 Maintenance of Recycled Water System 8

 2.4 Maintenance of Special Street Improvements..... 10

APPENDIX A: PROJECT RECORD DOCUMENTS.....12

APPENDIX B: INTENTIONALLY OMITTED.....22

APPENDIX C: VALVE NUMBERING REQUIREMENTS.....23

APPENDIX D: LEAK REPAIR WORK ORDER.....25

**APPENDIX E: SPECIAL STREET IMPROVEMENTS
 MAINTENANCE GUIDELINES.....26**

1 INTRODUCTION

1.1 PURPOSE

Maintenance and Operation of Developer Improvements

The Parkmerced Development Agreement requires that the Developer (and its successors and assigns) of the Parkmerced Project (the “Project”) operate and maintain certain infrastructure improvements and utility systems constructed or provided by Developer as part of the Project and that are not accepted by the City for maintenance (the “Developer Improvements”).

This O&M Manual provides the standards to which the City requires the Developer to operate and maintain the Developer Improvements. Certain Public Improvement Agreements (“PIAs”) executed for the Project require that the Developer (and, upon assignment, the Master HOA) operate and maintain the Developer Improvements to the standards described herein. The Developer Improvements are defined in the PIAs as the:

- Low-Pressure Water System
- Recycled Water System
- Special Street Improvements

The Development Agreement requires that the Developer create a Master Parkmerced Homeowners Association (the “Master HOA”) and record covenants, conditions, and restrictions (“CC&Rs”) against the project site that require the Master HOA to operate and maintain the Developer Improvements. The CC&Rs require that the Master HOA operate and maintain the Developer Improvements to the standards contained in this O&M Manual.

1.2 AUDIENCE

This O&M Manual is intended for the use of the Developer’s (and, upon assignment, Master HOA’s) personnel involved in the ongoing maintenance and upkeep of the Developer Improvements. The “Maintaining Party” as described below is the Developer, or, upon assignment, the Master HOA.

1.3 DESCRIPTION OF THE PROJECT

The San Francisco Board of Supervisors approved the Project pursuant to the Development Agreement with an effective date of July 11, 2011. The Project is a long-term mixed-use development project that comprehensively replans and redesigns the Parkmerced Property, constructs additional multi-family residential structures and open space areas, demolishes existing apartments, provides a neighborhood core with new commercial and retail services, reconfigures the street network and public realm, improves and enhances the open space amenities, modifies and extends existing neighborhood transit facilities, and improves utilities within the Parkmerced Property. The Parkmerced Property is an approximately 152-acre site located in the Lake Merced District in the southwest corner of San Francisco and is generally bounded by Vidal Drive, Font Boulevard, Pinto Avenue, and Serrano Drive to the north, 19th Avenue and Junipero Serra Boulevard to the east, Brotherhood Way to the south, and Lake Merced Boulevard to the west.

The Parkmerced Project will be constructed in phases, each phase (a "Development Phase") being a portion of the Project. Each Development Phase may be comprised of sub-phases (each, a "Subphase"). Subphases 1A and 1B of the Project, which form part of Development Phase 1, are subject to this O&M Manual. Future subsequent Development Phases and Subphases will each be made subject to this O&M Manual upon (i) the execution of PIAs for those future Development Phases and Subphases and (ii) the recording of a Declaration of Annexation to the Master HOA for those future Development Phases or Subphases.

1.4 EXISTING WATER METER AND BILLING OPERATIONS

SFPUC currently provides water to Parkmerced and each building through two "Master Meters", one set at the East side of Junipero Serra Boulevard at Font Boulevard and a second set at the Southeast corner of Font and Lake Merced Boulevards. Any and all water serving the property passes through one of the Master Meters, and, during standard operation, only the service at Junipero Serra Boulevard is active. Behind the Master Meters are a series of "deduct meters" serving irrigation and some domestic water uses. In total, there are 46 deduct meters installed, which are broken down as follows: six on domestic water services serving San Francisco State University, seven irrigation meters serving SFSU and 33 irrigation meters serving Parkmerced. All of the meters installed were provided and installed by SFPUC.

To bill services, each month SFPUC reads all of the meters. The deduct meter readings are billed directly to Parkmerced and SFSU, depending upon the applicable property owner for each service as noted above. The sum of all deduct meter readings are then deducted from the sum of the Master Meter reading and a bill is then issued to Parkmerced to pay. This process has been established since 2003 and further clarified in 2008 in direct collaboration with SFSU, Parkmerced and SFPUC billing department.

Until full completion of the Low Pressure Water System, each additional service installed would follow the same methodology in practice today.

2 MAINTENANCE STANDARDS AND REPORTING

The Maintaining Party will operate and maintain the Developer Improvements according to the guidelines contained herein. The Maintaining Party will notify the City and/or SFPUC in writing whenever repairs to the system require the replacement of any portion of an existing facility such as a pipeline, valve, including appurtenances such as blow offs and air/vacuum valves, or drain inlet. Normal non-replacement repairs will be documented in an annual written report submitted by October 1 to the City and SFPUC.¹ This report will document the location, date, and nature of any repairs undertaken to the water system in the previous fiscal year.

The Maintaining Party will maintain up-to-date project record documentation for each Development Phase and Subphase as described in Appendix A attached hereto and incorporated herein.

¹ Address to CDD Manager, 1990 Newcomb Street, San Francisco, CA 95124

2.1 INTENTIONALLY OMITTED

2.2 MAINTENANCE OF LOW PRESSURE WATER SYSTEM

The Low Pressure Water System constructed is shown on the plans attached to the PIAs. Pursuant to the Development Agreement, each segment of the Low Pressure Water System constructed during each subsequent development phase will be owned and operated by the Maintaining Party until such time as the entire system is completed. Once the final Development Phase of the Project has been completed, the Low Pressure Water System will be dedicated by the Maintaining Party to the City and accepted by the City of San Francisco for ownership and maintenance.

The Low Pressure Water System shall be operated and maintained by the Maintaining Party to the following standards:

Valves

All mainline valves in the system shall be exercised at least once every year to ensure they are easily located and confirm that they can open and close during an emergency shutdown. The Maintaining Party shall:

- Ensure that the valve boxes are not full of mud or debris, or have become buried.
- Inspect the valve for leaks around the valve stem.
- Ensure that the valve handle, including valve-operating nuts, is intact.
- Ensure that the valve can be fully opened and fully closed.
- Record the inspection date, whether the valve right or left handed, and whether it is normally open or normally closed.
- Record the number and direction of turns to closure.
- Record the condition (rusted, new, leaking, failing) of each valve.
- Create a map identifying the valves and their locations.
- Keep inspection information and map in a secure place. It is important to be able to isolate the system or sections of the system.
- Develop forms to track the valve inspections and repairs and to note any scheduled repairs.
- Replace or repair any valves that leak, fail to perform as intended, or are stuck (will not open or shut).
- Use valves that match SFPUC and are numbered according to the requirements described in Appendix C attached hereto and incorporated herein.
- Record any needed repairs or replacements, and notify the SFPUC in writing of any valve replacements that have occurred.

Fire Hydrants

Fire Hydrant operations including exercising isolation valves, flushing and pressure checks are the responsibility of the Maintaining Party. Fire hydrant maintenance shall be performed annually by SFFD.

Water system leak detection program.

Scheduled review of potential leakage shall be undertaken by the Maintaining Party. The Maintaining Party shall:

- Purchase detection equipment and train staff to check for leaks or hire an outside firm to perform leak detection surveys for them. The Maintaining Party may use a combination of internal checks and contracting. Leak detection should be performed every 5 years.
- Provide a written report to the SFPUC of the results of the 5-year leak detection survey.
- In the event of a leak, prepare a Leak Repair Work Order in the form attached hereto as Appendix D.

Water Line Pipe Repairs

- Repair procedures will be provided by CDD. Document repairs to the water distribution line, service line and meter boxes, especially repair clamps placed on water lines. Clamps are not long-term or permanent repairs, so identifying the date and location of such repairs is very important in planning for future pipeline repairs or replacements.
- Maintain a thorough record of line replacements to help identify areas of the distribution system more prone to failure due to age, pipe material, soil conditions, vibration, or other causes.
- Maintain compaction records, tap directions and as-built drawings
- Notify SFPUC and City of San Francisco in writing of any water line replacement repairs when they occur.

