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PLANNING DEPARTMENT

Addendum to Environmental Impact Report

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Addendum Date:	**April 12, 2017**
Case No.:	**2011.0123E**
Project Title:	**Peninsula Pipelines Seismic Upgrade Project**
EIR:	2011.0123E, certified October 17, 2013
Project Sponsor:	San Francisco Public Utilities Commission
Lead Agency:	San Francisco Planning Department
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REMARKS

Background

The San Francisco Planning Commission certified the Peninsula Pipelines Seismic Upgrade Project Final Environmental Impact Report (FEIR), Case No.2011.0123E, on October 17, 2013. The project analyzed in the FEIR consisted of seismic upgrades to regional water facilities at five locations on the San Francisco Peninsula, including in the Town of Colma, and the cities of South San Francisco, San Bruno, and Millbrae in San Mateo County. Following certification of the FEIR, the San Francisco Public Utilities Commission (SFPUC) approved the project on October 22, 2013.

SFPUC previously identified areas on the San Francisco Peninsula that are susceptible to liquefaction, ground shaking, and landslides. As a result of these studies, the SFPUC identified five water pipeline segments in need of seismic improvements, which will be referred to as the Adopted 2013 Project (adopted project). These five sites included projects at the following project sites: Colma site; South San Francisco Site; San Bruno North site; San Bruno South site; and the Milbrae site. These pipelines, part of the regional water system owned and operated by the City and County of San Francisco, are the San Andreas Pipeline No. 2 (SAPL2), San Andreas Pipeline No. 3 (SAPL3), and Sunset Supply Branch Pipeline (SSBPL). The project construction activities consisted of replacement and stabilization of pipeline segments, injection of grouting to fill voids under pipeline segments, the installation of pipe supports, and tree removal. Both open trench and jack-and-bore construction techniques were used to construct the water pipeline segments. In San Bruno, two segments of SAPL2 were replaced.

The SFPUC awarded a contract for the Adopted 2013 Project and construction began in April 2014. Construction was completed in February, 2016 for the entirety of the Adopted 2013 Project.

In July 2015, a portion of SAPL2 in San Bruno that had not been replaced burst, resulting in the loss of millions of gallons of water. Upon inspection of the line, it was discovered that four additional segments of the original line in San Bruno had deteriorated, and SAPL2 was subsequently taken out of service. The replacement of these four additional segments of SAPL2 is the focus of this environmental review.

PROPOSED PROJECT MODIFICATIONS

The project modifications proposed by the SFPUC and addressed in this addendum are to replace and/or slipline (installing a smaller pipe into an existing larger pipe) four discontinuous segments of 54-inch-diameter water pipeline segments (segments 1, 2, 3, and 4) of SAPL2 within San Bruno that were not identified in the Peninsula Pipelines FEIR, as described further below. The project modifications proposed under this addendum are referred to as the Modified 2017 Project (modified project). The pipeline occupies a partially-undeveloped right-of-way corridor 40 to 60 feet wide. The pipeline would be replaced with a new pipeline of the same size, in the same alignment and at the same depths as the existing pipeline. The four segments would be located from the Harry Tracy Water Treatment Plant, near the intersection of I-280 and Crystal Springs Road, to Sneath Lane, near the southern boundary of the Golden Gate National Cemetery. The locations of these segments are shown in the Attachment A: Location and Vicinity Map. The proposed new segments are located in the vicinity of the San Bruno North site and San Bruno South sites analyzed in the FEIR. The Adopted 2013 Project analyzed seismic upgrades to SAPL2 and SAPL3 within the City of San Bruno and the Modified 2017 Project would construct upgrades to just SAPL2. The Adopted 2013 Project included the construction and seismic upgrades of 4,680 linear feet and included a total construction area of 11.48 acres. The Modified 2017 Project would total an additional 7,307 linear feet of pipeline replacement and include a total construction area of 9.04 acres. **Table 1** below compares the Modified 2017 Project to the Adopted 2013 Project. Additionally, further discussion of the Modified 2017 Project and the individual segments is provided below.

Project Construction

Pipeline Replacement and Stabilization

The Modified 2017 Project would include replacement of the existing SAPL2 pipeline alignment on segments 1-4 by using shored open trench construction methods. This would include removing the existing 54-inch "lock bar"[1] steel pipe and replacing it with new 54-inch welded steel pipe. A portion of segment 1 would involve using a trenchless jack-and-bore technique, where a smaller welded steel pipe would be sliplined within the existing SAPL2 pipe. Additionally, excavation pits, approximately 12 feet deep, 10 feet wide, and 30 feet long, would be required at both ends of each portion to be sliplined. Trench excavation, removal of existing pipes, and installation of new pipes would be similar to the activities identified in the FEIR for construction of the Adopted 2013 Project. These construction techniques are consistent with the Adopted 2013 Project (FEIR, page 3-23, Common Construction Elements for Pipeline Replacement.)

In addition, construction of segments 3 and 4 would cross underneath three roadways, which would utilize trenchless jack-and-bore technique sliplining and require two excavation pits at each side of the roadway: at San Bruno Avenue, Cherry Avenue, and Sneath Lane.

Depth of excavation for construction of the Modified Project would be approximately 10 feet deep, with the exception of the Crystal Springs Road crossing for construction of segment 1 and the adjacent area where excavation would reach a maximum depth of approximately 16 feet deep.

Proposed pipe appurtenance replacements would include discharge valves, release valves, and manholes at the same locations as the existing SAPL2. For unpaved areas, the concrete risers housing the valves are approximately seven feet in diameter and up to 2.5 feet above grade. In

[1] A"lock bar" steel pipe is a type of rivetless steel pipe.

paved areas, the concrete riser is flush with the existing paved surface. There are two small cathodic protection enclosures within segment 1 that would be relocated in the same vicinity.

Construction Staging, Spoils Areas, and Vegetation Removal

Construction staging would occur within the SAPL2 right-of-way (ROW), as well as various locations off of the ROW as described below for construction of segments 1-4.

Trees and other vegetation would be removed within the ROW to avoid damage from roots to the proposed pipeline, consistent with the SFPUC Integrated Vegetation Management Policy.[2] In addition, trees would be removed within some staging areas, as described below. In total, 40 trees would be required to be removed for construction of the Modified 2017 Project. The tree species to be removed would consistent of a range of species including silver wattle, coastal live oak, bay laurel, toyon, and one Monterey Pine. Following construction of the modified project, all construction staging areas would be revegetated, as described further below.

Construction is estimated to begin in 2017 and end in 2019, with a total duration of approximately 24 months, assuming each segment is constructed in separate phases, and construction of each segment would occur subsequent to the completion of each phase. The duration of construction activities at each segment would range from approximately four to six months. Additionally, construction activities could occur simultaneously at segments 1-4, similar to construction activities described in the FEIR (page FEIR 3-35) for the Adopted 2013 Project, which would shorten the construction duration to a total of 6 months. Construction would progress at up to 50 feet per day in segment 1, and as much as 200 feet per day in segments 2, 3, and 4. Construction of segments 1-4 would in some locations require portions of the sidewalk/trails to be temporarily closed for construction access. In all of these occasions, SFPUC would construct alternative pedestrian access parallel to the route as part of the modified project.

Construction hours would be the same as described in the FEIR (8 a.m. to approximately 4:30 p.m. Monday through Friday, with potential limited weekend work). Nighttime construction could be required for construction of segment 1 at jack-and-bore technique slipline locations and at the crossing of Crystal Springs Road. Nighttime activities could also include limited 24-hour pumping for dewatering of the pipelines at segments 1-4, as described in the FEIR. Similar to the adopted project, the modified project would include project construction activities adjacent to sensitive receptors (i.e. residences). The nearest sensitive receptors to the modified project would be approximately 10 feet away in segment 3. This distance from sensitive receptors is similar to the San Bruno South site under the adopted project. Typical construction equipment and crew size would be the same as described in the FEIR (page 3-35) with a workforce at each site of up to 20 personnel per site for a total of 80 personnel to construct all four segments. Construction of segments 1-4 of the Modified 2017 Project are described in further detail below.

SFPUC Standard Construction Measures

The SFPUC has established standard construction measures for all Water System Improvement Project (WSIP) projects that would be implemented as part of the proposed project.[3] The main objectives of these measures are to:

- Reduce impacts on existing resources to the extent feasible;

[2] San Francisco Public Utilities Commission, *Integrated Vegetation Management Policy*, January 2015. Available at http://www.sfwater.org/index.aspx?page=431, accessed December 29, 2015.
[3] SFPUC, Standard Construction Measures, July 1 2015.

- Include activities such as early identification of sensitive environmental resources in the WSIP project area; and
- Notify businesses, owners, and residents of adjacent areas potentially affected by the WSIP projects about the nature, extent, and duration of construction activities.

The SFPUC would ensure that the proposed project's contract specifications contain uniform minimum provisions to address these issues.

SEGMENT 1

Segment 1 would include the replacement and construction of a 2,370 foot-long portion of SAPL2 extending northward from SFPUC's Harry Tracy Treatment Plant near I-280, along the east side of Crystal Springs Road in San Bruno, primarily within the Harry Tracy Treatment Plant (HTWTP) and Junipero Serra County Park (see Figure 1). Sliplining would be used between two pipeline vaults at the HTWTP while open-trench construction would also used for the remainder of the segment. Excavation pits, approximately 12 feet deep, 10 feet wide, and 30 feet long, would be required at both ends of each sliplined portion. Replacement along the remainder of the alignment would be by open cut trenching, generally about 10-feet-deep, but as deep as 16 feet in the Crystal Springs Road vicinity, where the existing pipeline is deeper. Construction of segment 1 is estimated to take approximately 6 months.

Two proposed staging areas outside of the SAPL2 ROW would be required to construct segment 1. One would be located at the Junipero Serra Park parking lot off of Crystal Springs Road, and the second staging area would be on park land within Junipero Serra Park. Construction staging would temporarily displace 54 parking spaces at the Junipero Serra Park parking lot.

Table 1- Comparison of Modified 2017 project to the Adopted 2013 project

Project Site	Approximate Distance of Pipe Upgrade[1] (feet)	Staging and Spoils Areas (acres)	Construction Zone (acres)	Total Construction Work Area[2] (acres)	Proposed Project Activities	Existing Uses – Site and Vicinity
Total Adopted 2013 project Colma; South San Francisco; San Bruno North; San Bruno South; Millbrae	**4,680**	**5.3 acres**	**6.18**	**11.48**	Pipeline segment replacement and Stabilization of pipe segment in tunnel	**Adjacent Uses:** Residential and recreational
Colma	700	0.77	1.47	2.24	Pipe segment replacement	**Site:** Vacant SFPUC ROW and area within Kohl's Department Store Parking Lot **Adjacent Uses:** Commercial and cemetery
South San Francisco	720	.05	1.29	1.34	Pipe segment replacement	**Site:** Vacant SFPUC ROW, Westborough Boulevard and area within the Pacific Supermarket Parking Lot **Adjacent Uses:** Commercial, residential, and recreational
San Bruno North	140[3]	0.14	0.76	0.90	Stabilization of pipe segment in tunnel	**Site:** Vacant SFPUC ROW and area within Caltrans ROW; portion of right-hand eastbound lane on San Bruno Avenue West **Adjacent Uses:** Commercial, residential, recreational
San Bruno South	(SAPL2) 1,170	2.31	1.59	3.90	Pipe segment replacement	**Site:** Vacant SFPUC ROW, Whitman Way, and areas within parking lots for Peninsula High School and San Bruno Chinese Church **Adjacent Uses:** Residential, church, school, open space, and recreational
	(SAPL3) 1,050				Pipe segment	

Project Site	Approximate Distance of Pipe Upgrade[1] (feet)	Staging and Spoils Areas (acres)	Construction Zone (acres)	Total Construction Work Area[2] (acres)	Proposed Project Activities	Existing Uses – Site and Vicinity
					replacement	
Millbrae	900	2.03	1.07	3.10	Pipe segment replacement	**Site:** Vacant SFPUC ROW, areas within a golf course, open space, and residential lots **Adjacent Uses:** Residential and recreational
Modified 2017 Segments						
Total Modified 2017 Segments	**7,307**	**2.26**	**6.78**	**9.04**	**Pipe Replacement**	
Segment 1	2,370	1.14	1.93	2.94	Pipe Replacement	**Segment 1 Site:** Harry Tracy Water Plant and Juniperro Serra Park. **Adjacent Uses:** Crystal Springs Road and residential
Segment 2	807	0.62	1.54	2.16	Pipe Replacement	**Segment 2 Site:** Vacant SFPUC ROW **Adjacent Uses:** Peninsula Alternative High School and San Bruno Chinese Church
Segment 3	1,510	0.26	1.51	1.77	Pipe Replacement	**Segment 3 Site:** Vacant SFPUC ROW, San Bruno Ave, Bayhill Shopping Center, YouTube building, and a parking garage. **Adjacent Uses:** Open space
Segment 4	2,620	0.37	1.8	2.17	Pipe Replacement	**Segment 4 Site:** Cherry Avenue Villas condominium complex, Boardwalk Drive, and Peninsula Place Homeowners condominium complex, Cherry Ave, Sneath Lane, and Golden Gate National Cemetery. **Adjacent Uses:** Commercial and residential.
Total Combined (Modified 2017 project to the	11,987	7.56	12.96	20.52	Pipeline segment replacement and	**N/A**

Project Site	Approximate Distance of Pipe Upgrade[1] (feet)	Staging and Spoils Areas (acres)	Construction Zone (acres)	Total Construction Work Area[2] (acres)	Proposed Project Activities	Existing Uses – Site and Vicinity
Adopted 2013 project)					Stabilization of pipe segment in tunnel	

Source: G&E Engineering Systems, Inc., 2012; PPSU project analysis, URS.

Notes:

[1] Approximate distance of pipe is measured as horizontal distance. Total length of pipe to be replaced may be longer, due to the vertical changes along the pipeline.

[2] Total Construction Work Area is the sum of Staging and Spoils Areas and the Construction Zone.

[3] Estimated length of work in tunnel.

ROW = right-of-way

Construction of segment 1 would require removal of approximately 40 trees and would require excavation of approximately 7,000 cubic yards of soil removal and total backfill of approximately 4,400 cubic yards. Construction access routes would be from within the HTWTP, Crystal Springs Road, and the SAPL2 ROW through the Junipero Serra Park. The Crystal Springs Road crossing would require temporary closure of one travel lane at a time for approximately two weeks, necessitating alternate one-way traffic operations for approximately 180 feet. Flaggers would direct traffic during lane closures.

Figure 1: Alignment of Segment 1 (shown in yellow)

SEGMENT 2

Segment 2 would include the replacement and construction of an 807 foot long portion of SAPL2. Segment 2 runs parallel from Courtland Drive adjacent to the San Bruno Chinese Church to the east and Peninsula Alternative High School across Courtland Drive to the west. Segment 2 is located directly south of the San Bruno South site, which was a part of the Adopted 2013 Project. Figure 2, below, shows the alignment of the existing SAPL2 segment to be replaced.

Open trench construction would be used for construction of segment 2, and would generally require excavation to depths of about 10-feet-deep. Construction of segment 2 is estimated to take approximately 4 months. Additionally, SFPUC's Standard Construction Measures # 7 – Biological Resources[4], which apply to all SFPUC projects, would ensure that biological resources are protected during construction activities of segment 2. Compliance with the SFPUC's Standard Construction Measures # 7 – would require that qualified biologist will carry out a survey of segment 2, as appropriate, to note the general resources identify whether habitat for special-status plant species are present, and if so protect such resources in accordance with local, State, and federal laws.

[4] SFPUC, Standard Construction Measures #7-Biological Resources states; all project sites and the immediately surrounding area will be screened to determine whether biological resources may be affected by construction. A qualified biologist will also carry out a survey of the project site, as appropriate, to note the general resources and identify whether habitat for special-status species and/or migratory birds, are present. In the event further investigation is necessary, the SFPUC will comply with all local, State, and federal requirements for surveys, analysis, and protection of biological resources (e.g., Migratory Bird Treaty Act, federal and State Endangered Species Acts, etc.). If necessary, measures will be implemented to protect biological resources, such as installing wildlife exclusion fencing, establishing work buffer zones, installing bird deterrents, monitoring by a qualified biologist, and other such measures. If tree removal is required, the SFPUC would comply with any applicable tree protection ordinance. July 1 2015.

The proposed construction staging area for this segment would be located within the parking lot of the Peninsula Alternative High School and would temporarily displace 120 parking spaces during the four month construction period. Construction of segment 2 would require excavation of approximately 3,800 cubic yards of soil removal and total backfill of approximately 3,300 cubic yards. No trees are expected to be removed during construction of this segment.

Construction vehicles and equipment would access the site from Courtland Drive, and no lane closures are required for construction of segment 2.

Figure 2: Alignment of Segment 2 (shown in yellow)

SEGMENT 3

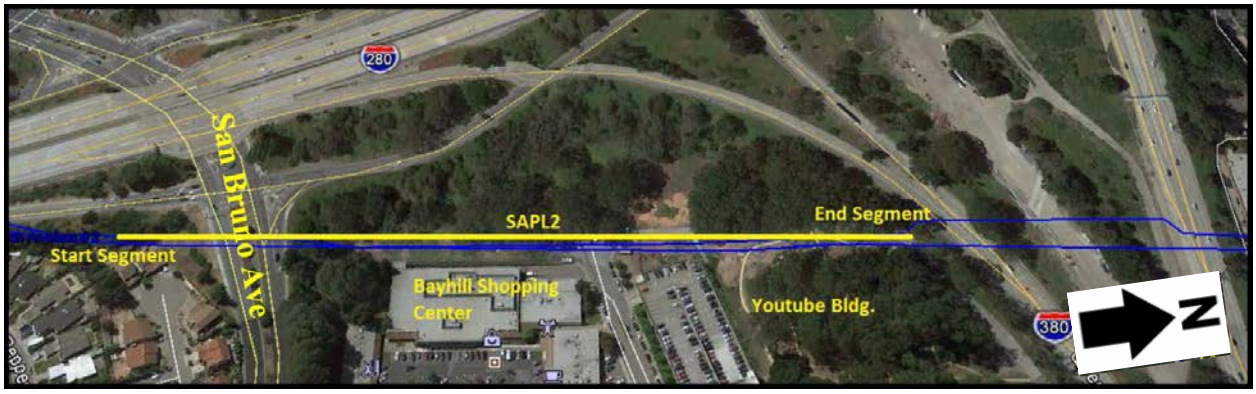
Segment 3 would include the replacement and construction of a 1,510 foot-long portion of SAPL2. Segment 3 is located south of San Bruno Avenue, runs along a grassy area just west of the Bayhill Shopping Center and a parking garage to the north of Bayhill Drive, and ends just south of Highway 380. Segment 3 is located directly north of the San Bruno North site, which was a part of the Adopted 2013 Project. Figure 3, below, shows the alignment of the segment 3 to be replaced.

Open trench construction would be used for construction of segment 3, and would generally require excavation to depths of about 10feetdeep. In addition, construction of segment 3 would cross underneath San Bruno Avenue, which would utilize trenchless jack-and-bore technique sliplining and require two excavation pits measuring 10-feet wide by 30-feet long, and 12 feet deep, at each side of San Bruno Ave. Construction of segment 3 is estimated to take approximately 6 months.

The proposed staging areas in this segment include a strip of grassland west of the Bayhill Shopping Center, a grassy area to the west of the Bayhill Shopping Center parking garage, and a woody and grassy area south of San Bruno Avenue within Caltrans ROW. Construction of segment 3 would require excavation of approximately 5,250 cubic yards of soil removal and total backfill of approximately 3,400 cubic yards. No trees are expected to be removed during construction of this segment.

Construction access routes would be from the Interstate 280 north off-ramp to San Bruno Avenue and Bayhill Drive.

Figure 3: Alignment of Segment 3 (shown in yellow)



SEGMENT 4

Segment 4 would include the replacement and construction of a 2,620 foot-long portion of SAPL2. Segment 4 is located between Highway 380 and the Golden Gate National Cemetery. This segment starts within the Cherry Avenue Villas condominium complex just north of Highway 380, crosses Boardwalk Drive (a private drive owned by the condominium complex) and runs through the Peninsula Place Homeowners condominium complex (running underneath Boardwalk Place for the largest stretch), crosses Cherry Ave and Sneath Lane, and continues for approximately 43 feet within the Golden Gate National Cemetery. Open trench construction would be used for construction of segment 4, and would generally require excavation to depths of about 10 feet deep. In addition, construction of segment 4 would cross underneath Cherry Avenue and Sneath Lane, which would utilize trenchless jack-and-bore technique sliplining and would require two excavation pits measuring 10 feet wide by 30 feet long, and 12 feet deep, at each side of these roadways.

Golden Gate National Cemetery is considered a historic resource under CEQA. The SFPUC's Standard Construction Measure # 9 – Cultural Resources[5], which apply to all SFPUC projects, would ensure that

[5] SFPUC, Standard Construction Measure # 9, Cultural Resources - Historic (Built Environment) Resources states; For projects within the City that include activities with the potential for direct or indirect effects to historic buildings or structures, initial CEQA screening will include a review, for the project footprint and up to one parcel surrounding the footprint of City and County of San Francisco's (CCSF's) online planning map, all relevant survey data, preservation address files, and other pertinent sources for previously-identified, historically significant buildings and building and structures more than 45 years old that have not been previously evaluated. For projects outside of the City, initial CEQA screening will include a records search of EP's CCSF historical resources data, California Historical Resources Information System (CHRIS), and other pertinent sources for historically significant or potentially significant buildings and structures older than 45 years. For projects that would modify an existing building or structure that has been determined by EP as being a significant historical resource (i.e., appears eligible to qualify for the California Register of Historic Resources (CRHR)), or that would introduce new aboveground facilities in the vicinity of a significant historical resource, or that would affect previously unevaluated buildings or structures more than 45 years old, the SFPUC will retain a qualified architectural historian (defined as meeting the Secretary of the Interior's Professional Qualification standards and, if a consultant, also selected in consultation with the ERO) to conduct a historical resource evaluation (HRE). SFPUC will submit the project description and the HRE to the CCSF Planning Department Preservation Planner or to the ERO's-designated qualified architectural historian to assess potential effects. Where the potential for the project to have adverse effects on historic buildings or structures is identified, the CCSF Planning Department Preservation Planner or the ERO's designee will consult with SFPUC to determine if the project can be conducted as planned or if the project design can be revised to avoid the significant impact, and will comply with applicable procedures set forth in Historic Architectural Resource Measure I. If these options are not feasible, the project will need to undergo further review with Environmental Planning (EP) and mitigation may be required. If so, the project would not qualify for a Categorical Exemption from CEQA review. Where construction will take place in proximity to a building or structure identified as a significant historical resource but would not otherwise directly affect it, the SFPUC will implement protective measures, such as but not limited to, the erection of temporary construction barriers to ensure that inadvertent impacts to such buildings or structures are avoided. July 1 2015.

any potential historic resources are protected during construction activities, including the requirement that a protection plan for the contributing features of the cemetery is prepared and approved by the Environmental Review Officer (ERO) prior to the start of construction. In compliance with the Standard Construction Measure # 9 – Cultural Resources, the project would implement the following procedures under the historic resources protection plan:

- Grass and any other landscaping that is removed or damaged during construction shall be replaced according to Secretary of the Interior's Standards (SOI) for the Treatment of Historic Properties. This means that replacement grass and landscaping needs to match the extant material, or be of replacement material approved by the Department of Veterans Affairs.[6]
- Any inadvertent damage to headstones, wrought iron fencing, and/or fence posts caused during construction shall be repaired according to Secretary of the Interior's Standards for the Treatment of Historic Properties.
- Protection and stabilization measures would be developed before project construction for any contributing elements of the Golden Gate National Cemetery that may require protection for features such as fencing, landscape, and headstones. Such measures could include physical barriers to protect contributing elements from construction activities (e.g., excavation, grading, construction equipment, or laydown areas).
- Construction workers would undergo training regarding the historical significance of the Golden Gate National Cemetery and the contributing elements that may be potentially impacted by the project. Training materials would be prepared or reviewed by a historic architect or architectural historian who meets the SOI Professional Qualification Standards and the contractor shall verify that the historical resource training was conducted.[7]

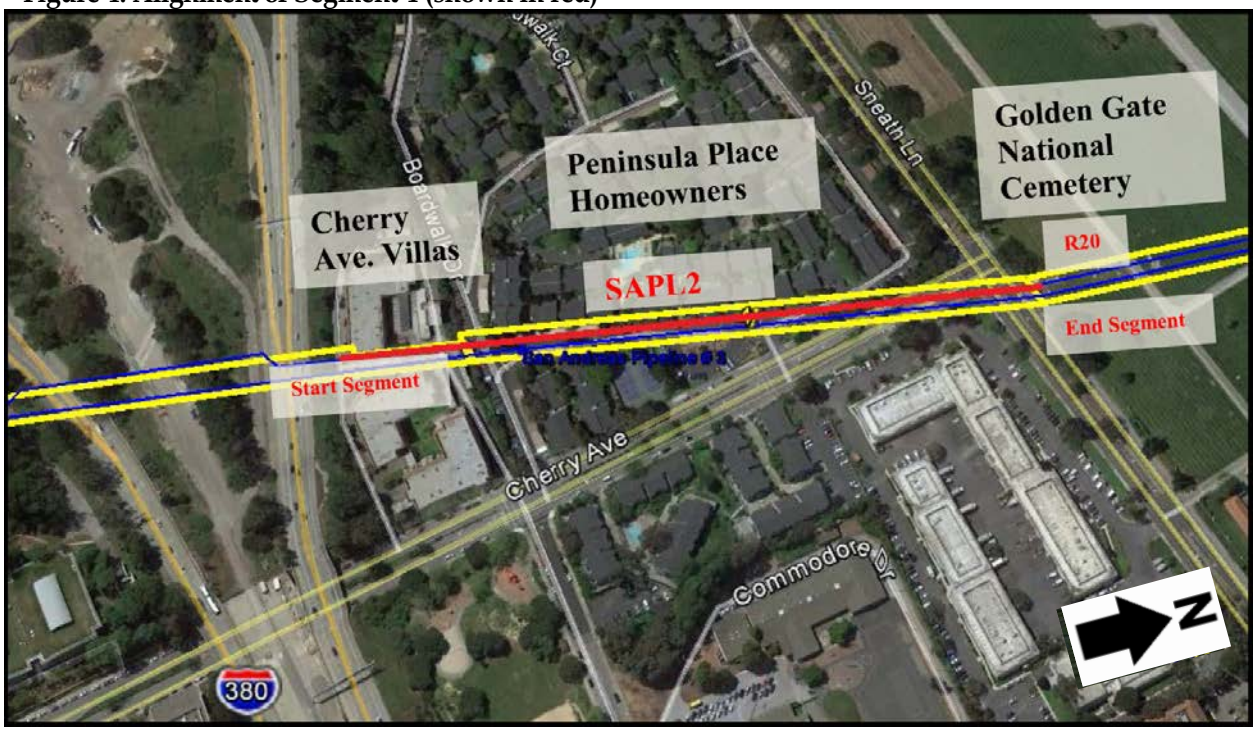
Construction of segment 4, within the Cemetery would also include supporting the existing fence in place while the existing pipe is removed and a new pipe is slipped under the fence. Additionally, all landscaping that is impacted by the project in the cemetery will be replaced in kind. Figure 4, below, shows the alignment of the existing SAPL2 segment to be replaced.

Construction activities associated with the pipeline replacement would temporarily displace 151 parking spaces within both the Cherry Avenue Villas and Peninsula Place Homeowners condominium complex, as well as parking spaces along Cherry Avenue. Construction of segment 4 would require excavation of approximately 4,000 cubic yards of soil removal and total backfill of approximately 2,500 cubic yards. No trees are expected to be removed for construction of this segment. Construction of segment 4 is estimated to take approximately 6 months.

Construction access routes would be from Cherry Avenue, the private Boardwalk Drive and Boardwalk Place, Sneath Lane, and internal roads within the Golden Gate National Cemetery. While sections of Boardwalk Place and Boardwalk Drive would be closed during construction, emergency access would be maintained.

[6] United States Department of the Interior, "Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines" Federal Register 44, No. 190. September 22, 1983; October 1995 release.
[7] 36 CFR Part 61, Appendix A.

Figure 4: Alignment of Segment 4 (shown in red)



PREVIOUS PROJECT MODIFICATIONS

The SFPUC has proposed various minor refinements of the Peninsula Pipelines Seismic Upgrade Project during the course of project construction. The San Francisco Planning Department reviewed each of these project modifications, concurred that they were minor, and determined that the project as modified would not deviate from the adopted project such that it would result in any new significant impacts beyond those identified in the FEIR or substantially increase the severity of a significant impact, and that no new mitigation measures would be required. Table 1 summarizes the minor project modification (MPMs) that the Planning Department has reviewed for the project.

Table 1: Minor Project Modifications

Minor project modification	Approval Date	Description
1	07/24/14	Expand staging area at the Baden Valve Lot in South San Francisco
2	09/08/14	Additional tree removal and trimming in South San Francisco
3	12/04/14	Additional tree removal in San Bruno

APPROVALS REQUIRED

The following project approvals by federal, State, and local agencies would be required for implementation of the Modified 2017 Project:

Federal

- U.S. Army Corps of Engineers Section 404 Clean Water Act permit;

State

- California Regional Water Quality Control Board Section 401 water quality certification;
- **Caltrans** - Encroachment permit and Memorandum of Agreement for use of the Caltrans ROW for construction staging;

Local

- **City of San Bruno** - Encroachment permits; temporary construction easements; tree removal permits for trees outside of the SFPUC (ROW) right-of-way, grading permits, sewer district approvals, and leases or other agreements as needed;
- **San Mateo County Parks Department** - Memorandum of Agreement for construction within Junipero Serra Park; and
- **SFPUC** - Final EIR and Addendum; approval of the modified project, and the mitigation and monitoring program.

CHANGES TO APPROACH TO ANALYSIS

This addendum uses an updated approach to analysis from the 2013 FEIR for transportation impacts in accordance with guidance from the State Office of Planning and Research (OPR) adopted by the San Francisco Planning Commission in March 2016. These regulatory and statutory changes are discussed below.

CEQA Section 21099

CEQA Section 21099(b)(1) requires that OPR develop revisions to the CEQA Guidelines establishing criteria for determining the significance of transportation impacts of projects that promote the "reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." CEQA Section 21099(b)(2) states that upon certification of the revised CEQA Guidelines for determining transportation impacts pursuant to Section 21099(b)(1), automobile delay, as described solely by level of service (LOS) or similar measures of vehicular capacity or traffic congestion, shall not be considered a significant impact on the environment under CEQA.

In January 2016, OPR published for public review and comment a *Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA*[8] (proposed transportation impact guidelines) recommending that transportation impacts for projects be measured using a vehicle miles traveled (VMT) metric. VMT measures the amount and distance that a project might cause people to drive, accounting for the number of passengers within a vehicle. OPR's proposed transportation impact guidelines provide substantial evidence that VMT is an appropriate standard to use in analyzing impacts to protect environmental quality and a better indicator of greenhouse gas, air quality, and energy impacts than

[8] This document is available online at: https://www.opr.ca.gov/s_sb743.php.

automobile delay. Acknowledging this, San Francisco Planning Commission Resolution 19579[9] adopted on March 3, 2016:

- Found that automobile delay, as described solely by LOS or similar measures of vehicular capacity or traffic congestion, shall no longer be considered a significant impact on the environment pursuant to CEQA, because it does not measure environmental impacts and therefore it does not protect environmental quality.
- Directed the Environmental Review Officer to remove automobile delay as a factor in determining significant impacts pursuant to CEQA for all guidelines, criteria, and list of exemptions, and to update the Transportation Impact Analysis Guidelines for Environmental Review and Categorical Exemptions from CEQA to reflect this change.
- Directed the Environmental Planning Division and Environmental Review Officer to replace automobile delay with VMT criteria which promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses; and is consistent with proposed and forthcoming changes to the CEQA Guidelines by OPR.

Planning Commission Resolution 19579 became effective immediately for all projects that have not received a CEQA determination and all projects that have previously received CEQA determinations, but require additional environmental analysis. Accordingly, this Addendum provides a VMT impact analysis of the transportation effects of the Modified 2017 Project in the Transportation section below. Therefore, the Addendum does not provide a discussion of automobile delay. Automobile delay may be considered by decision-makers, independent of the environmental review process, as part of their decision to approve, modify, or disapprove the proposed project.

ANALYSIS OF POTENTIAL ENVIRONMENTAL EFFECTS

Section 31.19(c)(1) of the San Francisco Administrative Code states that a modified project must be reevaluated and that, "If, on the basis of such reevaluation, the Environmental Review Officer determines, based on the requirements of CEQA, that no additional environmental review is necessary, this determination and the reasons therefore shall be noted in writing in the case record, and no further evaluation shall be required by this Chapter."

California Environmental Quality Act (CEQA) Guidelines Section 15164 provides for the use of an addendum to document the basis for a lead agency's decision not to require a subsequent FEIR for a project that is already adequately covered in a previously certified FEIR. The lead agency's decision to use an addendum must be supported by substantial evidence that the conditions that would trigger the preparation of a subsequent FEIR, as provided in CEQA Guidelines Section 15162, are not present.

This section evaluates the potential environmental effects of the proposed modifications, herein referred to as the "modified project", relative to the impacts of the "adopted project" as disclosed in the FEIR. The FEIR for the adopted project found that implementation of the project would result in significant unavoidable impacts during construction from construction noise and vibration impacts. Since certification, other than as explained and discussed in this addendum, no changes have occurred in the project or in the circumstances under which the adopted project would be undertaken, and no new information has emerged that would materially change any of the analyses or conclusions of the FEIR. For the reasons discussed below, the modified project would not result in any substantial changes that would require major revisions to the FEIR, nor would new significant environmental effects or a substantial increase in the severity of previously identified significant effects occur.

[9] San Francisco Planning Department, *Planning Commission Resolution No. 19579, Transportation Sustainability Program – Align Component, Case No. 2012.0726E*, March 3, 2016.

Plans and Policies

The FEIR discusses plans and policies relevant to the adopted project and provides an evaluation of the project's consistency with various San Francisco and applicable local plans and policies. Plans and policies relevant to the modified project are similar to those for the adopted project, and the consistency with those applicable plans and policies is the same to that described in FEIR. Particularly, the applicable City of San Bruno General Plan policies for the Adopted 2013 project are similar for the Modified 2017 Project. The analysis concludes that the adopted project would not conflict with these plans and policies.

As the modified project is the replacement of additional segments that are located in the same planning area (in this case, the City of San Bruno), and the proposed modifications would not change the characteristics of the adopted project or alter the project's overall consistency with applicable land use plans and policies, the Modified 2017 Project would not result in any inconsistencies with applicable plans and policies that were not identified in the FEIR.

Land Use and Land Use Planning

The FEIR found that the adopted project has the potential to result in significant land use impacts that could be reduced to a less than significant with mitigation resulting from construction of the Millbrae site and less-than-significant impacts or no impacts resulting from construction of the Colma, San Bruno North and South San Francisco sites, and the Common Staging area. The land use impacts would not change under the Modified 2017 Project. Existing land uses include recreational, residential, and commercial uses in the vicinity of the modified project and are similar to those described for the adopted project. The Modified 2017 Project would be constructed within the same SAPL2 ROW as the Adopted 2013 project, which is adjacent to residential, commercial, and park lands.

Similar to construction of the San Bruno South site under the Adopted 2013 Project, construction of segment 2 under the Modified 2017 Project would have a proposed staging area at the Peninsula Alternative High School and would have similar less-than-significant land use impacts from temporary direct or indirect impacts on existing land uses or land use activities. Within segment 4, the ROW travels through the Cherry Avenue Villas and Peninsula Place Homeowners condominium complexes. Construction would temporarily displace parking currently available within the SFPUC ROW. Access would be maintained throughout construction for each complex by using other internal roadways or maintaining pedestrian and emergency vehicle access to condominiums when internal road closures do occur, and temporary parking displacement would result in a less-than-significant impact, similar to the FEIR. Additionally, no other buildings or other roadway or parking facilities for construction of segments 1-4 would be displaced by construction activities, and access to other adjacent land uses would not be disrupted.

Similar to the Adopted 2013 Project, the Modified 2017 Project would result in indirect impacts from construction activities (such as noise and increased traffic) and would also result in potentially significant impacts from temporary construction activities, which could change the character of the vicinity or disrupt adjacent land uses or land use activities. With implementation of **Mitigation Measure M-LU-1a: Notice of Construction Activities,** which requires advanced notice for affected land uses of construction activities associated with the Modified 2017 Project**,** impacts from the modified project would be less-than-significant. Additionally, construction in segment 3 would result in "significant and unavoidable with mitigation" noise impacts and, **M-LU-1b Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts** would be required. Both **Mitigation Measures M-LU-1a: Notice of Construction Activities** and **M-LU-1b Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts** have been revised to provide notice to affected land uses impacted under the modified project. The modified mitigation measure, would provide equal or

better mitigation for construction related land use impacts than that provided in the FEIR. The revised mitigation language is presented below and in the attached MMRP (Attachment C).

Mitigation Measure M-LU-1a: Notice of Construction Activities would address these indirect impacts by providing advance notice to affected land uses. Mitigation measures that address direct impacts of other resource topics but that relate to indirect land use impacts are described in Sections 5.3, Aesthetics; 5.6, Transportation and Circulation; 5.7, Noise; and 5.8, Air Quality.

M-LU-1a: Notice of Construction Activities

This mitigation measure applies to all the project sites. The SFPUC or its contractor will coordinate with the City of San Bruno to agree on a public notification process and notification boundaries in San Bruno. The following notification procedures shall be implemented prior to construction:

1. The SFPUC shall provide advance notification to businesses, property owners, facility managers, and residents of adjacent areas potentially affected by the Pennisula Pipelines Seismic Upgrade (PPSU) project about the nature, extent, and duration of construction activities, at least 1 week prior to construction. The SFPUC shall also provide interim updates to these parties during periods of active construction to inform them of the status of the construction activities and schedule. Notices shall be sent to sensitive receptors and affected adjacent properties identified below:

    - **Colma Site –** Kohl's Department Store; Home Sweet Home Assisted Living Facility, if occupied; Creekside Villas, residential units in front of Kohl's Department Store to the East; and Cypress Lawn Memorial Cemetery;
    - **South San Francisco Site –** Residences adjacent to the construction zone along Arroyo Drive; Clubview Apartments; and California Golf Club of San Francisco;
    - **San Bruno Segments 1 through 4 –** Residences adjacent to the construction zone along Crystal Springs Road, Courtland Road, the 280 North off-ramp to San Bruno Avenue, San Bruno Avenue and Cedarwood Court, and within the Peninsula Place Homeowners and Cherry Avenue Villas condominium complexes.
    - **San Bruno North Site –** Residences adjacent to the construction zone along Cedarwood Court and Pepper Drive;
    - **San Bruno South Site –** Park Plaza Apartments and Shelter Creek Condominiums; Residences adjacent to the construction zone along Courtland Drive; Peninsula High School and other uses at the former Crestmoor High School campus; Peninsula High School Athletic Fields; and San Bruno Chinese Church; and
    - **Millbrae Site –** Green Hills Country Club; Meadows Elementary School; Residences adjacent to the construction zone along Ridgewood Drive, Hacienda Way, Helen Drive, Banbury Lane; Millwood Drive and Barcelona Drive; and Glen Oaks and Millbrae Montessori Schools;

2. The SFPUC shall coordinate with managers of facilities including, but not limited to, Kohl's Department Store, San Bruno Chinese Church, Peninsula High School, and the Green Hills Country Club to minimize disruptions to facility operations and activities, to the extent feasible.

3. Should weekend work be necessary, the SFPUC shall notify adjacent properties, including reasonable advance notification to the businesses, owners, and residents of adjacent areas potentially affected by the proposed project, and interim updates shall be provided.

Nighttime construction activities, which may be required at the San Bruno North and Segments 1 through 4, would use lighting. They could result in substantial light and glare impacts (refer to Section 5.3, FEIR Aesthetics), and temporarily result in a significant indirect land use impact. The noticing requirements contained in **Mitigation Measure M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts** (described below), would alert residents to upcoming nighttime construction activities, and provide a toll-free number for reporting construction-related complaints, reducing impacts to a less-than-significant level.

As detailed in FEIR Section 5.7, Noise, for certain homes located in very close proximity to the construction zones, or in certain locations where building heights or elevations make noise barriers infeasible or ineffective, noise and vibration impacts would remain significant and unavoidable, even with implementation of mitigation measures summarized under Noise. In these cases, the speech or sleep interference thresholds could be exceeded for greater than 2 weeks. This aggravating new source of noise could be compounded by a sense of loss of privacy on decks or in backyards associated with these homes, especially if residents are at home during daytime construction hours. This would be a potentially significant land use impact. These affected homes are listed below in **Mitigation Measure M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts**, which would reduce temporary land use conflicts associated with the project by requiring advance notification to adjacent residences of construction activities.

M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts

This mitigation measure applies to the South San Francisco, Segments 1 through 4, San Bruno North, San Bruno South, and Millbrae sites only. The SFPUC or its contractor shall provide 14-day advance notice by mail or hand delivery to all residents, tenants, and/or property owners in those homes listed below as being potentially subject to significant and unavoidable noise impacts, even after administrative and source controls are implemented.

- **South San Francisco Site –** Arroyo Drive (address numbers 105, 107 and 108);

- **San Bruno Segments 1 through 4 –** Residences adjacent to the construction zone along Boardwalk Place and Boardwalk Drive within the Peninsula Place Homeowners condominium complex and adjacent to the unnamed roadway within the Cherry Avenue Villas;

- **San Bruno North Site –** Cedarwood Court (address numbers 1790, 1791, 1800, 1801, 1820, 1821, 1840, and 1841); and Pepper Drive (address numbers 763, 769, 773, 779, 783, 789, 793, and 795);

- **San Bruno South Site –** Courtland Drive (address numbers 300, 306, 310, 316, 320, 326, 330, 336, 340, 350, 360, and 370); Shelter Creek Condominiums Buildings 4A, 4B, and 4D; and Park Plaza Apartments; and

- **Millbrae Site –** Hacienda Way (address numbers 859, 869, 873, 877, 881, 885, 889, 913, and 917); Ridgewood Drive (address numbers 1078, 1086, 1094, 1100, 1101, 1106, 1110, 1116, 1120, 1126, and 1130); and Banbury Lane (address number 971).

The notice will state the construction location, anticipated activities, and schedule, including whether nighttime construction is proposed. The notice will provide information about anticipated construction-related noise impacts and provide suggestions for avoiding or reducing exposure to such impacts (e.g., planning alternative schedules, closing windows facing the planned construction sites). The SFPUC shall identify and provide a public liaison person before and during construction to respond to the concerns of neighboring property owners. Procedures for contacting the public liaison officer via a toll-free telephone number, email, or in person will be included in the notices. Prior to construction, the SFPUC communications manager, resident engineer, and construction manager shall develop and review procedures for receiving and responding to questions and complaints.

The modified mitigation measures would not substantially alter the analysis or impacts of the FEIR; therefore, this change would not result substantial new information. The proposed project modifications would not result in any new significant effects on land use or land use planning beyond those identified in the FEIR or an increase in the severity of a significant impact, and no new mitigation measures would be required.

Aesthetics

The existing visual resource conditions, visual character, and scenic resources for the modified project are similar to those described for the adopted project. The modified project is located within the City of San Bruno, with similar structures, neighborhoods, roadways, and vegetation as the San Bruno North and South sites analyzed in the FEIR.

Construction associated with the modified project would entail similar construction activities and tree loss (40 trees within segment 1). In-regards to the tree loss required for construction of segment 1 in accordance with the SFPUC's Right-of Way Integrated Vegetation Management Policy, the tree loss would occur within the SFPUC ROW for segment 1. The tree removal would consist of the removal of trees ranging in height from 15 to 45 feet. The tree species to be removed would consistent of a range of species including silver wattle, coastal live oak, bay laurel, toyon, and one Monterey pine. The primary public vantage point where the tree loss would be visible is Crystal Springs Road; however, the tree loss would be largely obscured by other trees which would not be removed. Therefore, a significant impact on the existing visual character would not result from the tree removal activities and this impact would be less than significant.

Similar to the adopted project, the modified project could require nighttime lighting (staging areas, areas where the pipeline would be sliplined, and at the Crystal Springs Road crossing.) **M-AE-2 Site-Specific Construction Lighting Plan** would be required to be implemented for construction of segments 1-4 of the

Modified 2017 Project. Implementation of **M-AE-2 Site-Specific Construction Lighting Plan** would reduce potential light and glare impacts to a less-than-significant level.

Implementation of the modified project would thus not result in any new significant effects on visual resources beyond those identified in the FEIR or a substantial increase in the severity of a significant impact, and no new mitigation measures would be required.

Cultural and Paleontological Resources

The FEIR found that the adopted project would result in potentially significant impacts to archeological resources, paleontological resources, and human remains. The FEIR also identified that the adopted Project would result in less-than-significant effects to historic resources.

Historic Resources

The FEIR determined that the adopted project would result in less-than-significant impacts on historic resources. The only identified historic resource under the adopted project was the Green Hills Country Club.

A historic resources evaluation was prepared by JRP for the modified project, and determined that the only historic resource that has the potential to be affected by the modified project is the Golden Gate National Cemetery in segment 4.[10] The Cemetery is a historic district listed in the National Register of Historic Resources (NRHP) and California Register of Historic Resources (CRHR). A Planning Department Preservation Team Review (PTR) Form[11] agreed with the findings of the HRE.

The Planning Department Preservation Team Review (PTR) Form[12] evaluated the historic impacts associated with constructing the proposed project. The PRT form determined that implementation of SFPUC's Standard Construction Measures[13], which apply to all SFPUC projects and are discussed as part of the project description above, would ensure that historic resources are protected during construction activities. As described in the project description above, the modified project would support the existing fence in place while the existing pipe is removed and a new pipe is slipped under the fence. In addition, construction would temporarily affect the Cemetery lawn. As discussed in the project description, the lawn and all other landscaping disturbed by the proposed project will be replaced in kind. The replacement of the SAPL2 pipeline within the cemetery would entail the use of construction equipment and vehicles, which could potentially damage headstones (located immediately adjacent to the SFPUC easement, but not within the work area), the lawn, wrought iron fencing, and/or fence posts, which are character-defining features of the cemetery. These construction activities could result in the temporary physical alteration of a portion of the historic resource and could diminish the historic integrity of the cemetery. A historic resources protection plan will identify protection and stabilization measures that will ensure that construction activities do not damage character-defining features of the cemetery. This plan is required through implementation of the SFPUC Standard Construction Measures, which would avoid significant impacts to the Golden Gate National Cemetery by not diminishing the historic resource's integrity, and the modified project would conform to the Secretary of the Interior's Standards for the Treatment of Historic Properties.

As these measures fall within the scope of the SFPUC Standard Construction Measures, and as the SFPUC has committed to including these measures into the modified project's contract specifications, the

[10] JRP; Draft Historic Resources Evaluation San Andreas Pipeline No. 2 Lockbar Replacement Project San Mateo County, California; April 2017.
[11] Allison Vanderslice, Preservation Team Review Form, Peninsula Pipelines Seismic Upgrade Project, April 12, 2017
[12] Allison Vanderslice, Preservation Team Review Form, Peninsula Pipelines Seismic Upgrade Project, April 12, 2017
[13] SFPUC, Standard Construction Measures, July 1 2015. See Footnote 5.

modified project would not result in any new significant effects on historic resources beyond those identified in the FEIR, no new mitigation measures would be required, and this impact would be less than significant.

Archaeological Resources

The FEIR found that the Adopted 2013 Project has the potential to result in significant impacts on archaeological resources or human remains due to disturbance of known archaeological resources and anticipated human remains that may be present at the site. **Mitigation Measure M-CP-2a (Distribute "ALERT" Sheet)**, as described in the MMRP (Attachment C) would reduce potential impacts on archaeological resources to less-than-significant levels. The Modified 2017 Project would not increase the severity of the cultural resource impact, result in new or substantially different effects, or require new or modified mitigation measures for archaeological resources.

An archaeological records search that included the Area of Potential Effect (C-APE) and a 1/4-mile radius was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) on May 16, 2016 (NWIC File No. 1518) for the four segments of the Modified 2017 Project. NWIC records show seven previously recorded archaeological shell midden sites within the search radius, although none of the midden sites appear to intersect the ROW of the Modified 2017 Project segments. An archaeologist conducted a complete intensive archaeological survey of the C-APE for each of the four segments of the modified project in May 2016.[14] The survey and records search indicated segment 4 has a high archeological sensitivity, particularly in proximity to a former creek channel.

Therefore, the modified project could cause a substantial adverse change in the significance of a historical or unique archaeological resource, similar to the adopted project. **Mitigation Measures M-CP-2a: Distribute "ALERT" Sheet; M-CP-2b: Conduct Archeological Monitoring in Accordance with Approved Archaeological Monitoring Plan; and M-CP-2c: Prepare and Comply with an Archaeological Evaluation Plan and Evaluation Report**, would reduce potential archeological impacts to less than significant with mitigation. The modified project would not result in any new significant effects on archaeological resources beyond those identified in the FEIR, no new mitigation measures would be required, and this impact would be less than significant.

Paleontological Resources

Impact CP-3 of the FEIR addressed the effect of the adopted project on the significance of paleontological resources, and was found to be less than significant with mitigation, as a number of construction sites were considered to be in areas of paleontological sensitivity and mitigation was required. This conclusion would be the same for portions of each segment of the modified project. Segments 1 and 2 are entirely within areas underlain with the Merced Formation geological unit, which is considered high sensitivity. A majority of segments 3 and 4 are underlain with artificial fill, which is considered low sensitivity, but some portions could include the Merced Formation within the vertical paleontological C-APE.[15]

Therefore, the modified project could result in a substantial adverse effect by directly destroying a unique paleontological resource or site similar to the adopted project. **Mitigation Measure M-CP-3: Prepare and Implement a Paleontological Resources Monitoring Program**, would reduce potential archeological impacts to less than significant with mitigation. The modified project would not result in any new significant effects on paleontological resources beyond those identified in the FEIR, no new mitigation measures would be required, and this impact would be less than significant.

[14] Sally Salzman Morgan, memorandum to Deborah Craven-Green; Archeological Survey San Andreas Pipeline #2 Replacement, San Bruno, CA; October 25, 2016.
[15] Ibid.

Human Remains

Similar to the adopted project, unknown burials could be found during construction. Impact CP-4 addressed this issue and required mitigation. Additionally, segment 4 would involve construction within the Golden Gate National Cemetery; therefore, construction has the potential to encounter human remains. However, within the Cemetery, the locations of human remains are clearly indicated and construction within the Cemetery would be located within the ROW. Therefore, construction of the modified project would similarly have the potential to encounter human remains, and result in a substantial adverse effect related to the disturbance of human remains, the same as the adopted project. **Mitigation Measure M-CP-4: Treatment of Inadvertently Discovered Human Remains**, would reduce potential impacts to less than significant with mitigation.