Pipes

- Low pressure water lines constructed for the Project will be zinc coated Ductile Restrain Iron Pipe.
- Pipes used in water systems must be approved for potable water use. NSF International (NSF), American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), and Underwriters Laboratories (UL) test and approve pipe for potable water applications.
- Distribution system pipes should be buried at sufficient depth and compacted per SF standards to protect them from vandalism and over-loading and differential settlement.
- Pipelines must be supported per CDD standards when excavating next to or below pipelines.
- Valve boxes should provide access to distribution system valves.
- Consistent with the finding of the geotechnical report, no corrosion protection is currently recommended for the Parkmerced water line system.
- At such time as the MUNI tracks are installed in Font Boulevard the Developer/Maintaining Party shall consult with the SFPUC regarding an appropriate corrosion protection system that would include installation of insulated joints on pipelines.

Water System Service Connections

If any service connections need to be added to the “Public Improvements” (private water system/future public system) after plan approval and before acceptance by the City, the Maintaining Party shall request permission to add service laterals through the standard SFPUC approval process. In order to accommodate this, the Maintaining Party shall:

- Prepare plans identifying the proposed service lateral location and type
- Identify the appropriate meter boxes, valves and materials
- Apply for a water service through the SFPUC.
- Have SFPUC install appropriate meter.
- Provide the SFPPUC with Record Drawings after installation is complete.

Meters

- Meters shall be installed by SFPUC per City Standards with backflow preventers installed at each low pressure water service
- Meters shall be checked annually for leaks and other signs of distress

2.3 MAINTENANCE OF RECYCLED WATER SYSTEM

The Recycled Water System shall be operated and maintained by the Maintaining Party through Development Phase 1 to the following standards:

Valves

All mainline valves in the system shall be exercised at least once every year to ensure they are easily located and confirm that they can open and close during an emergency shutdown. The Maintaining Party shall:

- Ensure that the valve boxes are not full of mud or debris, or have become buried.
- Inspect the valve for leaks around the valve stem.
- Ensure that the valve handle, including valve-operating nuts, is intact.
- Ensure that the valve can be fully opened and fully closed.
- Record the inspection date, whether the valve right or left handed, and whether it is normally open or normally closed.²
- Record the number and direction of turns to closure.
- Record the condition (rusted, new, leaking, failing) of each valve.
- Create a map identifying the valves and their locations.
- Keep inspection information and map in a secure place. It is important to be able to isolate the system or sections of the system.
- Develop forms to track the valve inspections and repairs and to note any scheduled repairs.
- Replace or repair any valves that leak, fail to perform as intended, or are stuck (will not open or shut).

² Note: LPW and RW valves are right-handed and AWSS valves are left-handed.

- Use valves that match SFPUC and are numbered according to the requirements described in Appendix C attached hereto and incorporated herein.
- Record any needed repairs or replacements, and notify the SFPUC in writing of any valve replacements that have occurred.

Recycled Water system leak detection program.

Scheduled review of potential leakage shall be undertaken by the Maintaining Party. The Maintaining Party shall:

- Purchase detection equipment and train staff to check for leaks or hire an outside firm to perform leak detection surveys for them. The Maintaining Party may use a combination of internal checks and contracting. Leak detection should be performed every 5 years.
- Provide a written report to the SFPUC of the results of the 5-year leak detection survey.
- In the event of a leak, prepare a Leak Repair Work Order in the form attached hereto as Appendix D.

Recycled Water Line Pipe Repairs

- Repair procedures will be provided by CDD
- Document repairs to the water distribution line, service line and meter boxes, especially repair clamps placed on water lines. Clamps are not long-term or permanent repairs, so identifying the date and location of such repairs is very important in planning for future pipeline repairs or replacements.
- Maintain a thorough record of line replacements to help identify areas of the distribution system more prone to failure due to age, pipe material, soil conditions, vibration, or other causes.
- Maintain compaction records, tap directions and as-built drawings.
- Notify SFPUC and City of San Francisco in writing of any water line replacement repairs when they occur.

Pipes

- The Recycled Water System’s water lines constructed for the Project will be zinc coated Ductile Restrain Iron Pipe.
- Distribution system pipes should be buried at sufficient depth and compacted per SF standards to protect them from vandalism and over-loading and differential settlement.
- Pipelines must be supported per CDD standards when excavating next to or below pipelines.
- Valve boxes should provide access to distribution system valves.
- Consistent with the finding of the geotechnical report, no corrosion protection is currently recommended for the Parkmerced water line system.

Recycled Water System Service Connections

If any service connections need to be added to the Low-Pressure Water System or Recycle Water System after approval and before acceptance by the City, the Maintaining Party shall

request permission to add service laterals through the standard SFPUC approval process. In order to accommodate this, the Maintaining Party shall:

- Prepare plans identifying the proposed service lateral location and type
- Identify the appropriate meter boxes, valves and materials
- Apply for a water service through the SFPUC.
- Have SFPUC install appropriate meter.
- Provide the SFPPUC with Record Drawings after installation is complete.

Meters

- Meters shall be installed by SFPUC per City Standards without backflow preventers installed at each recycled water service
- Meters shall be checked annually for leaks and other signs of distress

2.4 REVIEW OF EMERGENCY RESPONSE PLAN


Maintaining Party personnel should familiarize themselves with the location of gate valves within the Project so that any problems with the system can be located and isolated quickly. In the event of an emergency, the Maintaining Party will immediately contact the SFPUC at (415) 550-4900. The Developer's contact number is (415) 405-4666. The Maintaining Party will have a plan on file for Emergency Response. In order to keep this Plan up to date, the Maintaining Party shall:

- Review all contacts for accuracy, make sure all equipment is working, and ensure all procedures match the systems conditions, as they presently exist.

2.5 MAINTENANCE OF SPECIAL STREET IMPROVEMENTS

The Special Street Improvements are the permeable pavers installed in the City right of way. The Special Street Improvements will be inspected annually prior to October 15th with the form attached as Appendix E submitted at that time. Maintenance shall be performed consistent with the inspection form findings to the standards attached in Appendix E.

The undersigned acknowledge they have reviewed the Parkmerced **O&M Manual Template** and agree with the approach it presents. Changes to this **O&M Manual Template** will be coordinated with and approved by the undersigned or their designated representatives.

Signature:  Date: _____
Print Name: SETH MALLEN
Title: VICE PRESIDENT
Role: _____

Signature: _____ Date: _____
Print Name: _____
Title: _____
Role: _____

Signature: _____ Date: _____
Print Name: _____
Title: _____
Role: _____

APPENDIX A: PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. THIS SECTION SETS FORTH REQUIREMENTS AND PROCEDURES FOR THE CONTRACTOR TO MAINTAIN UPDATED PROJECT RECORD DOCUMENTS REQUIRED UNDER THE CONTRACT AND TO SUBMIT UP-DATED RECORD DOCUMENTS TO THE CITY REPRESENTATIVE.
- B. RELATED DOCUMENTS AND SECTIONS INCLUDE:
 - 1. Section 01 33 00 – Submittal Procedures
 - 2. Section 01 77 00 – Closeout Procedures
 - 3. Standard Drawing No. A-1247, Typical Method of Measuring, Recording and Identifying Mains, Services, Gate Valves and All Appurtenances

1.02 GENERAL REQUIREMENTS

- A. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING UP-TO-DATE PROJECT RECORD DOCUMENTATION. THE CONTRACTOR SHALL MAKE THE UP-TO-DATE RECORD DOCUMENTATION AVAILABLE FOR MONTHLY INSPECTION BY THE CITY REPRESENTATIVE, AND AT ANY OTHER TIME REQUESTED BY THE CITY REPRESENTATIVE.
- B. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING TWO SETS OF PROJECT RECORD DOCUMENTS: ONE ON-SITE WORKING SET AND ANOTHER ONE IN A SECURE, OFF-SITE LOCATION, SO THAT IN THE EVENT OF LOSS OF THE PROJECT RECORD DOCUMENTS AT THE JOBSITE, THESE CAN BE ACCURATELY RECONSTRUCTED AND REPLACED.
- C. FOLLOWING COMPLETION OF THE CONTRACT WORK, THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING PROJECT RECORD DOCUMENTS MEETING THE REQUIREMENTS OF THE SPECIFICATIONS.
- D. THE CONTRACTOR SHALL MAINTAIN AN ORDERED, CLEAN, COMPLETED, INDEXED AND EASILY ACCESSIBLE FILING SYSTEM FOR ALL PROJECT RECORD DOCUMENTS.