Transportation and Circulation

Impacts on Roadways

As discussed on page 14, CEQA Section 21099(b)(1) requires that the State Office of Planning and Research (OPR) develop revisions to the CEQA Guidelines establishing criteria for determining the significance of transportation impacts of projects that "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." CEQA Section 21099(b)(2) states that upon certification of the revised guidelines for determining transportation impacts pursuant to Section 21099(b)(1), automobile delay, as described solely by level of service or similar measures of vehicular capacity or traffic congestion shall not be considered a significant impact on the environment under CEQA. In January 2016, OPR published for public review and comment a Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA recommending that transportation impacts for projects be measured using a vehicle miles traveled (VMT) metric. On March 3, 2016, in anticipation of the future certification of the revised CEQA Guidelines, the San Francisco Planning Commission adopted OPR's recommendation to use the VMT metric instead of automobile delay to evaluate the transportation impacts of projects (Resolution 19579). (Note: the VMT metric does not apply to the analysis of impacts on non-automobile modes of travel such as riding transit, walking and bicycling.) Accordingly, this Addendum does not contain a discussion of automobile delay impacts.

OPR recommends that if a project or land use meets any one of the three screening criteria outlined by OPR, including the below screening criterion applicable to the project, then the VMT impacts are presumed to be less than significant and a detailed VMT analysis is not required. The screening criterion applicable to the modified project and how it is applied is described below:

- **Small Projects.** OPR recommends that lead agencies may generally assume that a project would not have significant VMT impacts if the project would either: (1) generate fewer vehicle trips than the level required for studying consistency with the applicable congestion management program or (2) where the applicable congestion management program does not provide such a level, fewer than 100 vehicle trips per day.

The San Mateo County Congestion Management Program (CMP) threshold is 100 net peak period trips a day.[16] In addition, for the purpose of determining deficiencies, the CMP excludes construction, rehabilitation, or maintenance of facilities that impact the system. As the proposed project would not generate this number of trips (operation of the project would generate zero net trips), the proposed project meets the Small Projects screening criterion listed above and does not require VMT analysis.

[16] City/County Association of Governments of San Mateo County, Final San Mateo County Congestion Management Program 2011, November 2011.

Therefore, VMT impacts are presumed to be less than significant and a detailed VMT analysis is not required. In addition, as net operational trips would be zero, potential impacts to the CMP are considered to be less than significant.

Impacts to vehicles, bicyclists, and pedestrians

As with the adopted project, the modified project would increase traffic safety hazards for vehicles, bicyclists, and pedestrians during construction, and this is considered a potentially significant impact for the modified project. However, as with the adopted project, impacts related to increased safety hazards during construction activities would be reduced to a less than significant level with implementation of **Mitigation Measure M-TR-3: Traffic Control Plan**. Additionally, Mitigation Measure **M-TR-1: Maintain Traffic Flow on San Bruno Avenue West During the A.M. Peak Hour ,** would not be required to implemented as part of the modified project because the modified project would require the closure of either the I-280 off-ramp or San Bruno Avenue.

A detailed discussion of site specific impacts of construction of segments 1-4 to public transit, bicycle facilities, emergency access, and parking is provided below. In summary, impacts to traffic safety would be less than significant with mitigation. Additionally, the proposed project modifications would not result in any new significant effects on transportation and circulation beyond those identified in the FEIR or an increase in the severity of a significant impact, and no new mitigation measures would be required.

Public Transit

In segments 1 and 3, no buses run through the construction areas. For segment 2, SamTrans Route 141 runs a limited service on Courtland Drive adjacent to the project site and buses run three times every school day to Peninsula High School. For these segments, the limited increase in construction vehicles on these streets would not affect SamTrans service.

For segment 4, SamTrans Route 43 runs along Cherry Avenue and Sneath Lane between Cherry Avenue and El Camino Real, adjacent to the project site. SamTrans Route 49 runs a limited service once every school day in the morning on Cherry Avenue adjacent to the project site and Sneath Lane between Cherry Avenue and Skyline Boulevard. SamTrans buses may be may be slightly delayed as they travel along Sneath Lane westbound for approximately six months, as construction would necessitate the closure of the left turn lane to Cherry Avenue. However, this is not anticipated to significantly affect transit service, which would continue.

Therefore, construction-related impacts on public transit would be less than significant.

Bicycle Facilities

In segment 1, bicycles share the road with vehicles along Crystal Springs Road. For approximately ten weeks, construction of the pipeline crossing of Crystal Springs Road would require alternate one-way traffic. While this could result in some delays, bicycle access would be maintained.

For segment 2, bicycle travel would not be directly affected, as construction would not occur on a roadway. For segment 3, a private road (owned and operated by Gap Inc.) behind the YouTube building would be partially closed by construction. As this short stretch of road is private and leads to a dead-end, bicycle travel would not be significantly affected.

In segment 4, there are bike lanes on both sides of Sneath Lane. Construction on Sneath Lane would necessitate the closure of a short section of the bike lane on the north side of the street (westbound lanes). During the temporary bicycle lane closure (approximately six months), bicycle travel would share the lane with vehicles, and access would be maintained.

For all segments, the limited amount of construction traffic (less than 80 trips per day, or approximately 10 per hour for each segment, including worker vehicle trips) would not result in significant project-related bicycle impacts.

Therefore, construction related impacts on public transit would be less than significant.

Pedestrian Travel

In segment 1, there is a sidewalk/trail on the southern side of Crystal Springs Road which could be temporarily affected by construction. If portions of the sidewalk/trail need to be temporarily closed for construction access, alternative pedestrian access parallel to the route would be provided by SFPUC as part of the modified project. In segment 2, the sidewalk on Courtland Drive adjacent to the project site would remain open, along with the street. In segment 3, no public pedestrian access would be affected by construction. In segment 4, a segment of partial sidewalk on the north side of Sneath Lane would be closed during construction. As with segment 1, alternative access parallel to the route would be provided.

Therefore, impacts on pedestrian travel from the modified project would be similar to the adopted project, and this impact would be less than significant.

Parking

For segment 1, parking would be provided within the proposed staging area (the Junipero Serra Park parking lot). For segment 2, parking would be provided within the proposed staging area at Peninsula High School. For segments 3 and 4, parking would be provided in the proposed staging areas, but workers could temporarily park on public roadways within adjacent neighborhoods. In total, construction staging would temporarily displace 325 parking spaces. Additionally, on-street parking spots could be used by temporarily used by construction workers. This parking displacement for construction staging and construction workers is not anticipated to would lead to a physical environmental impact or a parking deficit that could create hazardous conditions, as it is assumed parking regulations would be obeyed.

Emergency access

For segments 1-3, project construction activities would not require full closures of any streets, and emergency vehicles would have continuous access to all public roadways. Segment 4 would require closure of sections of Boardwalk Place and Boardwalk Drive during construction. For emergency access to be maintained in segment 4, SFPUC would keep a portion open for emergency vehicles (and also for vehicles like garbage and mail trucks). Therefore, impacts on emergency vehicle access would be less than significant.

Operations impacts on traffic and circulation

As the net increase in vehicle trips would be zero after construction is complete, no impacts are expected to result from operation of the project.

Noise and Vibration

The FEIR presents information on the existing noise environment, vibration, and the regulatory framework, which also applies to the modified project. The nearest sensitive receptors to the modified project would be approximately 10 feet away in segment 3, which are the residences located within the Cherry Avenue Villas and Peninsula Place Homeowners condominium complexes. This distance from sensitive receptors is similar to the San Bruno South site under the adopted project, which was located approximately 10 feet away from the Shelter Creek Condominiums and Park Plaza Apartments.

The modified project (which would use similar types of equipment as the adopted project) could also exceed the 70-dBA L_{eq} speech interference threshold for daytime construction activities as described in Impact NO-1, which was similar to the original project. **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** requires noise control measures and noise barrier walls as part of a Noise Control Plan, which would reduce construction noise. However, similar to the FEIR analysis, the construction-related noise levels could still exceed the 70-dBA L_{eq} speech interference threshold, resulting in an impact which would be significant and unavoidable with mitigation. However,

based on the above information, implementation of the modified project would not result in a substantial increase in the severity of a significant impact, as the equipment, schedule of work, and distance to sensitive receptors would be the same as for the adopted project. No new significant effects would occur related to daytime construction activities beyond those identified in the FEIR, and no new mitigation measures would be required.

Nighttime noise from construction and pipeline dewatering activities are addressed in Impact NO-2 of the FEIR, which was found to be significant and unavoidable with mitigation for the San Bruno North site of the adopted project. Similar to the adopted project, the modified project would require nighttime construction activities. This could include dewatering and sliplining activities in all segments and the crossing of Crystal Springs Road in segment 1. Implementation of the modified project would not result in a substantial increase in the severity of a significant impact, as the equipment, schedule of work, and distance to sensitive receptors would be the same as for the adopted project. Impact NO-3 addressed the generation of noise levels in excess of standards adopted in the local general plan or noise ordinance, and was found to be significant and unavoidable with mitigation for the San Bruno North site due to nighttime activities. Additionally, Mitigation Measures **M-NO-3a: Limit Hours of Construction at Colma Site** and **M-NO-3b: Limit Hours of Construction at Millbrae Site** would not apply to the modified project because these measures applied specifically to the Colma and Millbrae sites of the adopted project, and the modified project is located entirely within the City of San Bruno. As in Impact NO-2, this would be the same for the modified project.

Similar to the adopted project, the modified project could also result in the exposure of persons to, or generation of, noise levels in excess of standards in the local general plan or noise ordinance. Noise would exceed City of San Bruno nighttime thresholds. **Mitigation Measure M-NO-1: Prepare and Implement Administrative and Source Controls** would apply to the modified project. Similar to Impact NO-3 for the adopted project, this impact would remain significant and unavoidable with mitigation.

The modified project could generate excessive groundborne vibration, the same as the adopted project. **Mitigation Measure M-NO-4: Develop and Implement Vibration Planning, Monitoring, and Reporting**, which requires a vibration control plan, would reduce groundborne vibration impacts to less than significant with mitigation.

Based on the above information, implementation of the modified project would not result in a substantial increase in the severity of a significant impact, as the equipment, schedule of work, and distance to sensitive receptors would be the same as for the adopted project. No new significant effects would occur related to noise or groundborne vibration beyond those identified in the FEIR, and no new mitigation measures would be required.

Air Quality

The FEIR determined that the adopted project would have less than significant impacts from criteria air pollutants, exposure of sensitive receptors to substantial pollutants and odors, and potentially significant impacts from fugitive dust during construction. The modified project would result in similar impacts. Existing air quality conditions for the modified project are similar to those described for the adopted project in that the modified project is located within the basin controlled by Bay Area Air Quality Management District (BAAQMD) and the same sensitive receptors are present (i.e. residences and schools are located within the vicinity of the adopted and modified project) As the same numbers and type of construction equipment would be used, and the same maximum number of crews (four) could be required for concurrent construction activities as the adopted project,[17] criteria pollutant levels generated by the modified project would be similar to the adopted project. Additionally, similar to the adopted project, fugitive dust emissions during construction would result in a potentially significant impact. Implementation of **Mitigation Measure M-AQ-1:BAAQMD Basic Construction Measures**, would reduce

[17] Email communication from Scott Macpherson, April 3, 2017

the impact of the modified project to a less-than-significant level. As with the adopted project, the modified project would not create objectionable odors and this impact would be less than significant.

In regards to the exposure of sensitive receptors to substantial pollutants from construction activities that produce toxic air contaminant (TACs), the FEIR identified that the maximum pollutant exposure to TACs would result from construction of the San Bruno south site and was determined to result in an estimated cancer risk of 6.9 per million.[18] Construction of segment 2 is also proposed to include construction a replacement of SAPL2 within the vicinity of the sensitive receptors that were exposed to pollutants during the construction of the San Bruno south site under the adopted project. The maximum cancer risk for both the San Bruno south site and construction of segment 2 would not exceed the significance threshold of a cancer risk of 10 per one million persons exposed. This is because the San Bruno south site required replacement of 2,200 feet of pipeline resulting in a cancer risk of 6.9. Using the same ratio of cancer risk per length of pipeline replacement (because the modified project would use the same types of construction equipment and because and sensitive receptors would be located roughly the same distance from construction activities) would result in a total cancer risk (adopted project and the modified project) of about 9.4 per million per persons exposed for the same receptors. This is less than the 10 per one million persons exposed threshold. Thus, the modified project would also result in a less than significant impact from the exposure of sensitive receptors to substantial pollutants. This analysis is also a conservative analysis because the FEIR assumed that the maximally exposed individual would be exposed to the annual average concentration throughout the construction period when during the actual construction process equipment location would vary within the project area and TAC concentrations (and therefore exposure) around the sites would vary. Additionally, the construction of segments 1, 3, and 4 would similarly result in less than significant impacts from exposure to TAC's because the FEIR identified lower cancer risk and chronic noncancer health risks at the adopted project sites and the modified project would not overlap with the construction sites in the adopted project. Therefore, the proposed project modifications would not result in any new significant effects on air quality beyond those identified in the FEIR or an increase in the severity of a significant impact, and no new mitigation measures would be required.

Recreation

The FEIR found that the adopted project would result in less than significant impacts to recreational uses, including from the temporary degradation of recreational uses during construction. The modified project includes tree removal and pipeline replacement at the Junipero Serra County Park (Park), including the temporary closure or realignment of sidewalks and closure of a parking lot. The modified project assumes the parking lot adjacent to the De Anza Picnic Area with 54 parking spaces would be used for construction staging.[19] Additionally, an area of approximately 0.13 acres within the Park next to Crystal Springs Road could be used for construction access, pending approvals from San Mateo County Parks Department. Visitors to the Park would need to use the remaining parking lots near the Willow Picnic Shelter, Buckeye Picnic Area, and Bay View Picnic Shelter. The sidewalk adjacent to Crystal Springs Road would be closed in certain areas to allow for truck access, although pedestrian access would be maintained by construction of temporary paths. No official trails would be affected.

During construction (approximately 6 months), use of the Park could decrease due to the loss of one parking lot, although the Park itself would remain open. Additionally, construction staging within the Park would displace 1.14 acres of a total 108 acres within the Park during the construction period.[20] Following construction of the modified project, all construction staging areas would be revegetated, as

[18] Peninsula Pipelines Air Quality Technical Report, URS, June 2012

[19] San Mateo County Parks Department, Junipero Serra Park Trails webpage. Available at http://parks.smcgov.org/junipero-serra-park-trails, accessed March 6, 2017.

[20] San Mateo County Parks: https://parks.smcgov.org/sites/parks.smcgov.org/files/JuniperoSerraBrochure-Nov2016.pdf

described further below. Therefore, recreational facilities and uses would not significantly be impaired during construction activities. In addition, there are several other open spaces/parks in the area, including Crestmore Canyon, Commodore Park, and Sweeney Ridge which can be used for dog walking and other passive recreation activities. As with the adopted project, the temporary loss (i.e. approximately six months) of open space and recreational facilities would be result in a less than significant impact for the modified project. Additionally, **M-RE-1: Coordination with Green Hills Country Club Facility Managers,** would not apply to the modified project because the modified project would not include construction within the Green Hills Country Club. Also similar to the adopted project, future project operations under the modified project would not have an effect on recreational resources, and there would be no impact. Therefore, the proposed project modifications would not result in any new significant effects on recreation beyond those identified in the FEIR or an increase in the severity of a significant impact, and no new mitigation measures would be required.

Utilities and Service Systems

The FEIR found that the adopted project would result in potentially significant impacts to utility and service systems, including from the potential disruption of utility operations, relocation of utilities, or accidental damage to existing utilities, and compliance with regulations pertaining to solid waste. Additionally, the FEIR identified that the adopted project would result in less than significant impacts related water supply availability, and land fill capacity. As the type and extent of construction for the modified project is the same as for the adopted project, utility and service systems impacts of the modified project also would be similar as the adopted project. This includes potential disruption of utility operations or accidental damage to existing utilities from cranes or excavation activities, potential adverse effects related to the relocation of utilities, and adverse effects relating to solid waste during construction. As impacts of the modified project would be similar to the adopted project, the modified project would be required to implement **Mitigation Measures M-UT-1a: Confirm Utility Line Information; M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities; M-UT-1c: Notify Local Fire Departments; M-UT-1d: Emergency Response Plan; M-UT-1e: Ensure Prompt Reconnection of Utilities; M-UT-1f: Coordinate Final Construction Plans with Affected Utilities; and M-UT-5: Prepare and Implement a Construction Solid Waste Recycling Plan**. As with the adopted project, project operations would result in no impact. Impacts related to water supply availability, landfill capacity would similarly be less than significant. Therefore, the proposed project modifications would not result in any new significant effects on utilities and service systems beyond those identified in the FEIR or an increase in the severity of a significant impact, and no new mitigation measures would be required.

Biological Resources

The FEIR found that the adopted project would result in potentially significant impacts to special-status species wildlife species; coast live oak woodlands, central coast riparian scrub habitat, and other sensitive natural communities; jurisdictional waters; and local policies including ordinances protecting trees. A biological resources survey was prepared for the modified project to identify potential habitat and special-status species occurrences in the modified project vicinity. The biological resources survey analyzed aerial imagery and reviewed biological databases prior to conducting a field survey. The databases searched were: the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB), the U.S. Fish and Wildlife (USFWS) Information for Planning and Conservation (IPaC) online tool, the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants, and Calflora. Additionally, on May 5, 2016, a reconnaissance-level wildlife and botanical survey was conducted. On May 24, 2016, a follow-up reconnaissance-level survey was conducted to identify potentially jurisdictional waters and assess habitat for special-status wildlife. On July 19, 2016, a botanical survey was conducted

for segment 1, and drainages were evaluated in Segment 1 to determine jurisdictional status.[21]

Suitable habitat for nesting birds, raptors, and roosting bats were observed in segments 1 through 4, although suitable habitat for special-status bats was not found. The construction of the modified project would result in potential impacts to special status species. Suitable habitat for San Francisco dusky footed woodrats in the form of woodrat middens were found in segment 1, similar to the conditions at the South San Francisco and Millbrae sites. No other special-status wildlife species, or suitable habitats for such species, were found.

Regarding special status plant species, segment 2 contains marginal habitat for Oakland star-tulip (*Calochortus umbellatus*) (CNPS Rank 4.2) and fragrant fritillary (*Fritillaria liliacea*) (CNPS Rank 1B.2). The blooming period for both species had ended prior to the first survey. However, because both species prefer serpentine soils, which are not present in this segment, they are likely absent and therefore potential impacts of the modified project on special status plant species are considered less than significant. Additionally, SFPUC's Standard Construction Measures[22], which apply to all SFPUC projects and are considered part of the project description, would ensure that any potential special status species are protected during construction activities. Compliance with the SFPUC's Standard Construction Measures # 7 – would require that qualified biologist will carry out a survey of segment 2, as appropriate, to note the general resources and identify whether habitat for special-status plant species, including are present, and if so protect such resources in accordance with local, State, and federal laws.

Construction of the modified project would result in potentially significant impacts to special status species. The following mitigations in the FEIR would be required for the modified project (segments 1-4), to reduce potential impacts to a less than significant level: **Mitigation Measure M-BI-1a: General Protection Measures**, **Mitigation Measure M-BI-1b: Worker Training and Awareness Program**; **Mitigation Measure M-BI-1c: Prepare and Implement a Vegetation Restoration Plan**; **Mitigation Measure M-BI-1d: Minimize Disturbance to Nesting Birds and Raptors; and Mitigation Measure M-BI-1e: Preconstruction Surveys for Special-Status Bats and Avoidance and Minimization Measures**. These mitigation measures would reduce impacts of the modified project on biological resources including nesting birds and special-status bat species to a less-than-significant level. **Mitigation Measure M-BI-1g: Mitigation for San Francisco Dusky-Footed Woodrat Middens,** which would only apply to segment 1, would reduce the San Francisco Dusky-Footed Woodrat Middens impacts of the modified project to a less-than-significant level. **M-BI-1f: Mitigation for the Mission Blue Butterfly** and **M-BI-1h: Mitigation for the California Red Legged Frog** would not be required to be implemented as part of the modified project because these special status species are not present in the modified project areas.

Additionally, oak woodlands extend through Segment 1 of the modified project. Along the half-mile long segment 1, 20 coast live oak trees would be removed. This would not represent a "conversion" of an oak woodland, as the density of oak trees along the length of the segment is low (an average of one tree every 130 feet). Additionally, the bulk of the oak woodlands would remain, and only the strip along the ROW requiring removal of oak trees would be removed. Similar to the adopted project, the impact from the modified project would be minimal. Therefore, project impacts to oak woodland habitats would be less than significant.

Additionally, similar to the adopted project, and modified project would require the removal of trees, which would result in inconsistencies with the City of San Bruno Municipal Code. The City of San Bruno Municipal Code protects removal or pruning of heritage trees, including any native bay, buckeye, oak, redwood or pine trees that are 6 inches or greater when measured at 54 inches above grade. All other trees with a trunk diameter of 10 inches or more measured at 54 inches above grade also are protected. For each

[21] Mandi McElroy, AECOM; Memorandum to Scott MacPherson, SFPUC; September 14, 2016.
[22] SFPUC, Standard Construction Measures, July 1 2015. See footnote 4.

heritage tree removed, two 24-inch box size trees, or one 36-inch box size tree is required to be planted as a replacement. Tree removal, including the removal of 20 coast live oak trees protected under the San Bruno Municipal Code, would be required at segment 1. If trees protected by the ordinance are removed, it would result in inconsistencies with the city's Municipal Code, resulting in a significant impact. However, this potential impact would be reduced to less than significant by Mitigation Measure M-BI-1a: General Protection Measures, which would protect the root systems of trees to be retained on site by requiring appropriate fencing; and would prevent long-term damage to trees by requiring that tree trimming be completed by an arborist. In addition, Mitigation Measure M-BI-4: Replacement of Trees to Be Removed, would fulfill the intent of City of San Bruno Municipal Code by requiring replanting of trees that are removed for construction of the project. Therefore, tree impacts would be reduced to less than significant with mitigation.

Segment 1 contains three stormwater ephemeral drainages which would be crossed by the modified project using cut and cover construction techniques. Two of these drainages were likely created by storm water runoff from Crystal Springs Road, while one has a damaged storm drain at its head which is creating wetland conditions. All of these drainages carry stormwater from Crystal Springs Road downslope to El Zanjon Creek, and are considered potential waters of the United States. The modified project could affect up to 0.06 acres of these aquatic resources, resulting in a significant impact.[23] **Mitigation Measure M-BI-3: Avoidance and Protection Measures for Jurisdictional Water Bodies**, would reduce impacts on jurisdictional waters to less than significant with mitigation.

Therefore, the proposed project modifications would not result in any new significant effects on biological resources beyond those identified in the FEIR or an increase in the severity of a significant impact, and no new mitigation measures would be required.

Geology and Soils

The FEIR found that the adopted project has the potential to result in significant impacts from substantial soil erosion and loss of topsoil and less than significant impacts resulting from a geologic unit that has become unstable; exposure of people or structures to potential groundshaking, ground failure, or landsides; or unstable soils, including expansive soils. A geotechnical interpretive report was prepared for the modified project to identify potential geologic and seismic hazards in the modified project vicinity.[24] The modified project would not have an impact on geology, soils, and seismicity conditions since the associated activities would primarily occur on existing roadways, flat staging areas, and access routes, and thus would not result in any new impacts compared to the adopted project.

Construction of the modified project would require excavation of up to approximately 20,100 cubic yards of soils to allow for the replacement and upgrade of existing pipelines. A portion of the soils would be reused on site and the remaining soils would be off-hauled. Excavation activities could result in substantial soil erosion during the rainy season. Additionally, the discharge and dewatering of water from the pipelines during construction could result in downstream erosion. The removal of the topsoil during site preparation and excavation activities could result in the permanent loss of these soils. While it is possible that topsoil was previously disturbed or removed from these sites during the installation of the existing pipelines, whatever topsoil does remain would be removed during project construction activities. The removal of topsoil could result in a significant loss of topsoil. As with the adopted project, soil loss would be minimized through implementation of **Mitigation Measure M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan (SWPPP)** and would reduce impacts to a less than significant level. **Mitigation Measure M-HY-1: Preparation and**

[23] AECOM, *Preliminary Jurisdictional Determination Form*, December 22 2016.
[24] Geotechnical Interpretive Report, San Andreas Pipeline No. 2, Arup/Terra, February, 2017

Implementation of a Storm Water Pollution Prevention Plan would require the SFPUC to prepare a SWPPP prior to the start of construction and would require the contractor to stabilize soils that may be erodible or unstable.

Therefore, implementation of the modified project would not result in any new significant effects beyond those identified for the adopted project or an increase in the severity of a significant impact on geology, soils, and seismicity, and no new mitigation measures would be required.

Hydrology and Water Quality

The FEIR found that the adopted project has the potential to result in significant impacts on water quality standards and less than significant impacts from dewatering activities resulting from construction of the South San Francisco site and less-than-significant impacts resulting from construction of the Colma, San Bruno North and South, Millbrae sites, and the Common Staging area. As described in the Biological Resources section above, Segment 1 contains three ephemeral drainages which would be crossed by the modified project using cut and cover construction methods. As the modified project would include construction activities that involve soil disturbance that in the absence of proper controls could degrade the water quality of nearby creeks that flow to San Francisco Bay, impacts on water quality would be potentially significant. As with the adopted project, **Mitigation Measure M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan (SWPPP)** would address potential water quality impacts during construction by requiring the SFPUC or its contractor to prepare a SWPPP detailing the construction Best Management Practice's (BMPs) that would be implemented during construction to control erosion and sedimentation of receiving water bodies, and minimize the risk of hazardous material release to surface water bodies. Therefore, this impact would be less than significant with mitigation.

Groundwater depths vary from 14 feet to 30 feet along segments 1-4; therefore, project construction has the possibility of encountering groundwater during construction activities, which would include excavation to depths of 10 to 30 feet. As with the adopted project, discharge of effluent during dewatering and discharge of treated water from the newly installed pipelines would be a less than significant impactbecause construction would be required to implement control measures in compliance with the National Pollutant Discharge Elimination System (NPDES) and local agency permitting requirements. Compliance with these permitting requirements would require that water pumped out as part of the dewatering activities be stored, tested, and treated to meet water quality standards prior to being discharged into the nearby sanitary sewer or other receiving body.

Therefore, the modified project would not result in any new significant effects on hydrology beyond those identified for the adopted project or a substantial increase in the severity of a significant impact, and no new mitigation measures would be required.

Hazards and Hazardous Materials

Similar to the adopted project, the modified project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, because the SFPUC and all service providers would be required to comply with hazardous materials law and regulations for the transport, use, and disposal of hazardous materials.

Similar to the adopted project, it cannot be determined with certainty whether excavated materials could contain potentially hazardous soil and/or groundwater wastes. While a review of the State Water Resources Control Board (SWRQB) GeoTracker and Department of Toxic Substances Control (DTSC) Envirostor databases did not identify any open cases within 500 feet or more of the modified project area, unknown materials could be present.[25] As with the adopted project, implementation of **Mitigation Measures M-HZ-2a: Prepare and Implement a Hazardous Material Handling and Disposal Plan, M-HZ-2b: Develop and**

[25] GeoTracker: http://www.envirostor.dtsc.ca.gov/public/

Implement a Hazardous Material Business Plan, and M-HZ-2c: Develop and Implement an Health and Safety Plan would reduce any potential impacts from hazardous materials to a less than significant level.

As with the adopted project, the modified project would be within 0.25 miles of the Peninsula Alternative High School, and impacts from emissions or use of hazardous materials or substances would be the less than significant as the SFPUC would be required to comply with hazardous materials laws and regulations covering the transport, use, and disposal of hazardous materials.

Additionally, similar to the adopted project, project construction would not result in public airport related aviation hazards during construction or interfere with emergency response or emergency evacuation plans.

As the modified project would maintain continuous access for emergency vehicles (including at the Cherry Avenue Villas and Peninsula Place Homeowners condominium complexes, where internal roadways would be closed to most traffic), impacts related to interference with emergency response plans or emergency evacuation plans would remain less than significant.

Thus, implementation of the modified project would not result in any new significant effects related to hazards and hazardous materials beyond those identified for the adopted project or an increase in the severity of a significant impact, and no new mitigation measures would be required.

Other Environmental Topics

The FEIR determined that the Adopted 2013 project would result in no impacts to Population and Housing and Agriculture and Forest Resources. The Modified 2017 Project would not change the analysis or conclusions reached in the FEIR and the adopted project would also result in no impacts related to these topics. The EIR also determined that the Adopted 2013 project would result in less than significant impact to: Greenhouse Gas Emissions; Public Services; Wind and Shadow; Mineral and Energy Resources. The Modified 2017 Project would not change the analysis or conclusions reached in the FEIR and impacts associated with these environmental topics would be the same as those analyzed in the adopted project and would be less than significant.

The Modified 2017 project would not change the analysis or conclusions reached in the FEIR and the impacts on these other environmental topics would be less than significant.

CONCLUSION

Based on the foregoing, it is concluded that the analyses conducted and the conclusions reached in the Final EIR certified on October 17, 2013 remain valid. The proposed modifications to the project will not cause new significant impacts not identified in the FEIR, and no new mitigation measures will be necessary to reduce significant impacts. Other than as described in this addendum, no project changes have occurred, and no changes have occurred with respect to circumstances surrounding the proposed project that would cause significant environmental impacts to which the project will contribute considerably, and no new information has become available that shows that the project will cause significant environmental impacts. Therefore, no supplemental environmental review is required beyond this addendum.

Date of Determination:

4/12/17

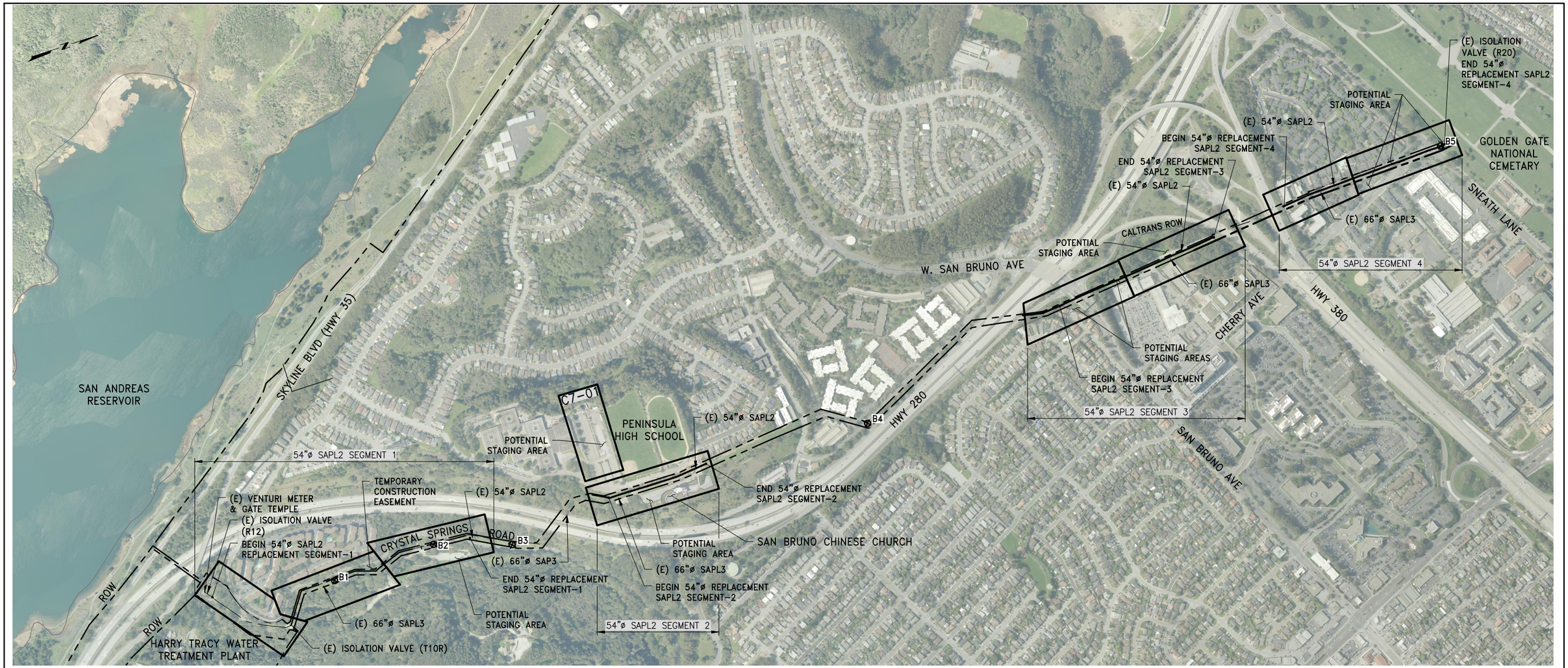
I do hereby certify that the above determination has been made pursuant to State and Local requirements.

Lisa Gibson
Acting Environmental Review Officer

cc: Scott Macpherson, SFPUC
Bulletin Board
Master Decision File
Distribution List

Attachments

Attachment A: Location and Vicinity Map
Attachment B: Figures
Attachment C: Mitigation Monitoring and Reporting Program (MMRP)



KEY MAP & POTENTIAL STAGING AREAS

SCALE:1"=400'

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SCALE IN FEET

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMANIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

KEY MAP & POTENTIAL STAGING AREAS

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

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CITY AND COUNTY OF SAN FRANCISCO

PUBLIC UTILITIES COMMISSION

WATER ENTERPRISE

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CONTRACT NO. WD-2829

OCTOBER 2016

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REGISTERED PROFESSIONAL ENGINEER
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C 81091
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STATE OF CALIFORNIA

AT THE TIME OF THE BID OPENING, THE CONTRACTOR SHALL POSSESS A VALID CALIFORNIA CLASS A, GENERAL ENGINEERING CONTRACTOR'S LICENSE.

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DRAWING INDEX

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G–0001	E–	DRAWING INDEX
G–0002	E–	ABBREVIATIONS AND LEGEND
G–0003	E–	GENERAL NOTES
G–1001	E–	LOCATION MAP AND VICINITY MAP
G–1002	E–	KEY MAP & POTENTIAL STAGING AREAS
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TS–1003	E–	TOPO SURVEY SEGMENT 3
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CD–1002	E–	CIVIL DEMOLITION PLAN – SEGMENT 1 (STA 8+50 TO STA 18+00)
CD–1003	E–	CIVIL DEMOLITION PLAN – SEGMENT 1 (STA 18+00 TO STA 25+15)
CD–1004	E–	CIVIL DEMOLITION PLAN – SEGMENT 2 (STA 38+00 TO STA 47+00)
CD–1005	E–	CIVIL DEMOLITION PLAN – SEGMENT 3 (STA 77+00 TO STA 86+00)
CD–1006	E–	CIVIL DEMOLITION PLAN – SEGMENT 3 (STA 86+00 TO STA 94+00)
CD–1007	E–	CIVIL DEMOLITION PLAN – SEGMENT 4 (STA 99+00 TO STA 106+00)
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CD–4004	E–	54"ø REPLACEMENT SAPL2 SEGMENT–2 DEMOLITION PLAN (STA 36+00 TO STA 47+00)
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CD–4006	E–	54"ø REPLACEMENT SAPL2 SEGMENT–3 DEMOLITION PLAN (STA 84+00 TO STA 94+00)
CD–4007	E–	54"ø REPLACEMENT SAPL2 SEGMENT–4 DEMOLITION PLAN (STA 99+00 TO STA 106+00)
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CD–4009	E–	TREE REMOVAL TABLE
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C–1005	E–	CIVIL PLAN – SEGMENT 3 (STA 77+00 TO STA 86+00)
C–1006	E–	CIVIL PLAN – SEGMENT 3 (STA 86+00 TO STA 94+00)
C–1007	E–	CIVIL PLAN – SEGMENT 4 (STA 99+00 TO STA 106+00)
C–1008	E–	CIVIL PLAN – SEGMENT 4 (STA 106+00 TO STA 115+00)
C–1009	E–	NOT USED

DRAWING INDEX

PLAN NO.	DRAWING NO.	TITLE
PIPELINE PLAN & PROFILE		
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C–4002	E–	54"ø REPLACEMENT SAPL2 SEGMENT–1 PLAN AND PROFILE (STA 8+50 TO STA 18+00)
C–4003	E–	54"ø REPLACEMENT SAPL2 SEGMENT–1 PLAN AND PROFILE (STA 18+00 TO STA 26+00)
C–4004	E–	54"ø REPLACEMENT SAPL2 SEGMENT–2 DEMOLITION PLAN (STA 36+00 TO STA 47+00)
C–4005	E–	PLAN AND PROFILE – SEGMENT 3 (STA 78+00 TO STA 86+00)
C–4006	E–	54"ø REPLACEMENT SAPL2 SEGMENT–3 PLAN AND PROFILE (STA 84+00 TO STA 94+00)
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CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. G–0001	DRAWING / FILE NO. E–	REVISION NO. 0

GENERAL ABBREVIATIONS

"A" LINE	ACCESS ROADWAY ALIGNMENT
AB	AGGREGATE BASE or ANCHOR BOLT
AC	ASPHALT CONCRETE
ACI	AMERICAN CONCRETE INSTITUTE
ADAS	AUTOMATIC DATA ACQUISITION SYSTEM
ADD	ADDITION(AL)
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALUM	ALUMINUM
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
A.T.R.	ALL THREADED ROD
AV	AIR VALVE
AVG	AVERAGE
AUX	AUXILIARY
AVV	AIR VACUUM VALVE
AWS	AMERICAN WELDING SOCIETY
BC	BEGIN CURVE
BEG	BEGINNING
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BG	BILLION GALLONS
BLDG	BUILDING
BM	BEAM
BMP	BEST MANAGEMENT PRACTICES
BO	BLOW OFF
BOF	BOTTOM OF FOOTING
B.O.S.	BOTTOM OF STEEL
BOT	BOTTOM
BRG	BEARING
CAP	CAPACITY
CB	CATCH BASIN or CONCRETE BEAM
C/C or CC	CENTER TO CENTER
℄	CENTER LINE
CEQA	CALIFORNIA ENVIRONMENTAL QUALITY ACT
CF	CUBIC FEET
CFRP	CARBON FIBER REINFORCED POLYMER
CFS	CUBIC FEET PER SECOND
CG	CLEAR AND GRUB
CI	CAST IRON
CIR	CIRCLE
CJ	CONSTRUCTION JOINT
CK PL	CHECKER PLATE
CLR	CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CML	CEMENT MORTAR LINING
CMP	CORRUGATED METAL PIPE
CO	CLEAN OUT
COL	COLUMN
COMM	COMMUNICATION
CONC	CONCRETE
CONN	CONNECTION
COND	CONDUIT
CONT	CONTINUE or CONTINUOUS
CONST	CONSTRUCTION
CP	COMPLETE PENETRATION WELD
CPLG	COUPLING
CTEL	CONNECT TO EXISTING LINE
CTR	CENTER
CRSI	CONCRETE REINFORCED STEEL INSTITUTE
CSOS	CRYSTAL SPRINGS OUTLET STRUCTURE
CSPS	CRYSTAL SPRINGS PUMP STATION
CSR	CRYSTAL SPRING ROAD
CSSAPL	CRYSTAL SPRINGS SAN ANDREAS PIPELINE
CY	CUBIC YARD
D	DEPTH
DET	DETAIL
DF	DOUGLAS FIR
DFT	DRY FILM THICKNESS
DG	DECOMPOSED GRANITE
DIA	DIAMETER
DIAG	DIAGRAM
DIM	DIMENSION
DN	DOWN
DR	DRAINAGE, DOOR
DWG	DRAWING
DI	DRAINAGE INLET
D/S	DOWNSTREAM
(E)	EXISTING
EA	EACH
EC	END CURVE
EE	EACH END
EF	EACH FACE
EG	EXISTING GROUND
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATION
ELL	ELBOW
EP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
E-W	EAST WEST
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FB	FABRICATED BRACKET
FDN	FOUNDATION
FF	FAR FACE or FINISH FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISHED
FL	FLOOR, FLOW LINE
FLEX	FLEXIBLE
FLG	FLAG(GED)
FLR	FLOOR
Fm	FRANCISCAN COMPLEX FORMATION
FO	FACE OF
FP	FOOT PATH
FPS	FEET PER SECOND
FRP	FIBER REINFORCED PLASTIC
FT	FOOT or FEET
FTG	FOOTING
FUT	FUTURE
GA	GAGE
GALV	GALVANIZED
GB	GRADE BEAM
GEN	GENERAL
GPM	GALLONS PER MINUTE
GR	GRADE
GRD	GROUND
GRTG	GRATING
GSKT	GASKET
GR	GRAVEL ROAD
HGT	HEIGHT
H or HOR	HORIZONTAL
HP	HORIZONTAL POINT OF INTERSECTION
HPI	HORSEPOWER, HIGH POINT, HIGH PRESSURE
HR	HANDRAIL, HOUR
HSB	HIGH STRENGTH BOLT
HSR	HIGH STRENGTH ROD
HSS	HOLLOW STRUCTURAL SECTION
HVAC	HEAT, VENTILATING & AIR CONDITIONING
HV	HOSE VALVE
HYD	HYDRAULIC, HYDRANT
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH
INFO	INFORMATION
INST	INSTRUMENTATION
INT	INTERIOR
INV	INVERT
JT	JOINT
JCT	JUNCTION
L	LENGTH
LB	POUND
LCSR	LOWER CRYSTAL SPRINGS RESERVOIR
LEV	LEVEL
LFL	LIQUID FILM LINER
LG	LONG
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LT	LEFT
LT WT	LIGHT WEIGHT
LONG	LONGITUDINAL
LP	LOW POINT, LOW PRESSURE
MAN	MANUAL
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT A307
MCC	MOTOR CONTROL CENTER
MCU	MEASUREMENT CONTROL UNIT
MECH	MECHANICAL
MFR	MANUFACTURE(R)
MH	MANHOLE
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
M, MTR	MOTOR
(N)	NEW
N-S	NORTH-SOUTH
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NMWS	NORMAL MAXIMUM WATER SURFACE
NOM	NOMINAL
NSG	NON-SHRINK GROUT
NTS	NOT TO SCALE
NI	NO IMPROVEMENTS
NS	NEAR SIDE
O/	OVER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OFC	OUTSIDE FACE OF CONCRETE
OG	ORIGINAL GROUND SURFACE
OH	OPPOSITE HAND or OVERHEAD
OPNG	OPENING
OGR	OLD GRAVEL ROAD
PC	PIECE, POINT OF CURVE
PCC	PORTLAND CEMENT CONCRETE
PG	PRESSURE GAGE
PL, PL	PLATE OR PROPERTY LINE
PI	POINT OF INTERSECTION
PMF	PROBABLE MAXIMUM FLOOD
PP	PARTIAL PENETRATION WELD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PIPE SLEEVE
PT	POINT, POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PR	PAVED ROAD
PXX+XX	PIPELINE ALIGNMET STATION
R	RADIUS, RISER
RCP	REINFORCED CONCRETE PIPE
RC	REINFORCED CONCRETE
RD	ROAD OR ROOF DRAIN
REF	REFERENCE
REINF	REINFORCEMENT
REM	REMOVABLE
REQ'D	REQUIRED
RM	ROOM
RPM	REVOLUTIONS PER MINUTE
RT	RIGHT
RUB	RUBBER
S	SLOPE
SAD	SEE ARCHITECTURAL DRAWINGS
SC	SERVICE CONNECTION
SCH	SCHEDULE
SCT	SAWYER CAMP TRAIL
SD	STORM DRAIN
SECT	SECTION
SFWD	SAN FRANCISCO WATER DEPARTMENT
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION(S)
SQ	SQUARE
SS	STAINLESS STEEL
STA	STATION
STAG	STAGGERED
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURE
SURF	SURFACE
SYM ABT	SYMMETRIC ABOUT
SYMM	SYMMETRICAL
T	TREAD
t	THICKNESS
T & B	TOP & BOTTOM
TELE	TELEPHONE
TOB	TOP OF BEAM
TOC	TOP OF CURB, TOP OF CONCRETE
TOF	TOP OF FOOTING
TOS	TOP OF STEEL
TOW	TOP OF WALL
TYP	TYPICAL
THK	THICK
Tts	TEMBLOR SANDSTONE FORMATION
UCSR	UPPER CRYSTAL SPRINGS RESERVOIR
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
U/S	UPSTREAM
VA	VEHICLE ACCESS
V/VERT	VERTICAL
VAC	VACUUM
VIF	VERIFY IN FIELD
VC	VERTICAL CURVE
VL	VALVE, VOLT
VOL	VOLUME
VPI	VERTICAL POINT OF INTERSECTION
WBO	BLOW OFF VALVE
WI	WROUGHT IRON
W/	WITH
W/O	WITHOUT
W	WIDTH, WEST
WC	WATER CLOSET, WATER COLUMN
WD	WOOD
WP	WATERPROOFING or WORKPOINT
WS	WATER SURFACE
WSE	WATER SURFACE EXIST
WSL	WATER SURFACE LEVEL
WT	WATER TIGHT, WEIGHT
WSP	WELDED STEEL PIPE
YD	YARD
1d	EMBEDMENT LENGTH

GENERAL LEGEND

AIR VALVE
ANTENNA
CABLE BOX
CATCH BASIN
CLEANOUT
DEMO PIPELINE
ELECTRIC BOX
ELECTRIC MANHOLE
ELECTRIC POLE
ELECTRIC PULLBOX
ELECTRIC STRUCTURE
FIRE HYDRANT
GAS MANHOLE
GAS VALVE
GATE POST
GUY ANCHOR
HOSE BIB
IRRIGATION BOX
PRESSURE INDICATOR
POST
SEWER MANHOLE
SIGN
SPRINKLER
STORM DRAIN MANHOLE
STREET LIGHT POST
STREET LIGHT PULLBOX
TRAFFIC SIGNAL
TRAFFIC SIGNAL PULLBOX
TELEPHONE PULLBOX
TELEPHONE MANHOLE
TREE
TREE
UTILITY POLE
WATER MANHOLE
WATER MANHOLE RISER
WATER METER
WATER VALVE

1.5:1 SLOPE GRADIENT (HOR. : VERT.)
—230— (E) GROUND CONTOUR
—245— FG
CONCRETE
STAGING AREA
FLOW LINE DIRECTION

WATER LEVEL ELEVATION — WATER LINE
ROCK SURFACE — FENCE
NATURAL GROUND OR GRADE — LIMITS OF WORK
BACKFILL — (E) GAS LINE
AC BERM — (E) WATER LINE
SLOPE GRADIENT (HOR. : VERT.) — (E) SANITARY SEWER LINE
FLOW LINE — (E) STORMDRAIN LINE
CUT SLOPE — (E) ELECTRICAL LINE
FILL SLOPE — (E) RECYCLED WATER
(E) GROUND CONTOUR — (E) POTABLE WATER
FG — (E) OVERHEAD LINE
CONCRETE — (N) ELECTRICAL LINE
STAGING AREA — (N) WATER LINE
FLOW LINE DIRECTION — (N) SANITARY SEWER LINE
(N) STORMDRAIN LINE
(N) GAS LINE

TYPICAL SECTION/DETAIL NUMBERING SYSTEM

SECTION — SCALE: X"=XX'
A / 1CXX
SECTION/DETAIL IDENTIFICATION
DRAWING ON WHICH SECTION/DETAIL WAS TAKEN

A / 1C01
SECTION IDENTIFICATION
DRAWING ON WHICH SECTION APPEARS

DETAIL — SCALE: X"=XX'
1 / 1CXX
DETAIL IDENTIFICATION
DRAWING ON WHICH DETAIL APPEARS

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER — ABDELMONIEM H. ABDELSALAM — C 81091 — CIVIL — STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

ABBREVIATIONS AND LEGEND

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
G-0002	E-	0

GENERAL NOTES:

1. HEAVY LINES AND SYMBOLS INDICATE WORK TO BE DONE BY THE CONTRACTOR. LIGHT LINES AND SYMBOLS INDICATE EXISTING FEATURES OR WORK TO BE DONE BY ANOTHER ENTITY.
2. WHERE THERE IS A DISCREPANCY BETWEEN THE WRITTEN DIMENSION AND SCALED DIMENSION, WRITTEN DIMENSIONS SHALL GOVERN.
3. ALL DIMENSIONS NOTED "CLR" MUST BE STRICTLY MAINTAINED.
4. RESTRICTED ACCESS AREAS ARE TYPICALLY THE SPACE OVER THE EXISTING PIPELINES. CONTRACTOR MAY NOT OPERATE HEAVY MACHINERY WITHIN THE RESTRICTED AREAS WITHOUT PRIOR PERMISSION FROM THE CITY REPRESENTATIVE.
5. ALL DISCREPANCIES BETWEEN THE INFORMATION SHOWN IN THE DRAWINGS AND THE ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE CITY REPRESENTATIVE.
6. AT THE CLOSE OF EACH WORKING SHIFT, WHERE THE NEXT SHIFT WILL NOT IMMEDIATELY FOLLOW, CAP PIPE ENDS AND CONSTRUCT TRENCH RAMPS AT THE END OF THE EXCAVATION.
7. LEGEND SHEETS ARE PROVIDED FOR EACH DISCIPLINE. SYMBOLS MAY NOT BE CONSISTENT BETWEEN DIFFERENT DISCIPLINE LEGENDS. USE THE APPROPRIATE LEGEND SHEET WITH THE CORRESPONDING DISCIPLINE DRAWINGS.
8. THE LOCATION AND GENERAL ARRANGEMENT OF UNDERGROUND UTILITIES, UNDERGROUND STRUCTURES, PIPES WITH FITTINGS, VALVES, AND APPURTENANCES WHERE SHOWN, ARE DIAGRAMMATIC AND SUBJECT TO VERIFICATION AND ADJUSTMENT IN THE FIELD.
9. CONTRACTOR SHALL BACKFILL ALL TRENCHES AND INSTALL THRUST BLOCKS, BOLTS AND HARNESSES PRIOR TO FILLING PIPES WITH WATER.
10. CONTRACTOR SHALL REPLACE ALL EXISTING THRUST BLOCKS WITH SAME DIMENSIONS EXCEPT AS NOTED IN PLAN OR DIRECTED BY THE CITY REPRESENTATIVE.
11. CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING AROUND LARGE TREES, TREES TO BE SAVED, ADJOINING RESIDENTIAL & COMMERCIAL BUILDINGS, EXISTING PARKING AND EXISTING UTILITIES; IN AND OUT CONSTRUCTION, STAGING AND STOCKPILE AREAS. ALL DAMAGES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S OWN EXPENSES.
12. CONTRACTOR SHALL AVOID OPERATION OF HEAVY EQUIPMENT, DRIVING OR PARKING ON TOP OF EXISTING PIPELINES. SEE SPECIFICATION SECTION 0 71 33.
13. CONTRACTOR SHALL VERIFY IN FIELD LOCATIONS & DEPTHS OF CONNECTION POINTS, PIPE SIZES AND FLANGE (TYPES, SIZES, ETC) PRIOR TO PIPE FABRICATION.

EXISTING UTILITIES:

1. EXISTING BURIED UTILITIES ARE INDICATED ON THE DRAWINGS WHERE SUCH UTILITIES ARE KNOWN. THE LOCATION AND EXTENT OF SUCH UTILITIES ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE, PROTECT AND MAINTAIN ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THE DRAWINGS. ONLY ACTUAL POTHOLE EXCAVATION WILL REVEAL THE TYPES, EXTENT, SIZES, LOCATIONS AND DEPTHS OF SUCH UNDERGROUND UTILITIES. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE AND DELINEATE ALL KNOWN UNDERGROUND UTILITIES. HOWEVER, THE OWNER, THE UTILITY OWNER AND THE OWNER'S REPRESENTATIVE CAN ASSUME NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE DELINEATION OF SUCH UNDERGROUND UTILITIES WHICH MAY BE ENCOUNTERED. SEE SPECIFICATIONS SECTION 01 71 33.
2. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL NECESSARY UTILITY RELOCATIONS.
3. ANY EXISTING UTILITY OR WATER PIPES INTO WHICH PROPOSED UTILITIES OR WATER PIPES ARE TO BE CONNECTED SHALL FIRST BE EXPOSED BY THE CONTRACTOR. THE CONTRACTOR SHALL THEN MEASURE THE EXISTING LOCATION AND ELEVATION FOR POSSIBLE CONFLICTS OR OTHER INCONSISTENCIES WITH PLANS. IF THESE MEASUREMENTS REVEAL CONFLICTS OR OTHER INCONSISTENCIES WITH THE PLANS, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE AND REQUEST DESIGN OR OTHER MODIFICATIONS TO RESOLVE THE CONFLICT OR INCONSISTENCIES.
4. THE CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT CROSSINGS OF EXISTING AND PROPOSED UTILITIES OR WATER PIPES AND PRIOR TO THE STAKING OF THE PROPOSED UTILITIES OR WATER PIPES AND PRIOR TO ANY EXCAVATION FOR PROPOSED UTILITY OR WATER PIPES INSTALLATION. CONTRACTOR SHALL MEASURE THE ELEVATION OF THE EXISTING UTILITIES AND CHECK FOR CONFLICTS WITH THE PROPOSED UTILITIES AND WATER PIPES. IF A GRADE CONFLICT DOES OCCUR, THE CONTRACTOR SHALL INFORM THE OWNER'S REPRESENTATIVE.
5. LOCATE ALL NEW UTILITIES AND WATER PIPES IN ACCORDANCE WITH THE DIMENSIONS SHOWN ON THE DRAWINGS. IN CASE OF ANY CONFLICT BETWEEN THE DIMENSIONS AND THE STATIONING, THE DIMENSIONS SHALL PREVAIL.
6. IF THERE ARE ANY DISCREPANCIES BETWEEN DIMENSIONS IN DRAWINGS AND EXISTING CONDITIONS WHICH WILL AFFECT THE WORK, THE CONTRACTOR SHALL BRING SUCH DISCREPANCIES TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE FOR ADJUSTMENT BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FITTING OF ALL WORK AND FOR THE COORDINATION OF ALL TRADES, SUBCONTRACTORS AND PERSONS ENGAGED UPON THE CONTRACT.

DEMOLITION NOTES:

1. CLEAR AND REMOVE ALL ORGANIC MATTER, DEBRIS, AND RUBBISH FROM WITHIN THE LIMIT OF WORK. CONTRACTOR SHALL DISPOSE OF SAID MATERIAL IN A LEGAL MANNER AS HIS PROPERTY.
2. CONTRACTOR MAY RE-USE MATERIAL SUBJECT TO SUBMITTALS PER SPECIFICATION AND REVIEW AND APPROVAL BY THE ENGINEER. EXCEPT AS NOTED IN CONTRACT DOCUMENT, ALL EXISTING PIPE, TURNOUTS AND GATE VALVES ARE NOT TO BE REUSED.
3. ALL EXCAVATION WORK WITHIN DRIP LINE OF EXISTING TREES THAT ARE TO REMAIN SHALL BE DONE BY HAND. CLEANLY CUT ANY ROOTS LARGER THAN ONE INCH DIAMETER. DO NOT TEAR ROOTS. COORDINATE WITH CITY REPRESENTATIVE PRIOR TO CONSTRUCTION.

CUSTOMER SERVICE TURNOUTS:

1. SFPUC MAY MODIFY THE LAYOUT OR CHANGE THE POINT OF CONNECTION AS DICTATED BY CONDITIONS FOUND IN THE FIELD.
2. SFPUC OPERATION STAFF WILL OPERATE THE VALVES FOR SHUTTING OFF AND/OR TURNING ON THE SERVICE TURNOUT.
3. CONTRACTOR SHALL VERIFY IN FIELD LOCATIONS & DEPTHS OF CONNECTION POINTS, PIPE SIZES AND FLANGE (TYPES, SIZES, ETC) PRIOR TO THE FABRICATION OF THE TURNOUT PIPE.
4. ALL THRUST BLOCKS AND PIPE RESTRAINERS SHALL BE INSTALLED AND INSPECTED PRIOR TO ANY PIPE TESTING.
5. ALL DIMENSIONS GIVEN ON THE DRAWINGS SHALL BE FIELD VERIFIED. PROVIDE MINIMUM 6-INCH CLEARANCE BETWEEN NEW AND EXISTING PIPES.
6. SEE SPECIFICATION SECTION 09 97 72 FOR COATING AND LINING.

PLAN & PROFILE NOTES:

1. IF SPECIFIED POINT OF CONNECTIONS SHOWN ON THE DRAWINGS ARE WITHIN 12 INCHES OF AN EXISTING BELL AND SPIGOT JOINT, CONTRACTOR SHALL MOVE CONNECTION POINT UP TO 2 FEET AWAY FROM THE JOINT TO FIT THE BUTT STRAP. THE LENGTH OF NEW PIPE TO BE INSTALLED SHALL BE LENGTHENED AT NO ADDITIONAL COST TO THE CITY. THE LENGTH OF NEW PIPE SHALL NOT BE SHORTENED.
2. REFER TO SPECIFICATIONS DOCUMENT 00 31 00 FOR AVAILABLE AND SUPPORTING REPORTS.
3. CONTRACTOR SHALL DESIGN, CONSTRUCT, OPERATE, MAINTAIN, IMPLEMENT AND REMOVE A DEWATERING SYSTEM AT ALL SITE. THE SYSTEM SHALL BE DESIGNED TO PREVENT MIGRATION AND PUMPING OF SOIL FINES WITH THE DISCHARGE WATER. A DEWATERING PLAN SHALL BE SUBMITTED FOR REVIEW PRIOR TO CONSTRUCTION, REFER TO SPECIFICATION SECTION 02140.

CONSTRUCTION SEQUENCES:

1. REFER TO SPECIFICATION SECTION 01 11 00 FOR SUMMARY OF WORK.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMONSH H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

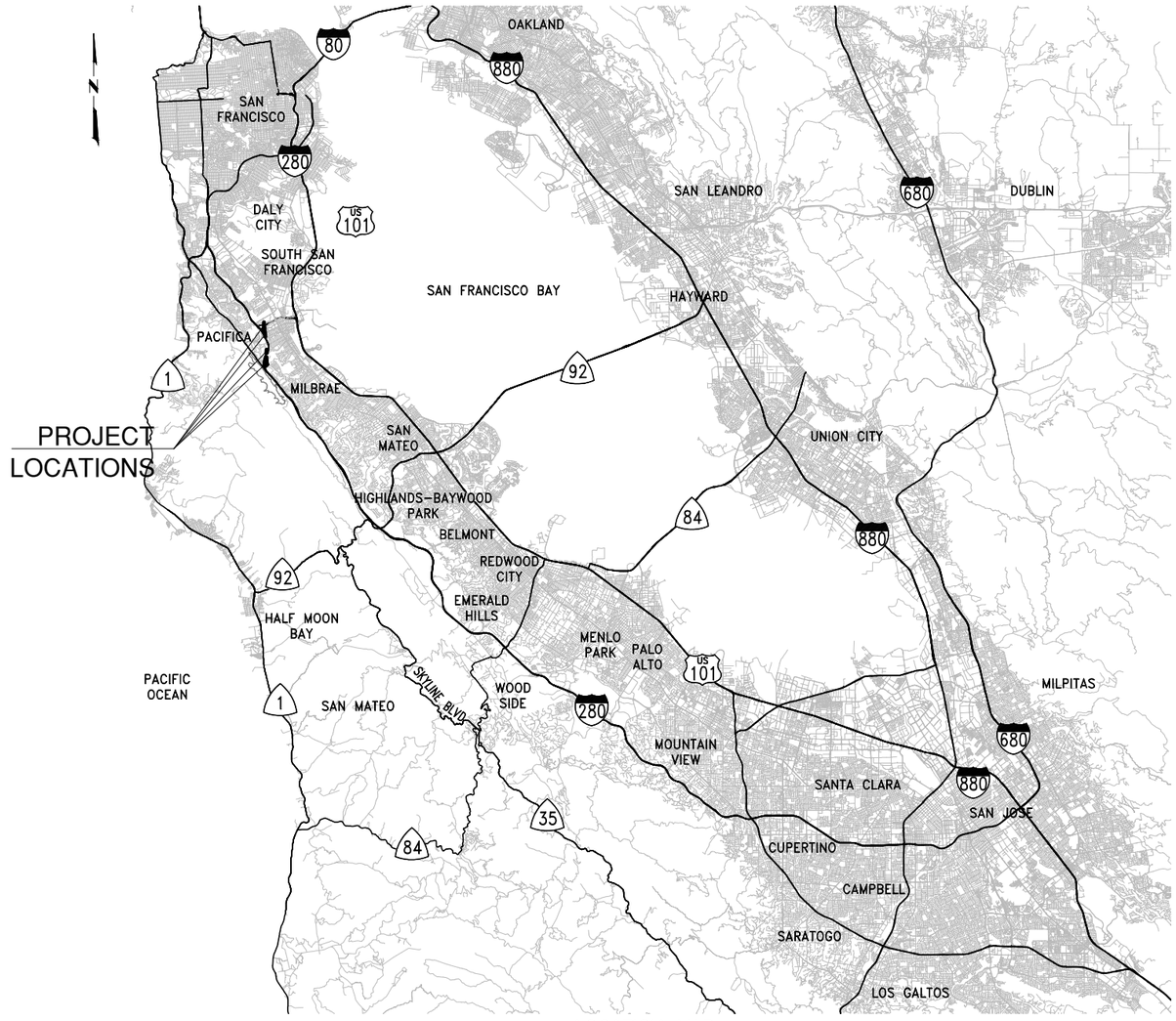
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

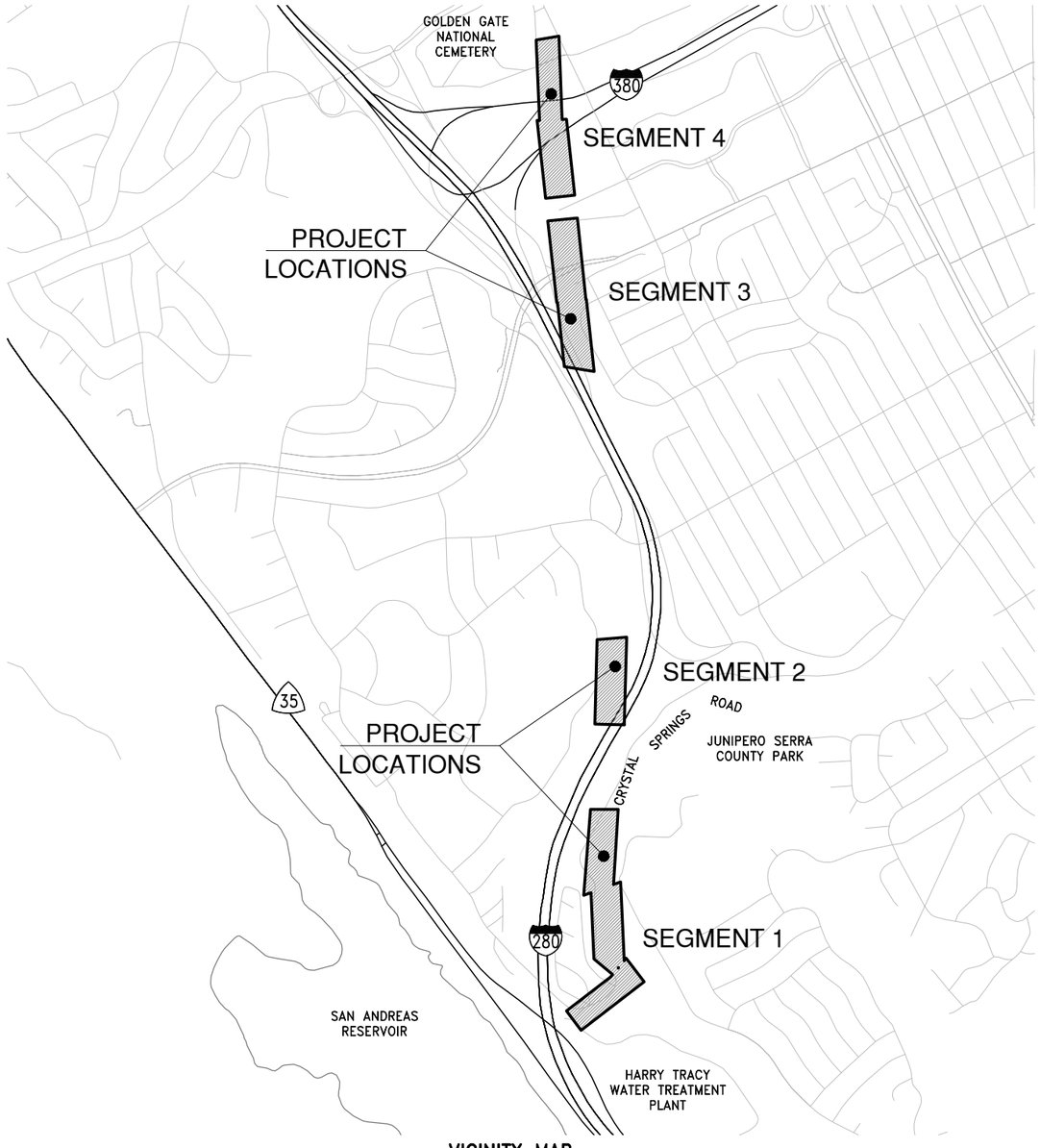
GENERAL NOTES

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
G-0003	E-	0



LOCATION MAP
N.T.S.



VICINITY MAP
N.T.S.

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

LOCATION AND VICINITY MAP

CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU		APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
G-1001	E-	0

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMANEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

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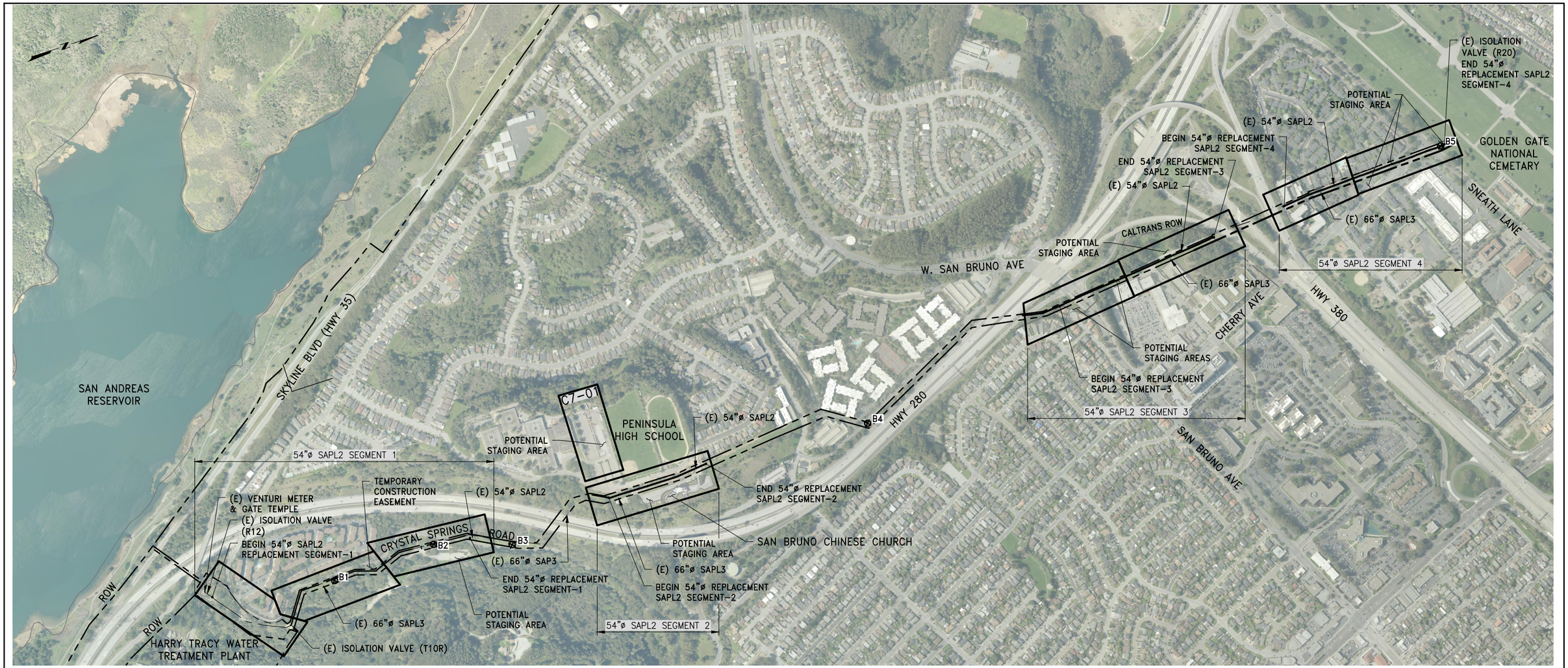
FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



KEY MAP & POTENTIAL STAGING AREAS

SCALE:1"=400'

0 400 800 1200

SCALE IN FEET

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMANIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

KEY MAP & POTENTIAL STAGING AREAS

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
G-1002	E-	0

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FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4

GENERAL NOTES

(1) THE NORTH ORIENTATION OF THIS DRAWING IS BASED UPON A GRID DIRECTION.

(2) THE ELEVATIONS AND CONTOURS SHOWN HEREON ARE BASED UPON LEICA GPS NETWORK DATUM WHICH IS DETERMINED BY EVALUATING MULTIPLE BENCH MARKS IN THE PROJECT AREA.

(3) POINT 104 IN THIS DRAWING IS A CALIFORNIA STATE PLANE ZONE 3 GRID COORDINATE. DERIVED FROM THE LEICA CORS NETWORK SOLUTION, EPOCH 2016.25, USING LEICA GEOMATICS OFFICE SOFTWARE. POINT 105 PROVIDES AN AZIMUTH DIRECTION TO POINT 104.

(4) ALL DISTANCES WITHIN THIS DRAWING ARE BASED UPON THE US SURVEY FOOT AND DECIMALS THEREOF AND ARE GROUND DISTANCES.

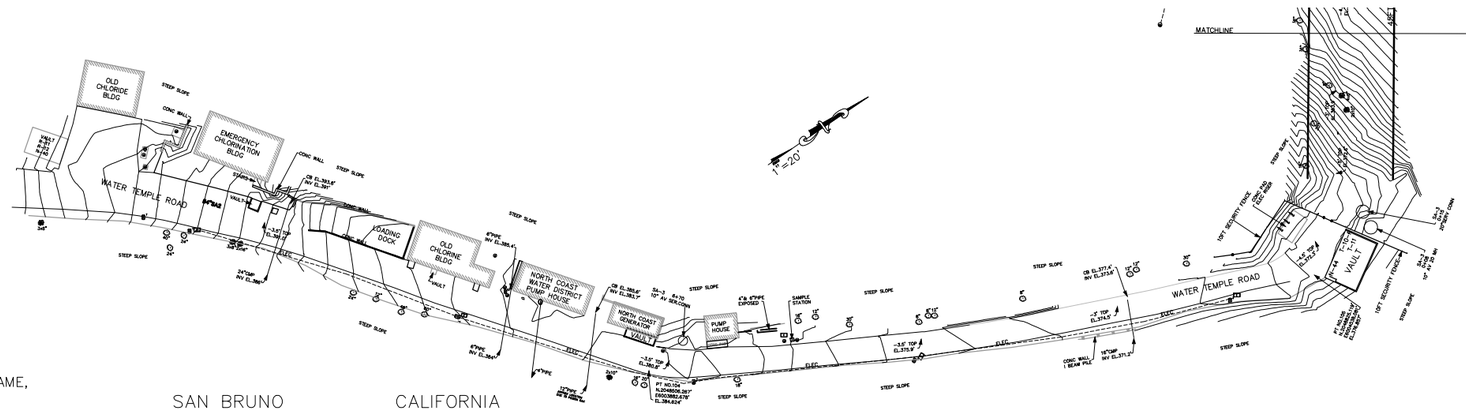
(5) THIS SURVEY WAS PREPARED BY SFWD SURVEY UNDER THE DIRECT SUPERVISION OF R.EDWARD PETERSON, LS, CHIEF SURVEYOR.

(6) JOB NUMBER: 16–0016 Seg1.dwg
DATE OF SURVEY: AUGUST 5 2016

(7) THE LAYERING SCHEME FOR THIS DRAWING FIRST CONSISTS OF LAYERS NAMED FOR THE PHYSICAL FEATURES LOCATED IN THE FIELD AND THESE LAYERS CONTAIN THE SURVEY POINTS (POINT MARKERS); FOR EXAMPLE, SYM_STREET(V–NODE– STREET) FOR CURB. THEN A SET OF LAYERS WAS ADDED WHICH CONTAINS ALL THE LINEWORK AND/OR TEXT THAT IS ASSOCIATED WITH THOSE PHYSICAL FEATURES AND IS SIMILARLY NAMED, FOR EXAMPLE, LN_CURB. LASTLY POINT LABELS WHICH CONSIST OF THE POINT NAME, ELEVATION AND DESCRIPTION ARE ON THE V–NODE_LAYERS.

(8) THE BENCHMARK IS A MAG NAIL ON WATER TEMPLE ROAD, OPPOSITE NORTH COAST GENERATOR, ELEVATION = 384.624 FEET.

(9) BOUNDARY LINE AS SHOWN IS BASED ON FOUND SFWD MONUMENTS WHICH HAS NOT BEEN VERIFIED WITH ADJOINERS' PROPERTY



SAN BRUNO CALIFORNIA
JULY 2016 SCALE: 1" = 40'

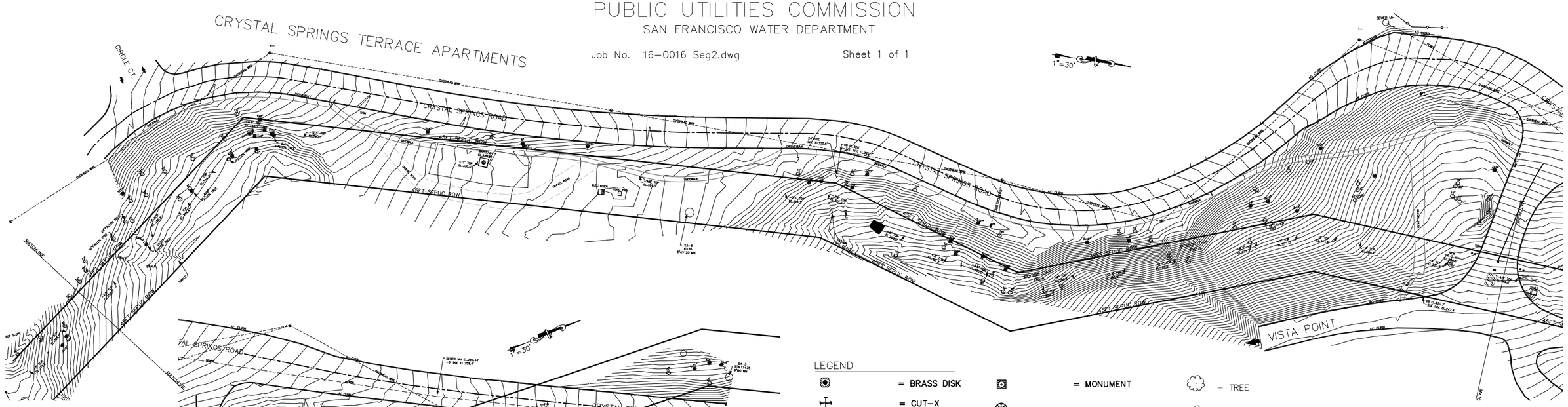
SAN ANDREAS NO.2 SEGMENT 2

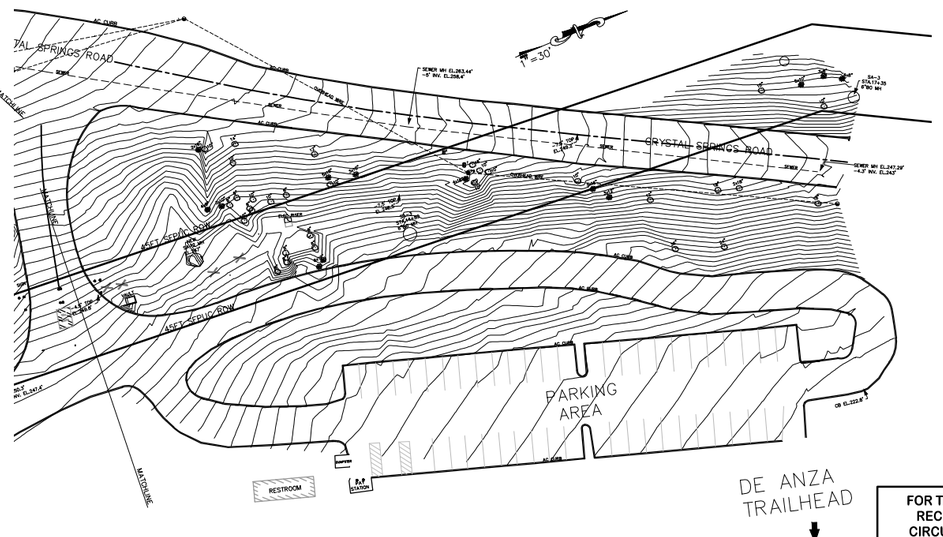
CITY AND COUNTY OF SAN FRANCISCO

PUBLIC UTILITIES COMMISSION

SAN FRANCISCO WATER DEPARTMENT

Job No. 16–0016 Seg2.dwg Sheet 1 of 1





LEGEND

= BRASS DISK	= MONUMENT	= TREE
= CUT–X	= NAIL PK	= TREE MULTI–TRUNKS
= CATCH BASIN	= SEWER MANHOLE	= WATER METER
= CATCH BASIN	= SIGN	= WATER VALVE
= ELECTRIC BOX	= SIGNAL PULLBOX	= UNKNOWN PULLBOX
= FIRE HYDRANT	= STORM MANHOLE	
= MAIL BOX	= TELEPHONE MANHOLE	

ELEVATION DATUM
NAD83
NAVD88

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

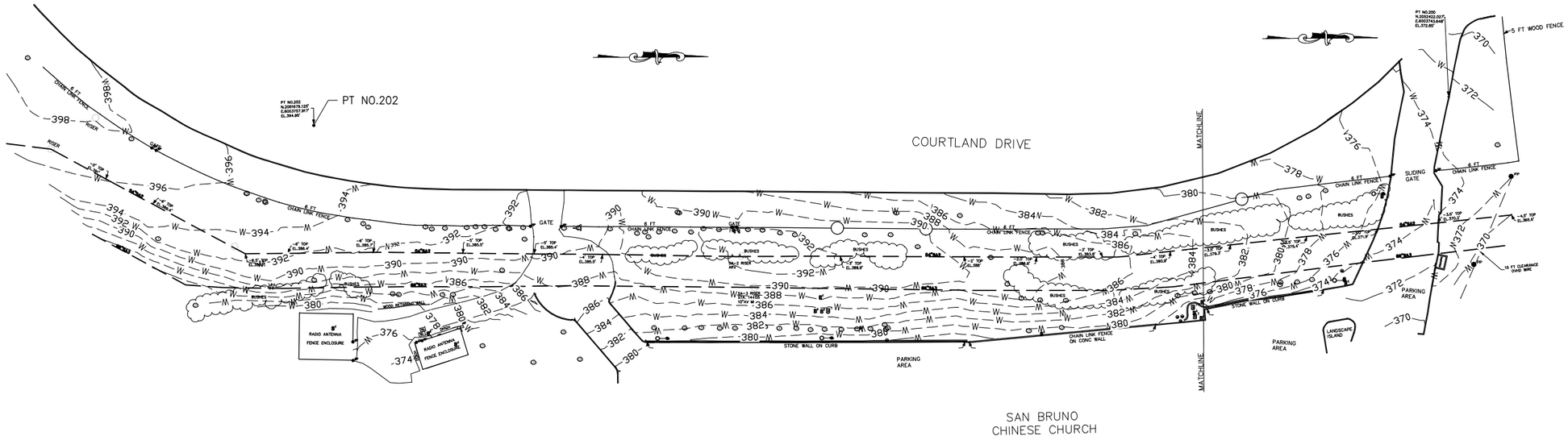
TOPO SURVEY SEGMENT 1

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
TS–1001	E–	0

FILE: Q:\CUW522739\CIVIL\50%SUBMITTAL\ACTIVE\TS–1001.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



LEGEND

- = BRASS DISK
- = CUT-X
- = CATCH BASIN
- = DOUBLE ELECTROLIER
- = ELECTRIC BOX
- = FIRE ALARM
- = FIRE HYDRANT
- = MAIL BOX
- = MONUMENT
- = NAIL PK
- = SEWER MANHOLE
- = SIGN
- = SIGNAL PULLBOX
- = STORM MANHOLE
- = STREET LIGHTING
- = TELEPHONE MANHOLE
- = TELEPHONE PULLBOX
- = TRAFFIC SIGNAL
- = TREE
- = TREE MULTI-TRUNKS
- = WATER METER
- = WATER VALVE
- = UNKNOWN PULLBOX

GENERAL NOTES

(1) THE NORTH ORIENTATION OF THIS DRAWING IS BASED UPON A GRID DIRECTION.

(2) THE ELEVATIONS AND CONTOURS SHOWN HEREON ARE BASED UPON LEICA GPS NETWORK DATUM WHICH IS DETERMINED BY EVALUATING MULTIPLE BENCH MARKS IN THE PROJECT AREA.

(3) POINT 202 IN THIS DRAWING IS A CALIFORNIA STATE PLANE ZONE 3 GRID COORDINATE. DERIVED FROM THE LEICA CORS NETWORK SOLUTION, EPOCH 2016.25, USING LEICA GEOMATICS OFFICE SOFTWARE. POINT 200 PROVIDES AN AZIMUTH DIRECTION TO POINT 202.

(4) ALL DISTANCES WITHIN THIS DRAWING ARE BASED UPON THE US SURVEY FOOT AND DECIMALS THEREOF AND ARE GROUND DISTANCES.

(5) THIS SURVEY WAS PREPARED BY SFWD SURVEY UNDER THE DIRECT SUPERVISION OF R.EDWARD PETERSON, LS, CHIEF SURVEYOR.

(6) JOB NUMBER: 16-0016 Seg2.dwg
DATE OF SURVEY: JULY 22, 2016

(7) THE LAYERING SCHEME FOR THIS DRAWING FIRST CONSISTS OF LAYERS NAMED FOR THE PHYSICAL FEATURES LOCATED IN THE FIELD AND THESE LAYERS CONTAIN THE SURVEY POINTS (POINT MARKERS); FOR EXAMPLE, SYM_STREET(V-NODE- STREET) FOR CURB. THEN A SET OF LAYERS WAS ADDED WHICH CONTIANS ALL THE LINEWORK AND/OR TEXT THAT IS ASSOCIATED WITH THOSE PHYSICAL FEATURES AND IS SIMILARY NAMED, FOR EXAMPLE, LN_CURB. LASTLY POINT LABELS WHICH CONSIST OF THE POINT NAME, ELEVATION AND DESCRIPTION ARE ON THE V-NODE_LAYERS.

(8) THE BENCHMARK IS A CUT-X ON SIDEWALK, COURTLAND DRIVE
NE PARKING LOT, PENINSULA HIGH SCHOOL, ELEVATION = 394.95 FEET.

SAN BRUNO CALIFORNIA
JULY 2016 SCALE: 1" = 40'

SAN ANDREAS NO.2 SEGMENT 2

CITY AND COUNTY OF SAN FRANCISCO

PUBLIC UTILITIES COMMISSION

SAN FRANCISCO WATER DEPARTMENT

Job No. 16-0016 Seg2.dwg Sheet 1 of 1

ELEVATION DATUM
NAD83
NAVD88

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

TOPO SURVEY SEGMENT 2

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

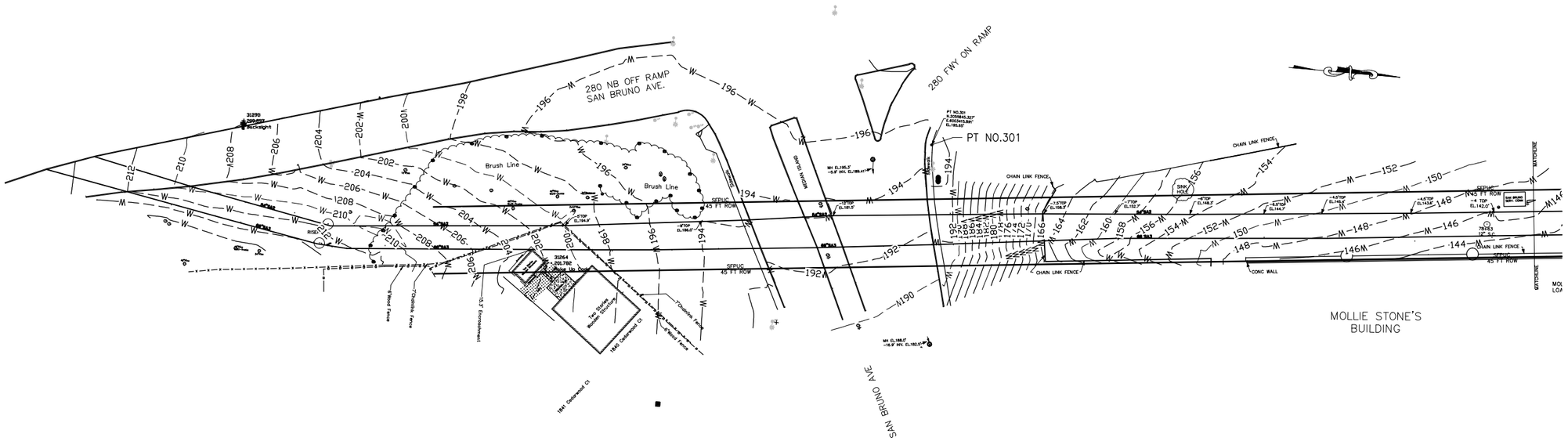
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
TS-1002	E-	0

FILE: Q:\CUW522739\CIVIL\50%SUBMITTAL\ACTIVE\TS-1002.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4

LEGEND

- = BRASS DISK
- = CUT–X
- = CATCH BASIN
- = DOUBLE ELECTROLIER
- = ELECTRIC BOX
- = FIRE ALARM
- = FIRE HYDRANT
- = MAIL BOX
- = MONUMENT
- = NAIL PK
- = SEWER MANHOLE
- = SIGN
- = SIGNAL PULLBOX
- = STORM MANHOLE
- = STREET LIGHTING
- = TELEPHONE MANHOLE
- = TELEPHONE PULLBOX
- = TRAFFIC SIGNAL
- = TREE
- = TREE MULTI–TRUNKS
- = WATER METER
- = WATER VALVE
- = UNKNOWN PULLBOX



GENERAL NOTES

(1) THE NORTH ORIENTATION OF THIS DRAWING IS BASED UPON A GRID DIRECTION.

(2) THE ELEVATIONS AND CONTOURS SHOWN HEREON ARE BASED UPON LEICA GPS NETWORK DATUM WHICH IS DETERMINED BY EVALUATING MULTIPLE BENCH MARKS IN THE PROJECT AREA.

(3) POINT 300 IN THIS DRAWING IS A CALIFORNIA STATE PLANE ZONE 3 GRID COORDINATE. DERIVED FROM THE LEICA CORS NETWORK SOLUTION, EPOCH 2016.25, USING LEICA GEOMATICS OFFICE SOFTWARE. POINT 301 PROVIDES AN AZIMUTH DIRECTION TO POINT 300.

(4) ALL DISTANCES WITHIN THIS DRAWING ARE BASED UPON THE US SURVEY FOOT AND DECIMALS THEREOF AND ARE GROUND DISTANCES.

(5) THIS SURVEY WAS PREPARED BY SFWD SURVEY UNDER THE DIRECT SUPERVISION OF R.EDWARD PETERSON, LS, CHIEF SURVEYOR.

(6) JOB NUMBER: 16–0016 Seg3.dwg
DATE OF SURVEY: JUNE 15, 2016

(7) THE LAYERING SCHEME FOR THIS DRAWING FIRST CONSISTS OF LAYERS NAMED FOR THE PHYSICAL FEATURES LOCATED IN THE FIELD AND THESE LAYERS CONTAIN THE SURVEY POINTS (POINT MARKERS); FOR EXAMPLE, SYM_STREET(V–NODE– STREET) FOR CURB. THEN A SET OF LAYERS WAS ADDED WHICH CONTAINS ALL THE LINEWORK AND/OR TEXT THAT IS ASSOCIATED WITH THOSE PHYSICAL FEATURES AND IS SIMILARLY NAMED, FOR EXAMPLE, LN_CURB. LASTLY POINT LABELS WHICH CONSIST OF THE POINT NAME, ELEVATION AND DESCRIPTION ARE ON THE V–NODE_LAYERS.

(8) THE BENCHMARK IS A CUT–X ON CONCRETE PAD, NW CORNER OF LOADING DOCK DRIVEWAY WEST END OF BAYHILL DR, ELEVATION = 140.46 FEET.

SAN BRUNO CALIFORNIA
JULY 2016 SCALE: 1" = 40'

SAN ANDREAS NO.2 SEGMENT 3

CITY AND COUNTY OF SAN FRANCISCO

PUBLIC UTILITIES COMMISSION

SAN FRANCISCO WATER DEPARTMENT

Job No. 16–0016 Seg3.dwg Sheet 1 of 1

50% SUBMITTAL

ELEVATION DATUM
NAD83
NAVD88

NO.	DATE	DESCRIPTION	BY	APPRD
		REVISIONS		

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

TOPO SURVEY SEGMENT 3

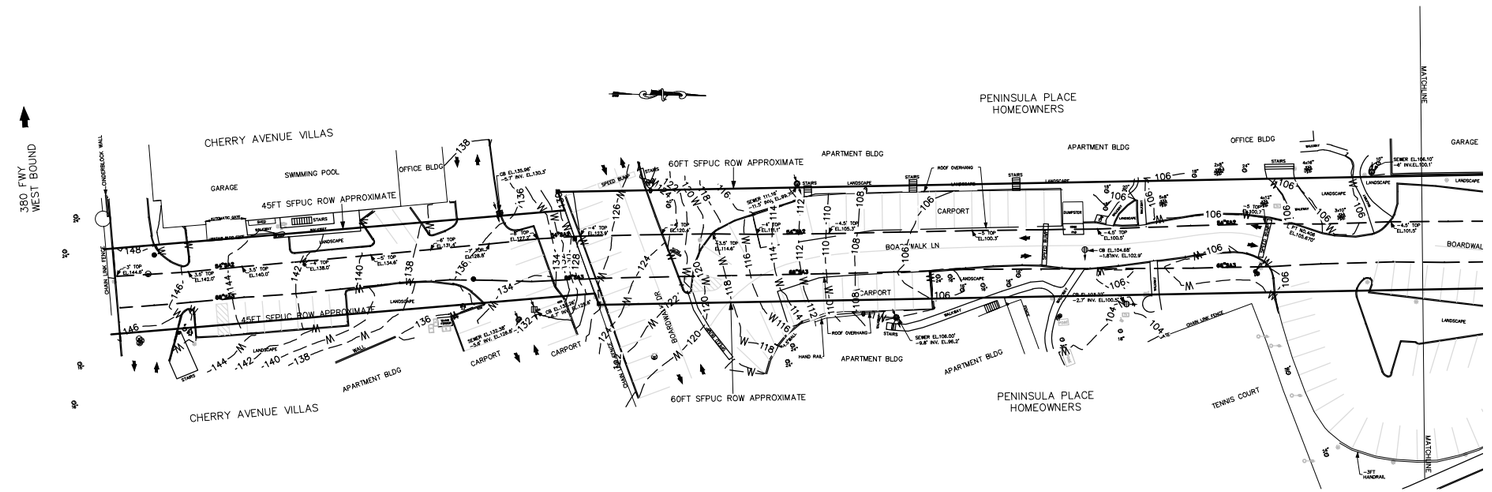
CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

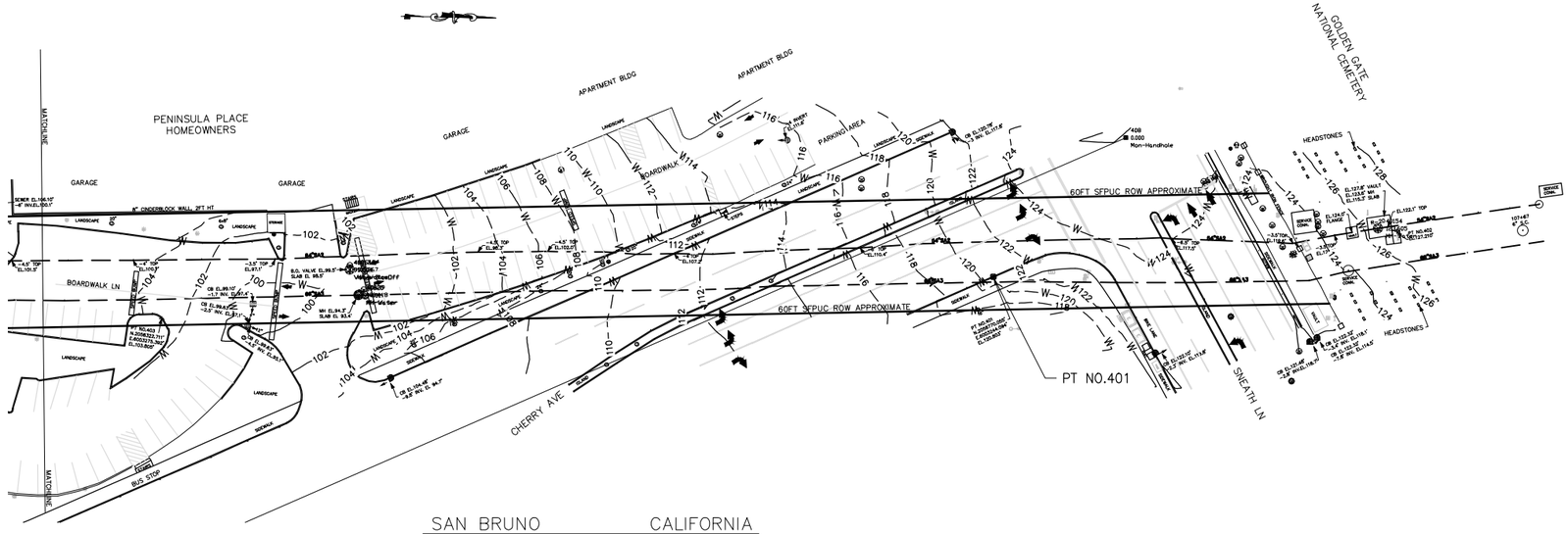
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
TS–1003	E–	0

FILE: Q:\CUW522739\CIVIL\50%SUBMITTAL\ACTIVE\TS–1003.DWG FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4

LEGEND

- = BRASS DISK
- = CUT–X
- = CATCH BASIN
- = DOUBLE ELECTROLIER
- = ELECTRIC BOX
- = FIRE ALARM
- = FIRE HYDRANT
- = MAIL BOX
- = MONUMENT
- = NAIL PK
- = SEWER MANHOLE
- = SIGN
- = SIGNAL PULLBOX
- = STORM MANHOLE
- = STREET LIGHTING
- = TELEPHONE MANHOLE
- = TELEPHONE PULLBOX
- = TRAFFIC SIGNAL
- = TREE
- = TREE MULTI–TRUNKS
- = WATER METER
- = WATER VALVE
- = UNKNOWN PULLBOX





GENERAL NOTES

(1) THE NORTH ORIENTATION OF THIS DRAWING IS BASED UPON A GRID DIRECTION.

(2) THE ELEVATIONS AND CONTOURS SHOWN HEREON ARE BASED UPON LEICA GPS NETWORK DATUM WHICH IS DETERMINED BY EVALUATING MULTIPLE BENCH MARKS IN THE PROJECT AREA.

(3) POINT 401 IN THIS DRAWING IS A CALIFORNIA STATE PLANE ZONE 3 GRID COORDINATE. DERIVED FROM THE LEICA CORS NETWORK SOLUTION, EPOCH 2016.25, USING LEICA GEOMATICS OFFICE SOFTWARE. POINT 400 PROVIDES AN AZIMUTH DIRECTION TO POINT 401.

(4) ALL DISTANCES WITHIN THIS DRAWING ARE BASED UPON THE US SURVEY FOOT AND DECIMALS THEREOF AND ARE GROUND DISTANCES.

(5) THIS SURVEY WAS PREPARED BY SFWD SURVEY UNDER THE DIRECT SUPERVISION OF R.EDWARD PETERSON, LS, CHIEF SURVEYOR.

(6) JOB NUMBER: 16–0016 Seg4.dwg
DATE OF SURVEY: JUNE 15, 2016

(7) THE LAYERING SCHEME FOR THIS DRAWING FIRST CONSISTS OF LAYERS NAMED FOR THE PHYSICAL FEATURES LOCATED IN THE FIELD AND THESE LAYERS CONTAIN THE SURVEY POINTS (POINT MARKERS); FOR EXAMPLE, SYM_STREET(V–NODE– STREET) FOR CURB. THEN A SET OF LAYERS WAS ADDED WHICH CONTAINS ALL THE LINEWORK AND/OR TEXT THAT IS ASSOCIATED WITH THOSE PHYSICAL FEATURES AND IS SIMILARLY NAMED, FOR EXAMPLE, LN_CURB. LASTLY POINT LABELS WHICH CONSIST OF THE POINT NAME, ELEVATION AND DESCRIPTION ARE ON THE V–NODE_LAYERS.

(8) THE BENCHMARK IS A BRASS DISK ON CURB OF CHERRY AVE, SE CORNER OF CHERRY AVE AND SNEATH LANE, ELEVATION = 120.803 FEET.

SAN BRUNO CALIFORNIA
JUNE 2016 SCALE: 1" = 40'

SAN ANDREAS NO.2 SEGMENT 4

CITY AND COUNTY OF SAN FRANCISCO

PUBLIC UTILITIES COMMISSION

SAN FRANCISCO WATER DEPARTMENT

Job No. 16–0016 Seg4.dwg Sheet 1 of 1

ELEVATION DATUM
NAD83
NAVD88

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

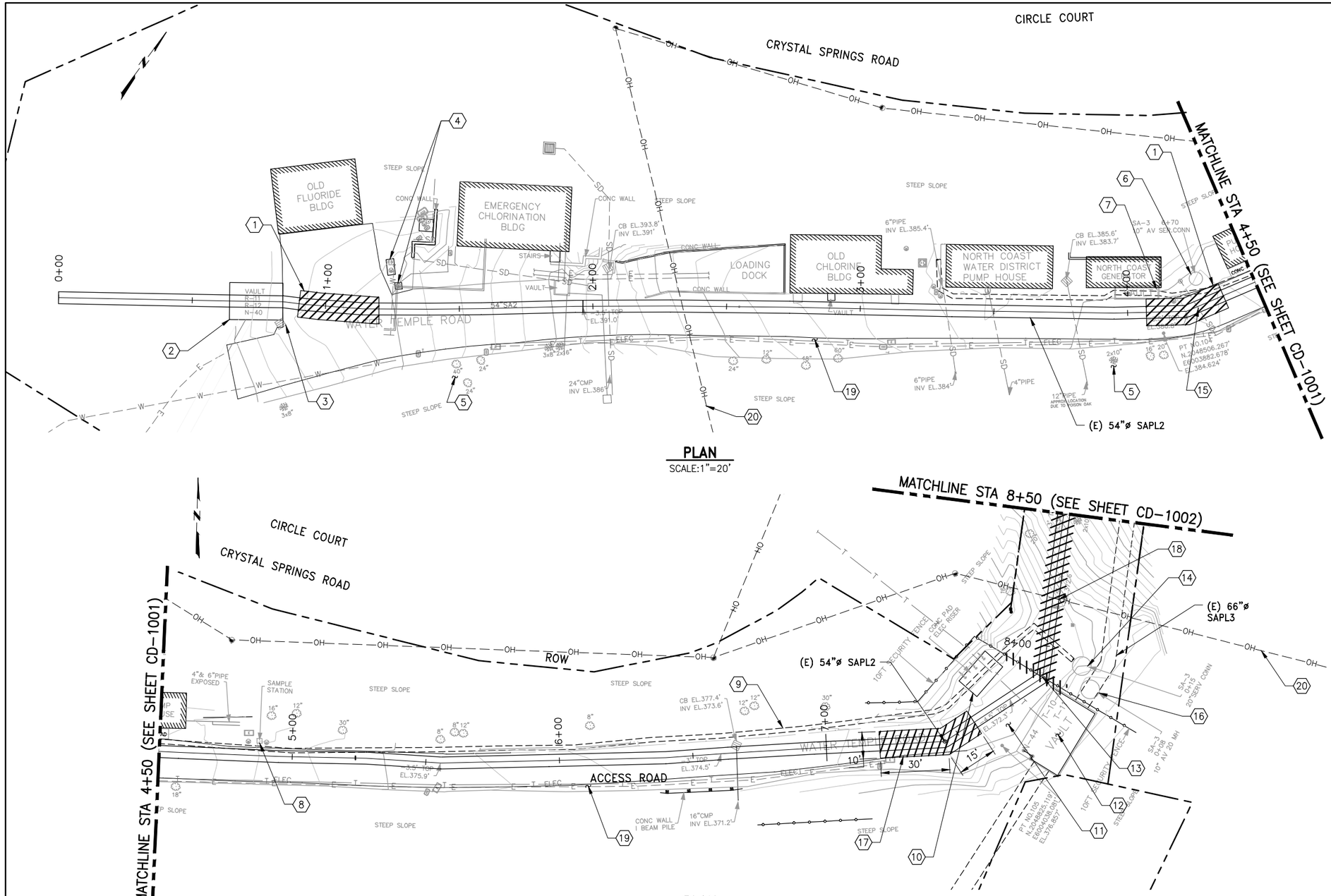
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

TOPO SURVEY SEGMENT 4

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
TS–1004	E–	0



SHEET NOTES:

1. DEMO (E) 54" DIA. SAPL2 PIPE AND PAVEMENT WITHIN 10'x30' SLIPLINE ACCESS POINT. REPAVE ACCESS PIT, SEE C-1001
2. PROTECT (E) ISOLATION VALVE VAULT (R12)
3. PROTECT (E) GRATE
4. PROTECT (E) CONCRETE PADS WITH FIRE HYDRANT AND VALVES
5. TRIM TREES AS NEEDED FOR CONSTRUCTION AS APPROVED BY THE CITY ARBORIST (TYP). SEE SPECIFICATION SECTION XX.XX.XX
6. PROTECT (E) SAPL3 VAULT
7. PROTECT (E) VAULT ADJACENT TO SLIPLINING PIT
8. PROTECT (E) SAMPLE STATION
9. PROTECT (E) 20"ø SFWD
10. PROTECT (E) ELECTRICAL CONCRETE PAD
11. PROTECT (E) CONCRETE PAD
12. PROTECT (E) VALVE VAULT
13. REMOVE (E) 10 FT TALL BARB WIRE CHAIN LINK FENCE
14. PROTECT (E) ISOLATION VALVE (T10R)
15. REMOVE (E) STORM DRAIN
16. PROTECT (E) AV VAULT
17. DEMO (E) 54" DIA. SAPL2 PIPE AND PAVEMENT WITHIN SLIPLINE ACCESS POINT. REPAVE ACCESS PIT. SEE C-1001
18. DEMO (E) 54"ø SAPL2
19. REMOVE (E) FIBER ROLLS ALONG SOUTH SIDE OF WATER TEMPLE ROAD (TYP).
20. CAUTION: LOW OVERHEAD, HIGH VOLTAGES ELECTRICAL LINES.