E. DEFINITIONS:

1. **Contract Drawings:** Drawings issued for bid and drawings issued by addenda during the bid period.
2. **Project Record Documents:** Interim Contractor Record Documents, Record Shop Drawings and Final Record Documents, which include, but are not limited to: Drawings, Specifications, Addenda, Change Orders, Requests For Information (“RFIs”), Equipment Data Sheets, clarifications, Field Orders, approved shop drawings, samples and other submittals, clearly marked to record accurately the Work as actually constructed (“record documents”), including changes, adjustments, and other information relative to the Work.
3. **Interim Contractor Record Documents:** Documents which the Contractor updates throughout construction to show all changes or variations between designed and as-constructed facilities.
4. **Record Shop Drawings:** Approved Contractor’s proposed installation and equipment details based on field conditions and requirements and considered and/or acknowledged as record documents, provided the Contractor has stamped them “record documents” and submitted them as such.
5. **Final Record Documents:** Final submittal by the Contractor of the Record Documents reflecting all the changes from the Contract Drawings and specifications, shop drawings, etc. made and actually constructed. The Final Record Documents are certified by the Contractor and the City Representative as marked-up construction documents representing facilities as constructed.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 REQUIREMENTS

- A. THE CONTRACTOR SHALL MAINTAIN AT THE CONTRACTOR’S JOBSITE OFFICE AN ACCURATELY MARKED, UP-TO-DATE SET OF PROJECT RECORD DOCUMENTS TO DOCUMENT WORK ACTUALLY INSTALLED AND CONDITIONS ENCOUNTERED. THE CONTRACTOR SHALL ACCURATELY INDICATE ON THE INTERIM CONTRACTOR RECORD DOCUMENTS ALL SITE CONDITIONS, MEASUREMENTS, DIMENSIONS, LOCATIONS OF UTILITIES, ALL CHANGES MADE BY CLARIFICATIONS, RFIS, CHANGE ORDERS, AND OTHER MODIFICATIONS TO THE CONTRACT DOCUMENTS AND DETAILS AS

SPECIFIED HEREIN AND AS APPROVED BY THE CITY REPRESENTATIVE.

- B. THE CONTRACTOR SHALL HAVE A DESIGNATED PERSON TO BE RESPONSIBLE FOR UPDATING AND MAINTAINING THE INTERIM CONTRACTOR RECORD DOCUMENTS.
- C. THE ON-SITE SET OF INTERIM CONTRACTOR RECORD DOCUMENTS SHALL BE KEPT IN A SAFE PLACE AND PROTECTED FROM DAMAGE BY WEATHER AND MANHANDLING. THE CONTRACTOR SHALL STORE PROJECT RECORD DOCUMENTS APART FROM OTHER DOCUMENTS USED FOR PERFORMING THE WORK AND SHALL KEEP THEM IN A DRY AND LEGIBLE CONDITION IN GOOD ORDER.
- D. THE CONTRACTOR SHALL KEEP INTERIM CONTRACTOR RECORD DOCUMENTS UP TO DATE DURING THE ENTIRE PROGRESS OF THE WORK, AND MAKE THEM AVAILABLE TO THE CITY REPRESENTATIVE AT ANY TIME. UPDATES ARE TO OCCUR NO MORE THAN 5 WORKING DAYS AFTER CHANGES IN THE WORK ARE MADE.

3.02 PROCEDURES

- A. AFTER THE NOTICE TO PROCEED, THE CITY REPRESENTATIVE WILL PROVIDE THE CONTRACTOR TWO DEDICATED SETS OF FULL-SIZE UNMARKED CONTRACT DRAWINGS SPECIFICALLY FOR THE INCORPORATION OF DETAILED RECORD DOCUMENTS CHANGES AND SUBSEQUENT APPROVAL OF THOSE CHANGES BY THE CITY REPRESENTATIVE. THE CONTRACTOR IS TO USE ONE SET FOR MAINTAINING THE UP-TO-DATE INTERIM CONTRACTOR RECORD DOCUMENTS AT THE FIELD OFFICE. ALL INFORMATION IN THE INTERIM CONTRACTOR RECORD DOCUMENTS IS TO BE TRANSFERRED TO THE SECOND, OFF-SITE SET OF DRAWINGS MONTHLY.
- B. ALL LINES AND NOTATIONS ON THE UP-TO-DATE INTERIM CONTRACTOR RECORD DOCUMENTS SHALL BE NEAT, ACCURATE, LEGIBLE, AND CAPABLE OF BEING SCANNED INTO PDF FORMAT (OR OTHER ELECTRONIC MEDIA FILE FORMAT AS SPECIFIED) SUCH THAT COPIES MADE FROM THE SCANNED FILES ARE AS LEGIBLE AS THE ORIGINAL.
- C. THE CONTRACTOR SHALL RECORD ALL CHANGES ON THE INTERIM CONTRACTOR RECORD DOCUMENTS. THE UPDATED INTERIM CONTRACTOR RECORD DOCUMENTS SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:

1. Field changes or adjustments in the final location or in the final dimensions or details of the Contract work relative to actual existing site conditions.
2. Changes resulting from RFIs
3. Changes made by Change Order work
4. Changes made by Field Order work
5. Records of horizontal locations of new water mains, fittings, services, gate valves and all appurtenances by reference to the closest property lines or curb lines (see attached Drawing A-1247). In addition, GPS coordinates shall be accompanied to each gate valve, air valve and blow-off valve location and shall be provided to City Representative as part of the Contract Record Documents.
6. Records of trench depths at each push-on joint along the new mains and laterals (see attached Drawing A-1247)
7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to visible and accessible features of the Work
8. Details not included on the original Contract Drawings but incorporated into the work by reference to approved shop drawings, product data, samples, calculations or other submittals
9. Location of items embedded in concrete such as conduits, cables, junction boxes, piping, reinforcing steel, etc.
10. Measured depths of foundations in relation to finish main floor datum.
11. Measured locations of internal utilities and appurtenances, referenced to visible and accessible locations or features of the Work
12. Location (to within 1-inch) of the centerline of each run of conduits, circuits, piping, ducts, and similar items which are shown schematically on the drawings, but where the final physical arrangement is determined by field conditions
13. Other applicable technical information.

D. THE INTERIM CONTRACTOR RECORD DOCUMENTS SHALL BE PREPARED AS FOLLOWS:

1. Make mark-ups using a dark red pencil or pen so that the mark-ups can be clearly seen when photocopied or scanned. Mark-up corresponding details and sections in addition to the mark-ups in plan view.
-

2. Clearly mark changes on drawings adding notes as required. Changes made in narrative or reference to a Change Order or RFI without marking the actual drawing are not acceptable.
 3. Date all entries, calling attention to the entry by a “cloud” drawn around the area or areas affected. If mark-ups are a result of an approved change such as a Change Order or RFI, write the reference to these documents in the clouded area.
 4. For each piece of equipment incorporated into the Work, record the manufacturer, trade name, catalog number, model number, serial number, date of installation, supplier of each product and equipment item.
 5. No paper shall be affixed to the back of the drawings. Do not include papers for explanations or comments since all mark-ups are to be complete and self-explanatory.
 6. Permanent papers affixed to drawings, which modify the drawings, shall be securely stapled to the drawings and shall not obstruct information unless intentional. Tape or glue is acceptable only where stapling is not possible.
 7. Drawings which are revised and issued as a result of a Change Order or RFI shall be inserted into the Interim Contractor Record documents and all marks on the old sheet shall be transferred to the new sheet.
 8. If permanent additions to a drawing cannot fit on the drawing, the original drawing shall be labeled “Sheet 1 of 2,” and the additions shall be placed on a new drawing sheet with an identical title block as the original drawing except that the title block shall be labeled “Sheet 2 of 2”.
- E. CONTRACTOR SHALL ARRANGE FOR THE CITY REPRESENTATIVE TO EXAMINE THE UP TO DATE MARKED INTERIM CONTRACTOR RECORD DOCUMENTS ON A MONTHLY BASIS AT A TIME MUTUALLY ACCEPTABLE TO THE CONTRACTOR AND THE CITY REPRESENTATIVE.
- F. FAILURE TO MAINTAIN UPDATED INTERIM CONTRACTOR RECORD DOCUMENTS ACCEPTABLE TO THE CITY REPRESENTATIVE WILL RESULT IN RETENTION OF A PORTION OF THE MONTHLY PROGRESS PAYMENT AS SPECIFIED IN THE GENERAL CONDITIONS.