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

0 20 40 60
SCALE: 1" = 20'-0"

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
DEBORAH C. RISSELL
No. C69681
Exp. 6/30/18
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

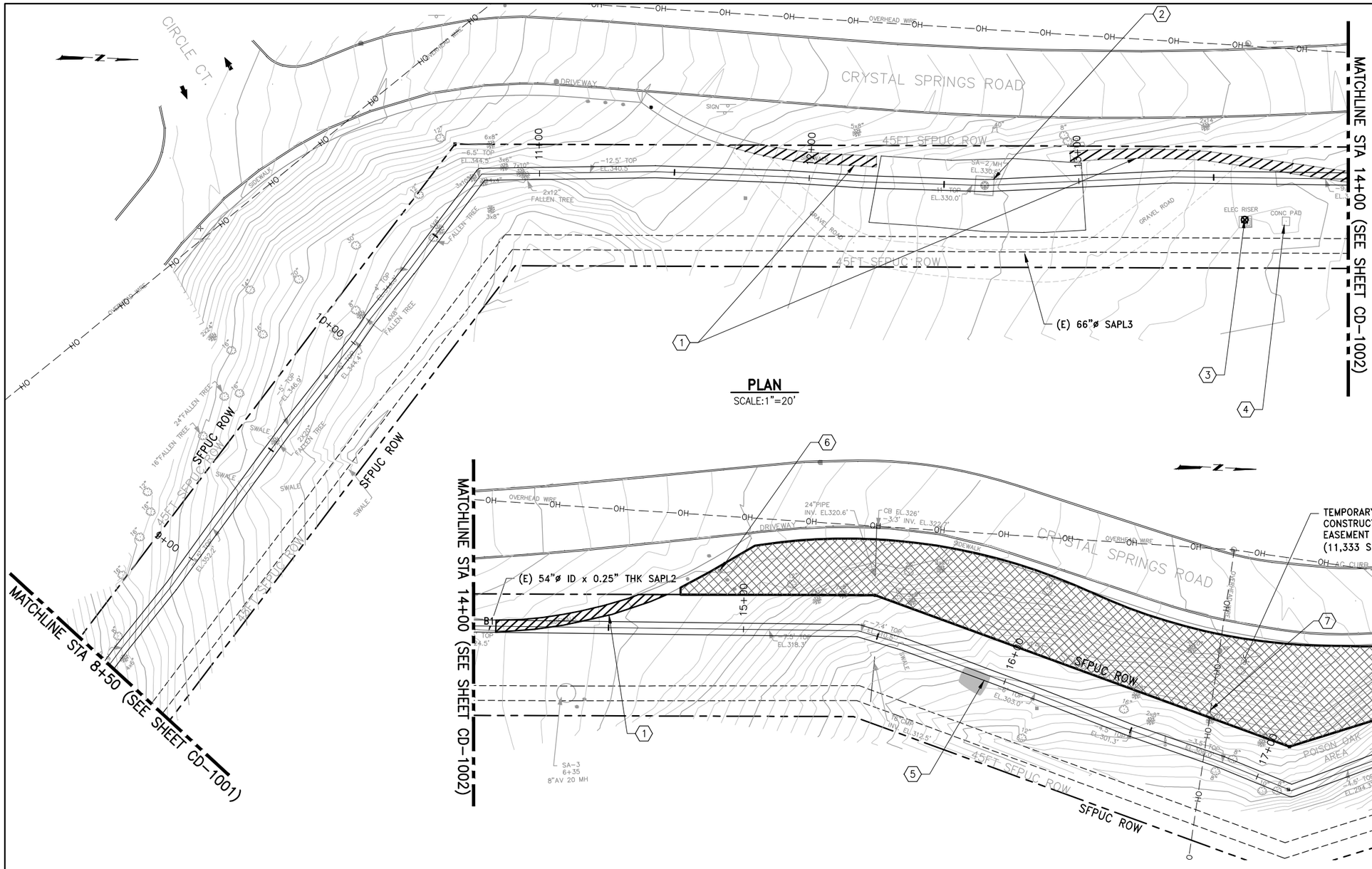
CIVIL DEMOLITION PLAN - SEGMENT 1
(STA 0+00 TO STA 8+50)

CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING/FILE NO.	REVISION NO.
CD-1001	E-	0

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\CD-1001.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



PLAN
SCALE:1"=20'

PLAN
SCALE:1"=20'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

SHEET NOTES:

1. REMOVE (E) SIDEWALK WITH IN ROW AS REQUIRED FOR CONSTRUCTION
2. REMOVE (E) MANHOLE
3. PROTECT (E) RECTIFIER B1
4. PROTECT (E) CONCRETE PAD
5. REMOVE (E) BOX
6. PROTECT (E) BOLLARDS
7. CAUTION: LOW OVERHEAD, HIGH VOLTAGES ELECTRICAL LINES.

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

0 20 40 60
SCALE: 1" = 20'-0"

50% SUBMITTAL

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
DEBORAH C. RUSSELL
No. C69681
Exp. 6/30/18
CIVIL
STATE OF CALIFORNIA

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

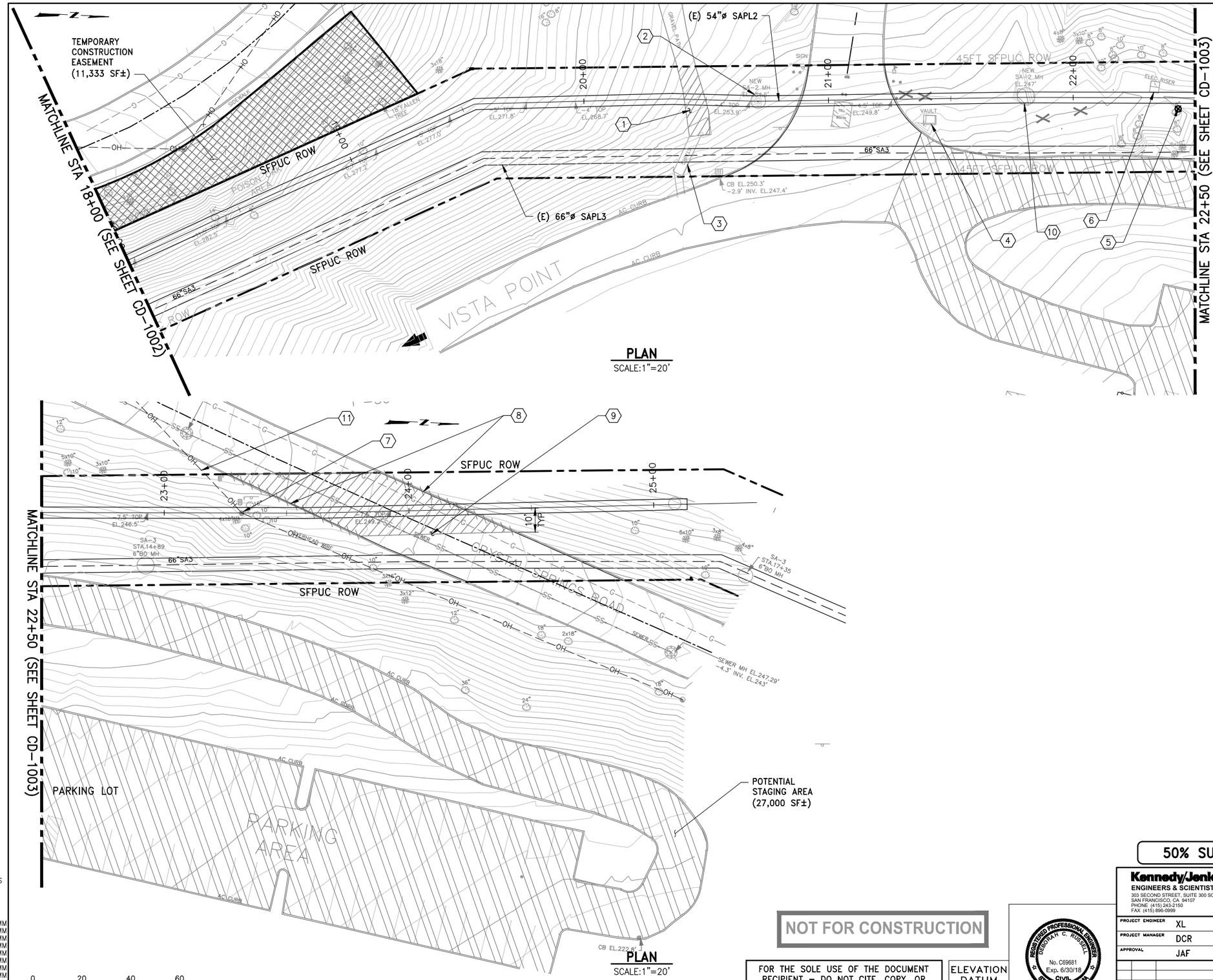
CIVIL DEMOLITION PLAN – SEGMENT 1
(STA 8+50 TO STA 18+00)

CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING/FILE NO.	REVISION NO.
CD-1002	E-	0

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\CD-1002.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



PLAN
SCALE:1"=20'

PLAN
SCALE:1"=20'

0 20 40 60
SCALE: 1" = 20'-0"

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

SHEET NOTES:

1. REMOVE GRAVEL PATH
2. REMOVE SAPL2 MANHOLE
3. PROTECT (E) STAIRS
4. PROTECT (E) VAULT
5. REMOVE (E) RECTIFIER B2
6. REMOVE (E) ELECTRICAL RISER
7. (E) OH WIRE POLE TO BE RELOCATED
8. REMOVE (E) CONCRETE CURB
9. CRYSTAL SPRINGS ROAD TO BE REPAVED, SEE C-1003
10. PROTECT (E) SAPL2 MANHOLE
11. CAUTION: LOW OVERHEAD, HIGH VOLTAGES ELECTRICAL LINES.

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
DEBORAH C. RUSSELL
No. C69681
Exp. 6/30/18
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

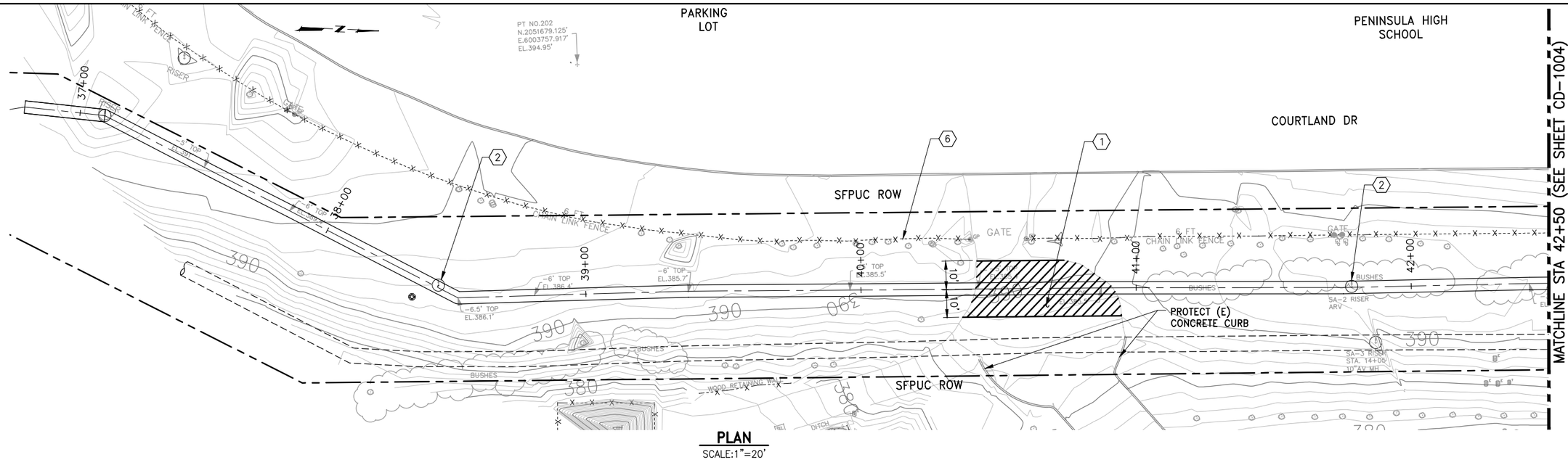
SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

CIVIL DEMOLITION PLAN - SEGMENT 1
(STA 18+00 TO STA 25+15)

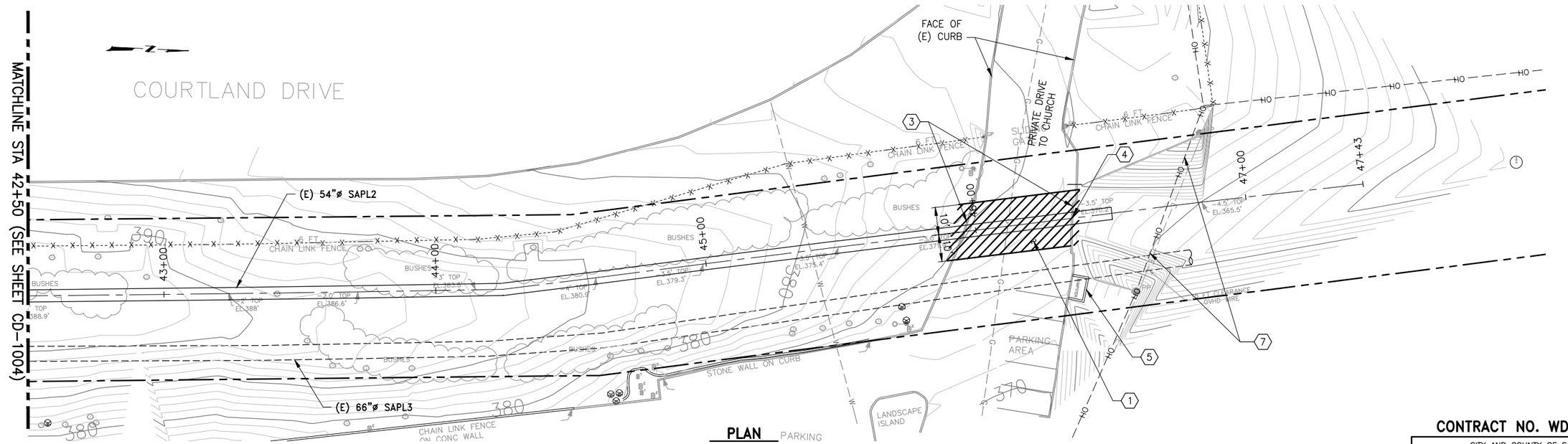
CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. CD-1003	DRAWING/FILE NO. E-	REVISION NO. 0	

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\CD-1003.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



PLAN
SCALE:1"=20'



PLAN PARKING
SCALE:1"=20'

SHEET NOTES:

1. REMOVE (E) PAVEMENT, SEE C-1004
2. REMOVE (E) SAPL2 WATER VALVE
3. REMOVE (E) CURB
4. REMOVE (E) RAMP
5. PROTECT (E) 71" TALL CMU WALL TRASH ENCLOSURE
6. PROTECT (E) FENCE
7. CAUTION: LOW OVERHEAD, HIGH VOLTAGES ELECTRICAL LINES.

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

0 20 40 60
SCALE: 1" = 20'-0"

NOT FOR CONSTRUCTION

FOR THE SOLE USE OF THE DOCUMENT RECIPIENT - DO NOT CITE, COPY, OR CIRCULATE WITHOUT THE EXPRESSED PERMISSION OF THE SFPUC.

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
DEBORAH C. RUSSELL
No. C69681
Exp. 6/30/18
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

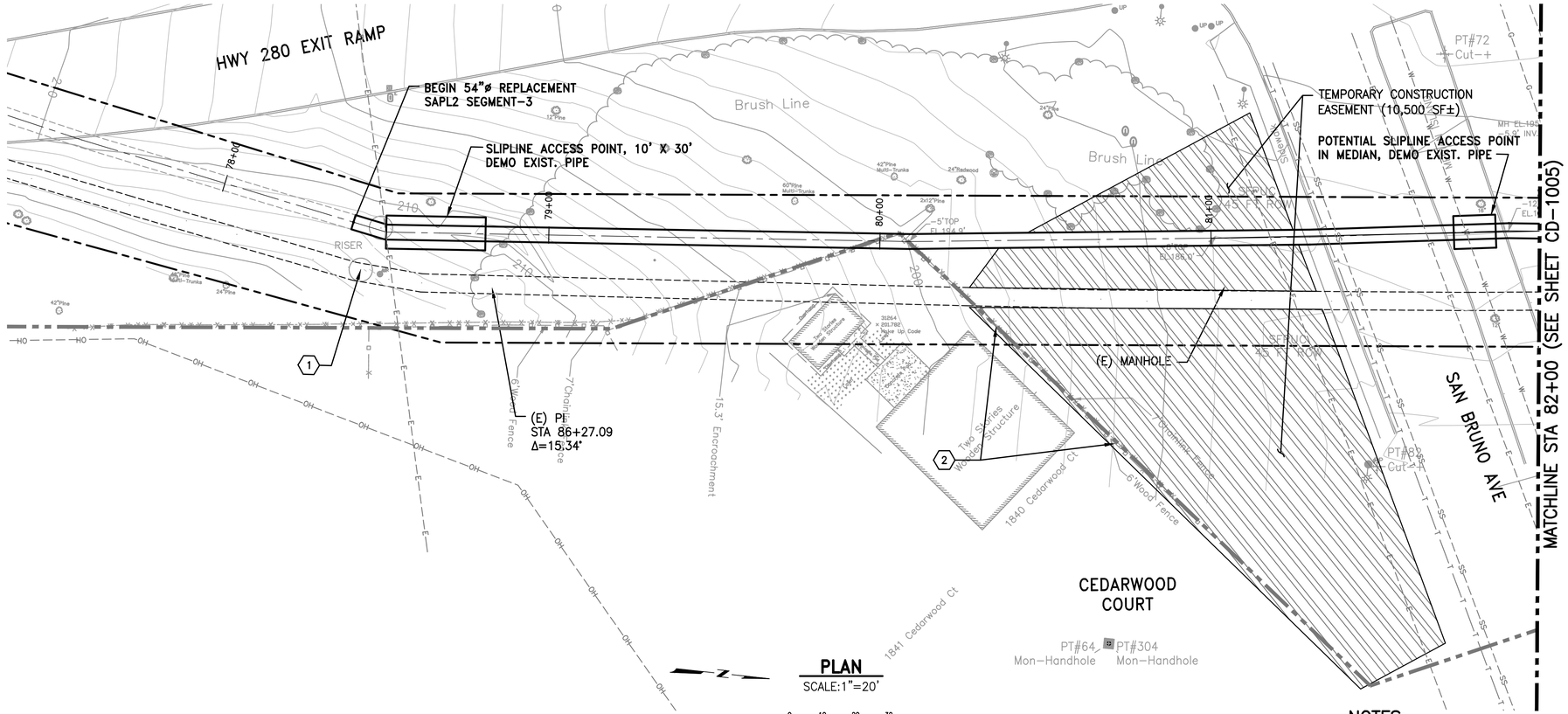
CIVIL DEMOLITION PLAN - SEGMENT 2
(STA 38+00 TO STA 47+00)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCT. 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING/FILE NO.	REVISION NO.
CD-1004	E-	0

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\CD-1004.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



DEMOLITION KEY NOTES:

1. PROTECT SA3 STRUCTURES AND AIR VENT.
2. PROTECT FENCE AND ADJACENT PROPERTY.
3. PROTECT IN PLACE, FENCE.
4. PROTECT IN PLACE, SERVICE CONN. & SURROUNDING VALVES
5. REMOVE GATE AND FENCE TO NEXT FENCE POST OUT.
6. PROTECT IN PLACE, BOLLARDS AND WATER METER
7. PROTECT IN PLACE, BOLLARDS AND FIRE HYDRANT
8. PROTECT IN PLACE, SIDEWALK
9. PROTECT IN PLACE, CATCH BASIN
10. REMOVE CONCRETE PAVEMENT/ SIDEWALK
11. REMOVE ASPHALT CONCRETE PAVEMENT
12. REMOVE CONCRETE CURB/ GUTTER
13. REMOVE 8' HIGH FENCE TO NEXT FENCE POST OUT
14. REMOVE AND SALVAGE DISC GOLF HOLE (?)
15. REMOVE WALKING PATH
16. FOR ACTUAL WIDTH OF AC PAVEMENT REMOVAL, SEE TRENCH DETAIL, DWG _____.
17. REMOVE AND SALVAGE "NO SKATEBOARDING" SIGN
18. PROTECT IN PLACE, "BLDG. 3 ENTRY" SIGN
19. REMOVE CONCRETE CURB
20. REMOVE RED 12" CURB AND WEEP HOLES
21. REMOVE AND SALVAGE "NO ROLLERBLADING" SIGN
22. REMOVE FENCE
23. REMOVE AND SALVAGE LIGHT AND LIGHT POLE
24. REMOVE AND SALVAGE WHEEL STOPS
25. PROTECT IN PLACE, 40" DIA. TREE
26. REMOVE CARPORT
27. REMOVE PORTION OF SPEED BUMP
28. REMOVE GARBAGE SHED
29. RELOCATE MAILBOXES (HOA TO DET. LOCATION)
30. RELOCATE CONCRETE WALKWAY
31. REMOVE RED CONCRETE CURB
32. REMOVE SURVEY MONUMENT "S.V.W.Co."
33. REMOVE AND SALVAGE "SPEED LIMIT 10" SIGN
34. REMOVE AND SALVAGE "STOP" SIGN
35. REMOVE AND SALVAGE WROUGHT IRON FENCE AND GATE
36. PROTECT IN PLACE, CITY OF SAN BRUNO SERVICE CONNECTION
37. PROTECT IN PLACE, WATER VALVE
38. PROTECT IN PLACE, ANODE
39. REMOVE VAULT
40. REMOVE ELECTRICAL RECTIFIER BOX AND SURROUNDING ITEMS FOR NEW RECTIFIER, SEE CP-_____.
41. PROTECT IN PLACE, CONCRETE FENCE COLUMN
42. REMOVE CONCRETE MOUNTABLE CURB/GUTTER

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.
4. SEE DWGS. CD-4001 THROUGH CD-4008 AND C-4001 THROUGH C-4008 FOR EXISTING UTILITY INFORMATION AND NOTES.
5. PROTECT SA3 PIPELINE AND APPURTANENCES AT ALL TIMES.
6. PROTECT ALL FEATURES IN AND AROUND ALL TEMPORARY CONSTRUCTION EASEMENTS (STAGING AREAS).
7. FOR TREE AND LANDSCAPING REMOVAL, SEE DWG _____.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
KENNETH JAMES LITLE
No. C39230
Exp. 12/31/2013
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

AGS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CIVIL DEMOLITION PLAN – SEGMENT 3
(STA 77+00 TO STA 86+00)

CHECKED / APPROVED: KL	DRAWN: JL
SECTION MANAGER	DESIGNED: TD
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: 10/14/16
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION
PLAN NO.: CD-1005	DRAWING/FILE NO.
	REVISION NO.: 0

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

FILE: Z:\AGS\PROJECT\2014\AGS-14-027 SFPUC CS-386 AS-NEEDED ENGINEERING (KJ-AGS JV)\8_PRODUCTION\1_DRAWINGS\2_SHEETS\CD-1005.DGN

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES

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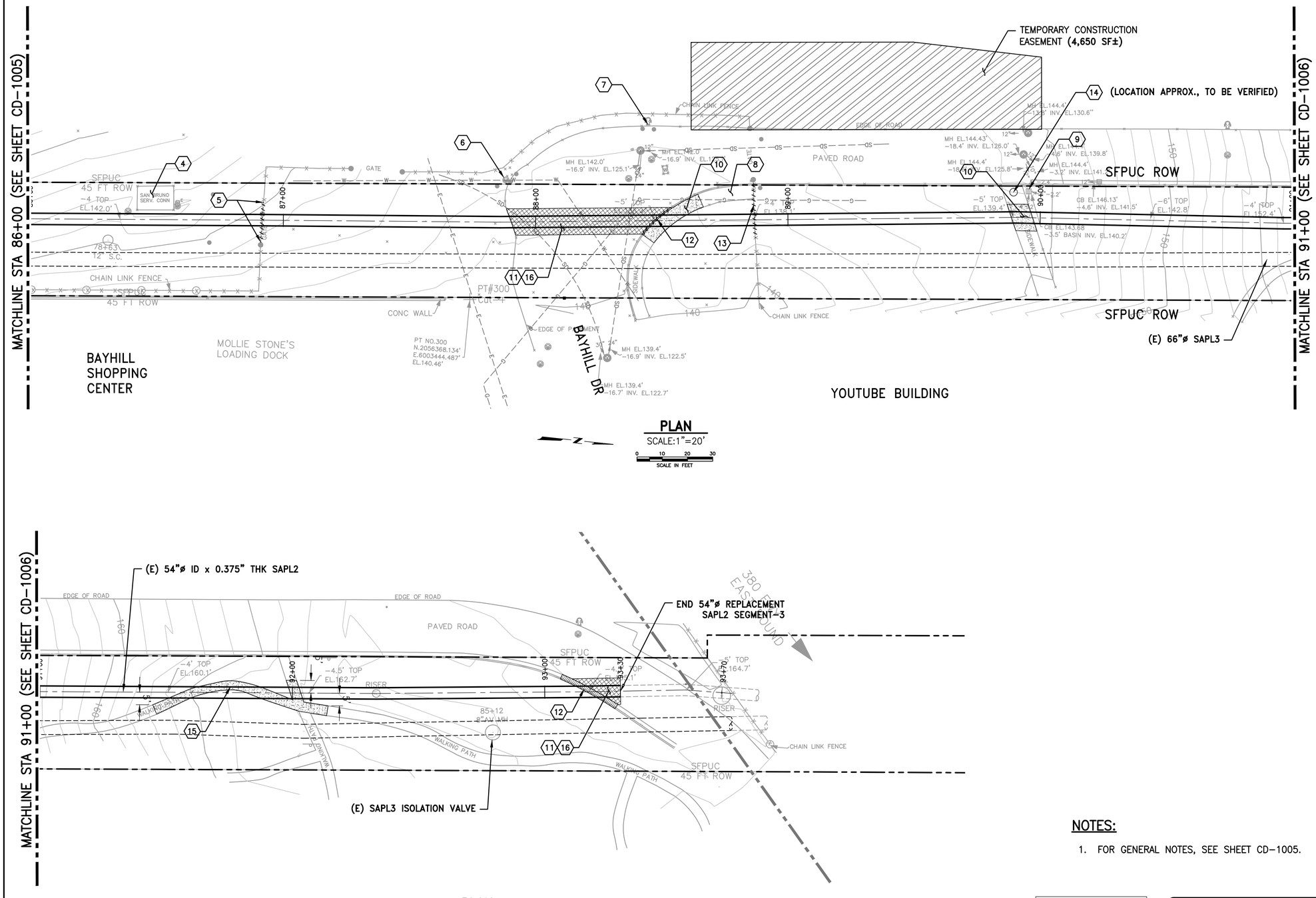

DEMOLITION KEY NOTES:

1. PROTECT SA3 STRUCTURES AND AIR VENT.
2. PROTECT FENCE AND ADJACENT PROPERTY.
3. PROTECT IN PLACE, FENCE.
4. PROTECT IN PLACE, SERVICE CONN. & SURROUNDING VALVES
5. REMOVE GATE AND FENCE TO NEXT FENCE POST OUT.
6. PROTECT IN PLACE, BOLLARDS AND WATER METER
7. PROTECT IN PLACE, BOLLARDS AND FIRE HYDRANT
8. PROTECT IN PLACE, SIDEWALK
9. PROTECT IN PLACE, CATCH BASIN
10. REMOVE CONCRETE PAVEMENT/ SIDEWALK
11. REMOVE ASPHALT CONCRETE PAVEMENT
12. REMOVE CONCRETE CURB/ GUTTER
13. REMOVE 8' HIGH FENCE TO NEXT FENCE POST OUT
14. REMOVE AND SALVAGE DISC GOLF HOLE (?)
15. REMOVE WALKING PATH
16. FOR ACTUAL WIDTH OF AC PAVEMENT REMOVAL, SEE TRENCH DETAIL, DWG _____.
17. REMOVE AND SALVAGE "NO SKATEBOARDING" SIGN
18. PROTECT IN PLACE, "BLDG. 3 ENTRY" SIGN
19. REMOVE CONCRETE CURB
20. REMOVE RED 12" CURB AND WEEP HOLES
21. REMOVE AND SALVAGE "NO ROLLERBLADING" SIGN
22. REMOVE FENCE
23. REMOVE AND SALVAGE LIGHT AND LIGHT POLE
24. REMOVE AND SALVAGE WHEEL STOPS
25. PROTECT IN PLACE, 40" DIA. TREE
26. REMOVE CARPORT
27. REMOVE PORTION OF SPEED BUMP
28. REMOVE GARBAGE SHED
29. RELOCATE MAILBOXES (HOA TO DET. LOCATION)
30. RELOCATE CONCRETE WALKWAY
31. REMOVE RED CONCRETE CURB
32. REMOVE SURVEY MONUMENT "S.V.W.Co."
33. REMOVE AND SALVAGE "SPEED LIMIT 10" SIGN
34. REMOVE AND SALVAGE "STOP" SIGN
35. REMOVE AND SALVAGE WROUGHT IRON FENCE AND GATE
36. PROTECT IN PLACE, CITY OF SAN BRUNO SERVICE CONNECTION
37. PROTECT IN PLACE, WATER VALVE
38. PROTECT IN PLACE, ANODE
39. REMOVE VAULT
40. REMOVE ELECTRICAL RECTIFIER BOX AND SURROUNDING ITEMS FOR NEW RECTIFIER, SEE CP-_____.
41. PROTECT IN PLACE, CONCRETE FENCE COLUMN
42. REMOVE CONCRETE MOUNTABLE CURB/GUTTER

NOTES:

1. FOR GENERAL NOTES, SEE SHEET CD-1005.

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
KENNETH JAMES LITLE
No. C39230
Exp. 12/31/2013
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

AGS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CIVIL DEMOLITION PLAN – SEGMENT 3
(STA 86+00 TO STA 94+00)

CHECKED / APPROVED: KL	DRAWN: JL
SECTION MANAGER	DESIGNED: TD
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: 10/14/16
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION
PLAN NO.: CD-1006	DRAWING/FILE NO.:
	REVISION NO.: 0

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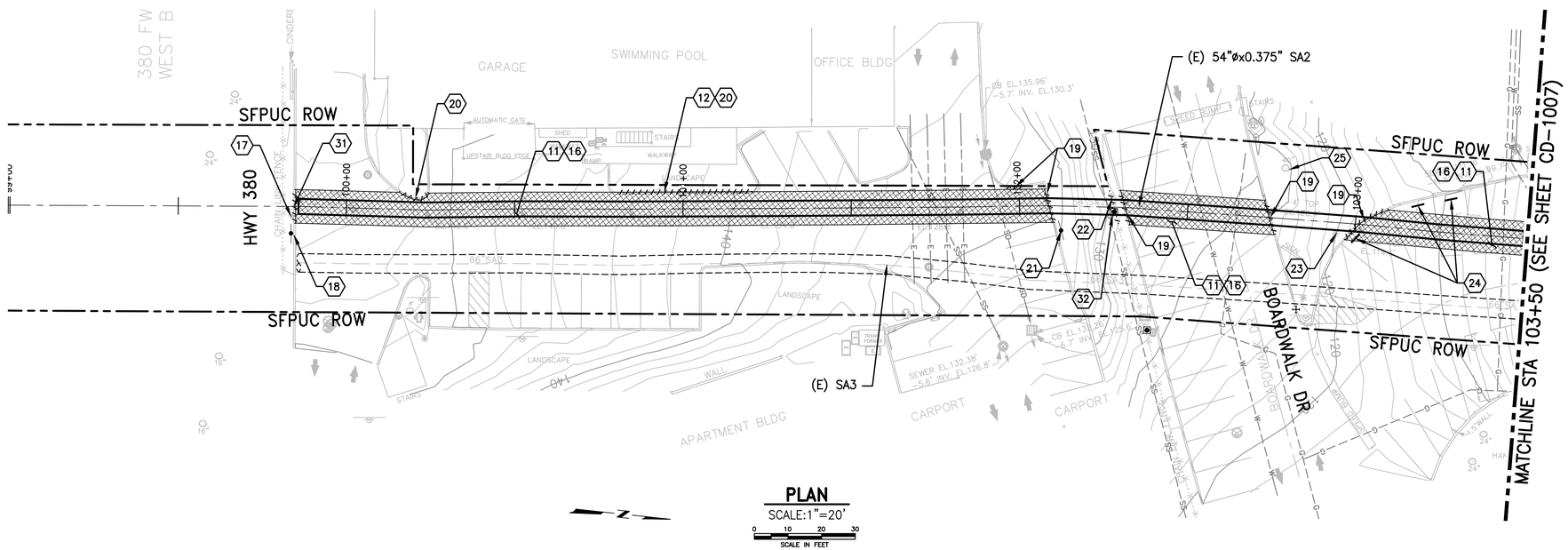
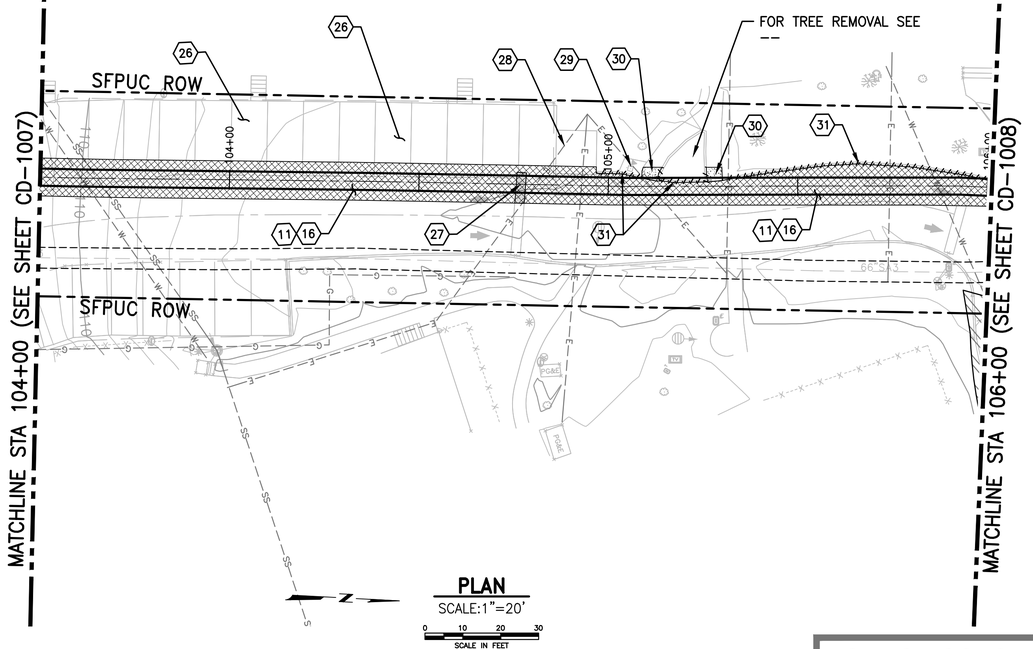
FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



PLAN
SCALE: 1"=20'
0 10 20 30
SCALE IN FEET



PLAN
SCALE: 1"=20'
0 10 20 30
SCALE IN FEET

DEMOLITION KEY NOTES:

1. PROTECT SA3 STRUCTURES AND AIR VENT.
2. PROTECT FENCE AND ADJACENT PROPERTY.
3. PROTECT IN PLACE, FENCE.
4. PROTECT IN PLACE, SERVICE CONN. & SURROUNDING VALVES
5. REMOVE GATE AND FENCE TO NEXT FENCE POST OUT.
6. PROTECT IN PLACE, BOLLARDS AND WATER METER
7. PROTECT IN PLACE, BOLLARDS AND FIRE HYDRANT
8. PROTECT IN PLACE, SIDEWALK
9. PROTECT IN PLACE, CATCH BASIN
10. REMOVE CONCRETE PAVEMENT/ SIDEWALK
11. REMOVE ASPHALT CONCRETE PAVEMENT
12. REMOVE CONCRETE CURB/ GUTTER
13. REMOVE 8' HIGH FENCE TO NEXT FENCE POST OUT
14. REMOVE AND SALVAGE DISC GOLF HOLE (?)
15. REMOVE WALKING PATH
16. FOR ACTUAL WIDTH OF AC PAVEMENT REMOVAL, SEE TRENCH DETAIL, DWG _____.
17. REMOVE AND SALVAGE "NO SKATEBOARDING" SIGN
18. PROTECT IN PLACE, "BLDG. 3 ENTRY" SIGN
19. REMOVE CONCRETE CURB
20. REMOVE RED 12" CURB AND WEEP HOLES
21. REMOVE AND SALVAGE "NO ROLLERBLADING" SIGN
22. REMOVE FENCE
23. REMOVE AND SALVAGE LIGHT AND LIGHT POLE
24. REMOVE AND SALVAGE WHEEL STOPS
25. PROTECT IN PLACE, 40" DIA. TREE
26. REMOVE CARPORT
27. REMOVE PORTION OF SPEED BUMP
28. REMOVE GARBAGE SHED
29. RELOCATE MAILBOXES (HOA TO DET. LOCATION)
30. RELOCATE CONCRETE WALKWAY
31. REMOVE RED CONCRETE CURB
32. REMOVE SURVEY MONUMENT "S.V.W.Co."
33. REMOVE AND SALVAGE "SPEED LIMIT 10" SIGN
34. REMOVE AND SALVAGE "STOP" SIGN
35. REMOVE AND SALVAGE WROUGHT IRON FENCE AND GATE
36. PROTECT IN PLACE, CITY OF SAN BRUNO SERVICE CONNECTION
37. PROTECT IN PLACE, WATER VALVE
38. PROTECT IN PLACE, ANODE
39. REMOVE VAULT
40. REMOVE ELECTRICAL RECTIFIER BOX AND SURROUNDING ITEMS FOR NEW RECTIFIER, SEE CP-_____.
41. PROTECT IN PLACE, CONCRETE FENCE COLUMN
42. REMOVE CONCRETE MOUNTABLE CURB/GUTTER

NOTES:

1. FOR GENERAL NOTES, SEE SHEET CD-1005.
2. CONTRACTOR SHALL USE EXTREME CAUTION NEAR GRAVE MARKERS IN CEMETERY.

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
KENNETH JAMES TITLE
No. C39230
Exp. 12/31/2013
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

AGS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CIVIL DEMOLITION PLAN – SEGMENT 4
(STA 99+00 TO STA 106+00)

CHECKED / APPROVED	DRAWN
KL	JL
SECTION MANAGER	DESIGNED
	TD
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN — DATE: 10/14/16
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

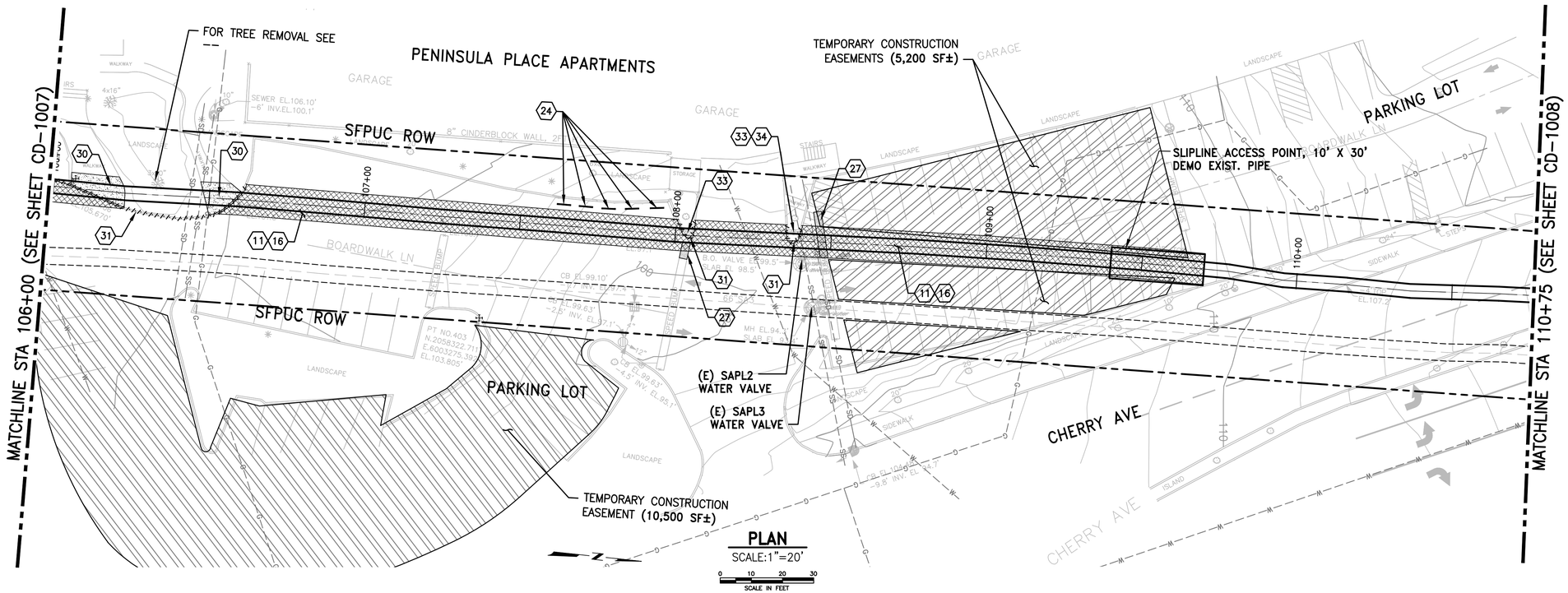
PLAN NO.	DRAWING/FILE NO.	REVISION NO.
CD-1007		0

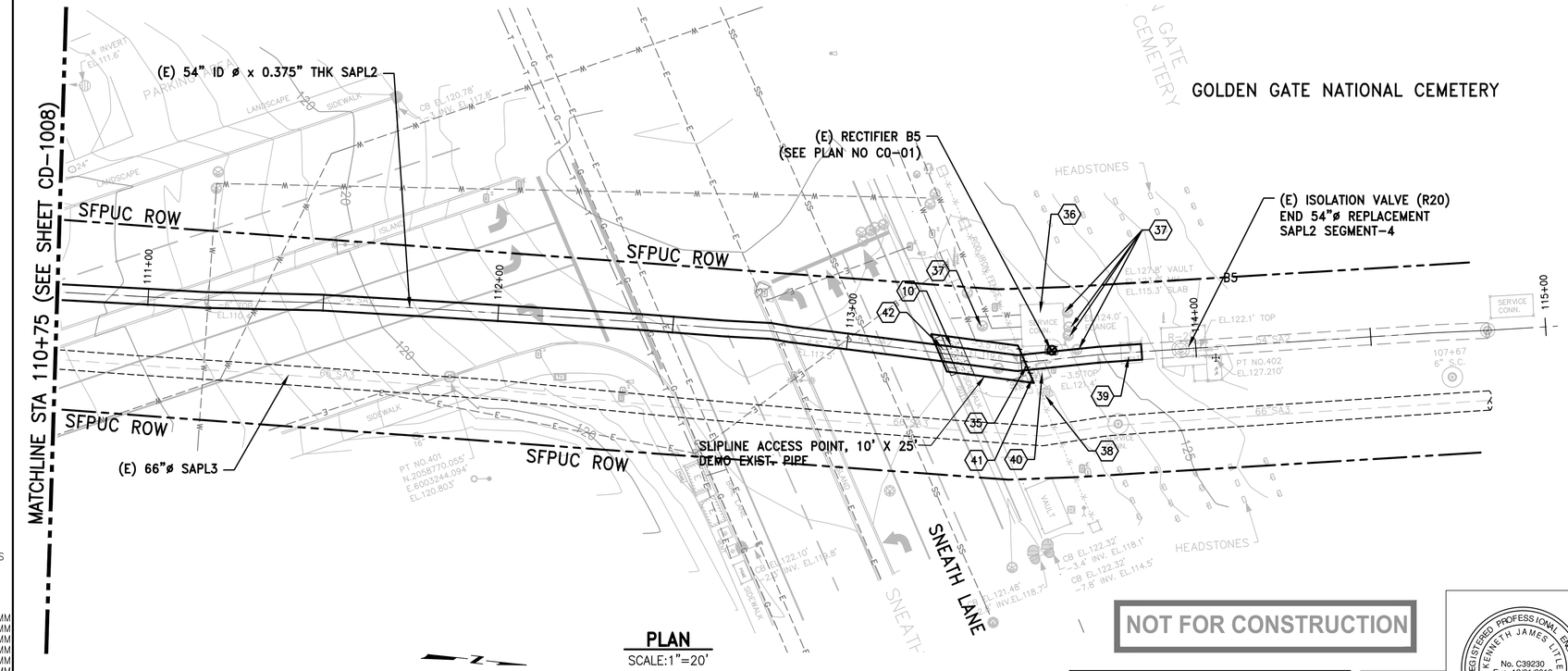
PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

FILE: Z:\AGS\PROJECT\2014\AGS-14-027 SFPUC CS-386 AS-NEEDED ENGINEERING (KJ-AGS JV)\8_PRODUCTION\1_DRAWINGS\2_SHEETS\CD-1007.DGN

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4





DEMOLITION KEY NOTES:

1. PROTECT SA3 STRUCTURES AND AIR VENT.
2. PROTECT FENCE AND ADJACENT PROPERTY.
3. PROTECT IN PLACE, FENCE.
4. PROTECT IN PLACE, SERVICE CONN. & SURROUNDING VALVES
5. REMOVE GATE AND FENCE TO NEXT FENCE POST OUT.
6. PROTECT IN PLACE, BOLLARDS AND WATER METER
7. PROTECT IN PLACE, BOLLARDS AND FIRE HYDRANT
8. PROTECT IN PLACE, SIDEWALK
9. PROTECT IN PLACE, CATCH BASIN
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12. REMOVE CONCRETE CURB/ GUTTER
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15. REMOVE WALKING PATH
16. FOR ACTUAL WIDTH OF AC PAVEMENT REMOVAL, SEE TRENCH DETAIL, DWG _____.
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22. REMOVE FENCE
23. REMOVE AND SALVAGE LIGHT AND LIGHT POLE
24. REMOVE AND SALVAGE WHEEL STOPS
25. PROTECT IN PLACE, 40" DIA. TREE
26. REMOVE CARPORT
27. REMOVE PORTION OF SPEED BUMP
28. REMOVE GARBAGE SHED
29. RELOCATE MAILBOXES (HOA TO DET. LOCATION)
30. RELOCATE CONCRETE WALKWAY
31. REMOVE RED CONCRETE CURB
32. REMOVE SURVEY MONUMENT "S.V.W.Co."
33. REMOVE AND SALVAGE "SPEED LIMIT 10" SIGN
34. REMOVE AND SALVAGE "STOP" SIGN
35. REMOVE AND SALVAGE WROUGHT IRON FENCE AND GATE
36. PROTECT IN PLACE, CITY OF SAN BRUNO SERVICE CONNECTION
37. PROTECT IN PLACE, WATER VALVE
38. PROTECT IN PLACE, ANODE
39. REMOVE VAULT
40. REMOVE ELECTRICAL RECTIFIER BOX AND SURROUNDING ITEMS FOR NEW RECTIFIER, SEE CP-_____.
41. PROTECT IN PLACE, CONCRETE FENCE COLUMN
42. REMOVE CONCRETE MOUNTABLE CURB/GUTTER

NOTES:

1. FOR GENERAL NOTES, SEE SHEET CD-1005.
2. CONTRACTOR SHALL USE EXTREME CAUTION NEAR GRAVE MARKERS IN CEMETERY.

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CIVIL DEMOLITION PLAN – SEGMENT 4
(STA 106+00 TO STA 115+00)

CHECKED / APPROVED	DRAWN	
KL	JL	
SECTION MANAGER	DESIGNED	
	TD	
MAINTENANCE ENGINEERING MANAGER	SCALE	DATE
	AS SHOWN	10/14/16
APPROVED	APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO.	DRAWING/FILE NO.	REVISION NO.
CD-1008		0

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

50% SUBMITTAL

AGS

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
KENNETH JAMES LITTLE
No. C39230
Exp. 12/31/2013
CIVIL
STATE OF CALIFORNIA

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

TREE REMOVAL TABLE

TREE NO.	TRUNK SIZE (IN)	NORTHING	EASTING	DESCRIPTION	PLAN NO.
⊗①	2x10"ø	2048888.0950	6003975.6930		
⊗②	20"ø	2048870.0750	6003972.0120		
⊗③	8"ø	2048887.8670	6003959.9000		
⊗④	4x6"ø	2048890.2980	6003968.0180		
⊗⑤	2x20"ø	2048942.6140	6003885.1740		
⊗⑥	16"ø	2048964.0470	6003844.9820		
⊗⑦	4x8"ø	2048972.1410	6003836.9060		
⊗⑧	8"ø	2048970.3380	6003835.2130		
⊗⑨	TBD	2048997.8120	6003807.0730	FALLEN TREE	
⊗⑩	4x6"ø	2048999.9085	6003803.8150		
⊗⑪	4x4"ø	2049015.4820	6003785.6270		
⊗⑫	3x10"ø	2049011.1460	6003784.2850		
⊗⑬	12"ø	2048991.7030	6003791.4380		
⊗⑭	12"ø	2048998.6100	6003770.0590		
⊗⑮	6x8"ø	2049017.3440	6003771.6260		
⊗⑯	2x12"ø	2049030.7110	6003782.5860		
⊗⑰	7x10"ø	2049028.2939	6003781.5474		
⊗⑱	3x6"ø	2049022.3975	6003779.9372		
⊗⑲	12"ø	2049452.6122	6003749.0986		
⊗⑳	2x12"ø	2049462.1730	6003754.6453		
⊗㉑	7x8"ø	2049471.8064	6003751.7182		
⊗㉒	10"ø	2049491.9446	6003752.8216		
⊗㉓	20"ø	2049495.7110	6003742.2172		
⊗㉔	3x8"ø	2049497.3993	6003753.2163		
⊗㉕	3x20"ø	2049507.3987	6003740.7498		
⊗㉖	10"ø	2049547.2681	6003747.5930		
⊗㉗	16"ø	2049577.6116	6003789.8126		
⊗㉘	3x8"ø	2049581.6371	6003784.2876		
⊗㉙	3x20"ø	2049601.4633	6003766.6090		
⊗㉚	18"ø	2049620.3347	6003773.2952		
⊗㉛	2x8"ø	2049587.9781	6003793.4520		
⊗㉜	2x20"ø	2049609.4826	6003792.4772		
⊗㉝	3x8"ø	2049629.1342	6003799.4659		
⊗㉞	8"ø	2049618.7611	6003806.2054		
⊗㉟	8"ø	2049612.4269	6003811.1358		
⊗㊱	10"ø	2049629.8384	6003817.5017		
⊗㊲	8"ø	2049635.5832	6003817.3841		
⊗㊳	8"ø	2049675.7127	6003805.6870		
⊗㊴	2x18"ø	2049690.4977	6003768.4997		
⊗㊵	18"ø	2049715.3500	6003757.1600		
⊗㊶	18"ø	2049727.7800	6003753.4000		
⊗㊷	4x8"ø	2049723.7700	6003761.5500		
⊗㊸	12"ø	2049741.3800	6003758.9000		
⊗㊹	14"ø	2049758.1050	6003770.6430		
⊗㊺	8"ø	2049774.0590	6003770.8810		

TREE REMOVAL TABLE

TREE NO.	TRUNK SIZE (IN)	NORTHING	EASTING	DESCRIPTION	PLAN NO.
⊗㊻	10"ø	2049820.5400	6003748.0200		
⊗㊼	8"ø	2050152.9440	6003757.8582		
⊗㊽	4x16"ø	2050240.1200	6003761.6900		
⊗㊾	10"ø	2050243.6401	6003765.3798		
⊗㊿	10"ø	2050248.8100	6003760.4600		
⊗(51)	10"ø	2050252.7000	6003762.8100		
⊗(52)	16"ø	2050246.4000	6003756.2400		

NOTES:

1. CONTRACTOR TO REMOVE TREE STUMP/ROOT AS NEEDED TO FACILITATE EXCAVATION AND CONSTRUCTION.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ISSEL MINER H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

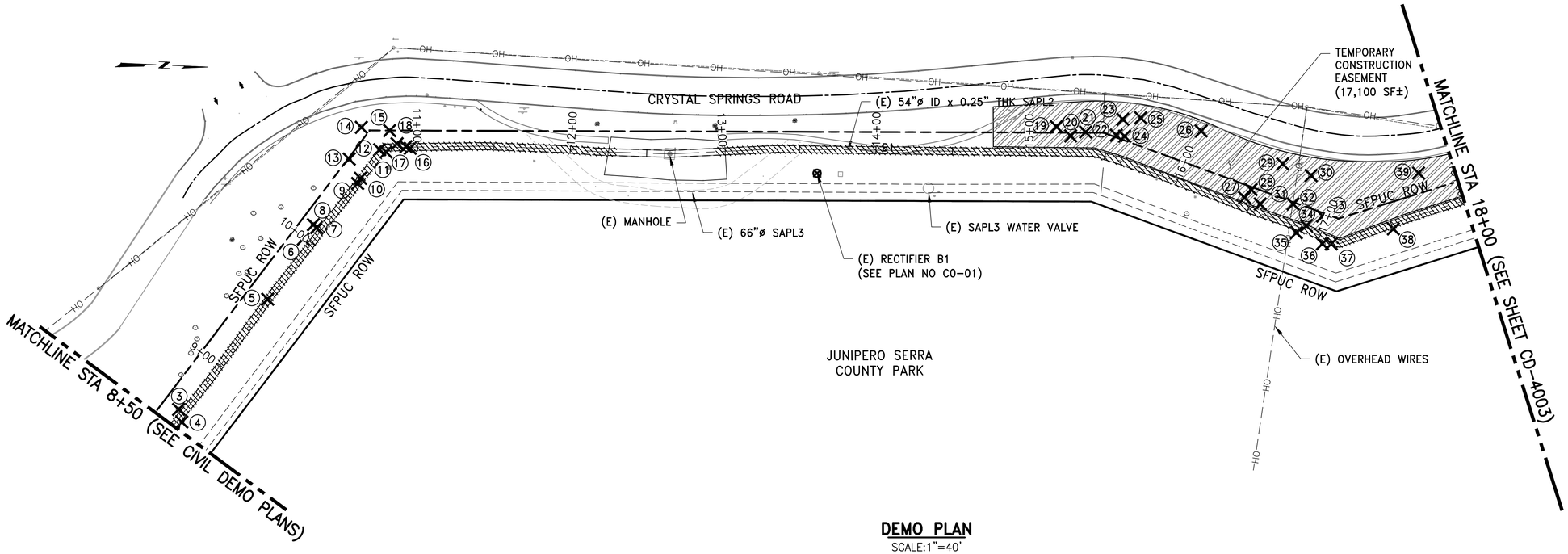
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

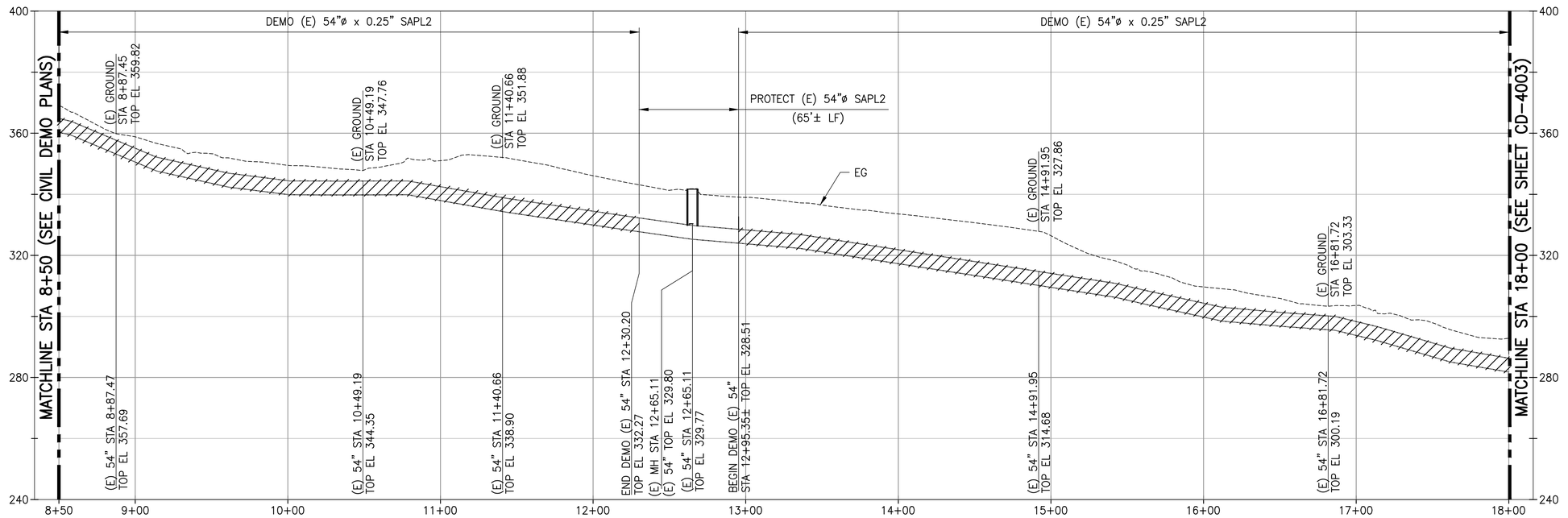
TREE REMOVAL TABLE

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED	APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CD-4009	E-	0



DEMO PLAN
SCALE:1"=40'



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

NOTES:

1. SEE PLAN NO CD-4009 FOR TREE REMOVABLE TABLE.
2. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
3. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
4. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMONEIM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

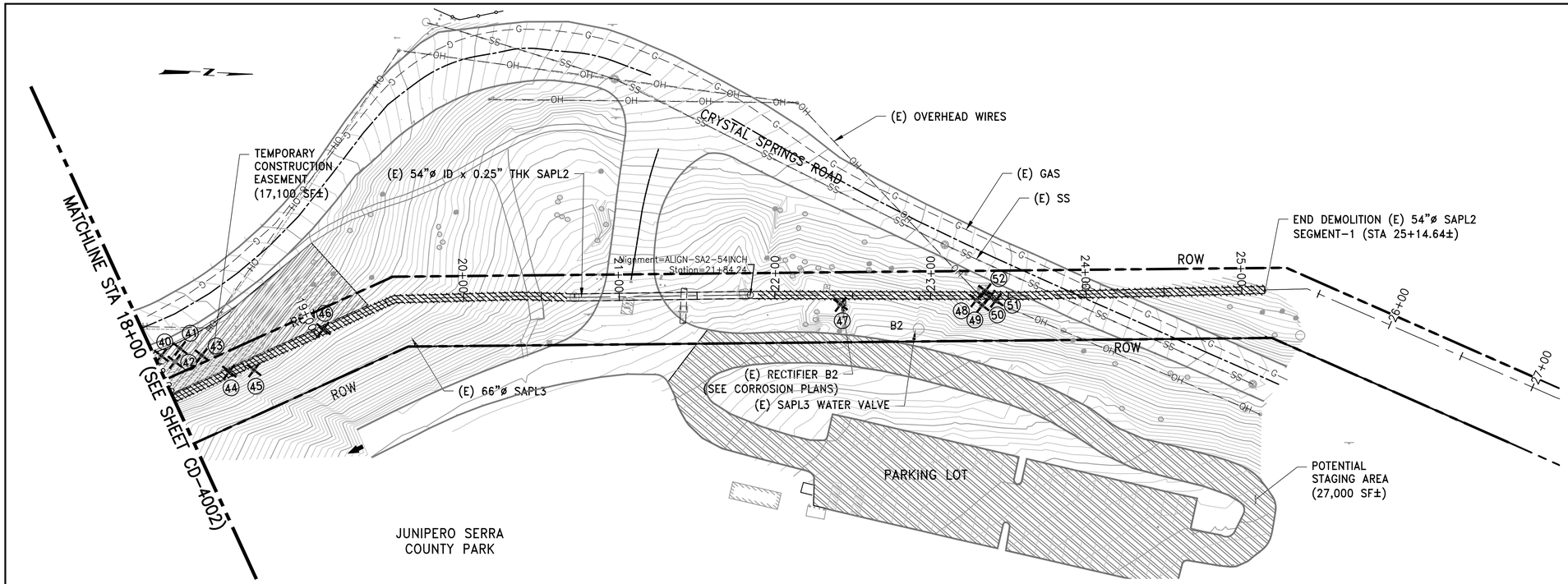
54"ø REPLACEMENT SAPL2 SEGMENT-1
DEMOLITION PLAN (STA 8+50 TO STA 18+00)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CD-4002	E-	0

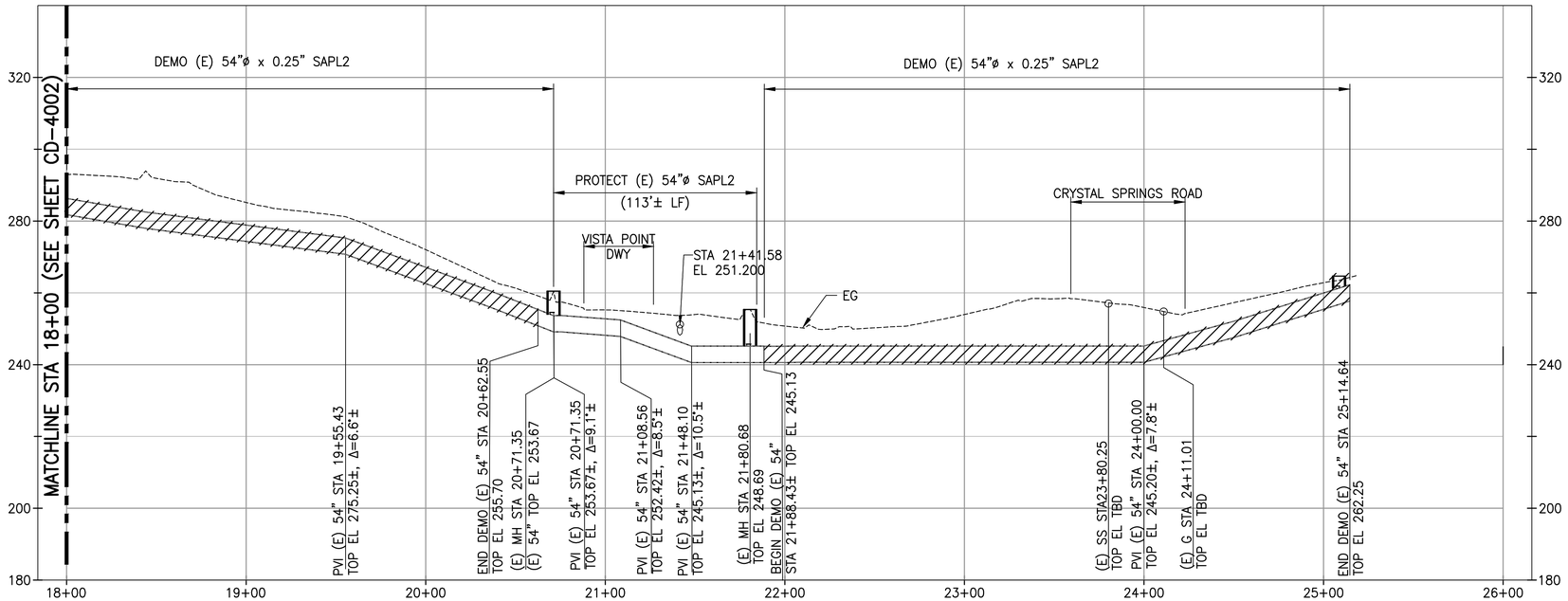
FILE:Q:\CUW522735\CIVIL\50% SUBMITTAL\ACTIVE\CD-4002.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES
0 4



DEMO PLAN

SCALE:1"=40'



PROFILE

SCALE: HORIZ:1"=40';VERT:1"=20'

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

NOTES:

1. SEE PLAN NO CD-4009 FOR TREE REMOVABLE TABLE.
2. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
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4. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMANIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPRD.

REVISIONS

CONTRACT NO. WD-2829

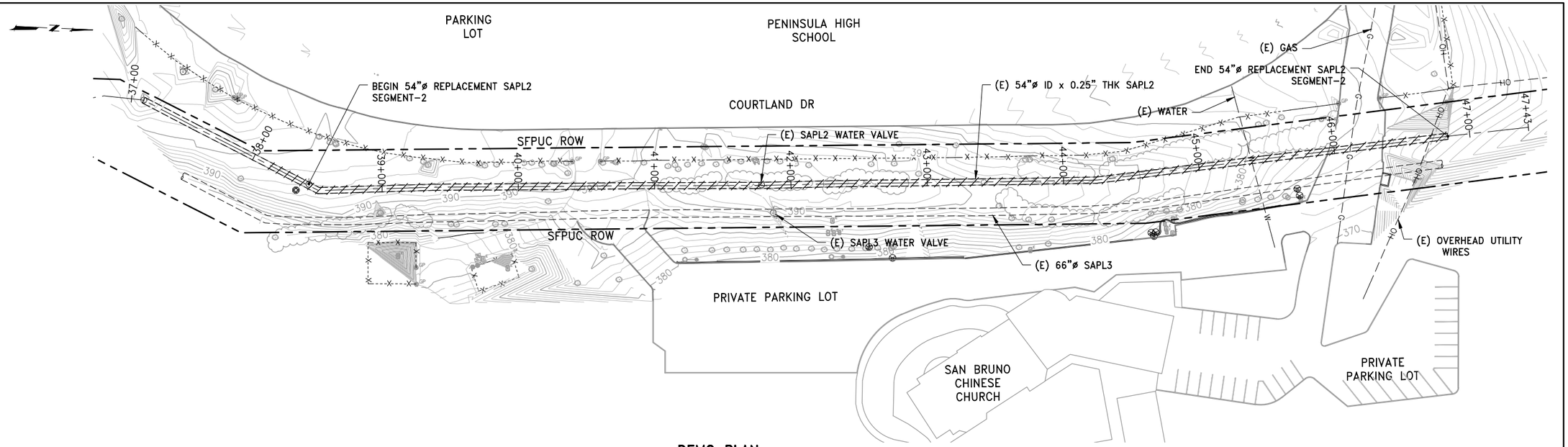
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

54"ø REPLACEMENT SAPL2 SEGMENT-1
DEMOLITION PLAN (STA 18+00 TO STA 26+00)

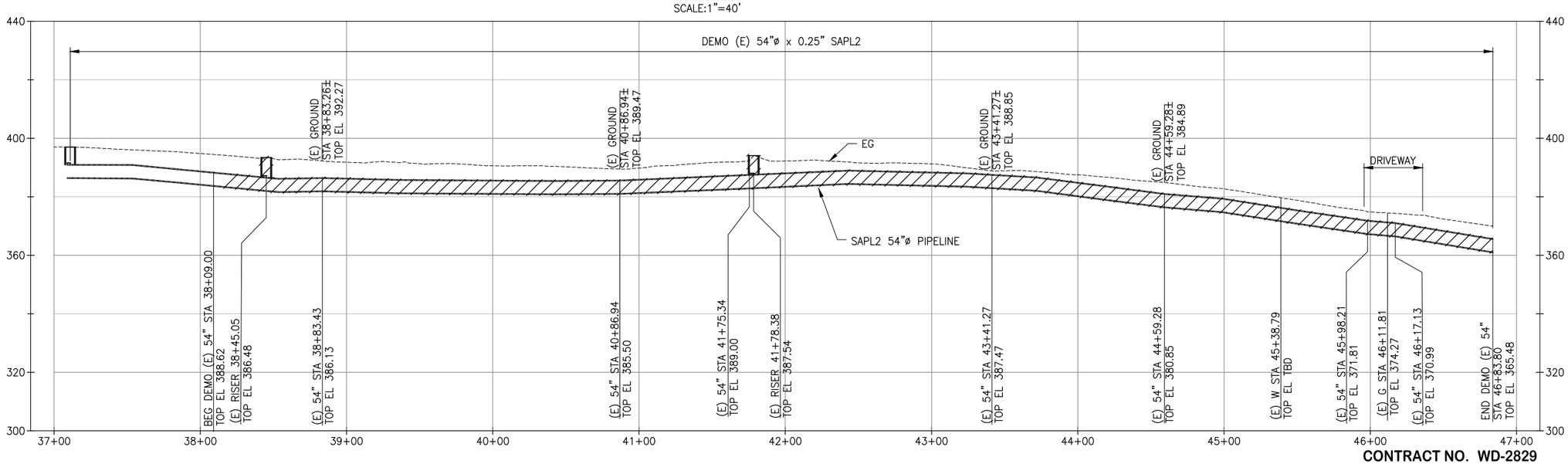
CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CD-4003	E-	0



DEMO PLAN

SCALE:1"=40'



PROFILE

SCALE: HORIZ:1"=40';VERT:1"=20'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER ABDELMANIEM H. ABDELSALAM C 81091 CIVIL STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

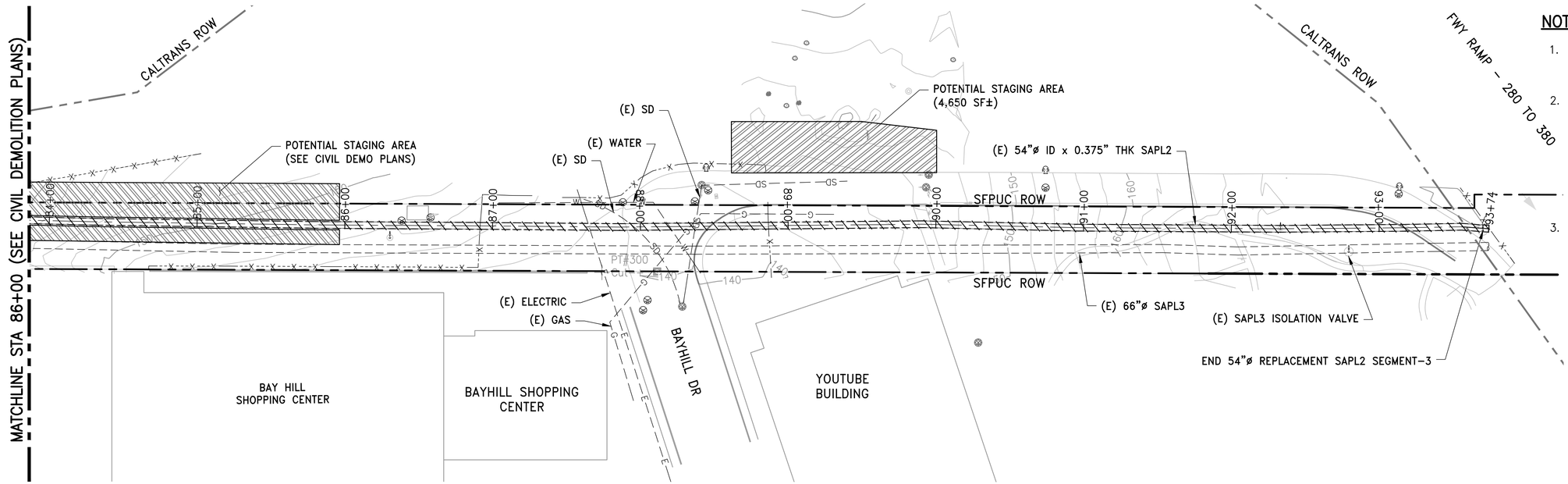
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

54"ø REPLACEMENT SAPL2 SEGMENT-2
DEMOLITION PLAN (STA 36+00 TO STA 47+00)

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CD-4004	E-	0



DEMO PLAN
SCALE:1"=40'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
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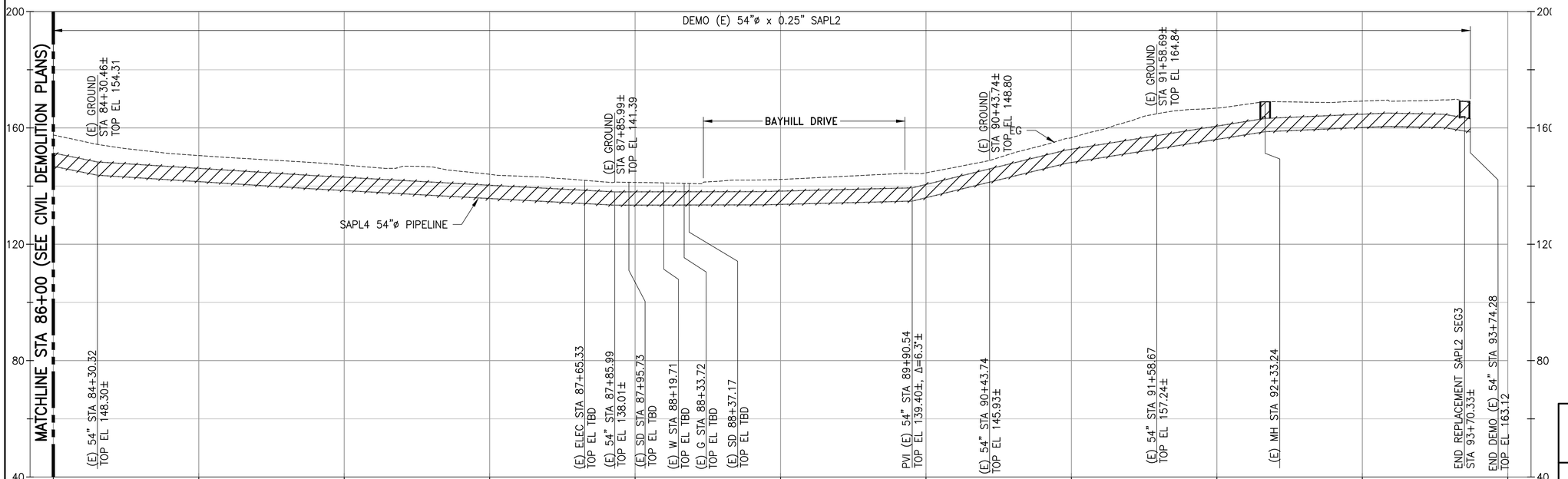
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

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ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMANIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

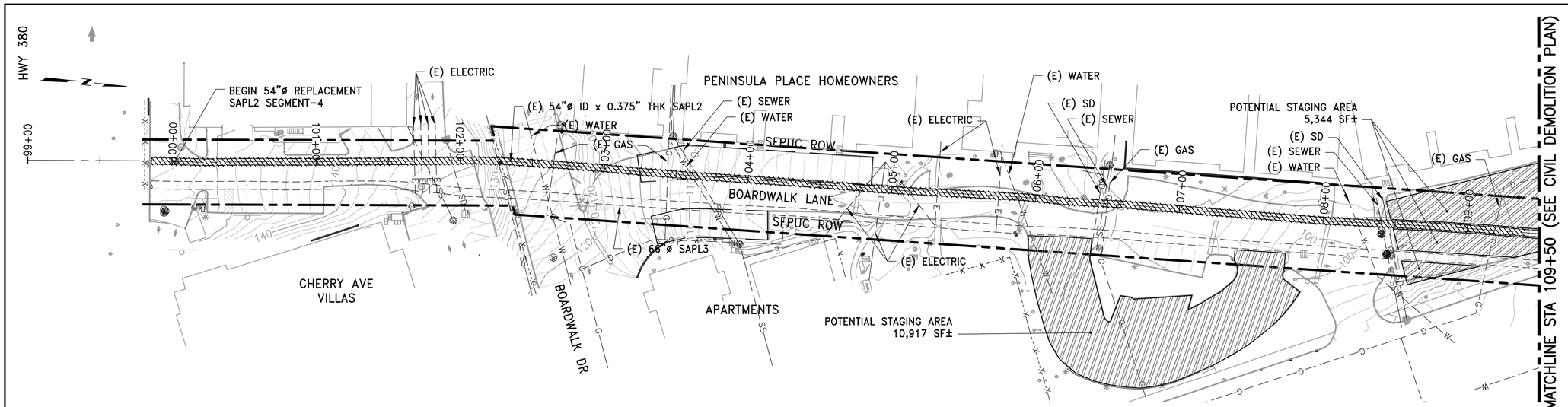
54"ø REPLACEMENT SAPL2 SEGMENT-3
DEMOLITION PLAN (STA 84+00 TO STA 94+00)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION

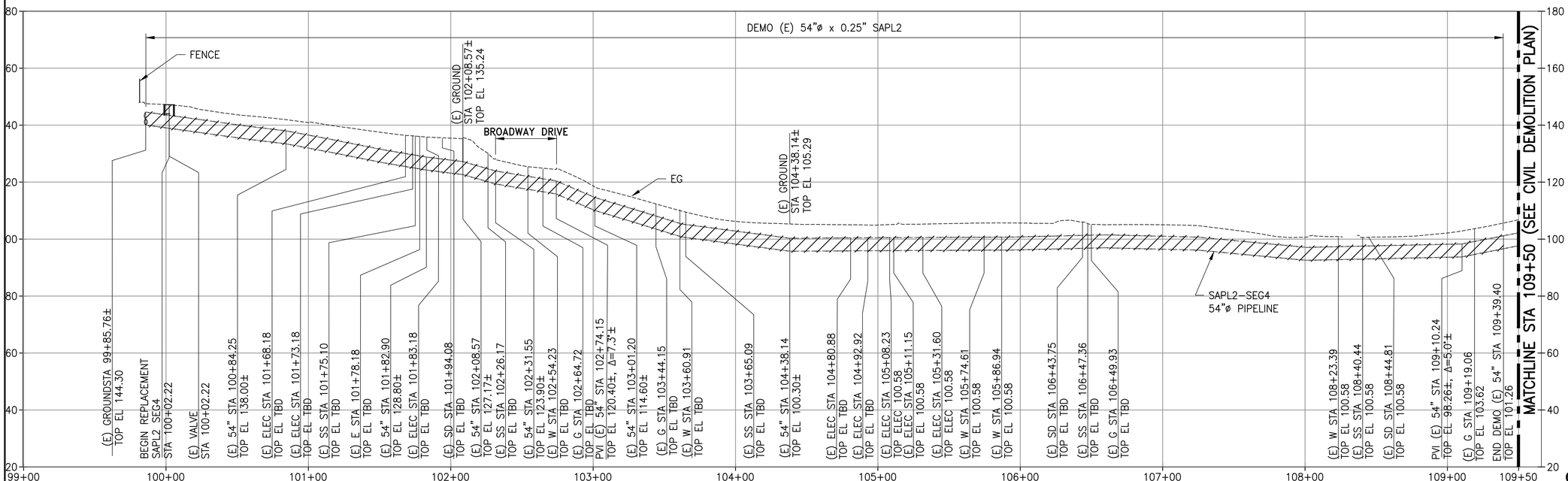
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CD-4006	E-	0

FILE:Q:\CUW522735\CIVIL\50% SUBMITTAL\ACTIVE\CD-4006.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



DEMO PLAN
SCALE:1"=40'



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER ABDELMANIEM H. ABDELSALAM C 81091 CIVIL STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD-2829

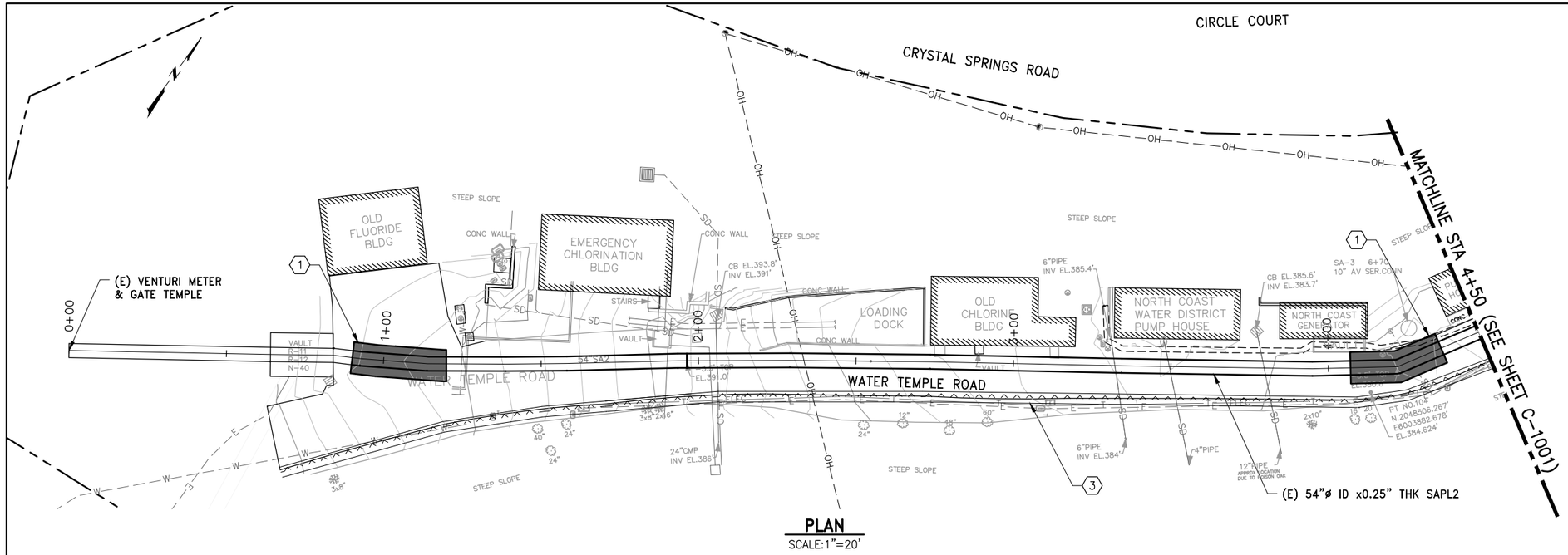
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

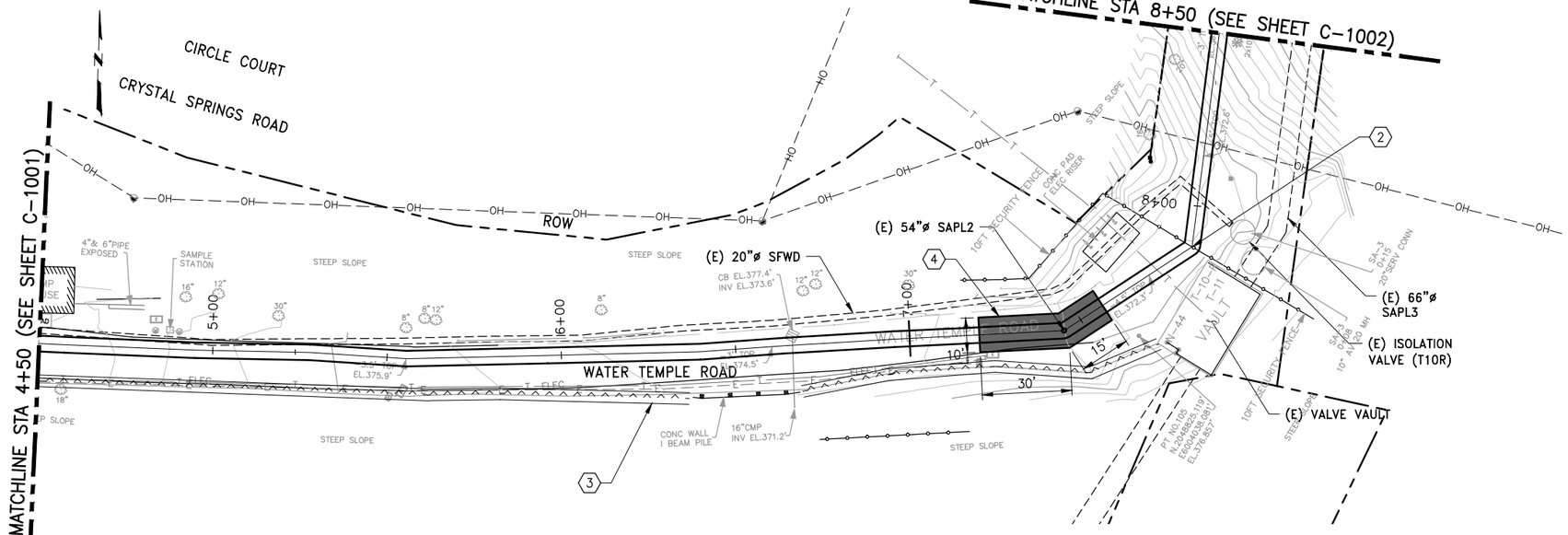
54"ø REPLACEMENT SAPL2
SEGMENT-4 DEMOLITION PLAN
(STA 99+00 TO STA 109+50)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CD-4007	E-	0



PLAN
SCALE:1"=20'



PLAN
SCALE:1"=20'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.
4. PROVIDE FIBER ROLLS ON SLOPES AS REQUIRED BY SECTION 32 93 00.

SHEET NOTES:

1. REPLACE PAVEMENT TWO FEET BEYOND 10'x30' SLIPLINE ACCESS POINT, ALL AROUND
2. REPLACE (E) 10 FT TALL BARB WIRE CHAIN LINK FENCE AS NEEDED FOR CONSTRUCTION
3. REPLACE (E) FIBER ROLL ALONG LENGTH OF WATER TEMPLE ROAD (APROX X' LONG)
4. REPLACE PAVEMENT TWO FEET BEYOND SLIPLINE ACCESS POINT, ALL AROUND

LEGEND:

- FIBER ROLLS
- (N) PAVEMENT

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

0 20 40 60
SCALE: 1" = 20'-0"

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\C-1001.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4

50% SUBMITTAL

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER DEBORAH C. RUSSELL No. C69681 Exp. 6/30/18 CIVIL STATE OF CALIFORNIA

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

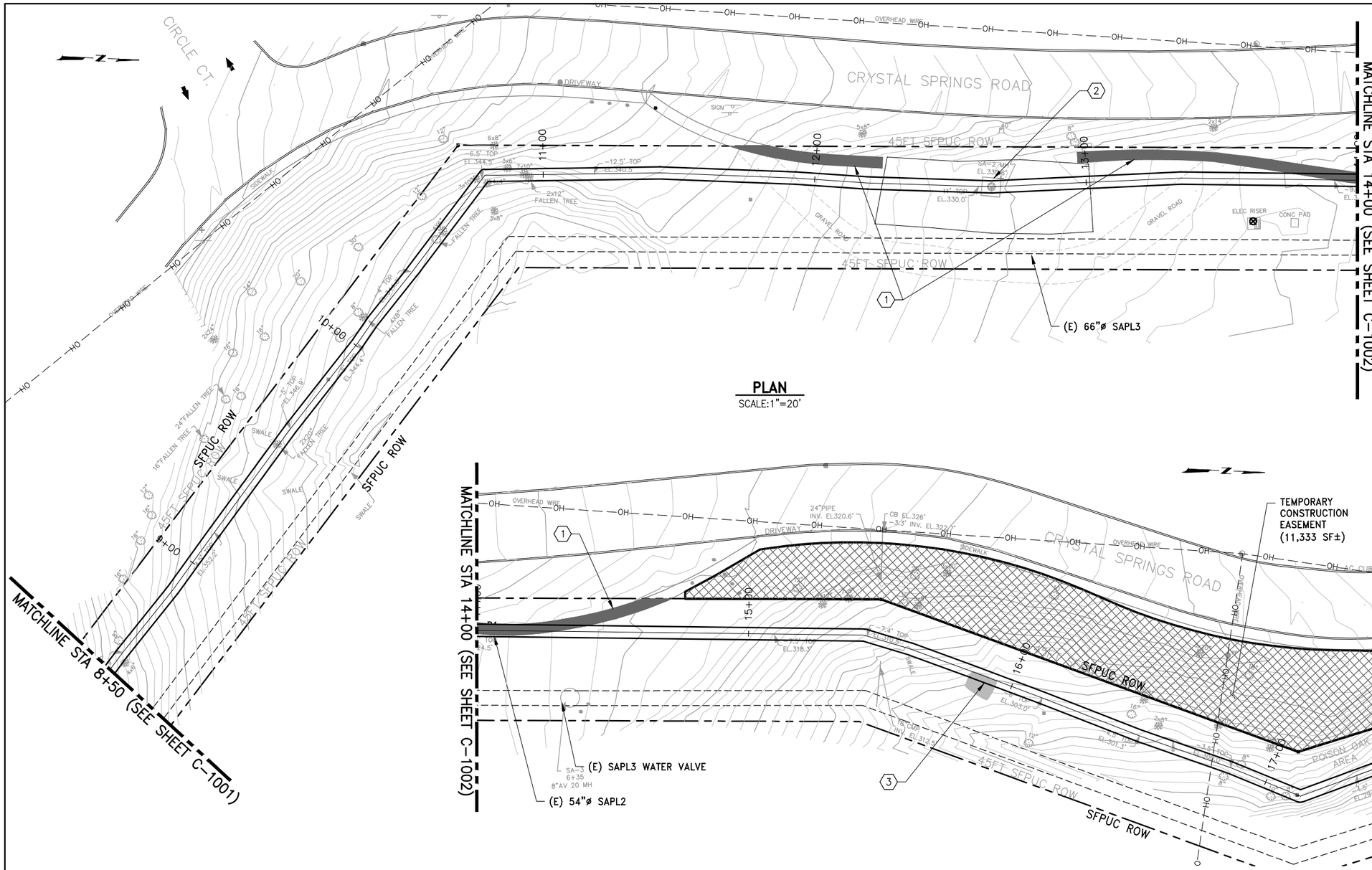
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

CIVIL PLAN – SEGMENT 1
(STA 0+00 TO STA 8+50)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCT. 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING/FILE NO.	REVISION NO.
C-1001	E-	0



NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.
4. PROVIDE FIBER ROLLS ON SLOPES AS REQUIRED BY SECTION 32 93 00.

SHEET NOTES:

1. REPLACE (E) CONCRETE SIDEWALK
2. REPLACE (E) MANHOLE
3. REPLACE (E) BOX

PLAN
SCALE:1"=20'

PLAN
SCALE:1"=20'

0 20 40 60
SCALE: 1" = 20'-0"

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\C-1002.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4

50% SUBMITTAL

NOT FOR CONSTRUCTION

FOR THE SOLE USE OF THE DOCUMENT RECIPIENT - DO NOT CITE, COPY, OR CIRCULATE WITHOUT THE EXPRESSED PERMISSION OF THE SFPUC.

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
DEBORAH C. RUSSELL
No. C69681
Exp. 6/30/18
CIVIL
STATE OF CALIFORNIA

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD-2829

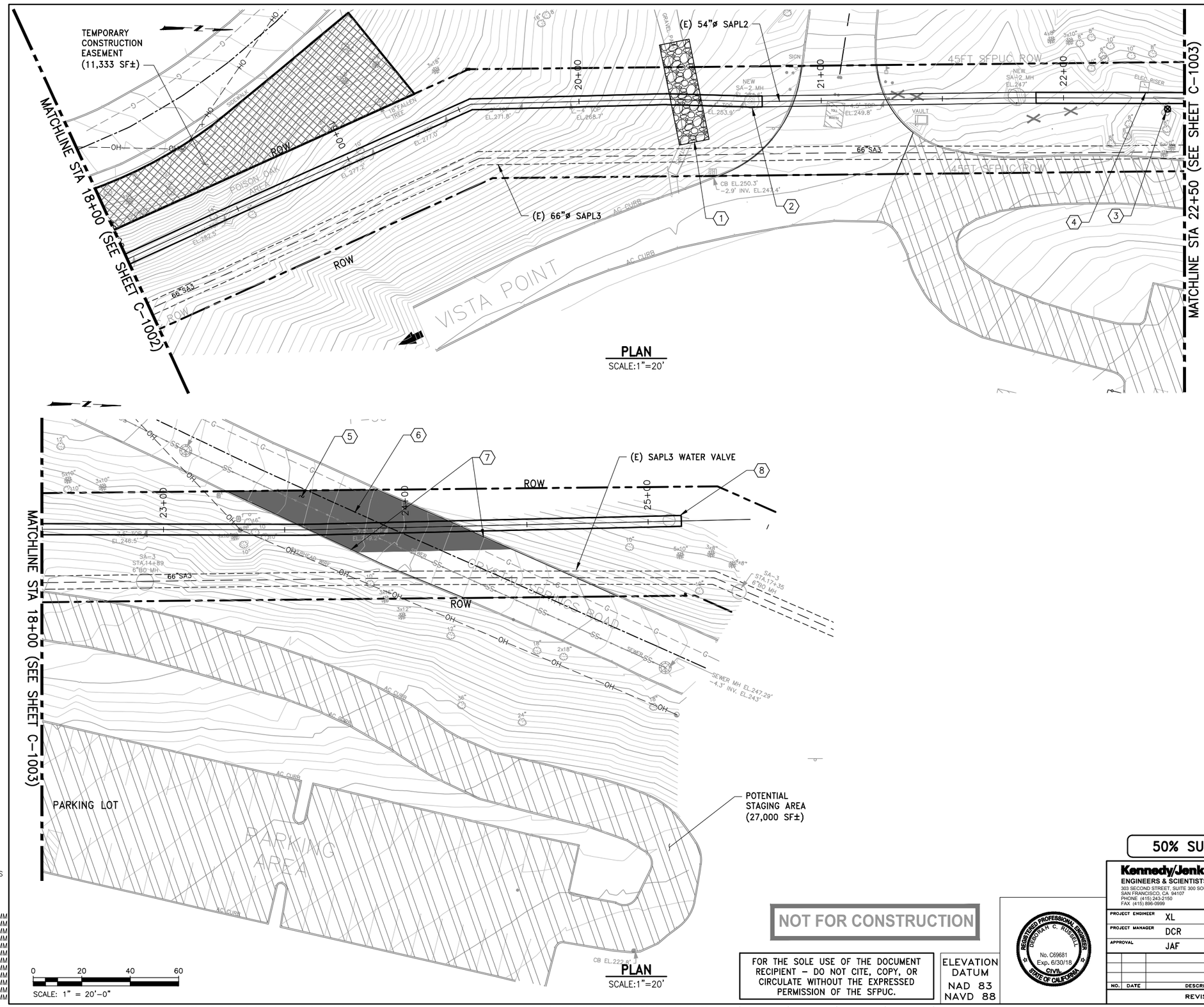
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

CIVIL PLAN - SEGMENT 1
(STA 8+50 TO STA 18+00)

CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING/FILE NO.	REVISION NO.
C-1002	E-	0



NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.
4. PROVIDE FIBER ROLLS ON SLOPES AS REQUIRED BY 32 93 00

SHEET NOTES:

1. REPLACE GRAVEL PATH
2. REPLACE SAPL2 MANHOLE
3. REPLACE (E) RECTIFIER B2 (SEE CP DWGS)
4. REPLACE (E) ELECTRICAL RISER
5. REPLACE (E) PAVEMENT
6. REPLACE ALL PAVEMENT MARKINGS IN KIND
7. REPLACE (E) CONCRETE CURB
8. REPLACE SAPL2 VALVE

LEGEND:

(N) PAVEMENT

(N) GRAVEL PATH

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

50% SUBMITTAL

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER DEBORAH C. ROSEKE No. C69681 Exp. 6/30/18 CIVIL STATE OF CALIFORNIA

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

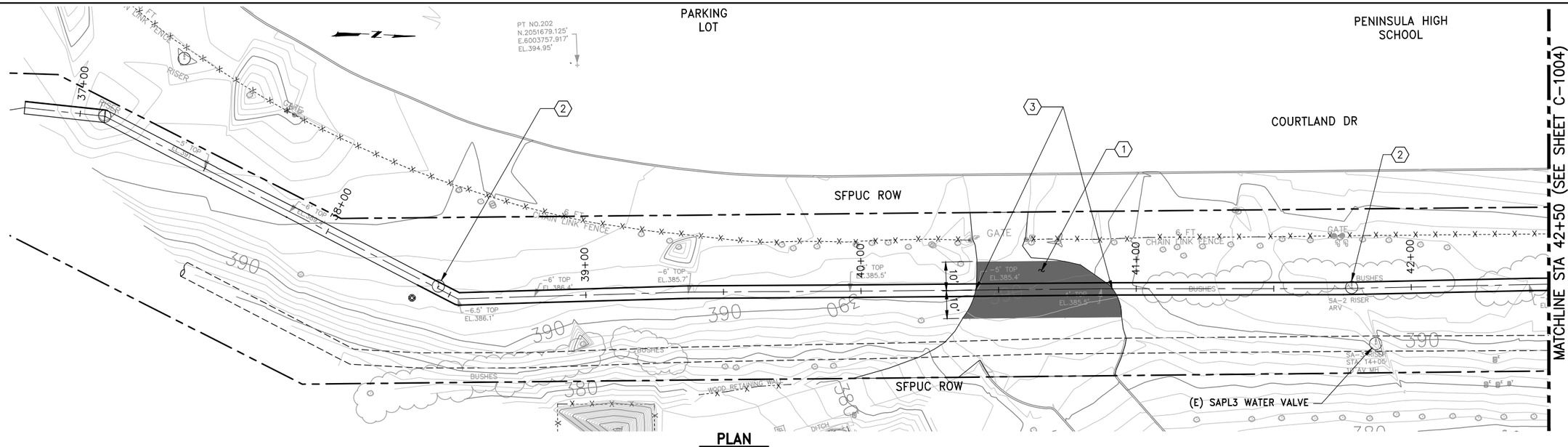
CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

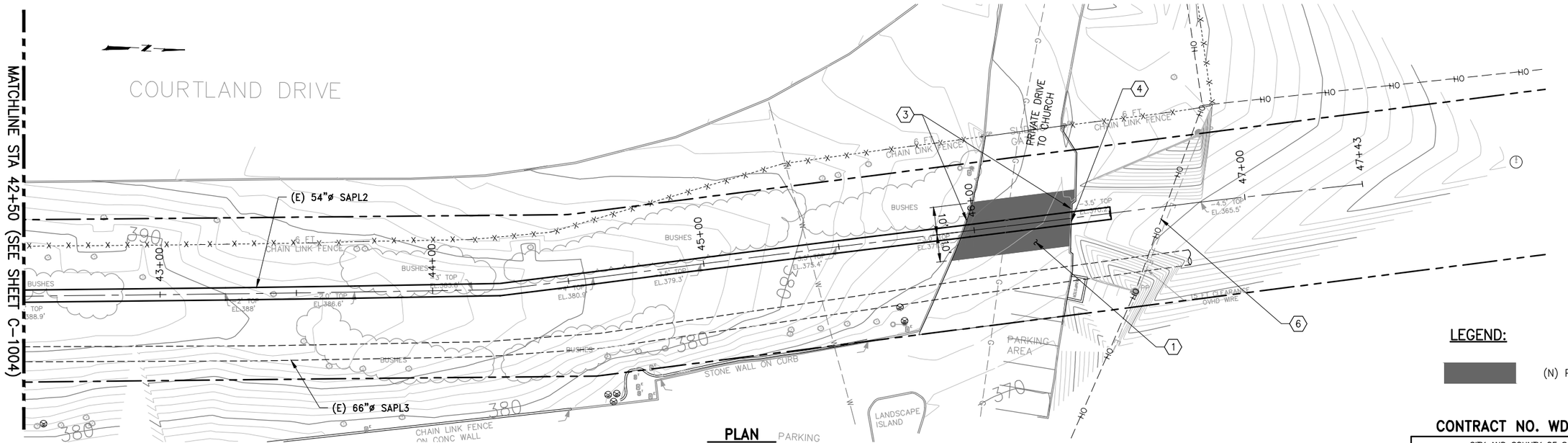
SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

CIVIL PLAN – SEGMENT 1
(STA 18+00 TO STA 25+15)

CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. C-1003	DRAWING/FILE NO. E-	REVISION NO. 0	



PLAN
SCALE:1"=20'



PLAN PARKING
SCALE:1"=20'

SHEET NOTES:

1. REPLACE PAVEMENT
2. REPLACE (E) SAPL2 VALVE
3. REPLACE (E) CURB
4. REPLACE (E) RAMP
5. REPLACE PAVEMENT
6. CAUTION: LOW OVERHEAD, HIGH VOLTAGES ELECTRICAL LINES.

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.
4. CAUTION: LOW OVERHEAD, HIGH VOLTAGES ELECTRICAL LINES.
4. ACCESS ROAD TO CHURCH SHALL BE MAINTAINED IN GOOD CONDITION (SERVICABLE BY PERSONAL VEHICLES) FOR USE BY CHURCH AT ALL TIMES.