3.03 PROJECT COMPLETION

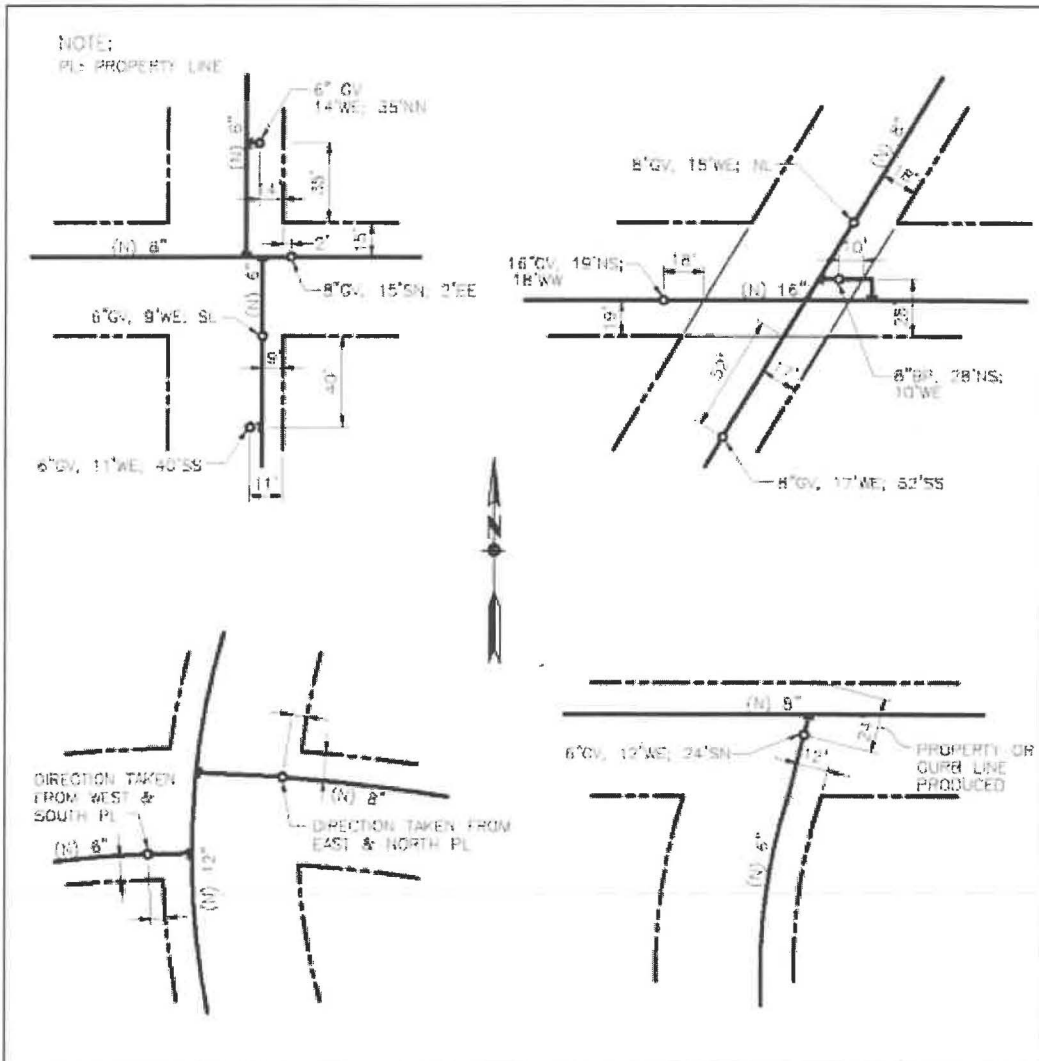
- A. UPDATED INTERIM CONTRACTOR RECORD DOCUMENTS SHOWING ALL REQUIRED INFORMATION UP THROUGH SUBSTANTIAL COMPLETION SHALL BE SUBMITTED TO AND ACCEPTED BY THE

CITY REPRESENTATIVE AS A CONDITION PRECEDENT TO THE CONTRACT BEING DEEMED AS SUBSTANTIALLY COMPLETE.

- B. BEFORE FINAL COMPLETION, THE CONTRACTOR SHALL PREPARE AND SUBMIT "FINAL RECORD DOCUMENTS" TO THE CITY REPRESENTATIVE AS SPECIFIED IN ARTICLE 3.03.D OF THIS SECTION. THE CONTRACTOR SHALL SUBMIT "FINAL RECORD DOCUMENTS" THAT ARE NEAT, CLEAN, AND ACCURATELY REFLECT WORK AS CONSTRUCTED. FOLLOWING REVIEW, IF THE FINAL RECORD DOCUMENTS ARE ACCEPTABLE TO THE CITY REPRESENTATIVE, THE CONTRACTOR SHALL CERTIFY EACH SHEET OF THE FINAL RECORD DOCUMENTS USING THE STAMP PROVIDED BY THE CITY REPRESENTATIVE STATING "CERTIFIED THAT THESE FINAL CONTRACTOR RECORD DOCUMENTS REPRESENT THE FACILITIES AS CONSTRUCTED." THE CONTRACTOR SHALL CERTIFY THE STAMP IN THE APPROPRIATE PLACE AND THEN THE CITY REPRESENTATIVE WILL CERTIFY THE STAMP.
- C. IN THE EVENT THAT THE FINAL RECORD DOCUMENTS DO NOT MEET THE APPROVAL OF THE CITY, OR THE CONDITION OF THE DRAWINGS IS DETERIORATED SO THAT THEY ARE NO LONGER SUITABLE FOR USE AS RECORD DOCUMENTS DOCUMENTATION, THE CONTRACTOR MAY REQUEST REPLACEMENT CONTRACT DRAWINGS UPON WHICH TO POST RECORD DOCUMENTS DOCUMENTATION. SUCH DRAWINGS WILL BE FURNISHED TO THE CONTRACTOR BY THE CITY REPRESENTATIVE. THE CONTRACTOR SHALL REIMBURSE THE CITY FOR THE ACTUAL COST OF PROVIDING SAID REPLACEMENT DRAWINGS.
- D. THE CONTRACTOR SHALL FURNISH:
1. Full size original set of "Final Record Documents" including certification by the Contractor and the City Representative.
 2. Electronically scanned files of the certified "Final Record Documents" in color PDF format at 300 dpi minimum resolution with one PDF file per drawing on DVDs.
 3. AutoCAD files in one or more DVDs. AutoCAD files will be provided by the City to the Contractor to provide revisions for the as-built conditions. An "AutoCAD File Use Agreement and Release" form shall be completed prior to release. AutoCAD Record Documents shall conform with the following format:
 - a. All changes made during construction shall be identified with a cloud and the letters 'RD' inscribed inside a triangle symbol.
 - b. Complete the revision title in the title block.
-

- c. The final set of the drawings shall be marked “Final Record Documents” and shall become owner’s record of the work.
- 4. A full size set of drawings printed from the AutoCAD files with the stamp “Certified that the Final Contractor Record Documents have been correctly transcribed into AutoCAD” on each sheet. Contractor shall sign the stamp and have his name printed below his signature.
- E. THE CITY WILL REQUIRE 15 WORKING DAYS TO PERFORM CERTIFICATION OF THE FINAL RECORD DOCUMENTS.
- F. FURNISH CERTIFICATES AND DOCUMENTATION OF TEST RESULTS REQUIRED IN TECHNICAL SPECIFICATIONS.

END OF SECTION

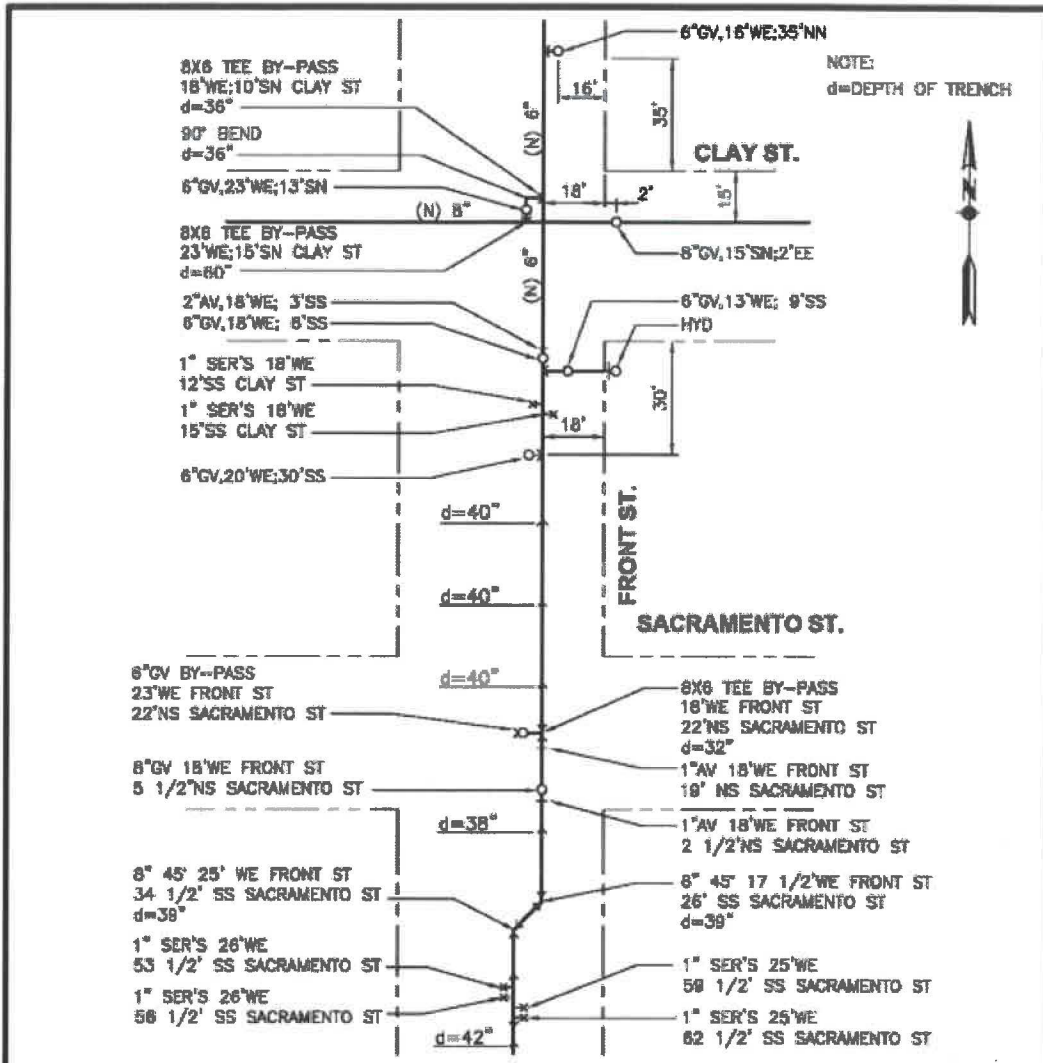




**CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
SAN FRANCISCO WATER DEPARTMENT**



**TYPICAL METHOD OF MEASURING,
RECORDING AND IDENTIFYING MAINS
SERVICES, GATE VALVES AND ALL APPURTENANCES (1 OF 2)**

APPROVED	SAM YOUNG	BY:	T. NGUYEN	DR:	C. CHU	DRAWING NO.
CDD MANAGER:	KATIE MILLER	CH:	J. LUM	SCALE:	NONE	A-1247
		DATE:	APRIL 2015			



 CITY AND COUNTY OF SAN FRANCISCO PUBLIC UTILITIES COMMISSION SAN FRANCISCO WATER DEPARTMENT			
TYPICAL METHOD OF MEASURING, RECORDING AND IDENTIFYING MAINS SERVICES, GATE VALVES AND ALL APPURTENANCES (2 OF 2)			
APPROVED: SAM YOUNG	BY: T. NGUYEN	DR: G. CHU	DRAWING NO.
CDD MANAGER: KATIE MILLER	CH: J. LUM	SCALE: NONE	A-1247
	DATE: APRIL 2015		

APPENDIX B: INTENTIONALLY OMITTED

APPENDIX C: VALVE NUMBERING REQUIREMENTS

(Attached)

City Distribution Division
 Maintenance Planning
 Policy & Procedure
 Critical Valve Numbering Project

Purpose

Number all Critical Valves 12" or larger throughout the City of San Francisco. Will also number smaller valves (i.e. 8") if it is deemed critical.

Equipment Number:

All valves are individually identified by CDD Engineering section using the Gatebook page and the unique valve number assigned on that page. The equipment number will use the Gatebook page and assigned valve number in addition to other naming features (below) for a 16 - Character ID.

The equipment number will be displayed as: COL12-XXXXYY-GV (COL (Reservoir Identifications) 12 (Valve Size) - XXX (Gatebook Page Number) YYY (unique valve number assigned by CDD Engineering) – GV (Valve Type). The equipment number will be assigned in the Maximo Location Hierarchy to the Reservoir it is a part of.

The naming process will be slightly different when naming a Divide (DV) – It will have both reservoirs identified. Divides (DV) it will be displayed as follows: SUN12-107409COL – the first reservoir description (SUN) is the primary system and the other reservoir description (COL) is the secondary. It is still a 16 character ID.

The Reservoir identifications are listed below:

VALVE DESCRIPTIONS	Reservoirs / Tanks
	Balboa Reservoir
COL	College Hill Reservoir
	Francisco Reservoir
FHT	Forest Hill Tank
HUN	Hunters Point Reservoir
	Laguna Honda Reservoir
LOM	Lombard Reservoir
MER	Merced Manor Reservoir
MPT	McClaren Park Tank
POT	Potrero Heights Reservoir
STA	Stanford Heights Reservoir
SUM	Summit Reservoir
SUN	Sunset Reservoir (N&S)
SUT	Sutro Reservoir
	T.I. - Reservoir -- 1/2 Million
	T.I. - Reservoir -- 1 Million
	T.I. - Reservoir -- 2 Million
	T.I. - Reservoir -- 3 Million
UMD	University Mound Reservoir (N&S)

Valve Type:

Valve Types	
GV	Gate Valve
BO	Blow Off
BV	Butterfly Valve
BP	By-Pass
CV	Check Valve
DV	Divide
DTV	
AV	Air Valve

12/2007

APPENDIX D: LEAK REPAIR WORK ORDER

(Attached)

Leak Repair Work Order #

Str #: _____ Str Name: _____ GL Acct #: _____
 Cross Str. 1: _____ Cross Str. 2: _____ Rpt Date/Time: _____