LEGEND:

(N) PAVEMENT

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

0 20 40 60
SCALE: 1" = 20'-0"

50% SUBMITTAL

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
DEBORAH C. RUSSELL
No. C69681
Exp. 6/30/18
CIVIL
STATE OF CALIFORNIA

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

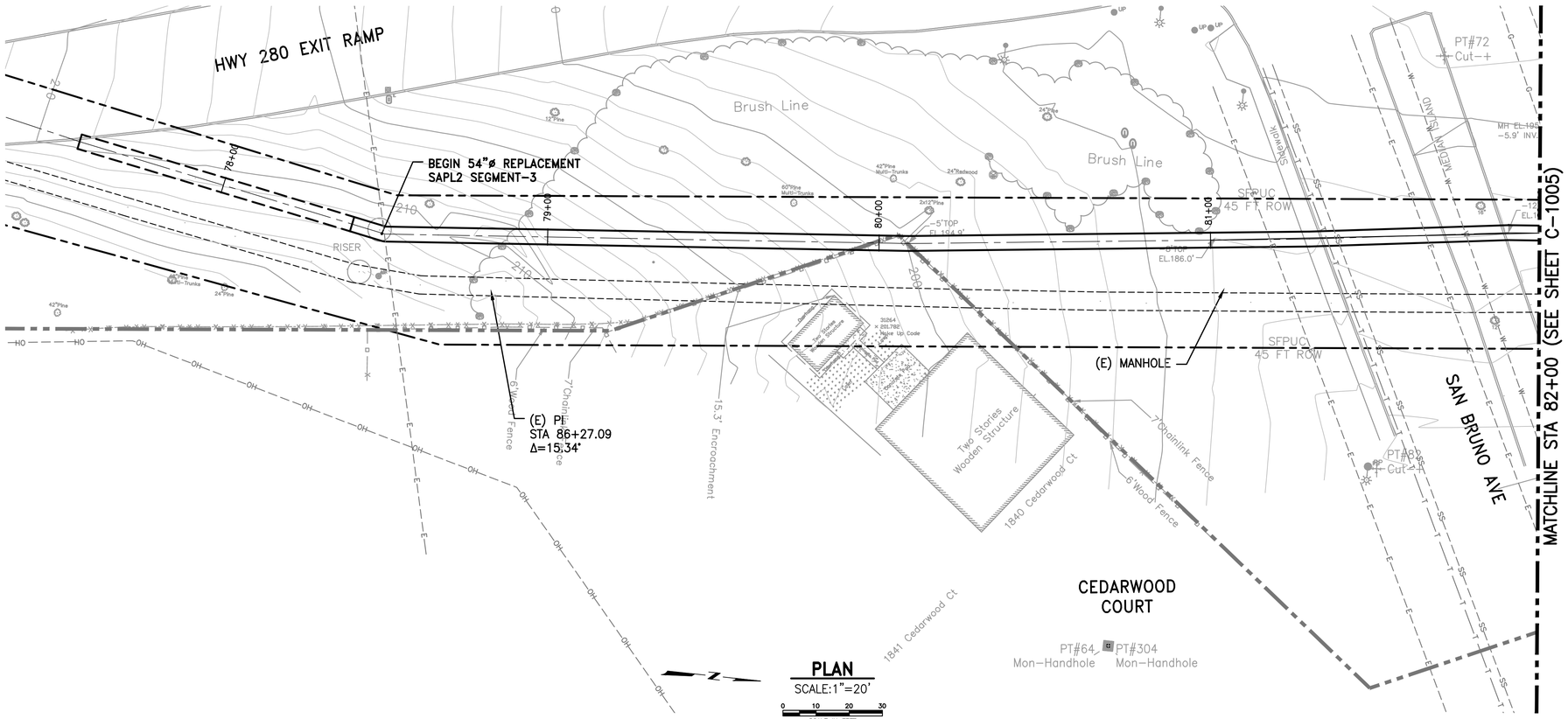
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

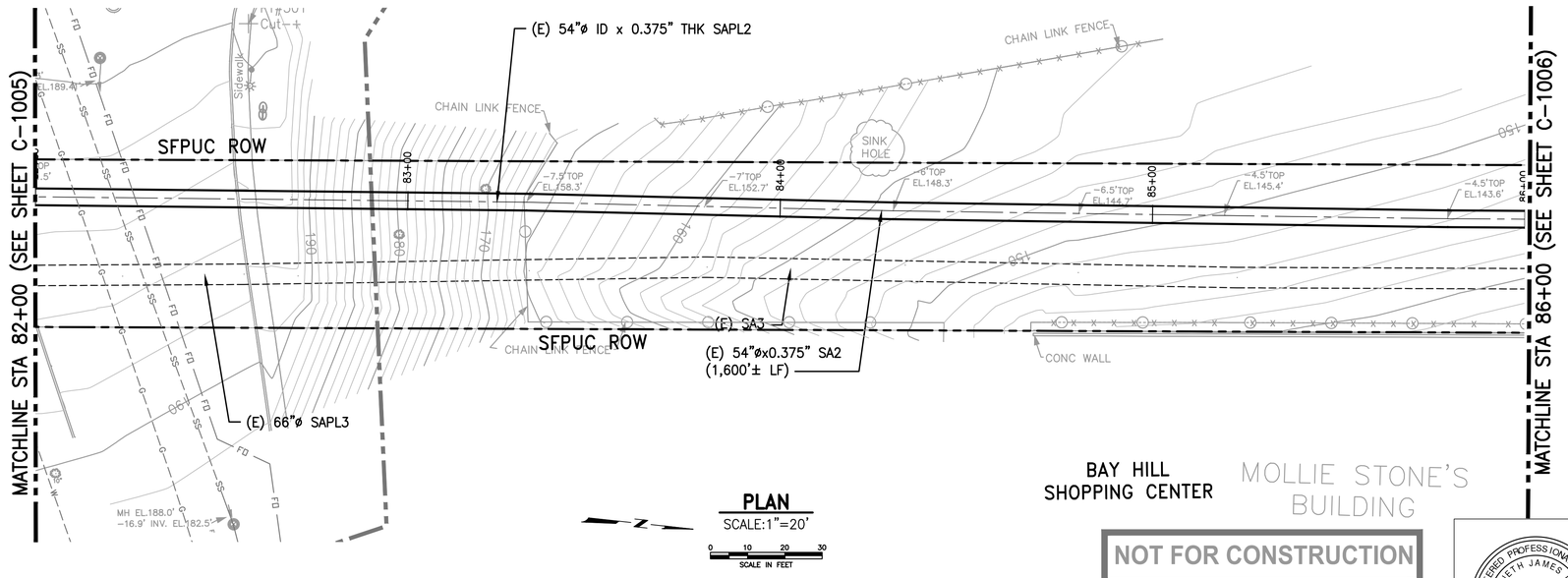
SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

CIVIL PLAN - SEGMENT 2
(STA 38+00 TO STA 47+00)

CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING/FILE NO.	REVISION NO.
C-1004	E-	0





CIVIL KEY NOTES:

1. REPLACE GATE AND FENCE
2. REPLACE CONCRETE PAVEMENT/SIDEWALK
3. REPLACE ASPHALT CONCRETE PAVEMENT
4. REPLACE CONCRETE CURB
5. REPLACE 8' HIGH FENCE
6. REPLACE WALKING PATH
7. REPLACE WOOD CHIP MULCH
8. REPLACE DISC GOLF HOLE
9. REPLACE CONCRETE CURB/GUTTER
10. REPLACE SALVAGED "NO SKATEBOARDING" SIGN
11. REPLACE SALVAGED "NO ROLLERBLADING" SIGN
12. REPLACE FENCE
13. REPLACE SALVAGED WHEEL STOPS
14. REPLACE SALVAGED LIGHT AND LIGHT POLE
15. REPLACE CARPORT PER HOA SPECIFICATIONS
16. REPLACE CONCRETE PAVEMENT/WALKWAY
17. REPLACE GARBAGE SHED
18. REPLACE PREVIOUSLY RELOCATED MAILBOXES
19. REPLACE PORTION OF SPEED BUMP
20. REPLACE CONCRETE CURB AND PAINT RED TO MATCH EXIST
21. REPLACE CONCRETE WALKWAY AND PAINT TO MATCH EXIST
22. REPLACE SALVAGED "SPEED LIMIT 10" SIGN
23. REPLACE SALVAGED "STOP" SIGN
24. REPLACE SALVAGED WROUGHT IRON FENCE AND GATE
25. REPLACE CONCRETE MOUNTABLE CURB/GUTTER

NOTES:

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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

BAY HILL SHOPPING CENTER

MOLLIE STONE'S BUILDING

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
KENNETH JAMES LITTLE
No. C39230
Exp. 12/31/2013
CIVIL
STATE OF CALIFORNIA

APPROXIMATE AREA OF ASPHALT CONCRETE REPLACEMENT:
0± SF

50% SUBMITTAL

AGS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CIVIL PLAN
(STA 77+00 TO STA 86+00)

CHECKED / APPROVED: KL	DRAWN: JL
SECTION MANAGER	DESIGNED: TD
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: 10/14/16
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION
PLAN NO. C-1005	DRAWING/FILE NO.
	REVISION NO. 0

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

FILE: Z:\AGS\PROJECT\2014\AGS-14-027 SFPUC CS-386 AS-NEEDED ENGINEERING (KJ-AGS JV)\8_PRODUCTION\1_DRAWINGS\2_SHEETS\C-1005.DWG FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES
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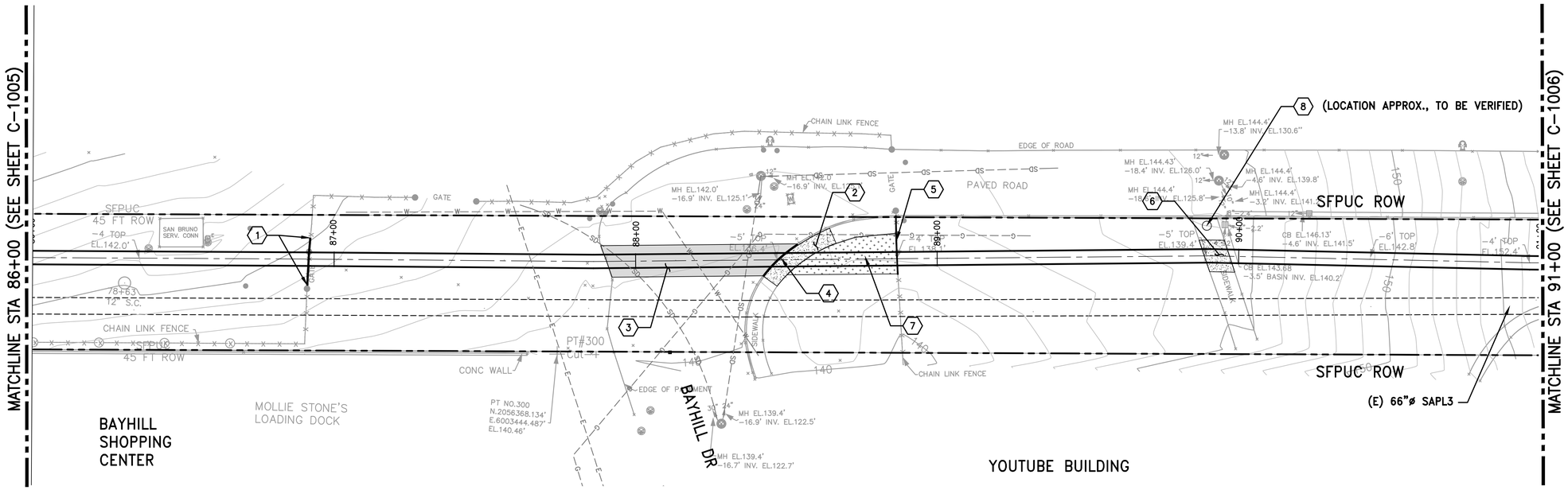

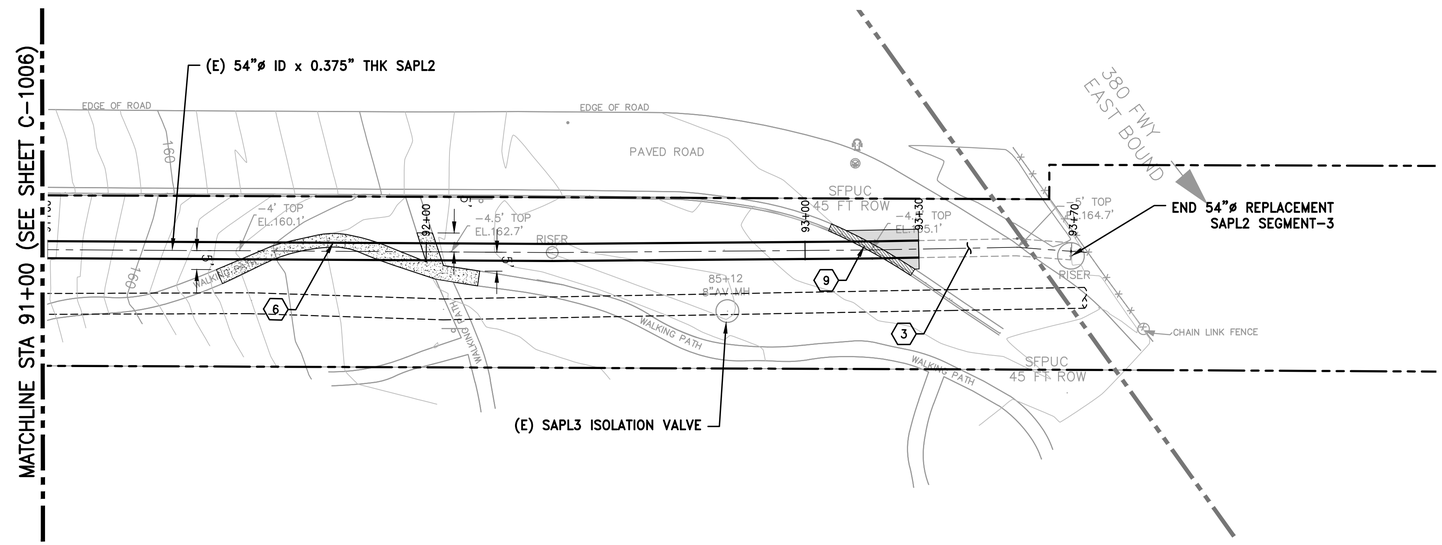

CIVIL KEY NOTES:

1. REPLACE GATE AND FENCE
2. REPLACE CONCRETE PAVEMENT/SIDEWALK
3. REPLACE ASPHALT CONCRETE PAVEMENT
4. REPLACE CONCRETE CURB
5. REPLACE 8' HIGH FENCE
6. REPLACE WALKING PATH
7. REPLACE WOOD CHIP MULCH
8. REPLACE DISC GOLF HOLE
9. REPLACE CONCRETE CURB/GUTTER
10. REPLACE SALVAGED "NO SKATEBOARDING" SIGN
11. REPLACE SALVAGED "NO ROLLERBLADING" SIGN
12. REPLACE FENCE
13. REPLACE SALVAGED WHEEL STOPS
14. REPLACE SALVAGED LIGHT AND LIGHT POLE
15. REPLACE CARPORT PER HOA SPECIFICATIONS
16. REPLACE CONCRETE PAVEMENT/WALKWAY
17. REPLACE GARBAGE SHED
18. REPLACE PREVIOUSLY RELOCATED MAILBOXES
19. REPLACE PORTION OF SPEED BUMP
20. REPLACE CONCRETE CURB AND PAINT RED TO MATCH EXIST
21. REPLACE CONCRETE WALKWAY AND PAINT TO MATCH EXIST
22. REPLACE SALVAGED "SPEED LIMIT 10" SIGN
23. REPLACE SALVAGED "STOP" SIGN
24. REPLACE SALVAGED WROUGHT IRON FENCE AND GATE
25. REPLACE CONCRETE MOUNTABLE CURB/GUTTER

NOTES:

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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

APPROXIMATE AREA OF ASPHALT CONCRETE REPLACEMENT: 700± SF

50% SUBMITTAL

AGS

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
KENNETH JAMES LYLE
No. C39230
Exp. 12/31/2013
CIVIL
STATE OF CALIFORNIA

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CIVIL PLAN
(STA 86+00 TO STA 94+00)

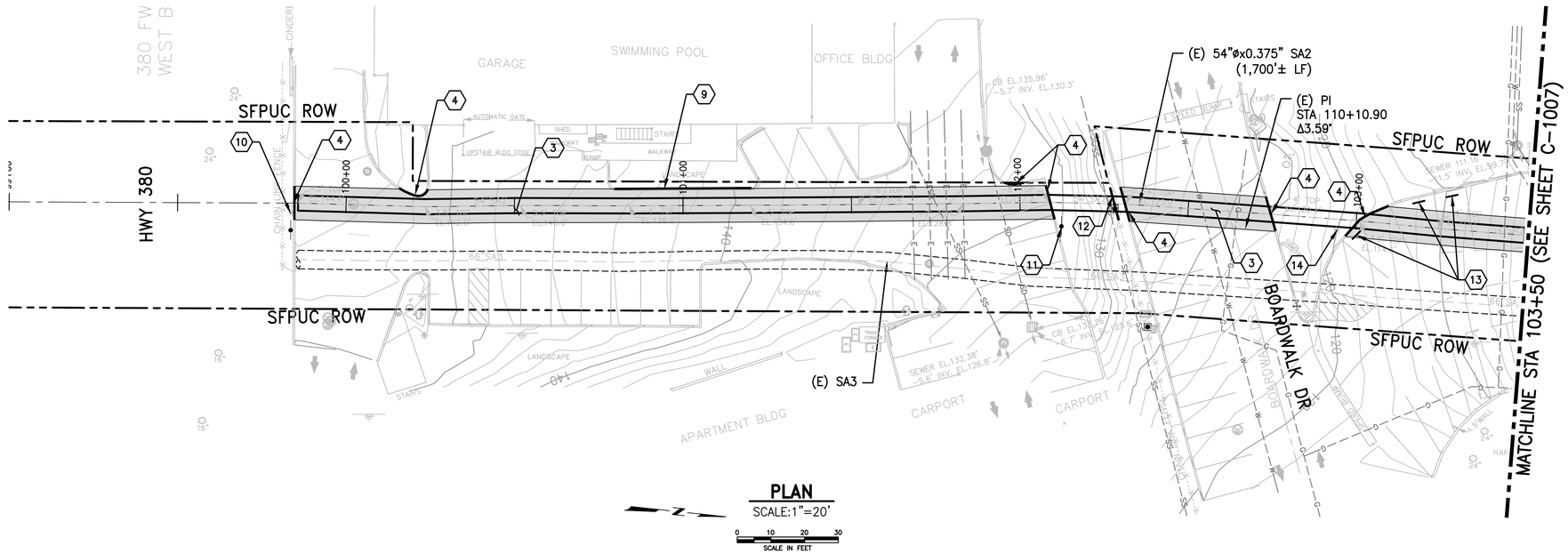
CHECKED / APPROVED: KL	DRAWN: JL
SECTION MANAGER	DESIGNED: TD
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: 10/14/16
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION
PLAN NO.: C-1006	DRAWING/FILE NO.
REVISION NO.: 0	

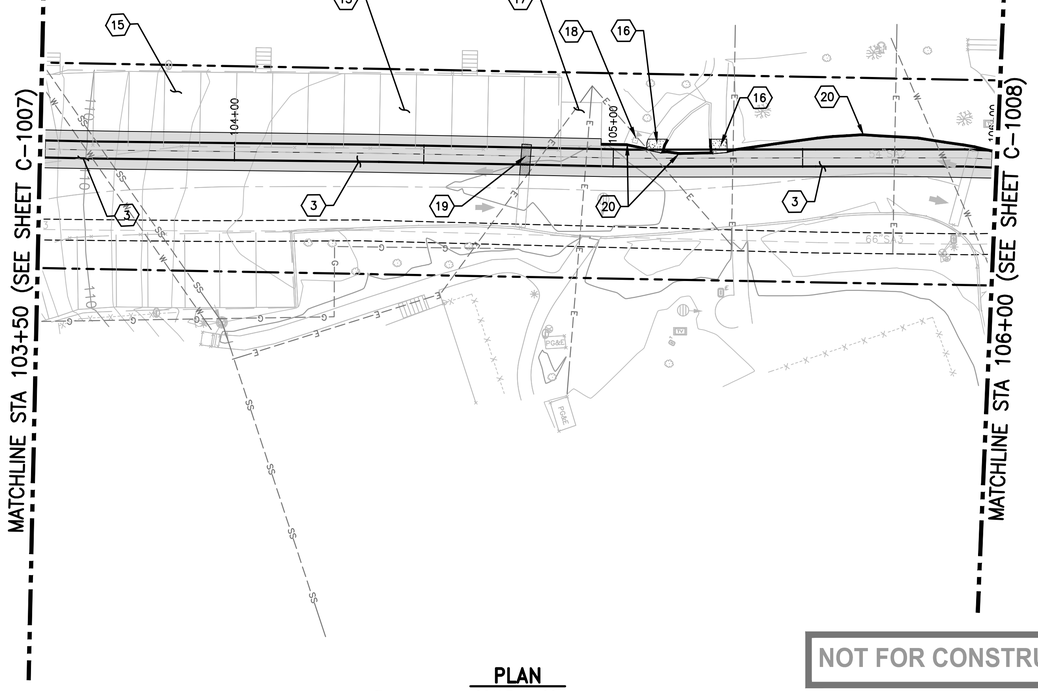
PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

FILE: Z:\AGS\PROJECT\2014\AGS-14-027 SFPUC CS-386 AS-NEEDED ENGINEERING (KJ-AGS JV)\8_PRODUCTION\1_DRAWINGS\2_SHEETS\C-1005.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4





CIVIL KEY NOTES:

1. REPLACE GATE AND FENCE
2. REPLACE CONCRETE PAVEMENT/SIDEWALK
3. REPLACE ASPHALT CONCRETE PAVEMENT
4. REPLACE CONCRETE CURB
5. REPLACE 8' HIGH FENCE
6. REPLACE WALKING PATH
7. REPLACE WOOD CHIP MULCH
8. REPLACE DISC GOLF HOLE
9. REPLACE CONCRETE CURB/GUTTER
10. REPLACE SALVAGED "NO SKATEBOARDING" SIGN
11. REPLACE SALVAGED "NO ROLLERBLADING" SIGN
12. REPLACE FENCE
13. REPLACE SALVAGED WHEEL STOPS
14. REPLACE SALVAGED LIGHT AND LIGHT POLE
15. REPLACE CARPORT PER HOA SPECIFICATIONS
16. REPLACE CONCRETE PAVEMENT/WALKWAY
17. REPLACE GARBAGE SHED
18. REPLACE PREVIOUSLY RELOCATED MAILBOXES
19. REPLACE PORTION OF SPEED BUMP
20. REPLACE CONCRETE CURB AND PAINT RED TO MATCH EXIST
21. REPLACE CONCRETE WALKWAY AND PAINT TO MATCH EXIST
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23. REPLACE SALVAGED "STOP" SIGN
24. REPLACE SALVAGED WROUGHT IRON FENCE AND GATE
25. REPLACE CONCRETE MOUNTABLE CURB/GUTTER

NOTES:

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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

APPROXIMATE AREA OF ASPHALT CONCRETE REPLACEMENT:
7,000± SF

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CIVIL PLAN
(STA 99+00 TO STA 106+00)

CHECKED / APPROVED: KL	DRAWN: JL
SECTION MANAGER	DESIGNED: TD
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: 10/14/16
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION
PLAN NO.: C-1007	DRAWING/FILE NO.
REVISION NO.: 0	

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

50% SUBMITTAL

AGS

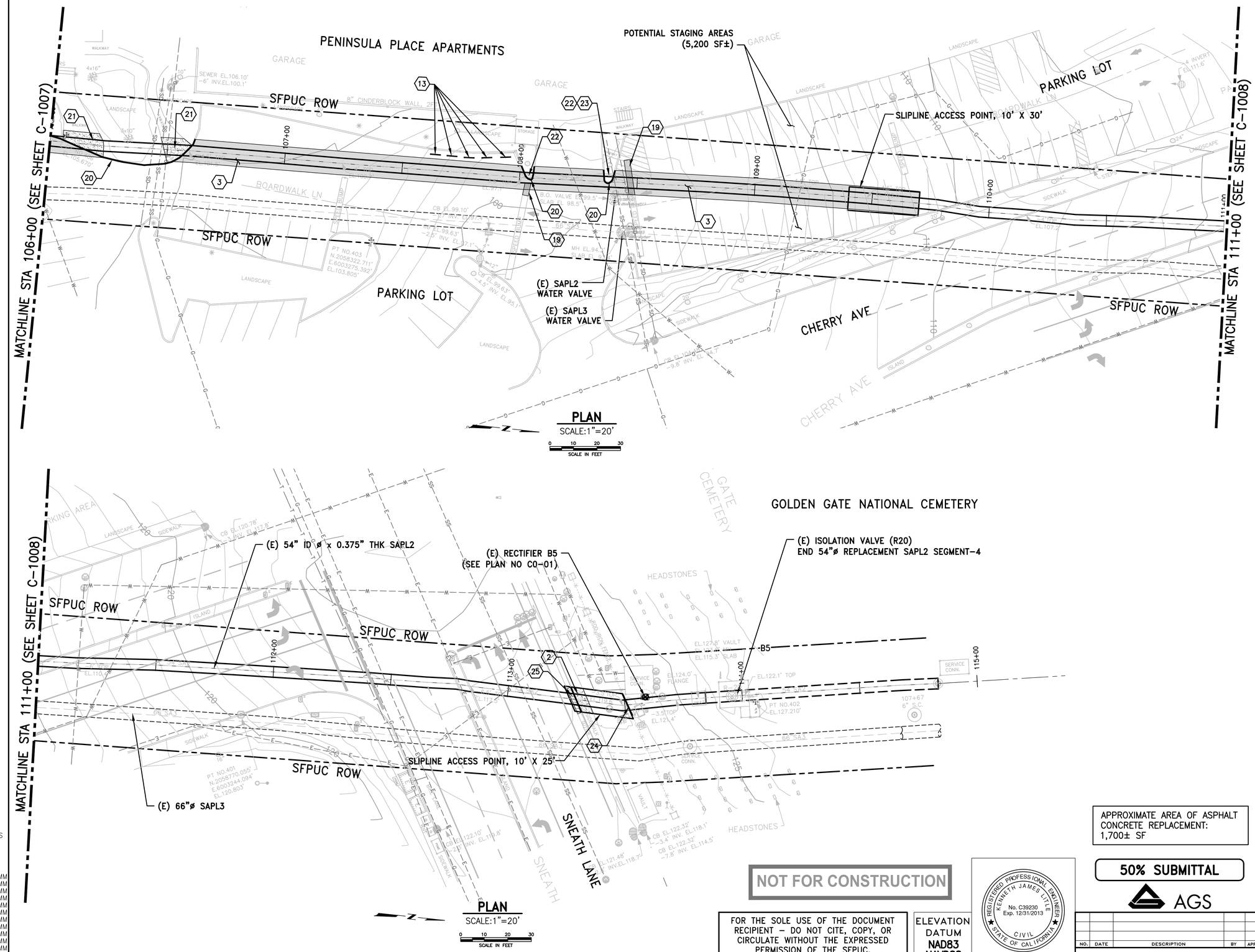
REGISTERED PROFESSIONAL ENGINEER
KENNETH JAMES LITTLE
No. C39230
Exp. 12/31/2013
CIVIL
STATE OF CALIFORNIA

ELEVATION DATUM
NAD83
NAVD88

NOT FOR CONSTRUCTION

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM



CIVIL KEY NOTES:

1. REPLACE GATE AND FENCE
2. REPLACE CONCRETE PAVEMENT/SIDEWALK
3. REPLACE ASPHALT CONCRETE PAVEMENT
4. REPLACE CONCRETE CURB
5. REPLACE 8' HIGH FENCE
6. REPLACE WALKING PATH
7. REPLACE WOOD CHIP MULCH
8. REPLACE DISC GOLF HOLE
9. REPLACE CONCRETE CURB/GUTTER
10. REPLACE SALVAGED "NO SKATEBOARDING" SIGN
11. REPLACE SALVAGED "NO ROLLERBLADING" SIGN
12. REPLACE FENCE
13. REPLACE SALVAGED WHEEL STOPS
14. REPLACE SALVAGED LIGHT AND LIGHT POLE
15. REPLACE CARPORT PER HOA SPECIFICATIONS
16. REPLACE CONCRETE PAVEMENT/WALKWAY
17. REPLACE GARBAGE SHED
18. REPLACE PREVIOUSLY RELOCATED MAILBOXES
19. REPLACE PORTION OF SPEED BUMP
20. REPLACE CONCRETE CURB AND PAINT RED TO MATCH EXIST
21. REPLACE CONCRETE WALKWAY AND PAINT TO MATCH EXIST
22. REPLACE SALVAGED "SPEED LIMIT 10" SIGN
23. REPLACE SALVAGED "STOP" SIGN
24. REPLACE SALVAGED WROUGHT IRON FENCE AND GATE
25. REPLACE CONCRETE MOUNTABLE CURB/GUTTER

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

APPROXIMATE AREA OF ASPHALT CONCRETE REPLACEMENT: 1,700± SF

50% SUBMITTAL

AGS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CIVIL PLAN
(STA 106+00 TO STA 115+00)

CHECKED / APPROVED	DRAWN	
KL	JL	
SECTION MANAGER	DESIGNED	
	TD	
MAINTENANCE ENGINEERING MANAGER	SCALE	DATE
	AS SHOWN	10/14/16
APPROVED	APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO.	DRAWING/FILE NO.	REVISION NO.
C-1008		0

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

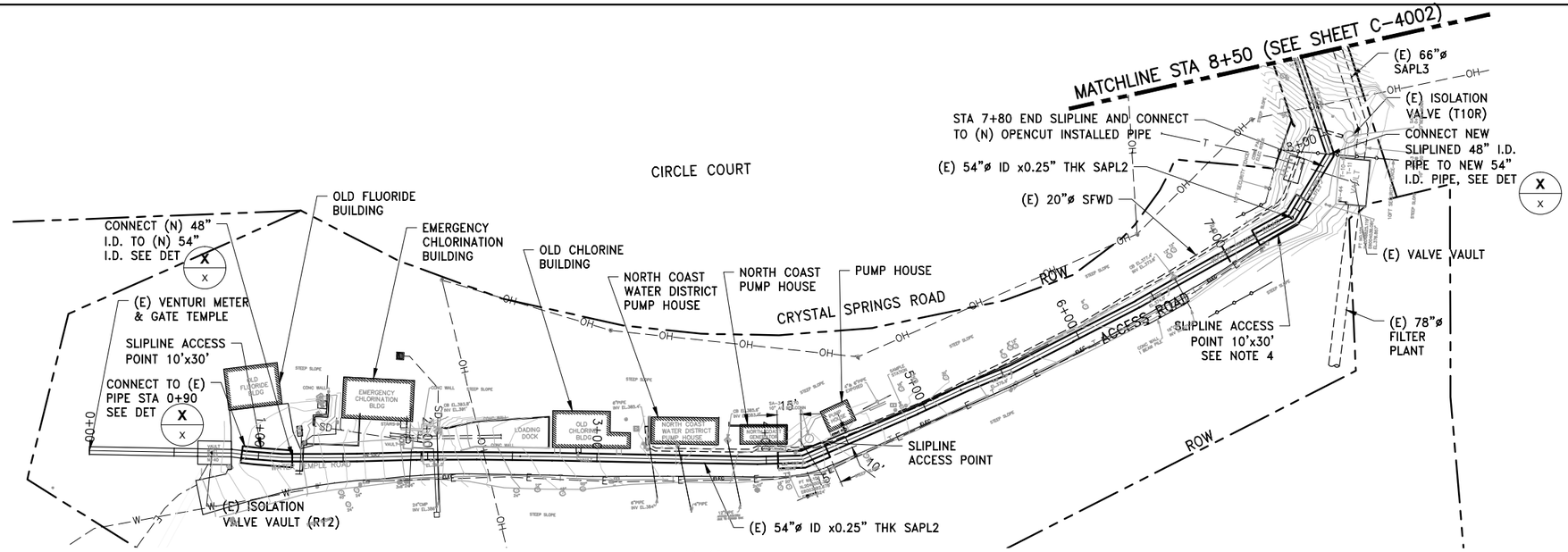
ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
KENNETH JAMES LITTLE
No. C39230
Exp. 12/31/2013
CIVIL
STATE OF CALIFORNIA

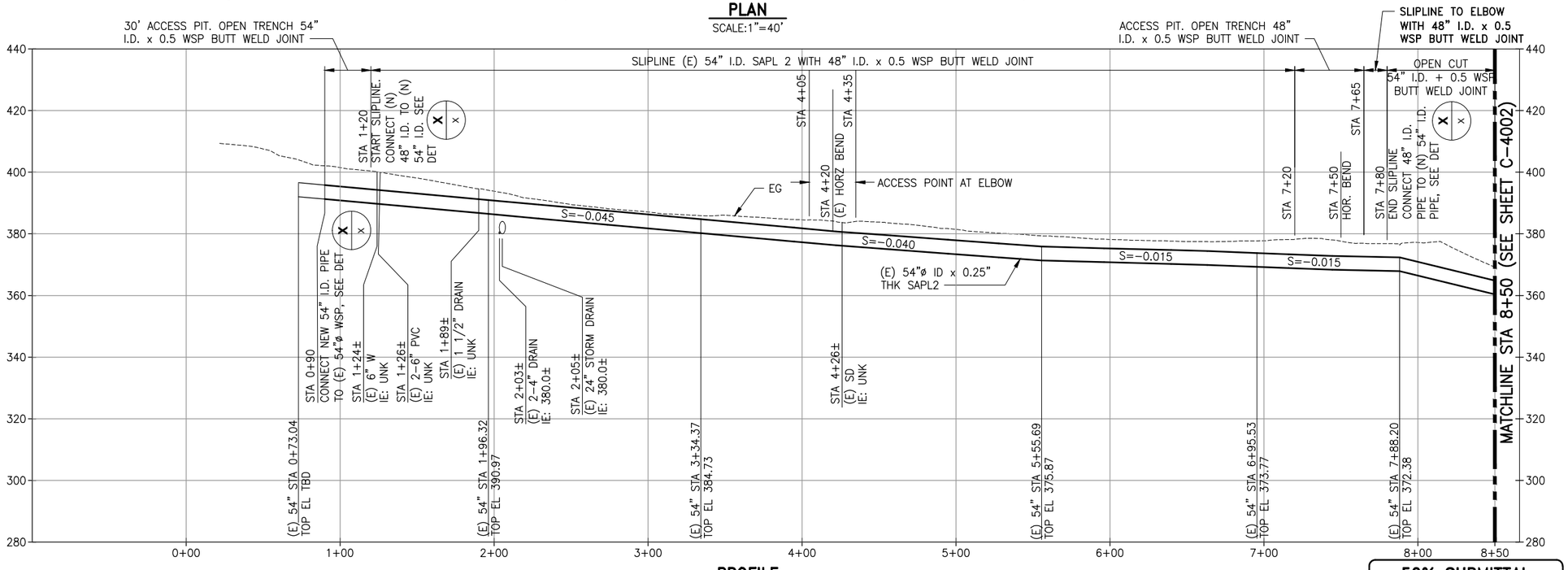
NOT FOR CONSTRUCTION

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM



PLAN
SCALE:1"=40'



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.
4. EXPAND ACCESS POINT TO ACCOMMODATE SLIPLINING TO STATION 7+80.
5. COMPLETELY REMOVE EXISTING PIPE AT ACCESS POINTS AND INSTALL NEW 54"ø WSP VIA OPEN TRENCH CONSTRUCTION METHODS.
6. PIPE WALL THICKNESS TO BE DETERMINED BASED ON GEOTECHNICAL CONDITIONS.

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
JAMES C. BOWLAND
No. 66400
Exp.06/30/18
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	JCB
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

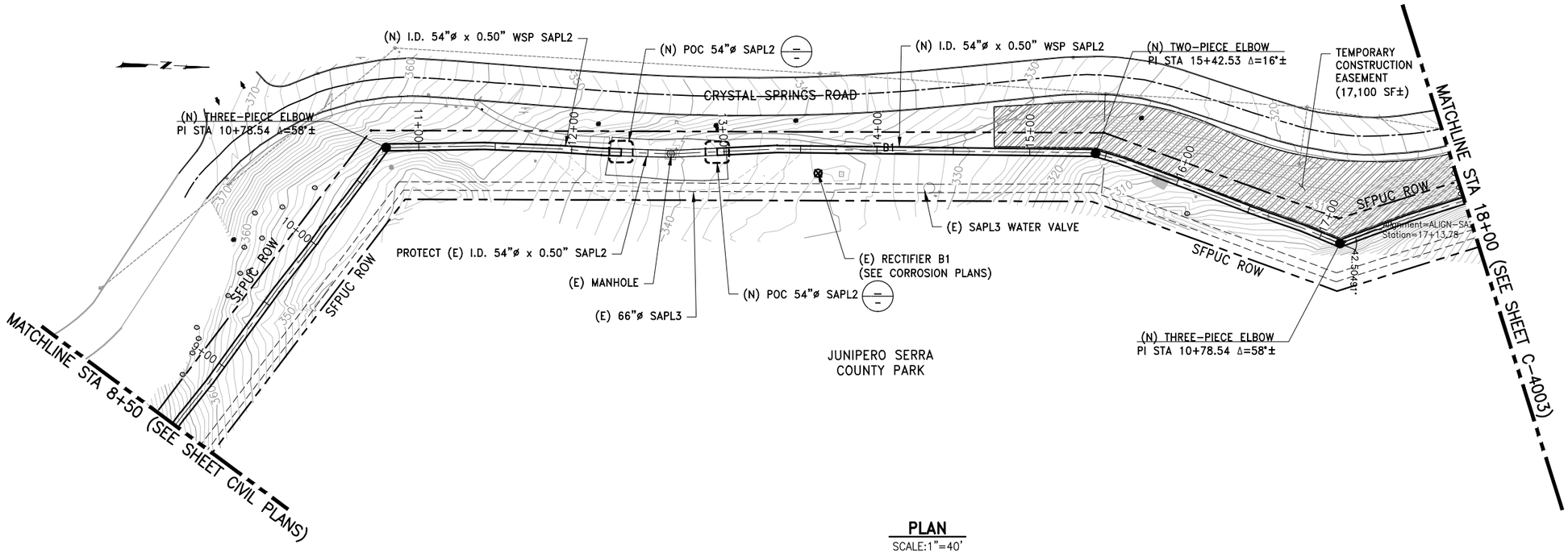
SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

PLAN AND PROFILE - SEGMENT 1
(STA 0+00 TO STA 8+50)

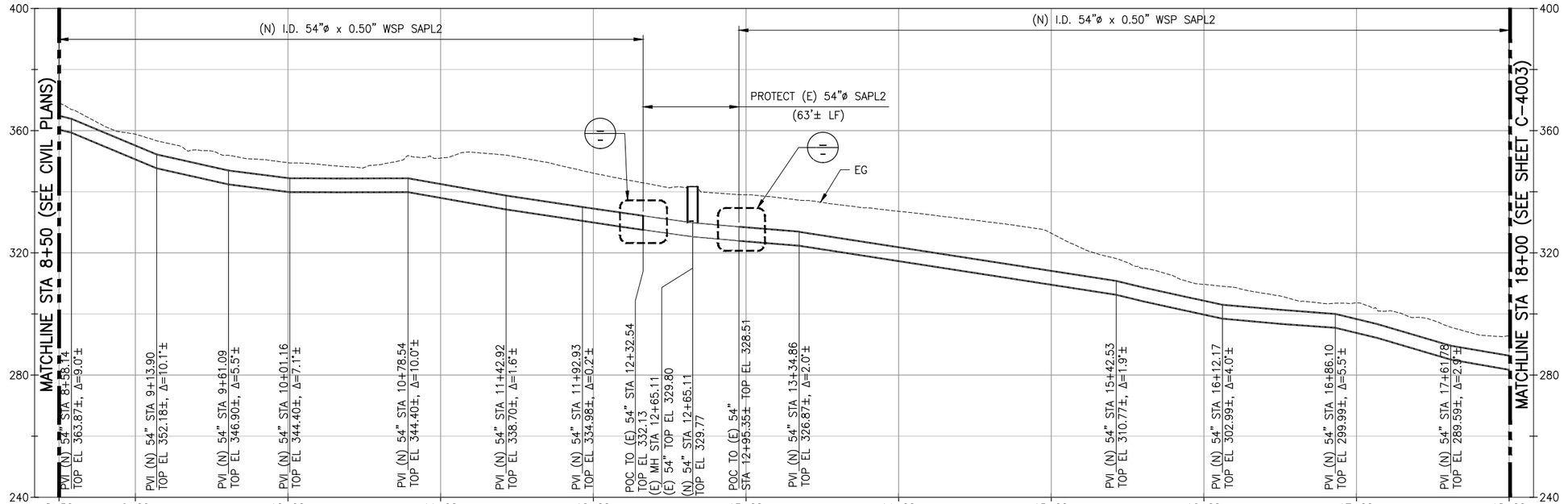
CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. C-4001	DRAWING/FILE NO. E-	REVISION NO. 0	

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\C-4001.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



PLAN
SCALE:1"=40'



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER ABDELMONEIM H. ABDELSALAM C 81091 CIVIL STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

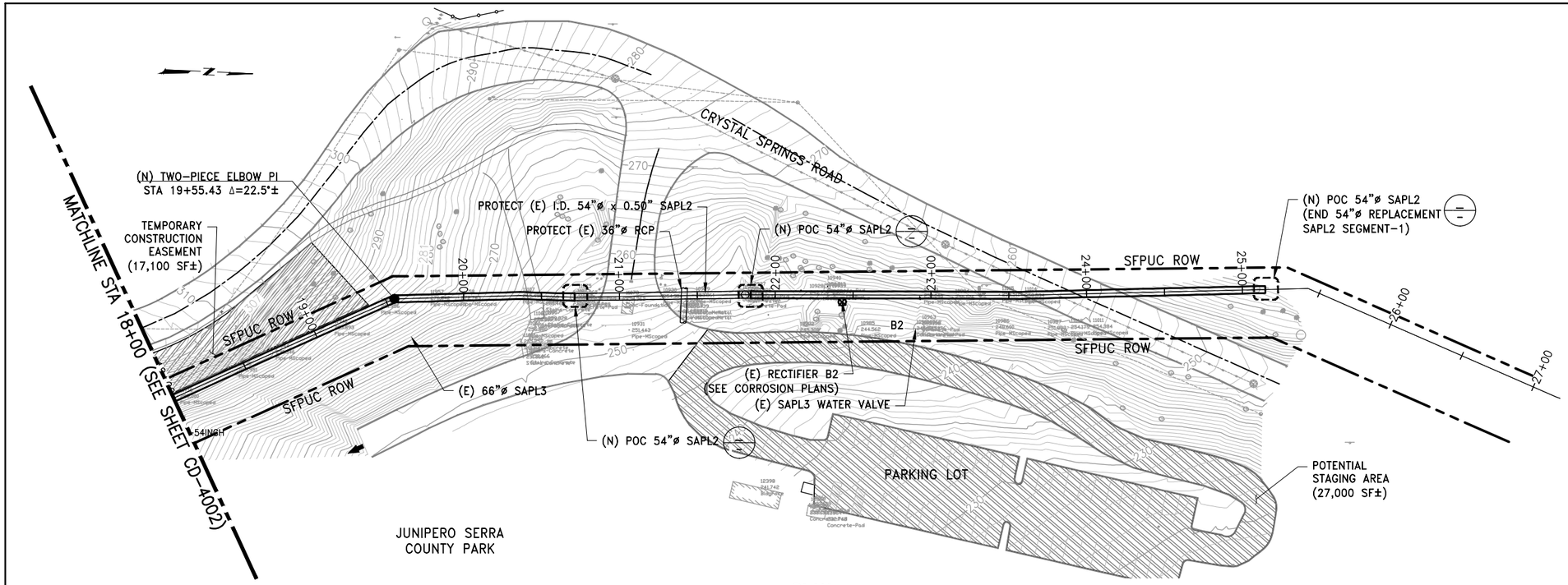
CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

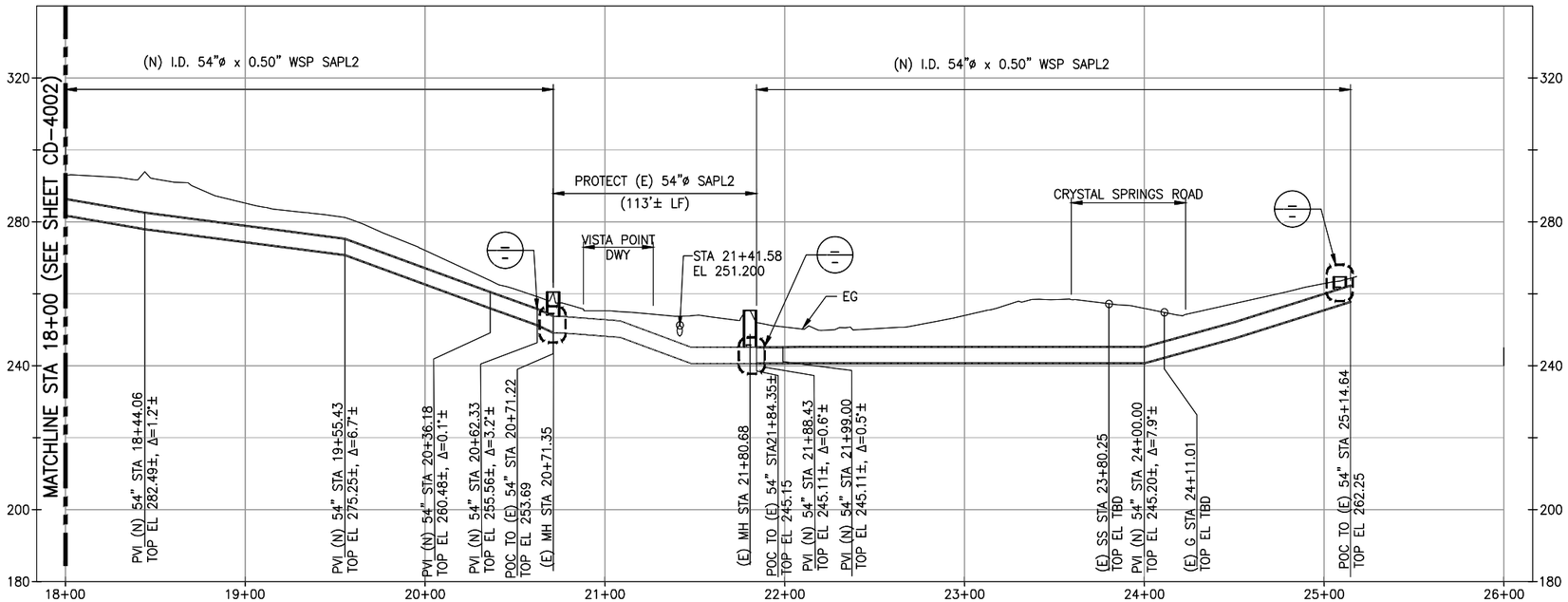
SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

54" ø REPLACEMENT SAPL2 SEGMENT-1 PLAN AND PROFILE
(STA 8+50 TO STA 18+00)

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. C-4002	DRAWING / FILE NO. E-	REVISION NO. 0



PLAN
SCALE:1"=40'



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

NOTES:

1. SEE PLAN NO CD-4009 FOR TREE REMOVABLE TABLE.
2. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
3. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
4. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELHANIEN H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

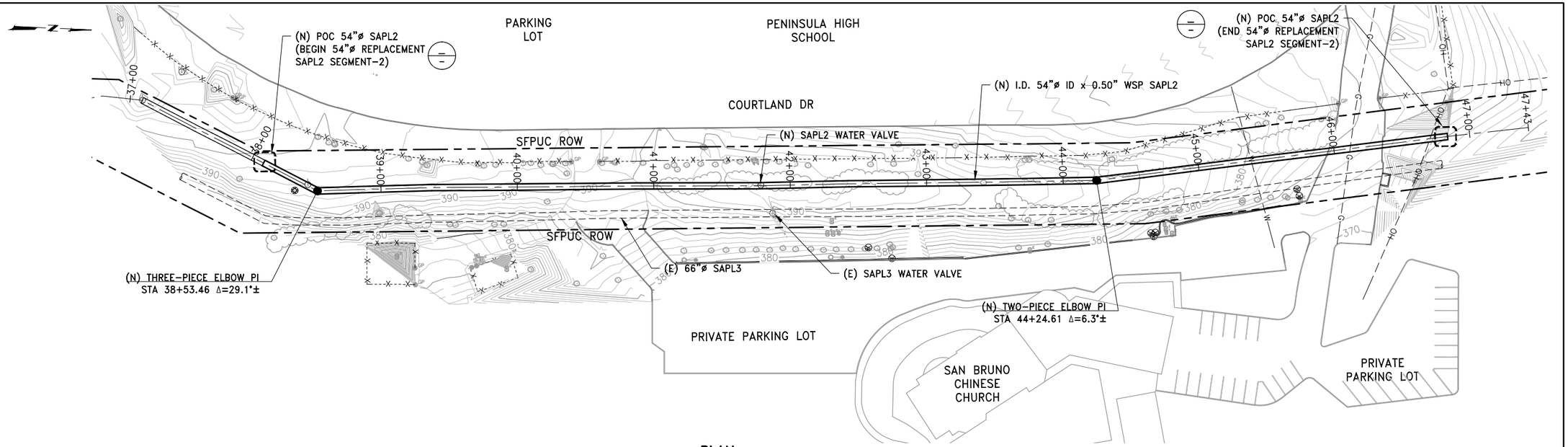
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

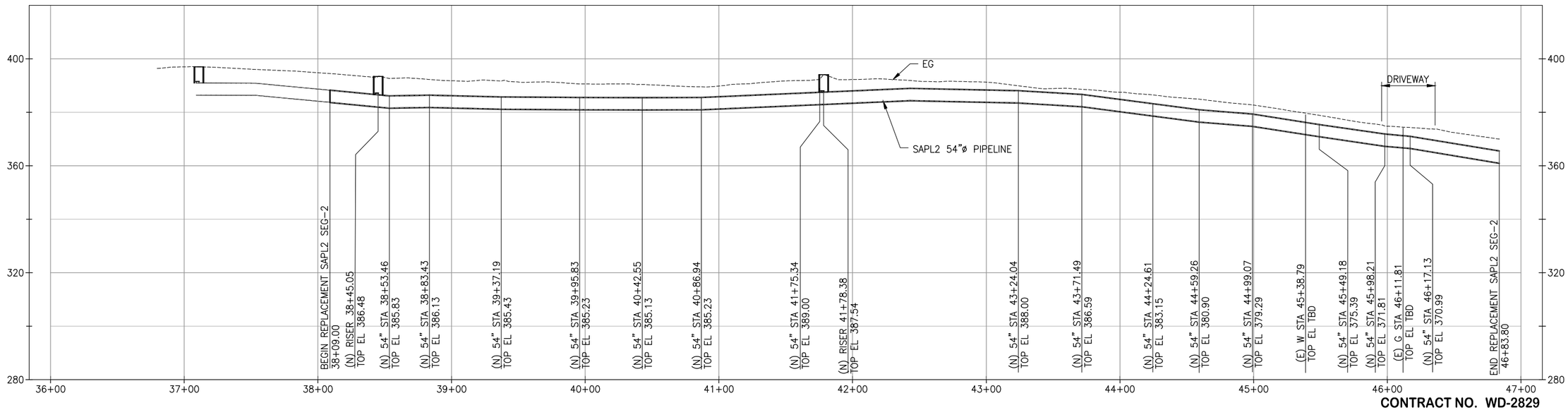
54"ø REPLACEMENT SAPL2 SEGMENT-1 PLAN AND PROFILE (STA 18+00 TO STA 26+00)

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED	APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-4003	E-	0



PLAN
SCALE:1"=40'



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER ANDREHOMEN H. ABELSALEH C 81091 CIVIL STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D
		REVISIONS		

CONTRACT NO. WD-2829

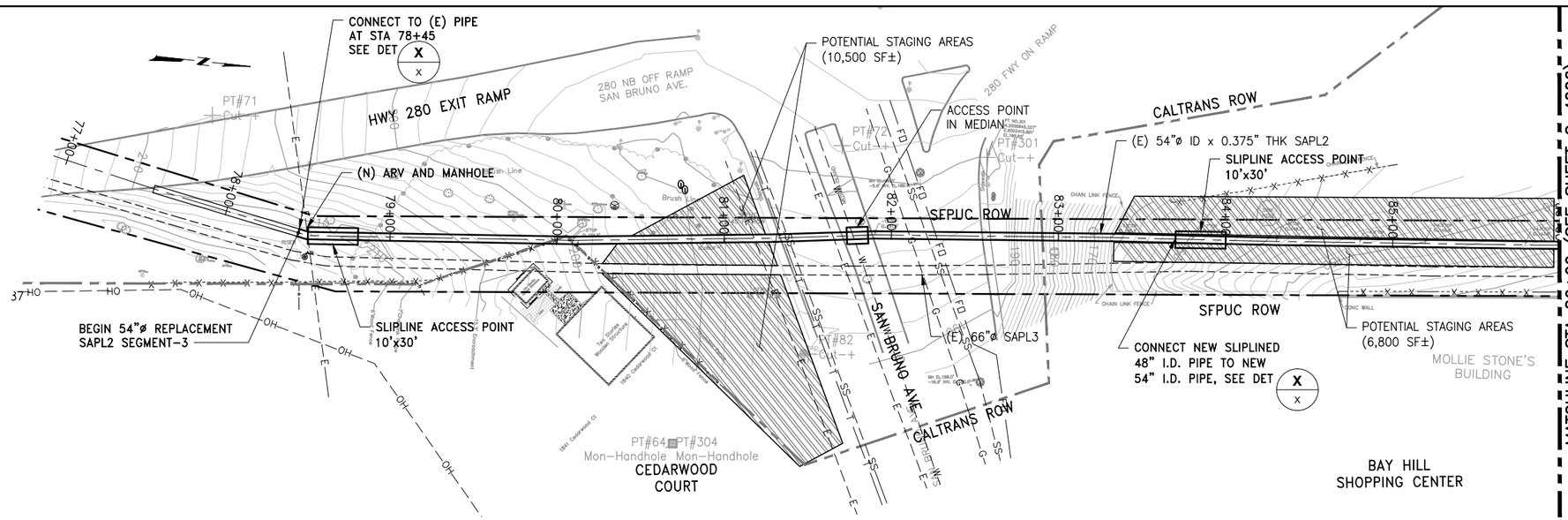
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

54"ø REPLACEMENT SAPL2 SEGMENT-1 PLAN AND PROFILE (STA 38+00 TO STA 47+00)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-4004	E-	0



NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
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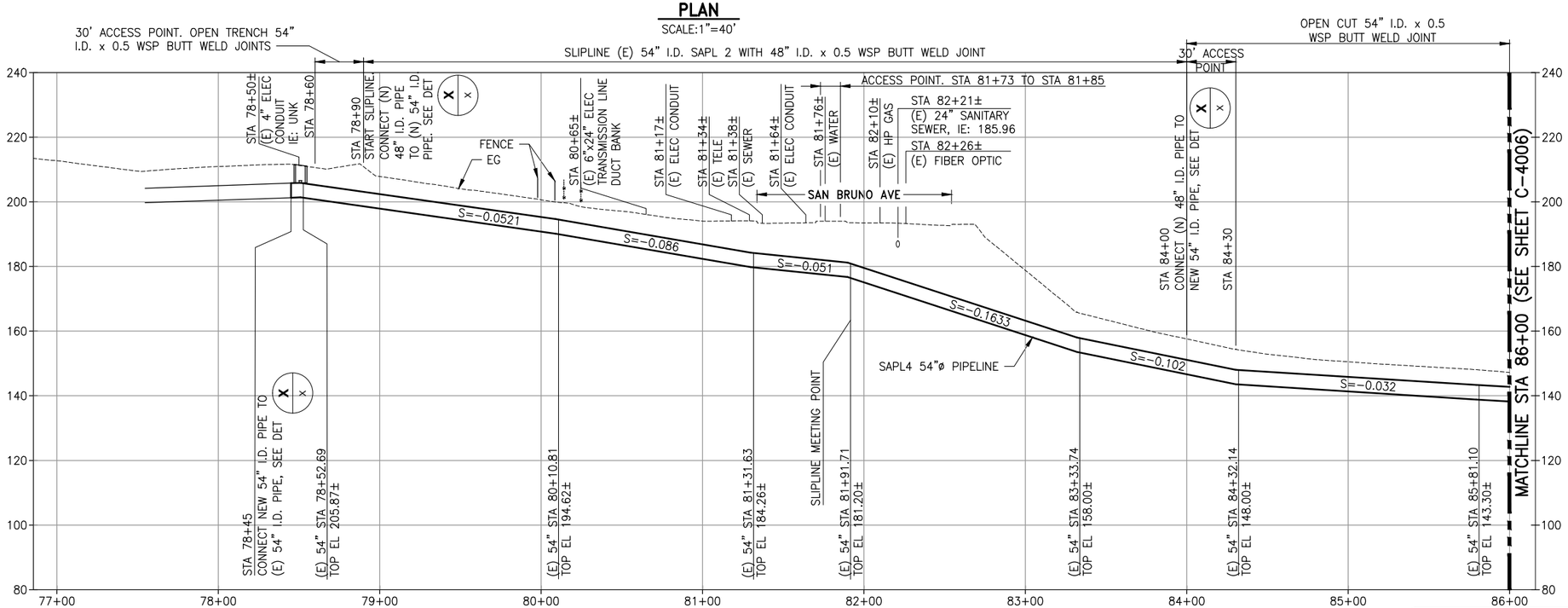
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.
4. ACCESS POINT IN MEDIAN FOR MAKING CONNECTION AT THE VERTICAL BEND LOCATED AT STA 81+91.
5. COMPLETELY REMOVE EXISTING PIPE AT ACCESS POINTS.
6. PIPE WALL THICKNESS TO BE DETERMINED BASED ON GEOTECHNICAL CONDITIONS.

PLAN

SCALE:1"=40'

PROFILE

SCALE: HORIZ:1"=40';VERT:1"=20'



PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
JAMES C. BOWLAND
No. 66400
Exp.06/30/18
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

Kennedy/Jenks Consultants
ENGINEERS & SCIENTISTS
303 SECOND STREET, SUITE 300 SOUTH
SAN FRANCISCO, CA 94107
PHONE (415) 243-2150
FAX (415) 896-0999

PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	JCB
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

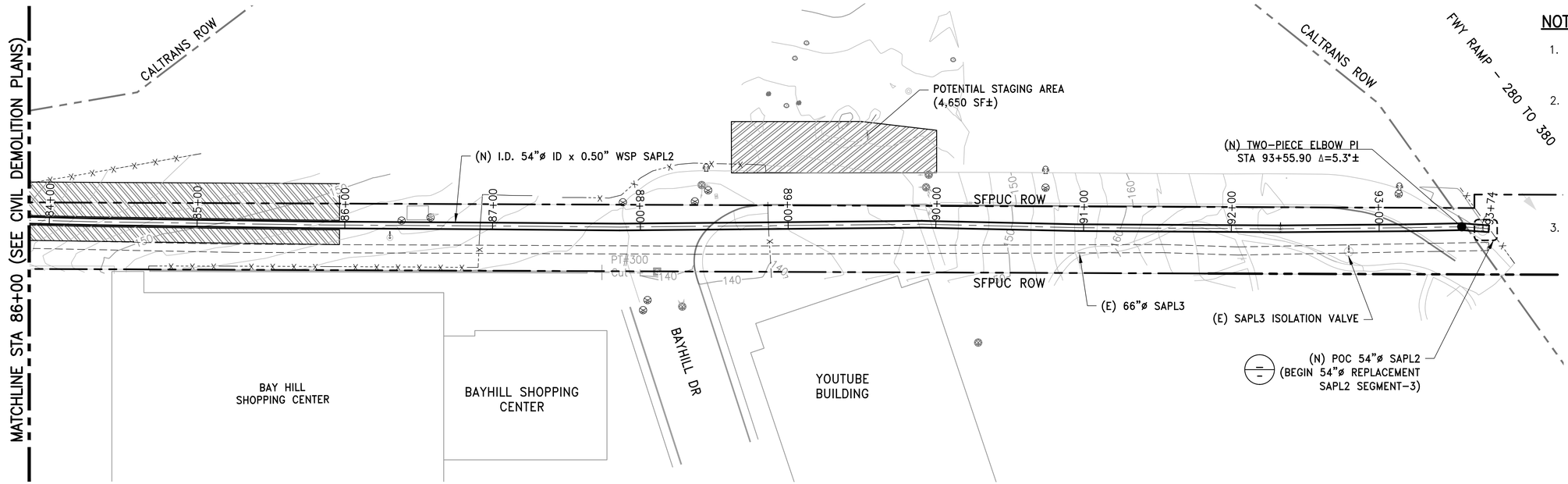
SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

PLAN AND PROFILE - SEGMENT 3
(STA 78+00 TO STA 86+00)

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. C-4005	DRAWING/FILE NO. E-	REVISION NO. 0

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\C-4005.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



PLAN
SCALE:1"=40'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
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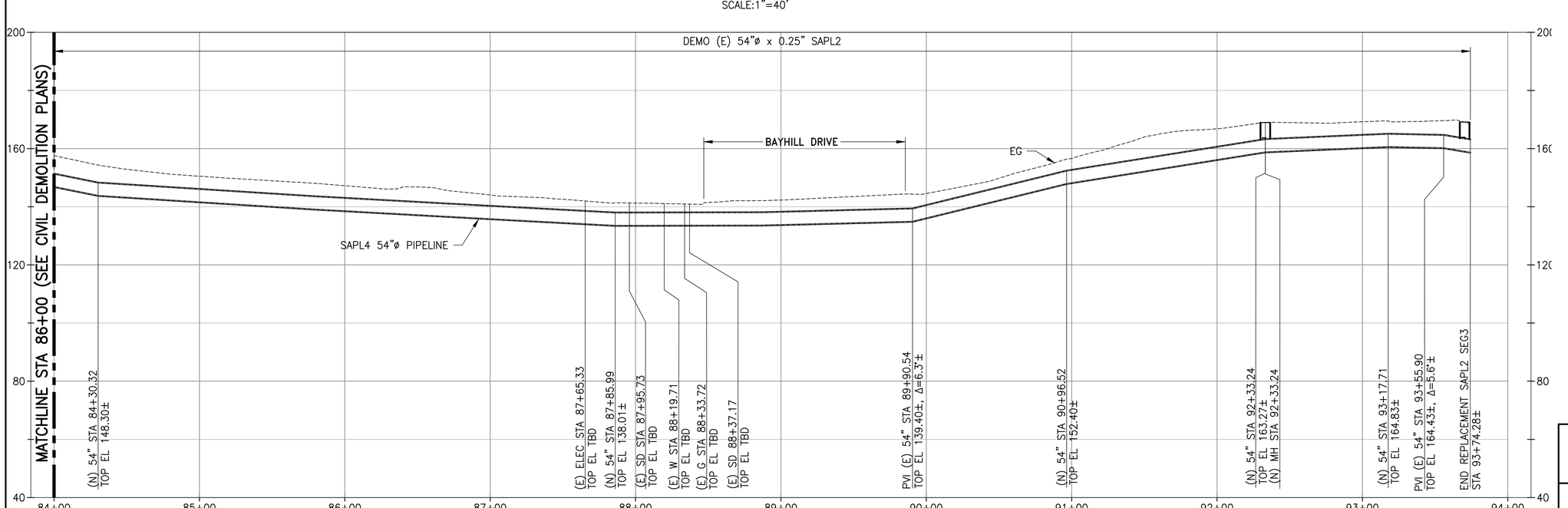
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1–800–227–2600 PRIOR TO DIGGING.



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

0 20 40 60
VERTICAL: 1" = 20'–0"

0 40 80 120
HORIZONTAL: 1" = 40'–0"

FOR THE SOLE USE OF THE DOCUMENT RECIPIENT - DO NOT CITE, COPY, OR CIRCULATE WITHOUT THE EXPRESSED PERMISSION OF THE SFPUC.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMANIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

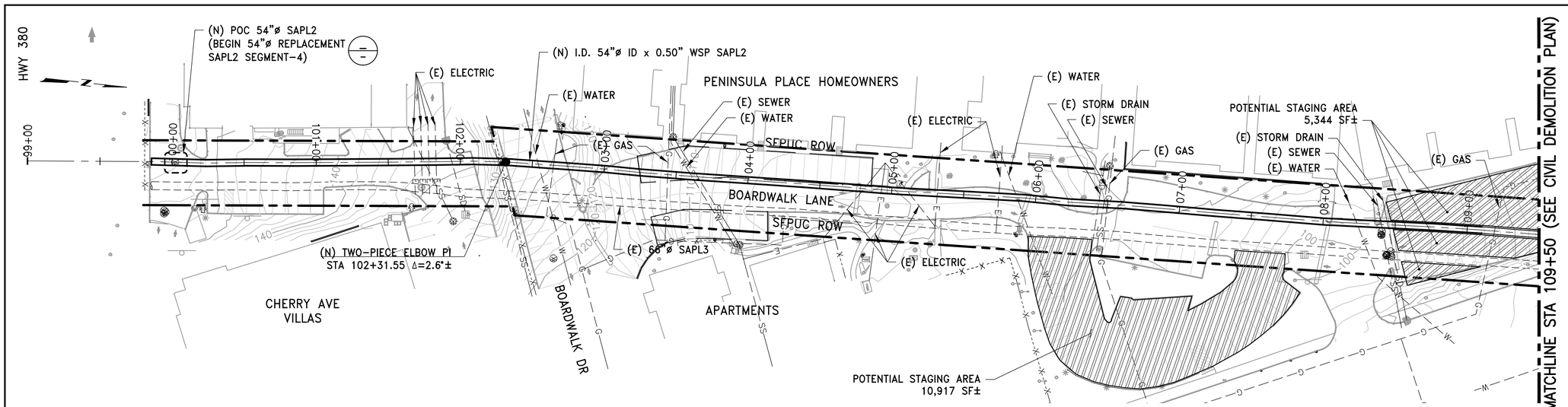
54"ø REPLACEMENT SAPL2 SEGMENT-3 PLAN AND PROFILE
(STA 84+00 TO STA 94+00)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

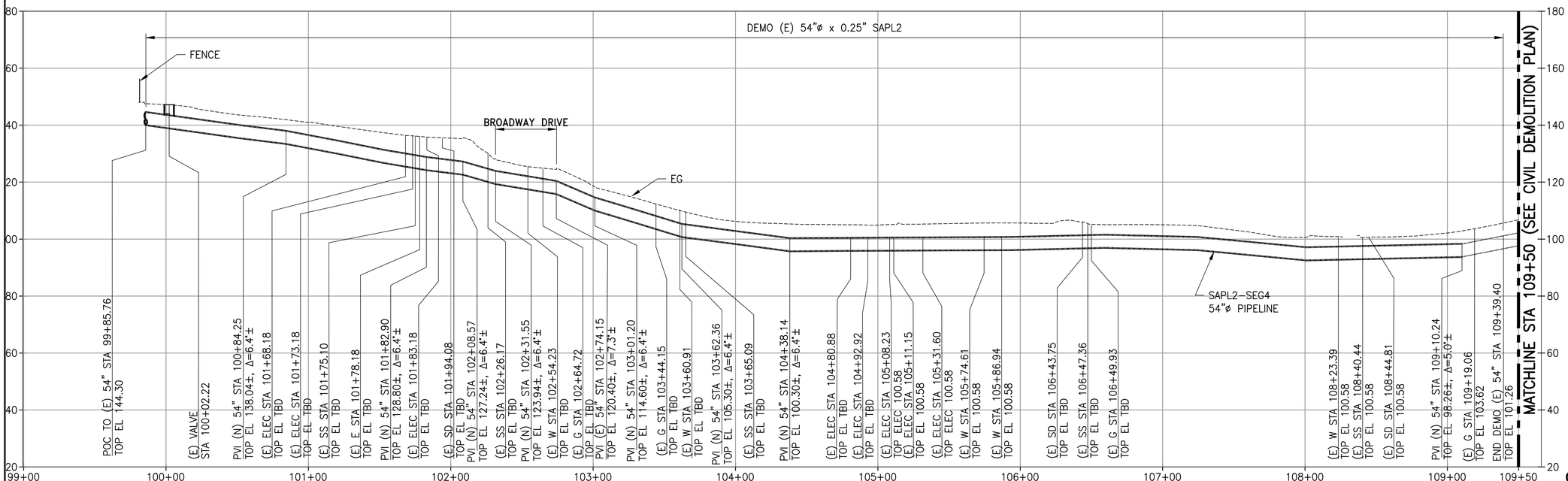
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C–4006	E–	0

FILE:Q:\CUW522735\CIVIL\50% SUBMITTAL\ACTIVE\C-4006.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



PLAN
SCALE:1"=40'



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
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3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMONIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD-2829

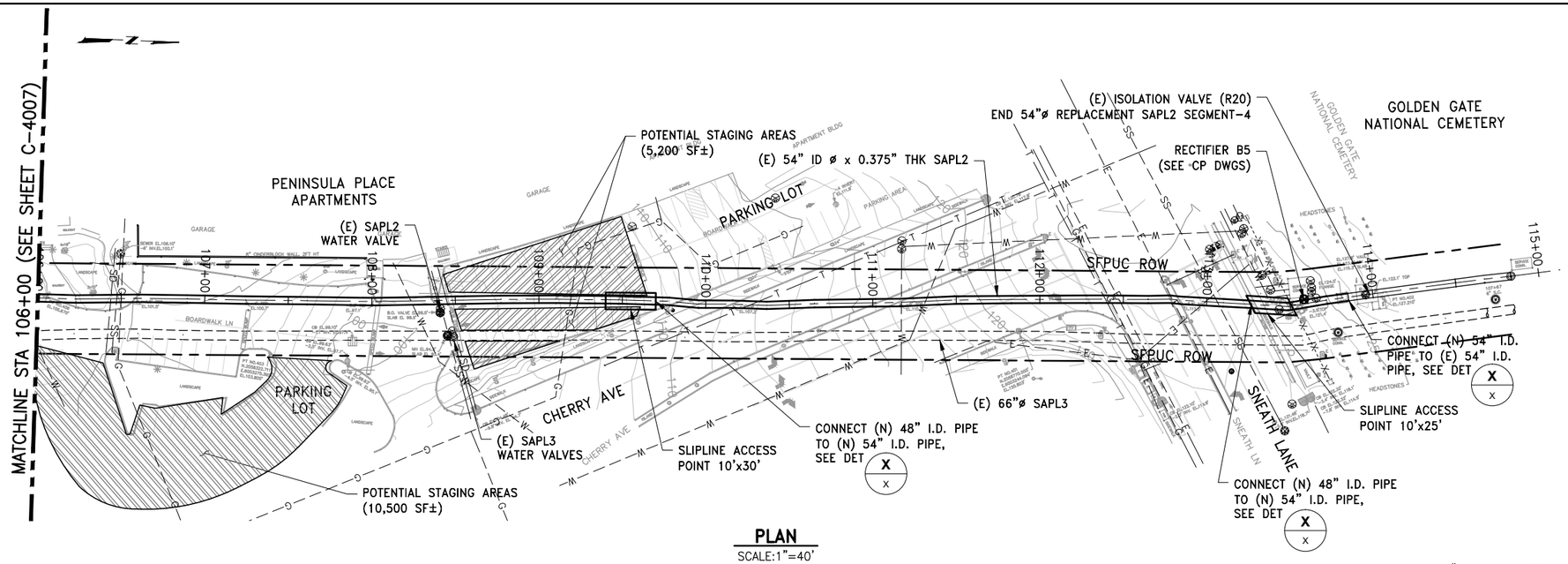
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

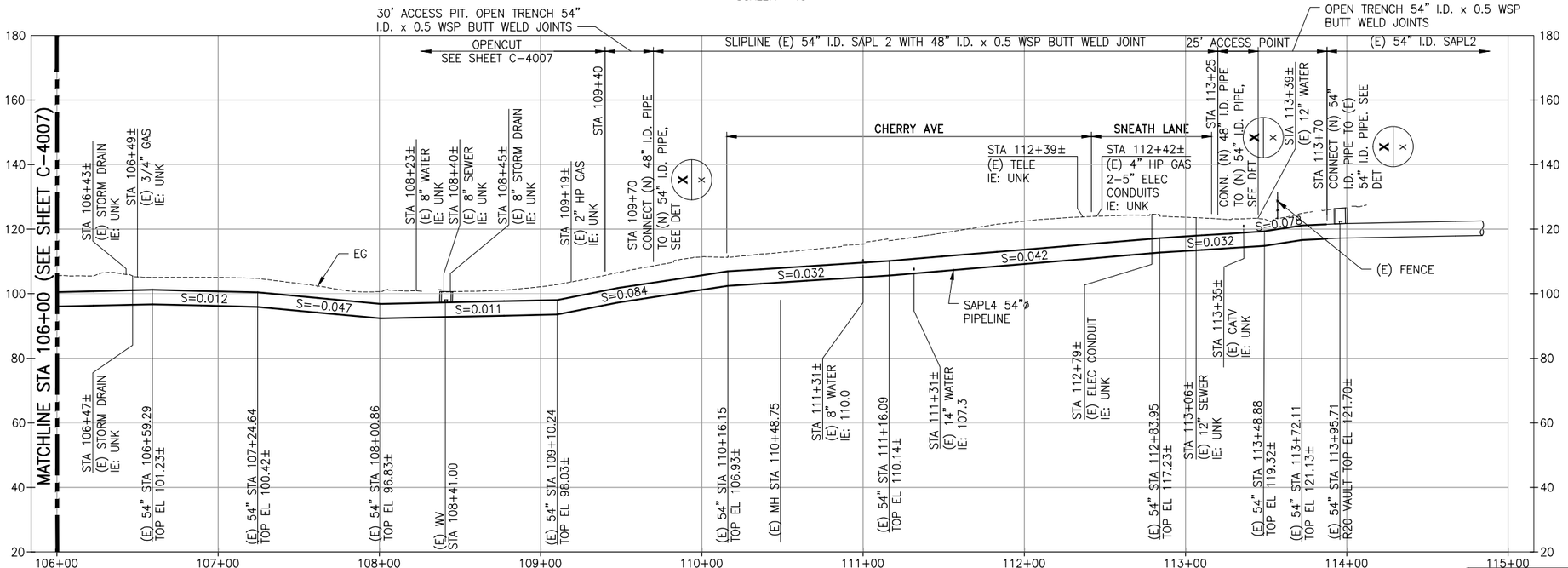
54"ø REPLACEMENT SAPL2 SEGMENT-1 PLAN AND PROFILE (STA 99+00 TO STA 109+50)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-4007	E-	0



PLAN
SCALE:1"=40'



PROFILE
SCALE: HORIZ:1"=40';VERT:1"=20'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.
4. COMPLETELY REMOVE EXISTING PIPE AT ACCESS POINTS.
5. PIPE WALL THICKNESS TO BE DETERMINED BASED ON GEOTECHNICAL CONDITIONS.
4. HIGH PRESSURE GAS LINE IS A PRIORITY SUBSURFACE INSTALLATION. CONTRACTOR TO COMPLY WITH SECTION 4216 OF CA GOVERNMENT CODE.

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.
RED 0.70MM
YELLOW 0.20MM
GREEN 0.25MM
CYAN 0.40MM
BLUE 0.50MM
MAGENTA 0.20MM
WHITE 0.35MM
GRAY 0.15MM
9 0.15MM
10 1.00MM
100 0.50MM
210 0.50MM

0 20 40 60
VERTICAL: 1" = 20'-0"

0 40 80 120
HORIZONTAL: 1" = 40'-0"

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER JAMES C. BOWLAND No. 66400 Exp.06/30/18 CIVIL STATE OF CALIFORNIA

50% SUBMITTAL

Kennedy/Jenks Consultants
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303 SECOND STREET, SUITE 300 SOUTH
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PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	JCB
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

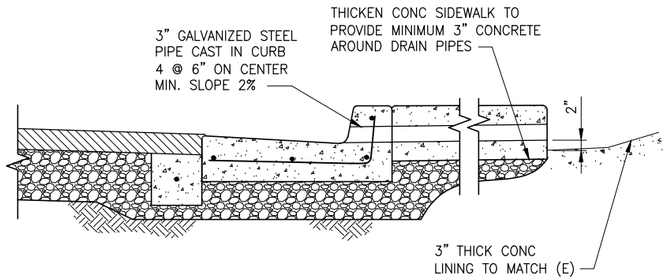
PLAN AND PROFILE - SEGMENT 4
(STA 106+00 TO STA 115+00)

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCT. 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING/FILE NO.	REVISION NO.
C-4008	E-	0

FILE: \\SAC2\CADDWGS\2014\1468050.21_SAPL2-REPLACEMENT\1-SHEETS\CIVIL\ACTIVE\C-4008.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



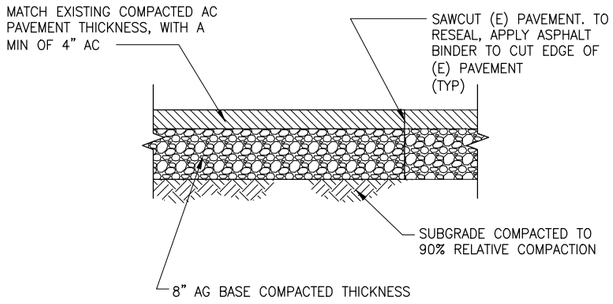
NOTES:

1. FOR CURB DIMENSIONS SEE DETAIL 3 / TYP

TYPICAL CURB DRAIN OUTLET DETAIL

SCALE: 1" = 1'–0"

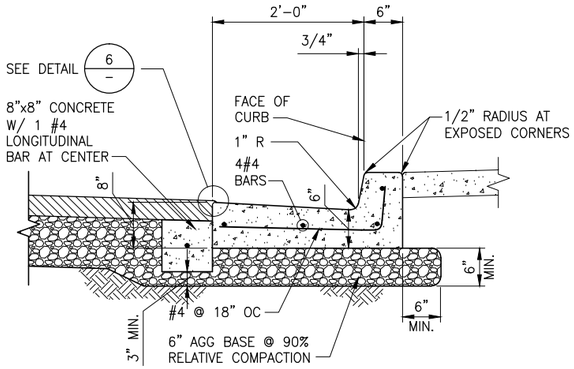
1 / TYP



TYPICAL ASPHALT CONCRETE PAVEMENT DETAIL

SCALE: 1" = 1'–0"

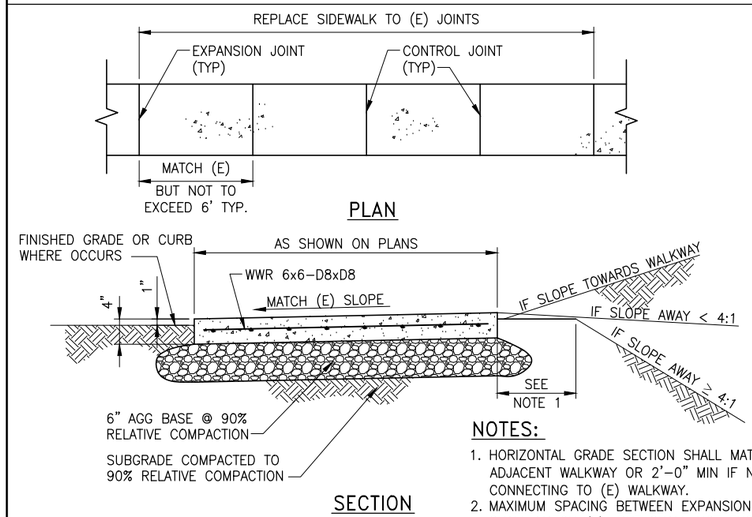
2 / TYP



TYPICAL CURB & GUTTER DETAIL

SCALE: 1" – 1'–0"

3 / TYP



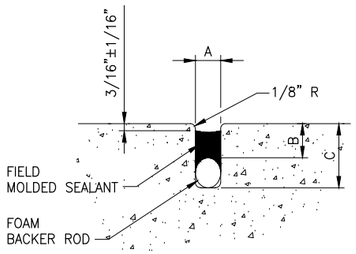
NOTES:

1. HORIZONTAL GRADE SECTION SHALL MATCH (E) ADJACENT WALKWAY OR 2'–0" MIN IF NOT CONNECTING TO (E) WALKWAY.
2. MAXIMUM SPACING BETWEEN EXPANSION JOINTS SHALL MATCH (E), BUT SHALL NOT EXCEED 24'–0".

TYPICAL CONCRETE WALKWAY DETAIL

SCALE: N.T.S.

4 / TYP



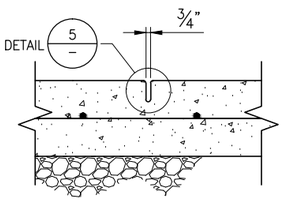
NOTE: DIMENSIONS APPLICABLE TO ALL CONTROL JOINTS REQUIRING SEALANT UNLESS NOTED OTHERWISE ON DRAWINGS

DIMENSION A	BACKER ROD DIAMETER	DIMENSION B	DIMENSION C
1/4"	3/8"	1/2"	1"
3/8"	1/2"	5/8"	1–1/4"

CONTROL JOINT DETAIL

SCALE: N.T.S.

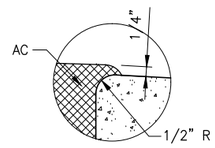
5 / TYP



TYP. CONTROL JOINT DETAIL

SCALE: N.T.S.

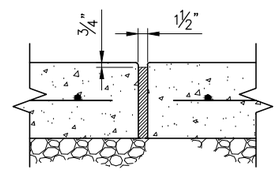
7 / TYP



DETAIL

SCALE: N.T.S.

6 / TYP



TYP. EXPANSION JOINT DETAIL

SCALE: N.T.S.

8 / TYP

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

FILE: V:\2014\1468050.21_SAPL2–REPLACEMENT\1–SHEETS\CIVIL\ACTIVE\C–5001.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4

0 1 1"□1:0"

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
DEBORAH C. RUSSELL
No. C69681
Exp. 6/30/18
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

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PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	NCL
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD–2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

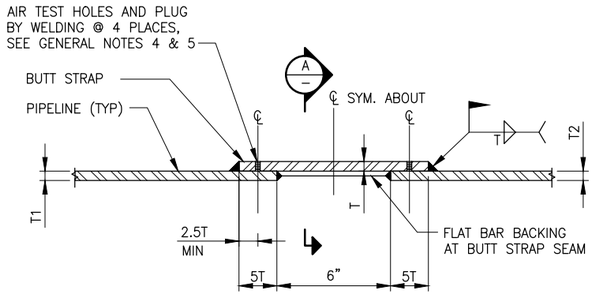
TYPICAL CIVIL DETAILS

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCT. 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING/FILE NO.	REVISION NO.
C–5001	E–	0

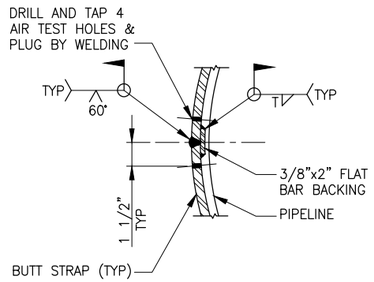
GENERAL NOTES:

1. SEE DRAWINGS AND SPECIFICATIONS FOR PLATE THICKNESS OF PIPES.
2. PROVIDE BUTT STRAPS IN TWO–SEMICIRCULAR PIECES FITTED TO PIPE.
3. PROVIDE 3/8" x 2" BACKING PLATE AT BUTT STRAP ENDS.
4. AIR TEST JOINT TO 40 psi MINIMUM.
5. "T" THICK BUTT STRAPS SHALL BE FABRICATED IN HALVES COMPLETE WITH 8 DRILLED AND TAPPED HOLES FOR STANDARD 1/4" THREADED PIPE. "T" SHALL EQUAL T1 OR T2 WHICHEVER IS THICKER.

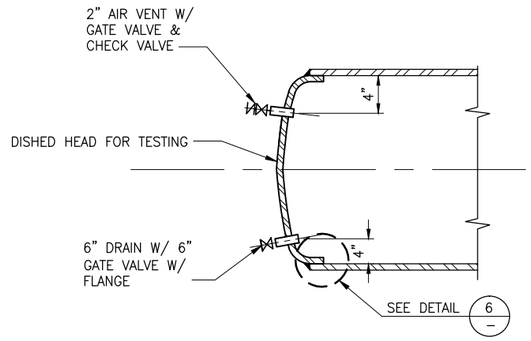


NOTE:
1. T EQUAL T1 OR T2 WHICHEVER IS GREATER.
2. REFER TO PLAN CP5–07 FOR PIPE COATING AND LINING.
3. FOR CONNECTIONS TO PIPE WITH DIFFERENT DIAMETERS SEE DETAIL 4 ON P5–02

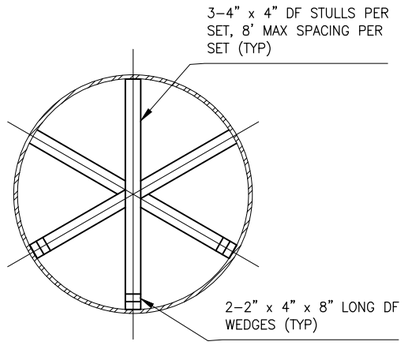
TYPICAL BUTT STRAP DETAIL 1 / – N.T.S.



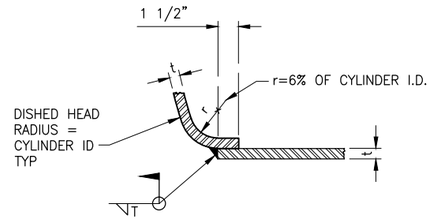
SECTION A / – N.T.S.



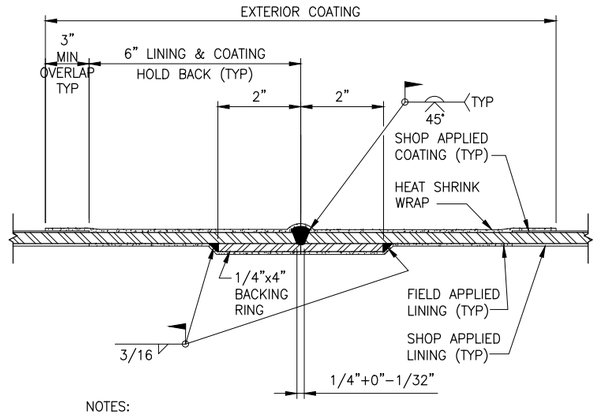
TEST BULKHEAD DETAIL 2 / – N.T.S.



TYPICAL STULLING DETAIL 3 / – N.T.S.



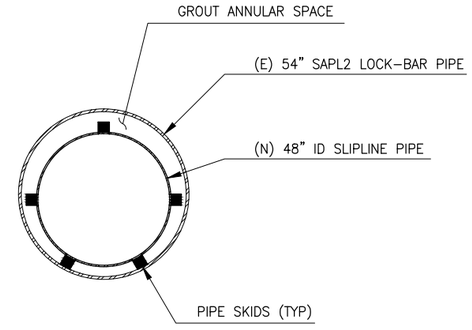
DETAIL 4 / – N.T.S.



NOTES:
1) CONTRACTOR'S OPTION TO PLACE THE BACKING RING ON THE INSIDE OR OUTSIDE OF PIPE.

2) THE LINING TIE–IN SHALL BE PER PLAN CP–XX COATING TRANSITION DETAILS.

TYPICAL FIELD BUTT JOINT DETAIL 5 / – N.T.S.



SAPL2 SLIP SECTION 6 / – N.T.S.

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.

RED	0.70MM
YELLOW	0.20MM
GREEN	0.25MM
CYAN	0.40MM
BLUE	0.50MM
MAGENTA	0.20MM
WHITE	0.35MM
GRAY	0.15MM
9	0.15MM
10	1.00MM
100	0.50MM
210	0.50MM

NOT FOR CONSTRUCTION

ELEVATION DATUM
NAD 83
NAVD 88

REGISTERED PROFESSIONAL ENGINEER
JAMES C. SORLAND
No. 66400
Exp.06/30/18
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

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PROJECT ENGINEER	XL	DRAWN	HCS
PROJECT MANAGER	DCR	DESIGNED	JCB
APPROVAL	JAF	CHECKED	ACS

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD–2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

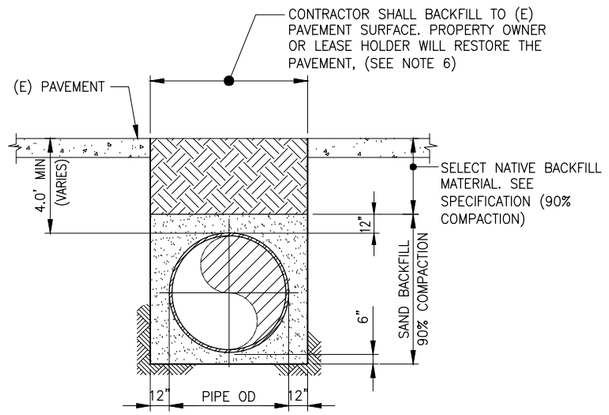
SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

TYPICAL STEEL PIPE AND COATING DETAILS I

CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCT. 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. C–5002	DRAWING/FILE NO. E–	REVISION NO. 0	

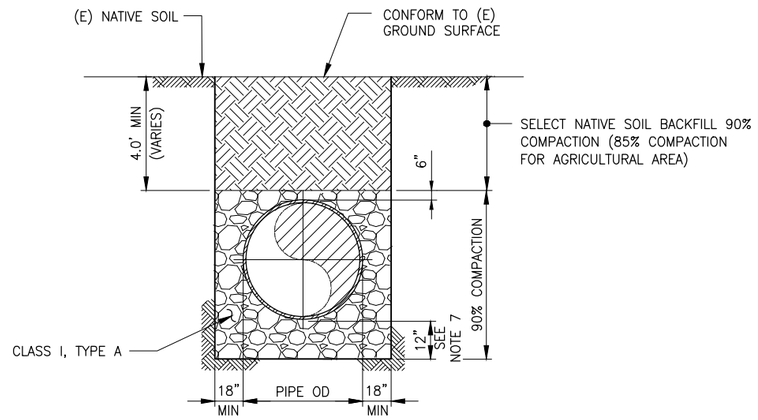
FILE: V:\2014\1468050.21_SAPL2–REPLACEMENT\1–SHEETS\CIVIL\ACTIVE\C–5002.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



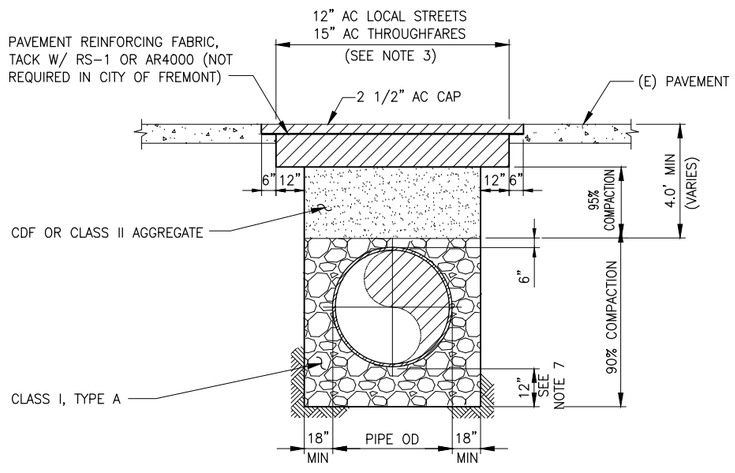
TYPICAL TRENCH FOR PAVED AREAS
OUTSIDE OF PUBLIC RIGHT-OF-WAY

DETAIL 1/– N.T.S.



TYPICAL TRENCH FOR UNPAVED AREAS
WITH HIGH GROUND WATER TABLE OR SOFT SOIL CONDITION

DETAIL 2/– N.T.S.



TYPICAL TRENCH FOR PAVED AREAS
WITH HIGH GROUND WATER TABLE OR SOFT SOIL CONDITION

DETAIL 3/– N.T.S.

NOTES:

1. TRENCH DETAILS ARE FOR PIPELINES OUTSIDE OF THE FAULT CROSSING AREA.
2. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE LOCATION OF SLOPED TRENCH TO BE USED.
3. SEE STANDARD PLANS AND SPECIFICATIONS OF LOCAL AUTHORITIES HAVING JURISDICTION FOR ADDITIONAL INFORMATION.
4. IF EDGE OF TRENCH FALLS WITHIN 5 FEET OF THE GUTTER, THE ENTIRE PAVEMENT SHALL BE REMOVED.
5. IF EXISTING PAVEMENT IS LESS THAN 3-INCH THICK, PAVEMENT SHALL BE SAWCUT FULL IN LIEU OF GRINDING AND REPLACE WITH 4-INCH MINIMUM ASPHALT CONCRETE. CONTRACTOR SHALL MATCH THE EXISTING PAVEMENT THICKNESS IF EXISTING THICKNESS IS MORE THAN 4-INCH.
6. SEE CIVIL AND LANDSCAPING DRAWINGS FOR PAVEMENT RESTORATION IN PARKS, SCHOOLS, COMMUNITY CENTERS, AND AREAS WITHIN THE SFPUC R.O.W..
7. THE 12-INCH THICK CRUSHED ROCK BEDDING IS FOR SOFT SOIL CONDITION ONLY AND IS NOT REQUIRED FOR HIGH GROUND WATER TABLE AREA WITH STABLE SOIL CONDITION. CONTRACTOR MAY USE CONTROL DENSITY FILL (CDF) IN LIEU OF CRUSHED ROCKS.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER ABDELMONEIM H. ABDELSHEIM C 81091 CIVIL STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

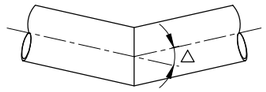
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

TYPICAL TRENCH DETAILS

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

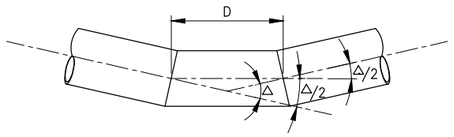
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-5011	E-	0



TYPE 1 BEND

SCALE: 3/8"=1'-0"

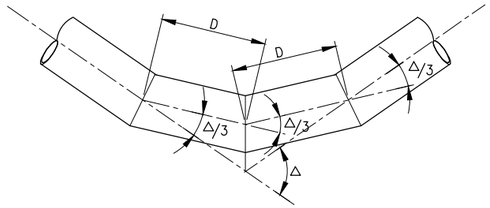
△ OVER 5° TO 22 1/2°



TYPE 2 BEND

SCALE: 3/8"=1'-0"

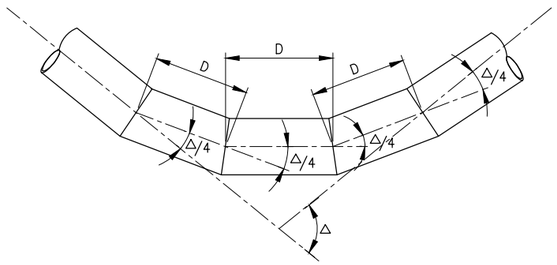
△ OVER 22 1/2° TO 45°



TYPE 3 BEND

SCALE: 3/8"=1'-0"

△ OVER 45° TO 67 1/2°



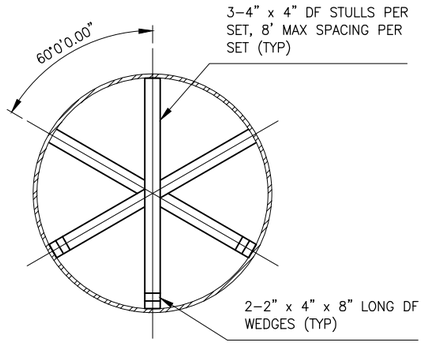
TYPE 4 BEND

SCALE: 3/8"=1'-0"

△ OVER 67 1/2° TO 90°

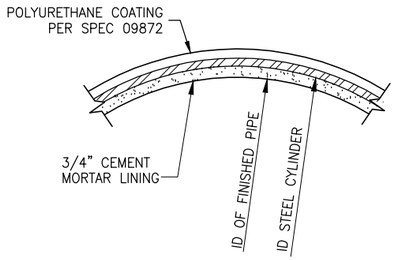
TYPICAL STEEL PIPE BENDS DETAIL (1)

N.T.S.



TYPICAL STULLING DETAIL (2)

N.T.S.



TYPICAL STEEL PIPE SECTION (3)

N.T.S.

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO

PUBLIC UTILITIES COMMISSION

INFRASTRUCTURE DIVISION

ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

TYPICAL PIPE ENCASEMENT DETAILS

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED: DC
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C–5012	E–	0

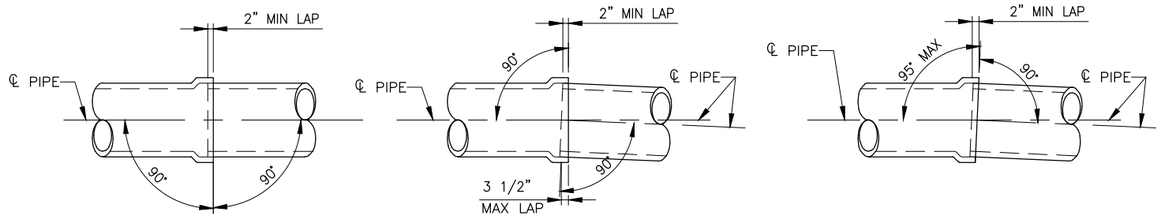
50% SUBMITTAL

REVISIONS

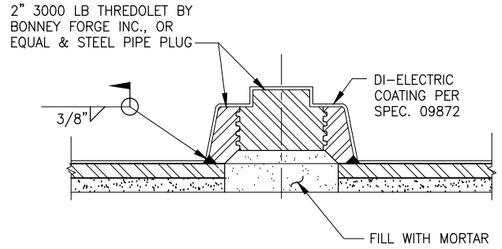
NO.	DATE	DESCRIPTION	BY	APP'D

ELEVATION DATUM
NAD83
NAVD88

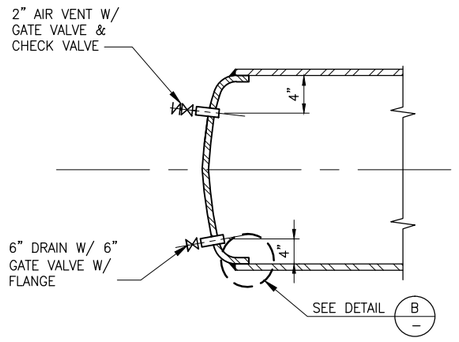
REGISTERED PROFESSIONAL ENGINEER
ROGER F. TAM
C 47898
CIVIL
STATE OF CALIFORNIA



WELDED BELL AND SPIGOT GIRTH JOINT 1
N.T.S.



2" TEMPORARY OUTLET DETAIL 2
N.T.S.



TEST BULKHEAD DETAIL 3
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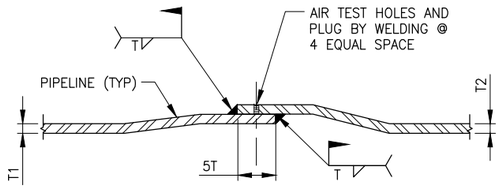
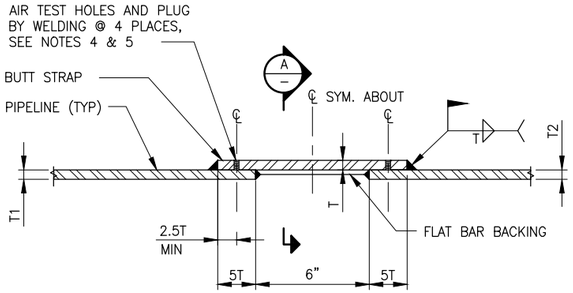


NOTE:

1. T EQUAL T1 OR T2 WHICHEVER IS GREATER.
2. REFER TO DETAIL 1 ON PLAN CP-0.7 FOR PIPE COATING AND LINING.

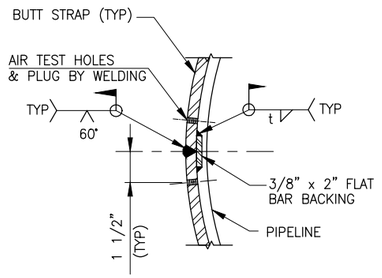
TYPICAL WELDED BELL & SPIGOT JOINT DETAIL 4
N.T.S.



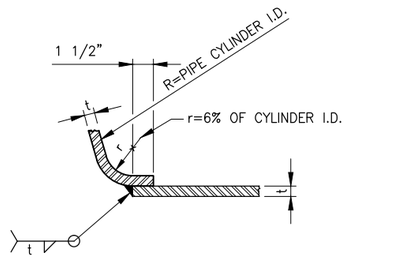
NOTE:

1. T EQUAL T1 OR T2 WHICHEVER IS GREATER.
2. REFER TO DETAIL 1 ON PLAN CP-0.7 FOR PIPE COATING AND LINING.

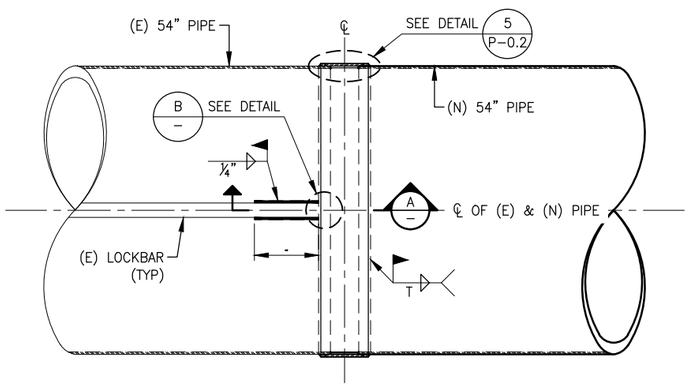
TYPICAL BUTT STRAP DETAIL 5
N.T.S.