Water System (select one) <input type="checkbox"/> Potable <input type="checkbox"/> AWSS <input type="checkbox"/> Non-CDD Leak Type (select one) <input type="checkbox"/> Service Leak <input type="checkbox"/> Main Break <input type="checkbox"/> Appurtenance <input type="checkbox"/> No Leak Cause (select one) <input type="checkbox"/> Natural <input type="checkbox"/> Contractor Hit <input type="checkbox"/> Vandalism <input type="checkbox"/> Other Accident	Site/Pipe Conditions (select all applicable) <input type="checkbox"/> Back-fill Loss <input type="checkbox"/> Bedrock foundation <input type="checkbox"/> Heavy Truck Traffic <input type="checkbox"/> Nearby High Voltage <input type="checkbox"/> Internal Corrosion <input type="checkbox"/> External Corrosion <input type="checkbox"/> Deposits <input type="checkbox"/> Deformation <input type="checkbox"/> No Restraints Paving Rpt: <div style="border: 1px solid black; height: 40px; width: 100%;"></div>	Diameter (select one) <input type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> 8" <input type="checkbox"/> 12" <input type="checkbox"/> 16" <input type="checkbox"/> 18" <input type="checkbox"/> 24" <input type="checkbox"/> 36"	Material (select one) <input type="checkbox"/> Cast Iron <input type="checkbox"/> Ductile Iron <input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> PVC <input type="checkbox"/> Other Pipe Length <div style="border: 1px solid black; height: 40px; width: 100%;"></div>	Pipe Damage (select one) <input type="checkbox"/> Circumferential <input type="checkbox"/> Longitudinal Split <input type="checkbox"/> Bell/Joint Fracture <input type="checkbox"/> Spiral Crack <input type="checkbox"/> Hole <input type="checkbox"/> Rupture Repair Type (select one) <input type="checkbox"/> Clamp <input type="checkbox"/> Replace Pipe Section <input type="checkbox"/> Caulk Joint
Location <div style="border: 1px solid black; height: 40px; width: 100%;"></div>				

Plumber Rpt:

Pipe Book Number:

Printed Name:

v02 ~ 22-Dec-16

Page 1 of 2

Leak Repair Work Order #

2nd Repair			Appurtenance Repair (select one) <input type="checkbox"/> Hydrant <input type="checkbox"/> Air Valve (AV) <input type="checkbox"/> Air Valve w Gate (AVG) <input type="checkbox"/> Altitude Valve (ALTV) <input type="checkbox"/> Ball Cock (BC) <input type="checkbox"/> Blow-Off (BO) <input type="checkbox"/> Butterfly Valve (BV) <input type="checkbox"/> Bypass (BP) <input type="checkbox"/> Check Valve (CV) <input type="checkbox"/> Divide (DIV) <input type="checkbox"/> Float Valve (FV) <input type="checkbox"/> Gate Valve (GV) <input type="checkbox"/> Pressure Regulator (PR) <input type="checkbox"/> Relief Valve (RV) <input type="checkbox"/> Stop Cock (SC) <input type="checkbox"/> Meter (Leak only) <input type="checkbox"/> Other/Unknown
Diameter (select one) <input type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> 8" <input type="checkbox"/> 12" <input type="checkbox"/> 16" <input type="checkbox"/> 18" <input type="checkbox"/> 24" <input type="checkbox"/> 36"	Material (select one) <input type="checkbox"/> Cast Iron <input type="checkbox"/> Ductile Iron <input type="checkbox"/> Steel <input type="checkbox"/> Galvanized <input type="checkbox"/> PVC <input type="checkbox"/> Other Pipe Length <div style="border: 1px solid black; height: 40px; width: 100%;"></div>	Pipe Damage (select one) <input type="checkbox"/> Circumferential <input type="checkbox"/> Longitudinal Split <input type="checkbox"/> Bell/Joint Fracture <input type="checkbox"/> Spiral Crack <input type="checkbox"/> Hole <input type="checkbox"/> Rupture Repair Type (select one) <input type="checkbox"/> Clamp <input type="checkbox"/> Replace Pipe Section <input type="checkbox"/> Caulk Joint	
Location (from property line or curb) <div style="border: 1px solid black; height: 40px; width: 100%;"></div>			

APPENDIX E: SPECIAL STREET IMPROVEMENTS. MAINTENANCE GUIDELINES

COMPLETE CHECKLIST IN BLUE PEN AND SUBMIT ELECTRONICALLY OR BY MAIL TO THE ADDRESSES BELOW



**San Francisco
Water Power Sewer**
Services of the San Francisco Public Utilities Commission

Urban Watershed Management Program
ATTN: Stormwater Review
525 Golden Gate Ave, 11th Floor
SAN FRANCISCO, CA 94102
stormwaterreview@sfpwater.org

Annual Self-Certification Checklist

PERMEABLE PAVEMENT

Inspection Date: _____ Address: _____ Block / Lot #: _____ Installation Date: _____
 Inspected By: Name: _____ Phone: _____ Property Owner Site Manager Contractor Other: _____

INSTRUCTIONS: All inspections, maintenance tasks and repairs are to be completed prior to the beginning of the rainy season (October 15). Mark all status boxes with an S or U, where S = Satisfactory (no maintenance required), and U = Unsatisfactory (maintenance required). See the Permeable Pavement Inspection instructions included in this packet for detailed descriptions of conditions requiring maintenance and further action.

Item #	Inspection Item Description	Status	Indicate Action Required or Action Planned	Indicate Action Taken (Include Date Completed)
1	Surface ponding evident / significantly reduced infiltration rate			
2	Silt and sediment deposited on pavement surface			
3	Trash and large debris accumulation on pavement surface			
4	Excessive drawdown time of the aggregate storage layer > 48 hrs.			
5	Excessive oil staining on pavement surface			
6	Weed growth in paver joints / expansion joints			
7	Cracks and displacement / settlement of permeable pavement / broken pavers			
8	Disturbances contributing landscape areas: erosion of surrounding landscape areas (if applicable)			

Page 1 of 2

Item #	Inspection Item Description	Status	Indicate Action Required or Action Planned	Indicate Action Taken (Include Date Completed)
9	Destabilized contributing paved areas / spalling and raveling* of adjacent standard pavement (if applicable)			
10	Unauthorized modifications			
11	Utility cuts / other surface repairs evident and improperly patched (if applicable)			
12	Permeable pavement surface raveling and spalling / deterioration			
13	Potholes forming / pavers missing			
14	Loss of paver jointing material (if applicable)			
15	Visible surface contaminants / pollution			
16	Catch basin / overflow structure blockage			
17	Underdrain blockage (if applicable)			
18	Vegetation damage / bare spots and/or weed growth in turf paver or grass paver type systems (if applicable)			
19	Structural damage (planter edges, check dams or outlet structure)			

*Definitions: **Spalling:** Cracking, breaking or chipping of joint/crack edges. Usually occurs within about 2 ft. of joint/crack edge.
Raveling: The progressive disintegration of an asphalt layer from the surface downward as a result of the dislodgement of aggregate particles. It usually starts with the loss of fine aggregate (fines) and advances to the loss of larger aggregate sizes.

Signature: _____ Date: _____



Annual Self-Certification Checklist Instructions

PERMEABLE PAVEMENT

NOTE: These instructions are intended to be a companion piece to the Annual Self-Certification Checklist. The information contained herein is to be used to help the preparer of the Annual Self-Certification Checklist accurately conduct an inspection and properly complete the form.

Abbreviations: SGG: San Francisco Stormwater Design Guidelines; SCP: Stormwater Control Plan; EMD: San Francisco Stormwater Management Ordinance; BMP: Best Management Practice (Permeable Pavement); S: Sales Information

Item #	Inspection Item Description	Inspection Instructions and Explanation
1	Surface ponding evident / significantly reduced infiltration rate	<p>Area of Concern: Several maintenance related issues can lead to a reduced infiltration rate and surface ponding in permeable pavement installations. Pavement clogging can prevent stormwater from flowing through the pavement surface and reaching the aggregate storage layer beneath. Additionally, if the aggregate storage layer fails to draw down completely within 48 hours, subsequent rainfall may begin to pond on the pavement surface as the volume of water builds up in the pavement section.</p> <p>To determine if surface ponding is being caused by clogging, a test for the infiltration rate of the permeable pavement surface must be conducted. The following test procedures cover the three most common permeable pavement types:</p> <ul style="list-style-type: none"> • Permeable Pavers - Standard Test Method for Surface Infiltration Rate of Permeable Unit Pavement Systems - ASTM C1781/C1781M - 13 • Pervious Concrete and Porous Asphalt - Standard Test Method for Infiltration Rate of In Place Pervious Concrete - ASTM C1701/C1701M - 08 <p>Maintenance Solution: If it is determined that the surface ponding is a result of pavement clogging, then steps must be taken to clean the pavement surface and restore permeability. Permeable pavements can be cleaned by vacuuming or vacuuming combined with pressure washing. For more information on ponded water and extended drawdown time of the aggregate storage layer, see Item #4 below.</p>
2	Silt and sediment deposited on pavement surface	<p>Area of Concern: Excessive silt and sediment accumulation causes significant problems in permeable pavement installations. Silt and sediment will clog or inhibit the infiltration capacity of the pavement surface. Clogged or inhibited filtration capacity could lead to surface ponding and flooding.</p> <p>Maintenance Solution: All silt and sediment should be removed from permeable pavement by vacuuming before the start of the rainy season (October 15) and at least twice per year, or as frequently as site conditions dictate, and discarded at an appropriate facility.</p>
3	Trash and large debris accumulation on pavement surface	<p>Area of Concern: Excessive trash or debris accumulation causes problems in permeable pavement installations that go beyond poor aesthetics. Trash and debris accumulation can clog or inhibit the infiltration capacity of the pavement surface and clog outflow structure grates. Clogged or inhibited filtration capacity could lead to surface ponding. Clogged outflow structure grates can lead to overflowing and ponding.</p> <p>Maintenance Solution: All trash and debris should be removed from permeable pavement before the start of the rainy season (October 15) or as frequently as site conditions dictate, and discarded at an appropriate facility.</p>

Item #	Inspection Item Description	Inspection Instructions and Explanation
4	Extended drawdown time of the aggregate storage layer > 48 hrs.	<p>Area of Concern: If properly designed and built, extended storage aggregate drawdown times beyond 48 hours in permeable pavement installations can be related to several problems such as:</p> <ul style="list-style-type: none"> • blockage or clogging of the underdrains, outflow, or overflow structure (if applicable) • clogging of the aggregate storage layer, choking layer, or bedding layer • clogging of geotextiles (if applicable) <p>Inspecting the underdrain for clogging can be done visually by looking for standing water in the cleanout or by running a garden hose into the cleanout and determining if the water flows freely or backs up and overtops the cleanout pipe. Alternatively, video inspection of the underdrain pipe may be performed to determine the source of the underdrain failure.</p> <p>Inspecting the outflow structure or sand trap can be done by removing the lid or grate from the structure and visually inspecting for standing water or excessive debris accumulation.</p> <p>Maintenance Solution: Clogged underdrains and outflow structures can be cleared by jetting or snaking the underdrain pipe or culvert that connects the structure to the sewer, and by removing accumulated debris and sediment from the bottom of the structure.</p> <p>If aggregate or geotextile clogging is suspected, further investigation must be conducted to verify the problem. The removal of clogged subsurface aggregates and geotextiles requires the removal of the pavement surface and reconstruction of the permeable pavement system.</p>
5	Excessive oil staining on pavement surface	<p>Area of Concern: Oil leaks from vehicles can create staining on the pavement surface. This staining can cause the pavement surface to have a reduced infiltration capacity and may even create contamination issues depending on the quantity of oil that created the stain and how far the oil seeped into the pavement.</p> <p>Maintenance Solution: Oil stains must be pressure washed from the pavement when the percentage of the stained surface reaches 10% of the square footage of the overall permeable pavement surface or as often as site conditions dictate. Larger stains may require the removal and replacement of the affected pavement surface and possibly some of the subsurface aggregates. See Item #14 below for larger spills and contamination issues.</p> <p>Hydrocarbon oil pan drippings may be remediated by the use of products such as S-200 Dripone from International Environmental Products, LLC, or equivalent.</p>
6	Weed growth in paver joints / expansion joints	<p>Area of Concern: Noxious and invasive weeds must be removed when they cover more than 10% of the pavement surface. Noxious and invasive weeds are highly damaging to pavements and the natural and built environment. These weeds interfere with the structural stability of the pavement, reduce infiltration, and increase the amount of debris that is deposited on the pavement surface.</p> <p>Maintenance Solution: Best practices call for weed removal on a monthly basis, regardless of cover percentage. Weed removal must include the entire root structure and the weeds must be discarded at an appropriate facility to prevent spreading of invasive species. California's Pest Prevention System (PPS) and the California Food and Agricultural Code (FAC) Appendix D set regulations and laws pertaining to weed removal and disposal.</p>
7	Cracks and displacement / settlement of permeable pavement / broken pavers	<p>Area of Concern: See Item # 11, 12, 13, and 16</p>

Annual Self-Certification Checklist Instructions

Item #	Inspection Item Description	Inspection Instructions and Explanation
8	Destabilized contributing landscape areas / erosion of surrounding landscape areas (if applicable)	<p>Area of Concern: All surrounding landscaped areas that contribute runoff to the permeable pavement surface must be stabilized with turf, mulch, or groundcover plantings to stimulate erosion and sources of silt and sediment that can be conveyed onto the permeable pavement surface and cause clogging. Sediment-laden runoff must be physically blocked and diverted from draining onto the permeable pavement by curbs, berms, sandbags, straw wattles, and/or silt fencing.</p> <p>Maintenance Solution: Any bare spots adjacent to the permeable pavement where soil is visible must be re-covered with turf, mulch, or groundcover plantings ASAP. The added plantings or mulch must meet the material thickness and type specified in the design. Temporary erosion and sedimentation controls can also be installed to immediately protect the adjacent permeable pavement until the replacement plantings are fully grown-in. Alternatively, these surrounding landscaped areas can be graded away from the permeable pavement.</p>
9	Destabilized contributing paved areas / spalling* and raveling* of adjacent standard pavement (if applicable)	<p>Area of Concern: Adjacent standard pavements that drain onto permeable pavements can be sources of silt, fines, and sediment that can clog permeable pavement surfaces. These standard pavement surfaces must be cleaned regularly to eliminate or minimize the clogging risk that they pose to the adjacent permeable pavement.</p> <p>Standard asphalt pavement is the largest contributor of fines, silt, and sediment, especially during the first two years after installation as the asphalt surface weathers and sheds sand/fine aggregates from its surface.</p> <p>Additionally, structurally deficient adjacent pavements (both concrete and asphalt) that are undergoing spalling or raveling can contribute large amounts of fines silt and sediment to the adjacent permeable paving.</p> <p>Maintenance Solution: Deteriorating pavements must be repaired as soon as possible to minimize further degradation. A similar situation will also occur when adjacent pavements undergo grinding / milling and resurfacing / repaving. During these operations, the adjacent permeable pavement must be protected from the resurfacing / repaving operations.</p>
10	Unauthorized modifications	<p>Area of Concern: Unauthorized modifications consist of any changes to a permeable pavement installation that deviate from the approved construction documents. These modifications can take place during construction (e.g., pavement or aggregate substitutions with inferior components) or can happen over time after the permeable pavement is constructed (i.e., reducing the footprint of the permeable pavement to accommodate an addition to a nearby structure).</p> <p>The SDG Maintenance Agreement Exhibit B recorded on the deed of the property provides the original approved construction documents that can be referred to and used to determine if modifications have been made.</p> <p>Maintenance Solution: All unauthorized modifications must be corrected by returning the BMP to its original configuration, as described in the approved construction documents contained in the SDG Maintenance Agreement Exhibit B.</p>

Item #	Inspection Item Description	Inspection Instructions and Explanation
11	Utility cuts / other surface repairs evident and improperly patched (if applicable)	<p>Area of Concern: Underground utility repairs or construction can require the cutting and removal of sections of permeable pavements to provide access to subsurface facilities. The removal and replacement process must be correctly completed to ensure that the structural integrity and function of the permeable pavement is not compromised.</p> <p>Maintenance Solution: When working on permeable pavement, all surrounding surfaces must be protected from sediments and fines created by the utility work. Saw cutting work must be performed by wet cutting, vacuumed, and the saw cutting residue must be washed off the surface after vacuuming before it is allowed to dry. The following is the required patching standard for the three most common permeable pavement surfaces:</p> <ul style="list-style-type: none"> • Permeable Interlocking Concrete Pavers (PICP) – The PICP surface must be replaced in-kind, preferably with the covers that were removed from the utility cut into to eliminate a variation in color between the existing in-place pavers and new pavers added to the patch. The patch size must be increased by two times the shortest dimension of the excavation beyond the outside edge of the excavation to ensure a smooth transition from the undisturbed pavers to the patched paver area. All subsurface aggregate that was removed to access the subsurface facility must be replaced in-kind with new materials, matching the existing section thicknesses (excavated aggregates must not be reused due to the possibility of contamination with dirt and fines). The new patch must also be left slightly higher than the surrounding existing surface (1/4" to 3/8") to allow for settlement of the patch. • Pervious Concrete – Every effort must be made to replace the surface in-kind. Small patches can be replaced with standard non-pervious concrete (by permission and approval from the SFPUC) if the patch size is 10% or less than the entire permeable surface that was disturbed. Otherwise, the entire pavement surface must be removed and replaced to the nearest joint and/or the patch size must be increased by two times the shortest dimension of the excavation beyond the outside edge of the excavation to ensure a smooth transition from the undisturbed pavers to the patched paver area. All subsurface aggregate that was removed to access the subsurface facility must be replaced in-kind with new materials, matching the existing section thicknesses (excavated aggregates must not be reused due to the possibility of contamination with dirt and fines). The new patch must also be left slightly higher than the surrounding existing surface (1/4" to 3/8") to allow for settlement of the patch. • Porous Asphalt – Every effort must be made to replace the surface in-kind. Small patches can be replaced with standard non-porous asphalt (by permission and approval from the SFPUC) if the patch size is 10% or less than the entire permeable surface that was disturbed. The patch size must be increased by two times the shortest dimension of the excavation beyond the outside edge of the excavation to ensure a smooth transition from the undisturbed pavers to the patched paver area. All subsurface aggregate that was removed to access the subsurface facility must be replaced in-kind with new materials, matching the existing section thicknesses (excavated aggregates must not be reused due to the possibility of contamination with dirt and fines). The new patch must also be left slightly higher than the surrounding existing surface (1/4" to 3/8") to allow for settlement of the patch.
12	Permeable pavement surface raveling and spalling / deterioration	<p>Area of Concern: Structurally deficient permeable pavements that are undergoing spalling or raveling degradation can contribute large amounts of fine soil and sediment that can cause clogging and a lack of infiltration capacity. These deteriorating pavements must be repaired as soon as possible to minimize further degradation.</p> <p>Additionally, large pieces of aggregate that break off from the pavement surface can create further damage to the permeable pavement surface as these loose aggregates are driven or walked over, further abrading the deteriorating surface.</p> <p>Maintenance Solution: Loose materials must be removed by sweeping or vacuuming.</p>
13	Potholes forming / pavers missing	<p>Area of Concern: See Item #12 above for minor pothole formation.</p> <p>See Item #13 below for major pothole formation and severe structural deterioration.</p> <p>Maintenance Solution: Surface repairs must be handled in the same manner as a utility cut patch, minus the removal and replacement of the sub-base and base aggregate, unless the structural deterioration was determined to be caused by base failure. If a base failure is suspected, consult with a licensed civil and geotechnical engineer for repair options.</p>

Annual Self-Certification Checklist Instructions

Item #	Inspection Item Description	Inspection Instructions and Explanation
14	Loss of paver jointing material (if applicable)	<p>Area of Concern: Capped PCCP rely on jointing material (typically fine aggregate like AASHTO M5, M89, or M9) to provide structural stability and an initial filtering of sediment and float before those materials reach and clog the aggregate bedding layer beneath the pavers. Over time, traffic and vacuuming can reduce the amount of jointing material.</p> <p>Maintenance Solution: Jointing material must be replenished periodically over the life of the installation as frequently as site conditions dictate or after pressure washing. The replacement jointing material must meet the same specs as the material that was used during installation.</p>
15	Visible surface contaminants / pollution	<p>Area of Concern: Visible surface contaminants and pollution can range from inert substances that can cause permeable pavement clogging to hazardous substances that impact plant, environmental, or human health.</p> <p>Examples of inert contaminants are masonry, plaster or concrete "spillover," and masonry or roadway saw cutting slurry and rebar. Examples of hazardous contaminants are petroleum-based substances, caustic chemicals, pesticides, and herbicides. These pollutants can often be identified by sight or smell when they become deposited on the surface of a permeable pavement.</p> <p>If pollutants are detected, investigations must be conducted to determine the source of the contaminant, mitigate that source, and then take steps to clean up the contamination.</p> <p>Maintenance Solution: For inert substances, cleanup can typically be conducted by regular maintenance personnel by simply scraping off, pressure washing, vacuuming, and carting the contaminated material at an appropriate facility. Hazardous substance cleanup will require specially trained and licensed contractors and special disposal conforming to local and national laws and regulations.</p>
16	Catch basin / overflow structure blockage	<p>Area of Concern: Trash, debris, and sediment can create blockages at the overflow structure or catch basins built into permeable pavement systems, inhibiting the flow of water out of the facility or inhibiting the emergency overflow measures designed into the project. Catch basin and overflow structure blockages can create excessive ponding within and around the area of the permeable pavement installation, potentially leading to hazardous conditions and property damage.</p> <p>Maintenance Solution: Blockages must be cleared before the start of the rainy season (October 15), before each forecast storm if site conditions require, and/or as frequently as site conditions dictate. Trash and debris must be removed by hand or with hand tools and disposed of at an appropriate facility. Overflow structures and catch basin grates, sumps, and traps must be cleared of debris by hand, hand tools, or water truck.</p>

Item #	Inspection Item Description	Inspection Instructions and Explanation
17	Underdrain blockage (if applicable)	<p>Area of Concern: Inspecting the underdrain for clogging can be done visually by looking for standing water in the cleanout or by running a garden hose into the cleanout and determining if the water flows freely or backs up and overtops the cleanout pipe. Ultimately, video inspection of the underdrain pipe may be performed to determine the source of the underdrain failure.</p> <p>Maintenance Solution: Clogged underdrains can be cleared by jetting or snaking the underdrain pipe or culvert that connects the structure to the sewer and by removing accumulated debris and sediment from the bottom of the pipe.</p>
18	Vegetation damage / bare spots and/or weed growth in turf paver or grass paver type systems (if applicable)	<p>Area of Concern: Vegetation plays an important role in the function of a turf or grass paver system. In addition to evapotranspiration, plant roots help aerate the soil and minimize soil compaction, replenish organic materials in the soil, and provide a habitat for beneficial bacteria that aids in the biological breakdown and mitigation of pollutants deposited by stormwater into the planting medium.</p> <p>For a turf or grass paver system to function properly, it needs consistent and healthy plant cover. Bare spots created by missing plants give invasive weeds an opportunity to grow. This invasive weed growth will crowd out the beneficial plant species over time, reducing the effectiveness of the turf or grass paver system.</p> <p>Maintenance Solution: Dead, diseased, dying, or missing plants must be replaced. If a large amount of plants have died off, consult with a horticultural expert on the cause of the death and remedy the cause before replanting.</p>
19	Structural damage (curbs, pavement edging, overflow or underdrain structure)	<p>Area of Concern: For minor structural damage, refer to Item #s 11, 12, and 13 above.</p> <p>More significant structural damage, such as damage caused by auto accidents, nearby construction work, or natural disasters must be repaired as soon as possible.</p> <p>Maintenance Solution: Major repairs can consist of removal and replacement of the entire permeable pavement surface, damaged curbs, pavement edging, overflow or underdrain structures, or structural bracing and supplemental reinforcement of failing structural components.</p>

*Definitions: **Spalling** - Cracking, breaking or chipping of joint/track edges. Usually occurs within about 2 ft. of joint/track edge.
Raveling - The progressive disintegration of an asphalt layer from the surface downward as a result of the dislodgement of aggregate particles. It usually starts with the loss of fine aggregate (fines) and advances to the loss of larger aggregate sizes.