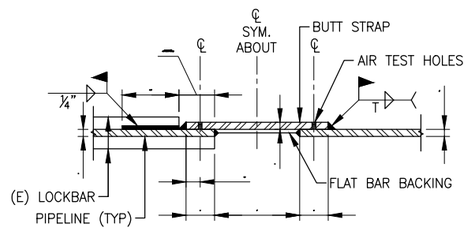
SECTION A
N.T.S.



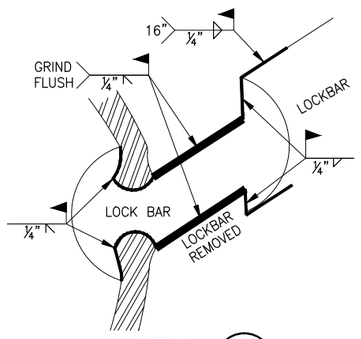
DETAIL B
N.T.S.



LOCKBAR STEEL PIPE TO WELDED STEEL PIPE CONNECTION 6
N.T.S.



SECTION A
N.T.S.



DETAIL B
N.T.S.

NOTES:

1. SEE DRAWINGS AND/OR SPECIFICATIONS FOR PLATE THICKNESS OF PIPES.
2. TYPICAL BUTT STRAPS SHALL COME IN TWO-SEMICIRCULAR PIECES FITTED TO PIPE.
3. PROVIDE 3/8" x 2" BACKING PLATE AT BUTT STRAP ENDS.
4. AIR TEST TO 100psi MINIMUM.
5. "T" THICK BUTT STRAPS SHALL BE FABRICATED IN HALVES COMPLETE WITH 8 DRILLED AND TAPPED HOLES FOR STANDARD 1/4" THREADED PIPE. "T" SHALL EQUAL T1 OR T2 WHICHEVER IS THICKER.

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

TYPICAL STEEL PIPE DETAILS

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED: DC	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

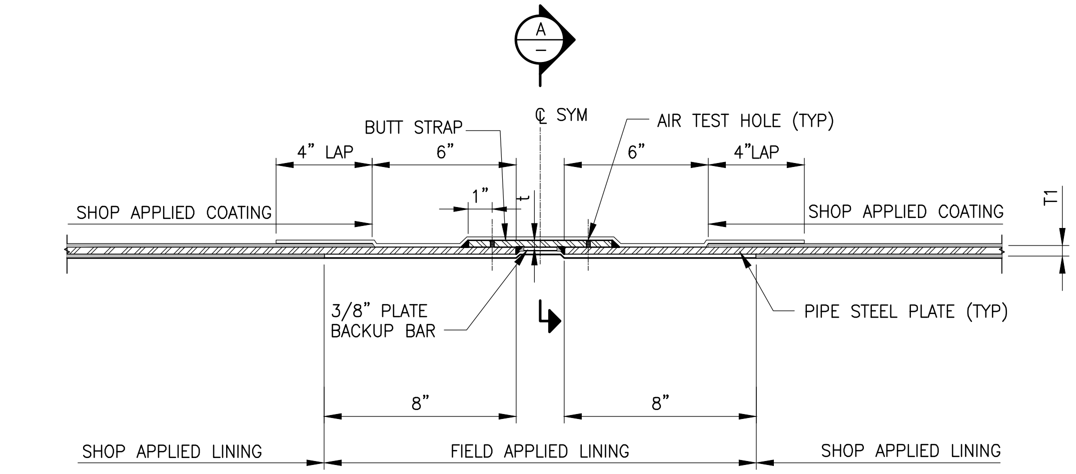
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-5013	E-	0

NO.	DATE	DESCRIPTION	BY	APP'D
		REVISIONS		

50% SUBMITTAL

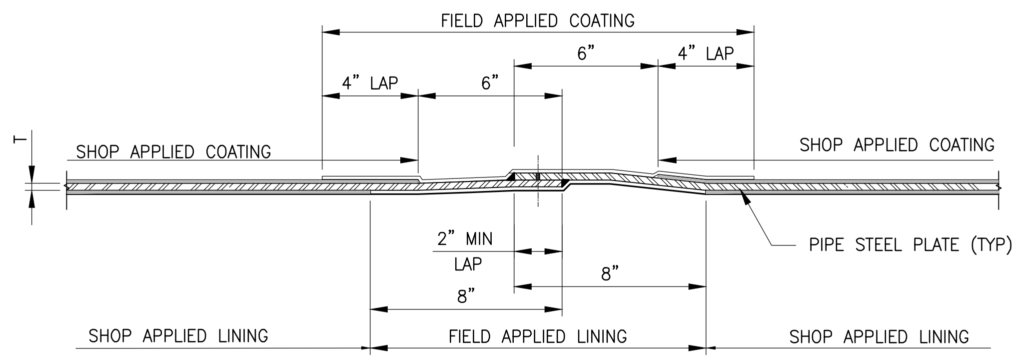
ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ROGER F. TAM
C 47898
CIVIL
STATE OF CALIFORNIA



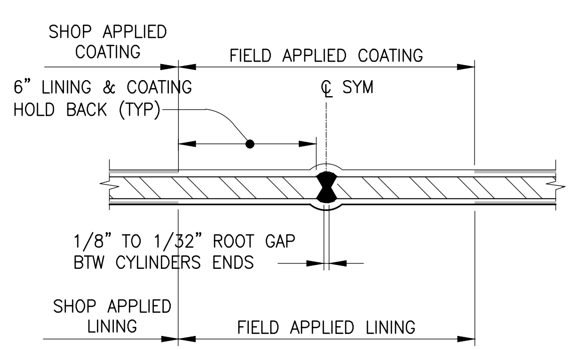
TYPICAL DIELECTRIC COATING AND LINING AT BUTT STRAP JOINT

DETAIL 1/–
N.T.S.



TYPICAL DIELECTRIC COATING AND LINING AT LAP JOINT

DETAIL 2/–
N.T.S.



TYPICAL DIELETRIC COATING AND LINING AT BUTT JOINT DETAIL

DETAIL 3/–
N.T.S.

NOTE:

ALL EXPOSED METAL SURFACES, EXCEPT FLANGE SHALL BE COATED WITH EPOXY IN ACCORDANCE WITH AWWA C210 NSF STANDARD 61 APPROVED. AMERLOCK 400, HIGH–SOLIDS EPOXY COATING OR APPROVED EQUAL. THE EPOXY COATING SHALL BE TWO COATS MINIMUM, 6 MILS DFT PER COAT OR APPROVED CORROSION RESISTANT COATING.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMONIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

TYPICAL COATING AND LINING AT
STEEL PIPE JOINTS

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE AS SHOWN	DATE OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. C–5014	DRAWING / FILE NO. E–	REVISION NO. 0

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES

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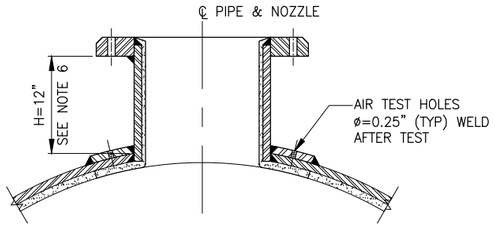
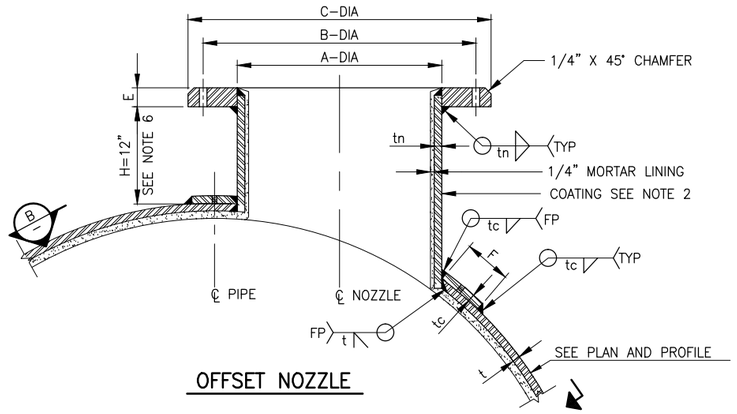
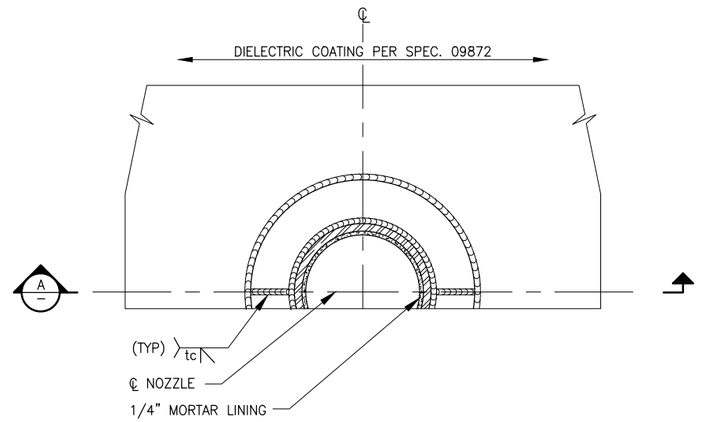


RADIAL NOZZLE
(SIMILAR TO OFFSET NOZZLE)



OFFSET NOZZLE

NOZZLES ON STEEL PIPE
SECTION A –



SECTION B – N.T.S.

NOZZLE DIMENSIONS (INCHES)										
NOZZLE	A	B	F	C	tc	tn	BOLT HOLE DIA	BOLT DIA	No. BOLT	E (PER AWWA CLASS "E")
4	4.57	7.5	3	9	3/8	0.365	3/4	5/8	8	1.125
6	6.72	9.5	5	11	7/16	0.365	7/8	3/4	8	1.313
8	8.72	11.75	6	13.5	1/2	0.365	7/8	3/4	8	1.500
10	10.88	14.25	6	16	1/2	0.365	1	7/8	12	1.563
12	12.88	17	7	19	1/2	0.375	1	7/8	12	1.750
16	16.19	21.25	9	23.5	5/8	0.375	1 1/8	1	16	2.000
24	24.19	29.50	10	32	3/4	0.375	1 3/8	1 1/4	20	2.625

NOTES:

1. ALL FLANGE SHALL BE FACED AFTER WELDING OF SKIRT.
2. EXPOSED METAL SURFACES, EXCEPT FLANGE FACE SHALL BE COATED WITH DIELECTRIC COATING PER SPECIFICATION SECTION 09872. FLANGE FACE SHALL BE COATED WITH SHOP PRIMER.
3. FLANGES INSTALLED SHALL CONFORM TO AWWA STANDARD C–207 CLASS "E".
4. 250# ANSI VALVE SPEC NOT COMPATIBLE WITH AWWA C–207 CLASS "E".
5. RADIAL NOZZLES SHALL BE USED FOR INSTALLATION OF WELD LEADS.
6. USE H=15" FOR DRAWING P–0.6, P–0.7, P–0.8 AND P–0.14.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ROGER F. TAM
C 47898
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

NOZZLE LAYOUT AND DETAILS

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C–5016	E–	0

APPURTENANCE AND MANHOLE SCHEDULE

PLAN No.	STATION	TYPE OF APPURTENANCE	24-INCH MH	CONC MH RISER	
		SECTION I	MANHOLE	ID (FT)	HEIGHT (FT)

APPURTENANCE AND MANHOLE SCHEDULE

PLAN No.	STATION	TYPE OF APPURTENANCE	24-INCH MH	CONC MH RISER	
		SECTION I	MANHOLE	ID (FT)	HEIGHT (FT)

NOTE:

INFORMATION IN TABLE IS FOR ESTIMATING PURPOSE ONLY AND SUBJECT TO CHANGE OR FIELD VERIFY.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMONIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

APPURTENANCE AND MANHOLE SCHEDULE

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN — DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-5018	E-	0

FILE:Q:\CUW522735\CIVIL\50% SUBMITTAL ACTIVE\C-5018.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES

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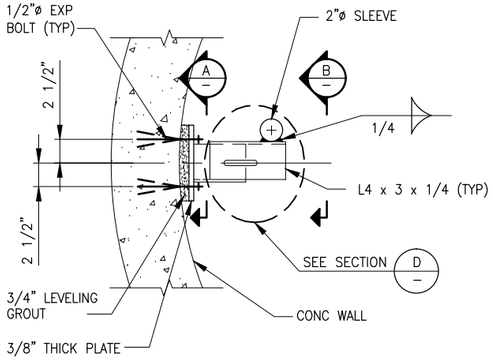
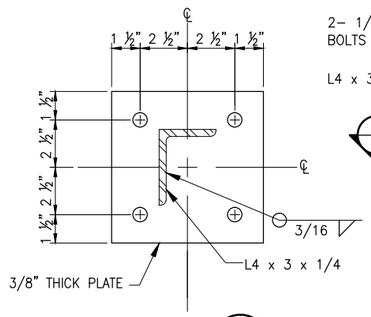
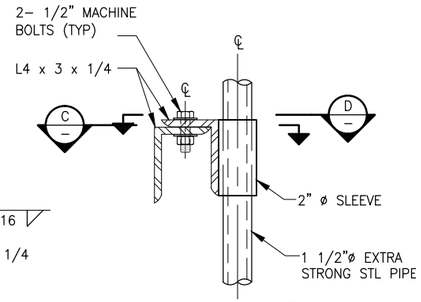


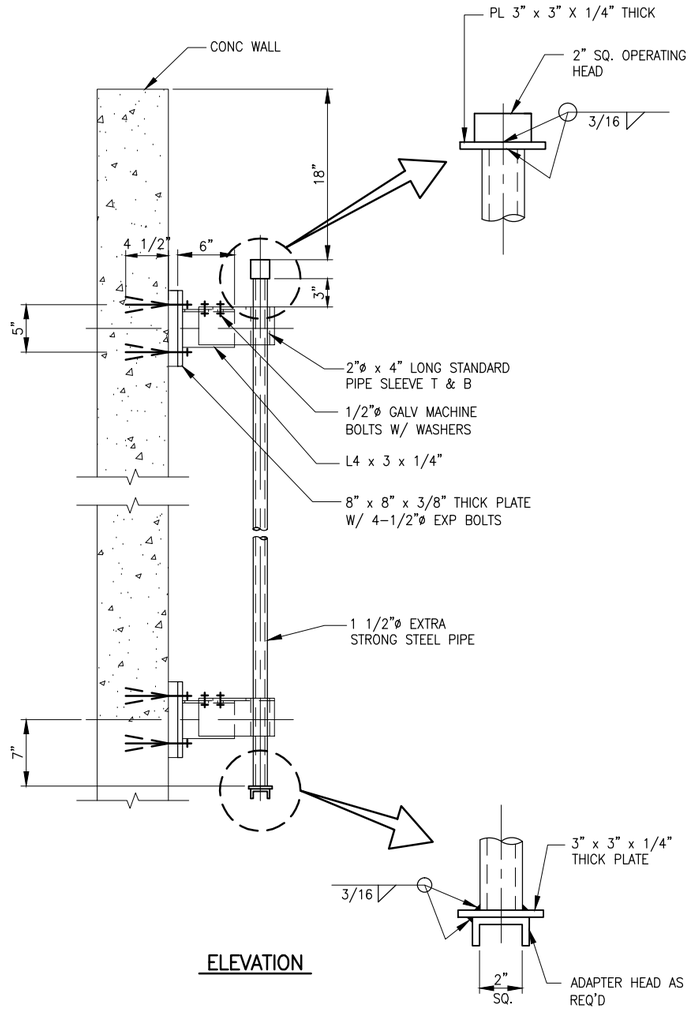
PLAN



SECTION A
3"=1'-0"

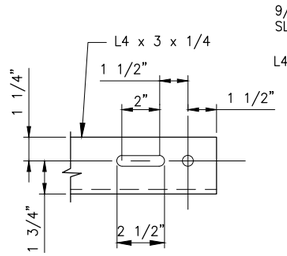


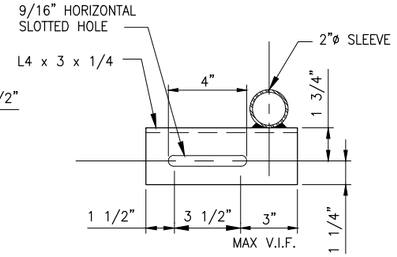
SECTION B
3"=1'-0"



ELEVATION

STANDARD VALVE STEM EXTENSION DETAIL 1
N.T.S. (TWO BRACKET REQUIRED)





SECTION C
3"=1'-0"

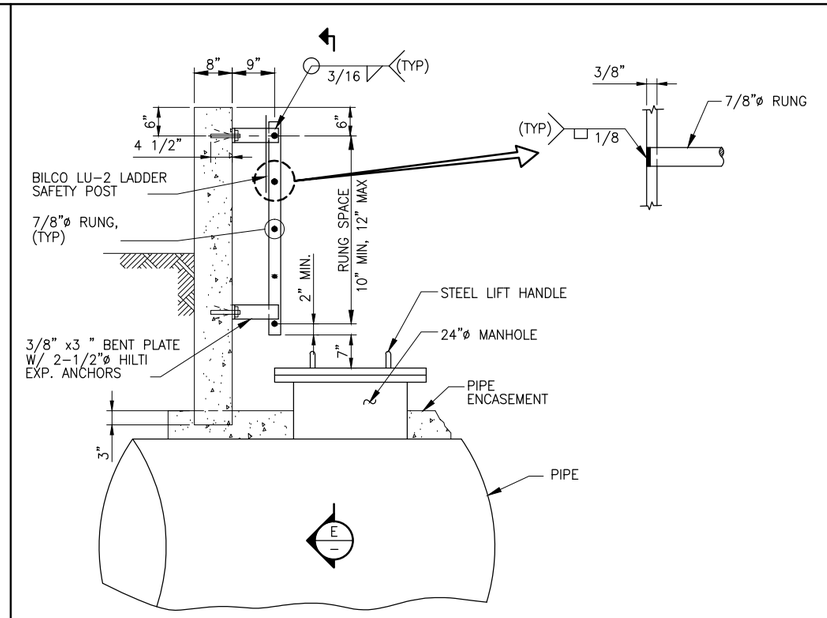
SECTION D
3"=1'-0"

NOTES:

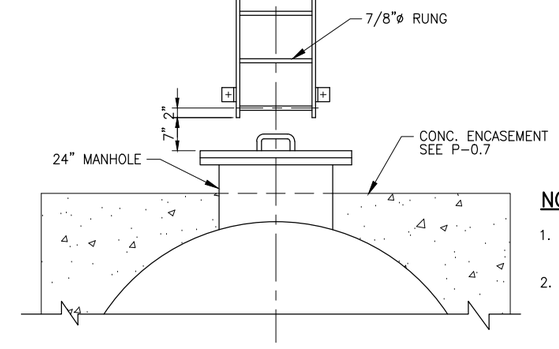
1. ALL OPERATING NUTS SHALL BE 2" STD. SQ. NUT. THE "OPEN" DIRECTION SHALL BE INDICATED BY AN ARROW WITH THE WORD "OPEN" CAST ON THE SKIRT OF THE FLANGE OR AT THE TOP OF THE NUT.
2. ALL STRUCTURAL STEEL & BOLTS AS SHOWN SHALL BE GALVANIZED.
3. MATERIALS:

STRUCTURAL STEEL SHAPE AND ANGLES:	ASTM A36
STRUCTURAL PIPE:	ASTM A53, GRADE B
BOLTS (MACHINE BOLT):	ASTM A307
WELDING:	E70XX

4. ALL WORK PERFORMED SHALL MEET LATEST EDITION OF CALIFORNIA BUILDING CODE AND AWWA CODE REQUIREMENTS.
5. ALL MATERIALS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND INSTALLATION.
6. PROVIDE LADDER IF THE DISTANCE FROM TOP OF 24" MANHOLE FLANGE TO THE VAULT COVER IS GREATER THAN OR EQUAL TO 5'–0" OR PER DIRECTION OF ENGINEER.



ELEVATION



NOTES:

1. SEE STANDARD VALVE STEM EXTENSION NOTES.
2. LADDER DESIGN SHALL MEET OSHA REQUIREMENTS.

SECTION E

LADDER FOR RISERS DETAIL 2
3/4"=1'-0"

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

LADDER, VALVE STEM EXTENSION AND GUIDE DETAILS FOR CONCRETE RISER

50% SUBMITTAL

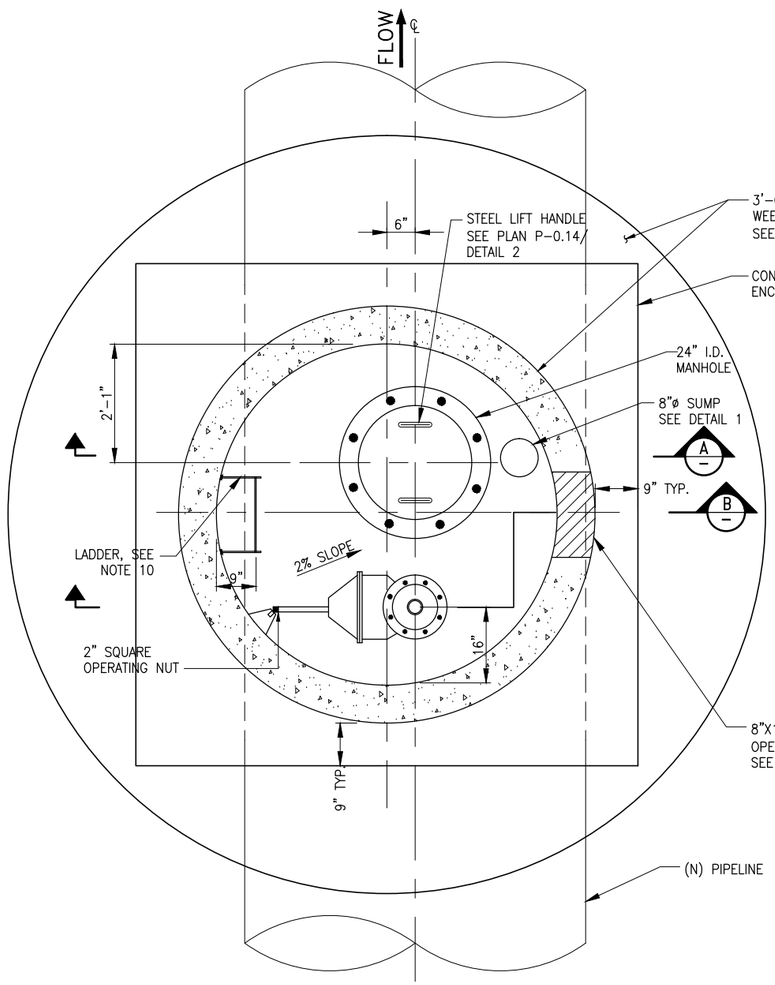
CHECKED / APPROVED		DRAWN	
SECTION MANAGER		DESIGNED	
MAINTENANCE ENGINEERING MANAGER		SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED		APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU		MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. C–5020	DRAWING / FILE NO. E–	REVISION NO. 0	

REVISIONS

NO.	DATE	DESCRIPTION	BY	APP'D

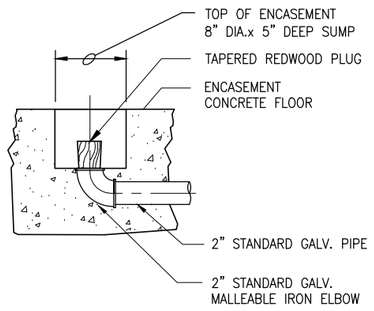
REGISTERED PROFESSIONAL ENGINEER ROGER F. TAM C 47898 CIVIL STATE OF CALIFORNIA

ELEVATION DATUM
NAD83
NAVD88



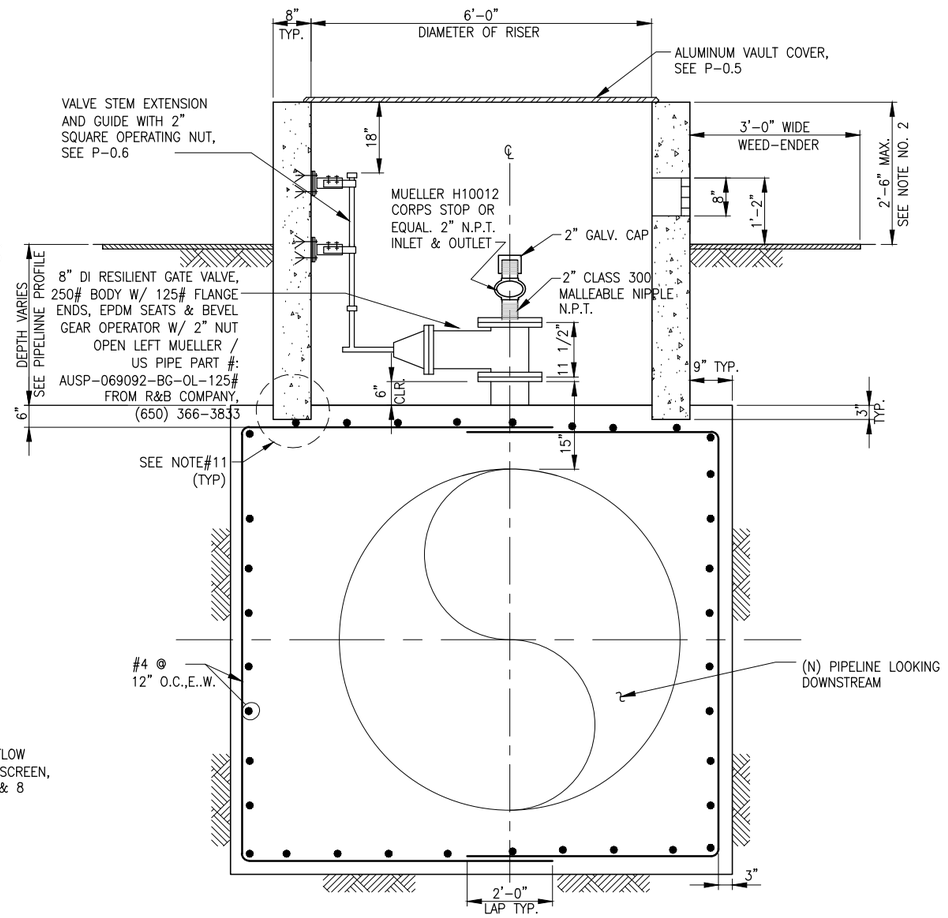
UNPAVED RISER WITH MANHOLE AND TOP BLOWOFF – PLAN

3/4"=1'-0"



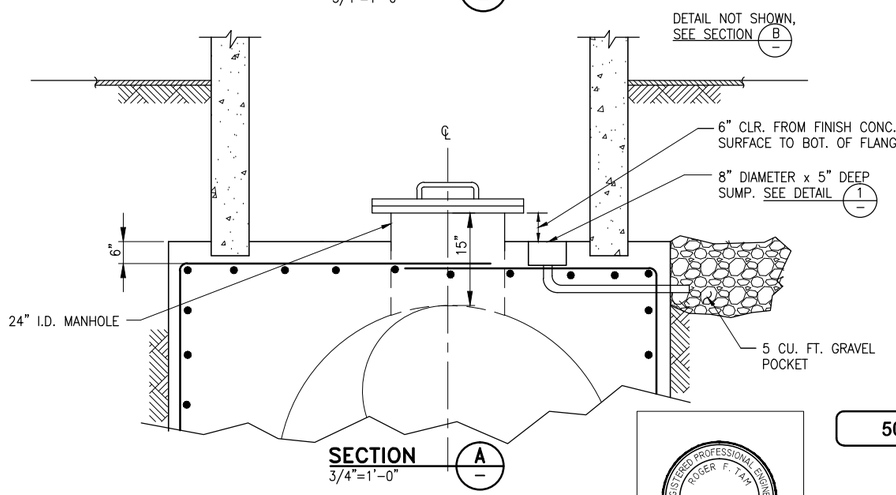
SUMP – DETAIL 1

N.T.S.



SECTION B

3/4"=1'-0"



SECTION A

3/4"=1'-0"

NOTES:

1. ALL PRE-FABRICATED CONCRETE SHALL MEET ASTM C-478 SPECIFICATION.
2. THE 2'-6" DIMENSION IS MEASURED FROM TOP OF THE VAULT RISER WALL TO THE LOWEST FINISHED GRADE SURROUNDING THE VAULT.
3. LOOKING DOWNSTREAM, THE FLANGED ENCLOSED BEVEL GEAR GATE VALVE WITH 2" OPERATING NUT SHALL BE POSITIONED TO THE LEFT OF AND PERPENDICULAR TO THE PIPE. SUBMIT POSITION FOR REVIEW AND APPROVAL BEFORE INSTALLATION.
4. CONTRACTOR SHALL NOTIFY THE CITY REPRESENTATIVE IN WRITING IF ANY PART OF THIS RISER STANDARD OR SPECIFICATION CAN NOT BE MET. ALTERATIONS OR MODIFICATIONS TO THE RISER MUST BE REVIEWED AND APPROVED BY THE CITY REPRESENTATIVE BEFORE INSTALLATION.
5. CONCRETE STRENGTH OF THE PIPE ENCASEMENT SHALL MATCH THE CONCRETE STRENGTH OF THE RISER.
6. THE 250# RATED GATE VALVE FLANGE SHALL CONFORM TO THE SPECIFICATION OF THE AWWA, C207, CLASS E FLANGE DIAMETER AND DRILLING. THESE FLANGES HAVE THE SAME DIAMETER AND DRILLING AS ANSI/ASME B16.1 CLASS 125 CAST-IRON FLANGES. IN SIZE 24" AND SMALLER THEY ALSO MATCH ANSI/ASME B16.5 150 PSI STANDARD STEEL FLANGES.
7. WHEN AIR VENT SCREEN LOCATES AT SLOPING GROUND, SCREEN SHALL BE PLACED AT THE DOWN SLOPE SIDE 6" ABOVE GRADE.
8. SCREEN SHALL BE 10 GA 1/2"x1/2" GALV. WIRED, SCREEN, TACK WELD TO FRAME, ATTACH TO CONCRETE WITH 3/16"ø FASTENERS (8 MINIMUM).
9. INSTALL 3' WIDE WEED-ENDER AROUND THE UNPAVED RISER. MANUFACTURER OF WEED-ENDER IS U-TECK. (WWW.UTECK.COM, 1-800-542-7011) OR APPROVED EQUAL. FOLLOW MANUFACTURER'S RECOMMENDATIONS/INSTRUCTIONS TO INSTALL WEED-ENDER.
10. CONTRACTOR SHALL APPLY CONSEAL CS-102 OR APPROVED EQUAL WITH NON-SHRINK GROUT ON THE ENTIRE CONTACTED SURFACE OF JOINT BETWEEN MANHOLE BASE AND THE PRECAST RING. CONTRACTOR SHALL ALSO INSTALL WATERSTOP: CONSEAL CS-231 OR APPROVED EQUAL.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ROGER F. TAM
C 47898
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

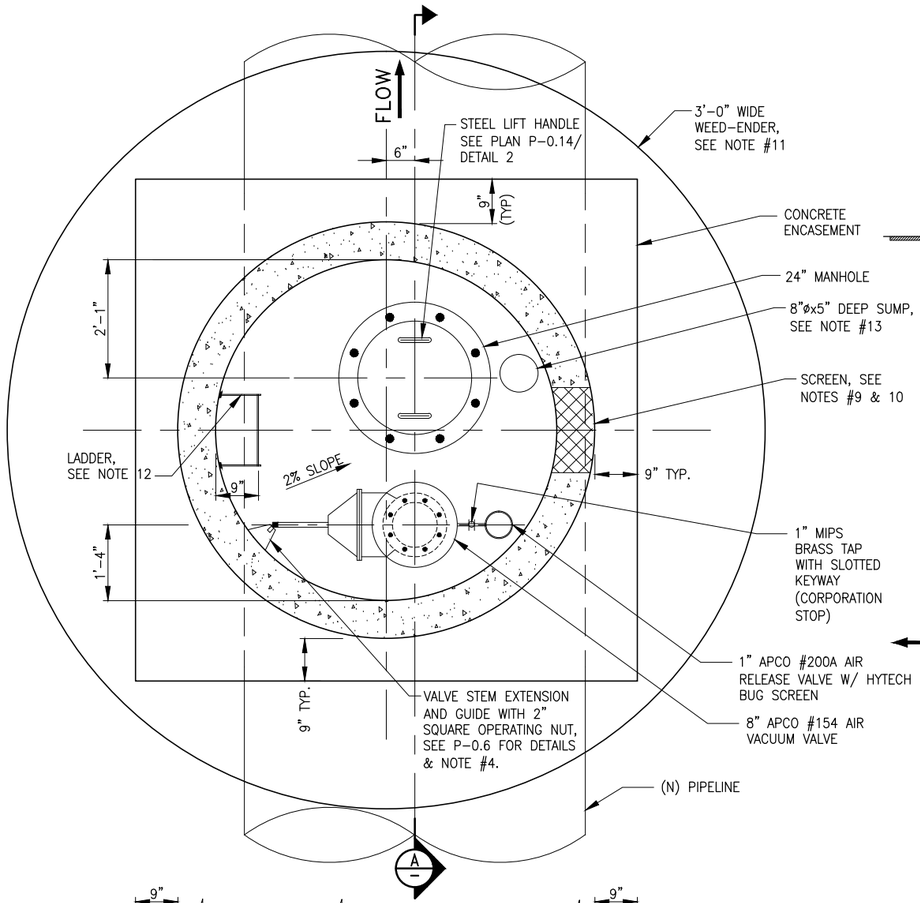
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

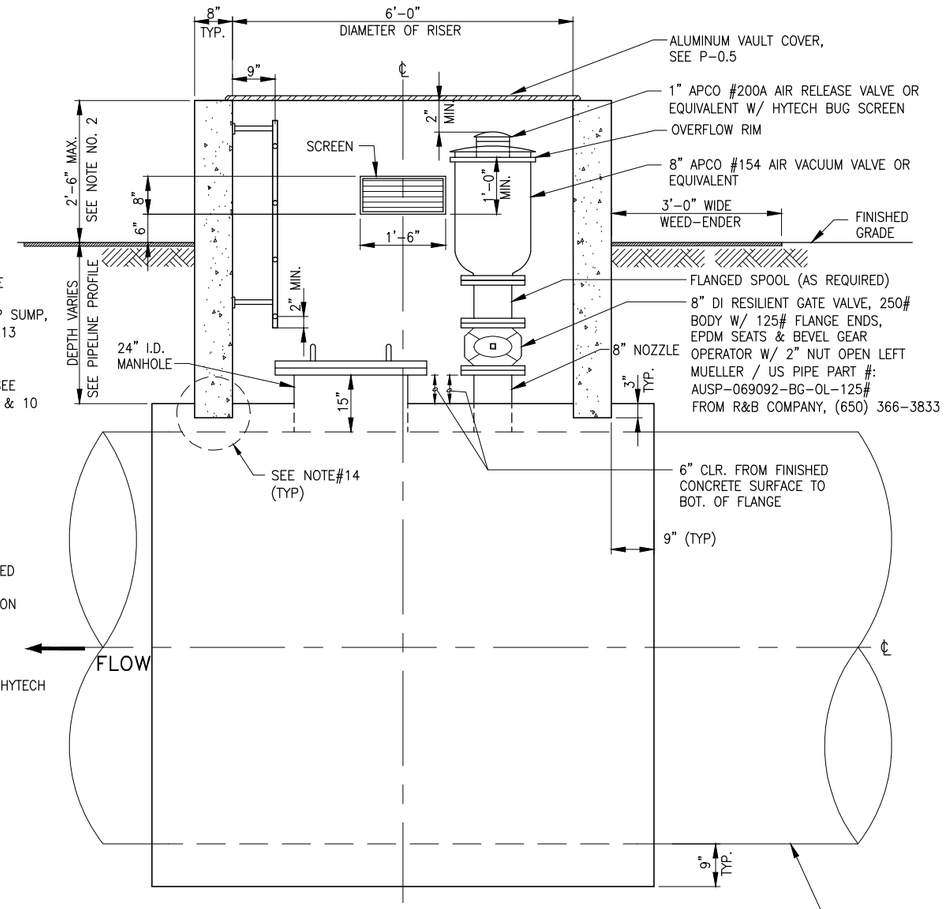
SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

TOP BLOWOFF WITH MANHOLE IN UNPAVED AREA

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	DC
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

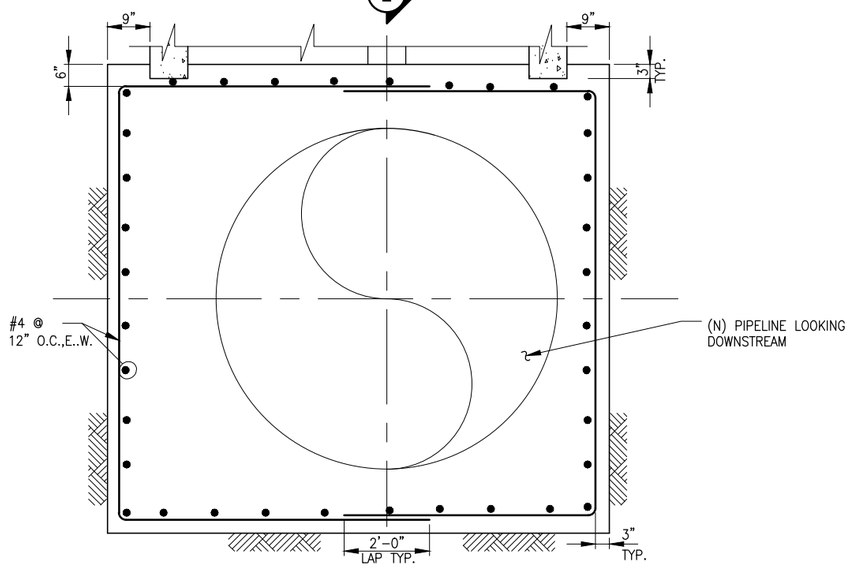
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-5021	E-	0





NOTES:

1. ALL PRE-FABRICATED CONCRETE SHALL MEET ASTM C-478 SPECIFICATION.
2. THE 2'-6" DIMENSION IS MEASURED FROM TOP OF THE VAULT RISER WALL TO THE HIGHEST FINISHED GRADE SURROUNDING THE VAULT.
3. THE TOTAL HEIGHT OF THE RISER SHALL DEPEND ON THE DEPTH OF THE PIPE BELOW THE SURFACE.
4. THE DISTANCE BETWEEN THE TOP OF THE VAULT TO THE TOP OF THE STEM EXTENSION OPERATING NUT SHALL BE NO MORE THAN 18"
5. LOOKING DOWNSTREAM, THE FLANGED ENCLOSED BEVEL GEAR GATE VALVE WITH 2" OPERATING NUT SHALL BE POSITIONED TO THE LEFT OF AND PERPENDICULAR TO THE PIPE. THE AIR RELEASE VALVE SHALL BE POSITIONED TO THE RIGHT OF AND PERPENDICULAR TO THE PIPE. CONTRACTOR SHALL SUBMIT THE EQUIPMENT LAYOUT FOR REVIEW AND APPROVAL BEFORE INSTALLATION.
6. CONTRACTOR SHALL NOTIFY THE CITY REPRESENTATIVE IN WRITING IF ANY PART OF THIS RISER STANDARD OR SPECIFICATION CAN NOT BE MET. ALTERATIONS OR MODIFICATIONS TO THE RISER MUST BE REVIEWED AND APPROVED BY THE CITY REPRESENTATIVE BEFORE INSTALLATION.
7. CONCRETE STRENGTH OF THE PIPE ENCASEMENT SHALL MATCH THE CONCRETE STRENGTH OF THE RISER.
8. THE 250# RATED GATE VALVE FLANGE SHALL CONFORM TO THE SPECIFICATION OF THE AWWA, C207, CLASS E FLANGE DIAMETER AND DRILLING. THESE FLANGES HAVE THE SAME DIAMETER AND DRILLING AS ANSI/ASME B16.1 CLASS 125 CAST-IRON FLANGES. IN SIZE 24" AND SMALLER THEY ALSO MATCH ANSI/ASME B16.5 150 PSI STANDARD STEEL FLANGES.
9. WHEN AIR VENT SCREEN LOCATES AT SLOPING GROUND, SCREEN SHALL BE PLACED AT THE DOWN SLOPE SIDE 6" ABOVE GRADE.
10. SCREEN SHALL BE 10 GA 1/2"x1/2" GALV. WIRED, SCREEN, TACK WELD TO FRAME, ATTACH TO CONCRETE WITH 3/16"ø POWER ACTUATED FASTENERS (8 MINIMUM).
11. INSTALL 3' WIDE WEED-ENDER AROUND THE UNPAVED RISER. MANUFACTURER OF WEED-ENDER IS U-TECK. (WWW.UTECK.COM, 1-800-542-7011) OR APPROVED EQUAL. FOLLOW MANUFACTURER'S RECOMMENDATIONS/INSTRUCTIONS TO INSTALL WEED-ENDER.
12. CONTRACTOR SHALL APPLY CONSEAL CS-102 OR APPROVED EQUAL WITH NON-SHRINK GROUT ON THE ENTIRE CONTACTED SURFACE OF JOINT BETWEEN MANHOLE BASE AND THE PRECAST RING. CONTRACTOR SHALL ALSO INSTALL WATERSTOP: CONSEAL CS-231 OR APPROVED EQUAL.



AIR AND VACUUM VALVES WITH MANHOLE IN UNPAVED AREA PLAN (1/—)
3/4"=1'-0"

SECTION (A/—)
3/4"=1'-0" N.T.S.

AIR VACUUM VALVE #154	
HEIGHT	25"
MAX. DIAMETER	18"
WEIGHT	200 lbs

AIR RELEASE VALVE #200A	
HEIGHT	10"
WIDTH	7"
WEIGHT	20 lbs

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ROGER F. TAM
C 47898
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

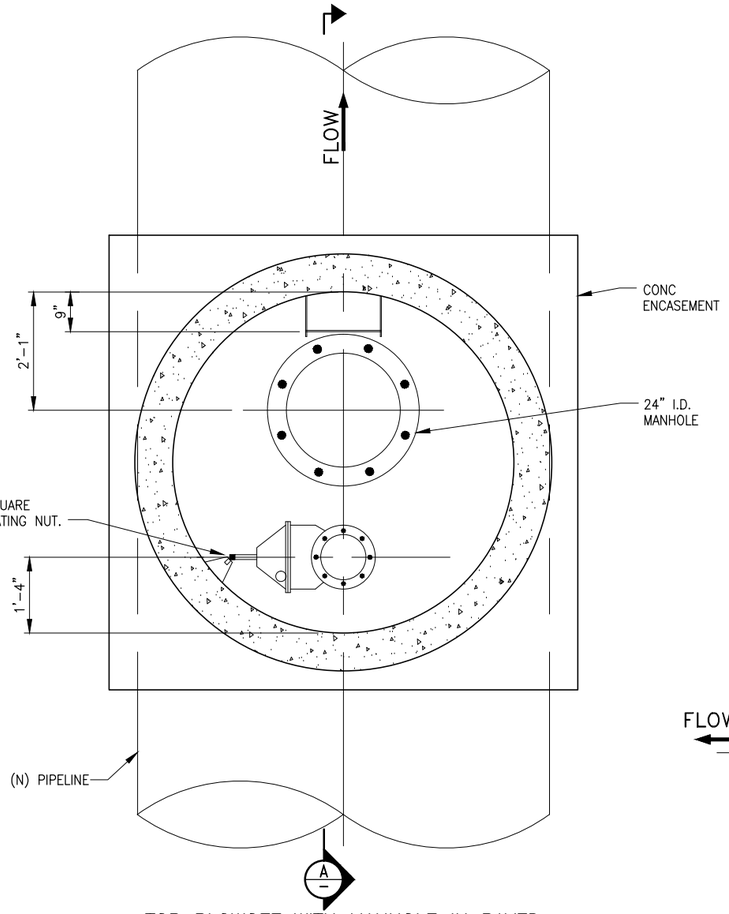
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

AIR AND VACUUM VALVES WITH MANHOLE IN UNPAVED AREA

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED	APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

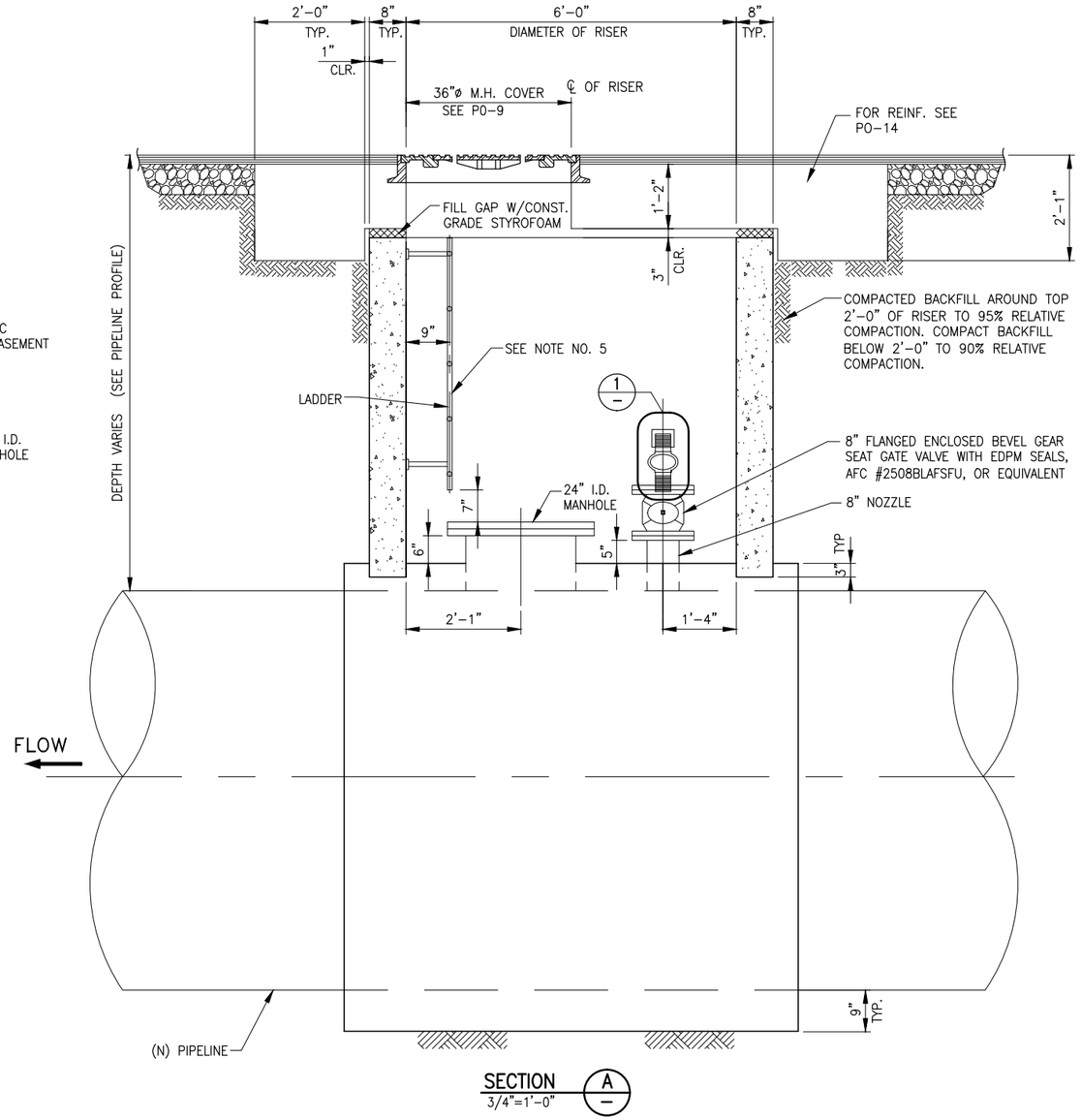
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-5022	E-	0



TOP BLOWOFF WITH MANHOLE IN PAVED AREA

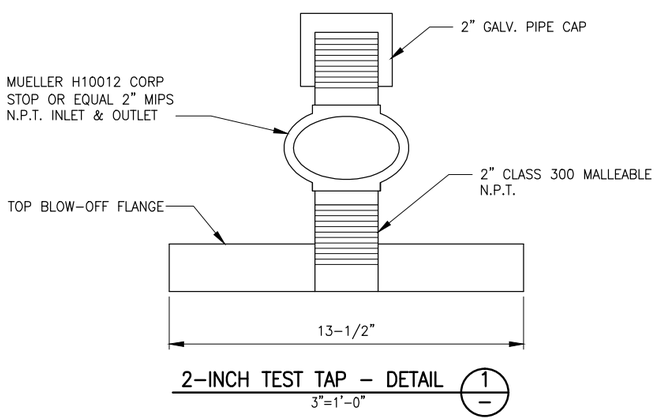
PLAN

3/4"=1'-0"



SECTION A

3/4"=1'-0"



2-INCH TEST TAP - DETAIL 1

3"=1'-0"

NOTES:

1. ALL PRE-FABRICATED CONCRETE SHALL MEET ASTM C-478 SPECIFICATION, HANSON CONCRETE PRODUCTS OR APPROVED EQUAL.
2. LOOKING DOWNSTREAM, THE FLANGED ENCLOSED BEVEL GEAR GATE VALVE WITH 2" OPERATING NUT SHALL BE POSITIONED TO THE LEFT OF AND PERPENDICULAR TO THE PIPE. SUBMIT POSITION FOR REVIEW AND APPROVAL BEFORE INSTALLATION.
3. CONTRACTOR SHALL NOTIFY THE CITY REPRESENTATIVE IN WRITING IF ANY PART OF THIS RISER STANDARD OR SPECIFICATION CAN NOT BE MET. ALTERATIONS OR MODIFICATIONS TO THE RISER MUST BE REVIEWED AND APPROVED BY THE CITY REPRESENTATIVE BEFORE INSTALLATION.
4. THE 250# RATED GATE VALVE FLANGE SHALL CONFORM TO THE SPECIFICATION OF THE AWWA, C207, CLASS E FLANGE DIAMETER AND DRILLING. THESE FLANGES HAVE THE SAME DIAMETER AND DRILLING AS ANSI/ASME B16.1 CLASS 125 CAST-IRON FLANGES. IN SIZE 24" AND SMALLER THEY ALSO MATCH ANSI/ASME B16.5 150 PSI STANDARD STEEL FLANGES.
5. PROVIDE LADDER IF THE DISTANCE FROM THE TOP OF 24" MANHOLE FLANGE TO THE FINISH STREET GRADE GREATER THAN OR EQUAL TO 5'-0". FOR LADDER SEE PO-10.
6. FOR PIPE ENCASEMENT DETAIL, SEE PO-11.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMUNIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

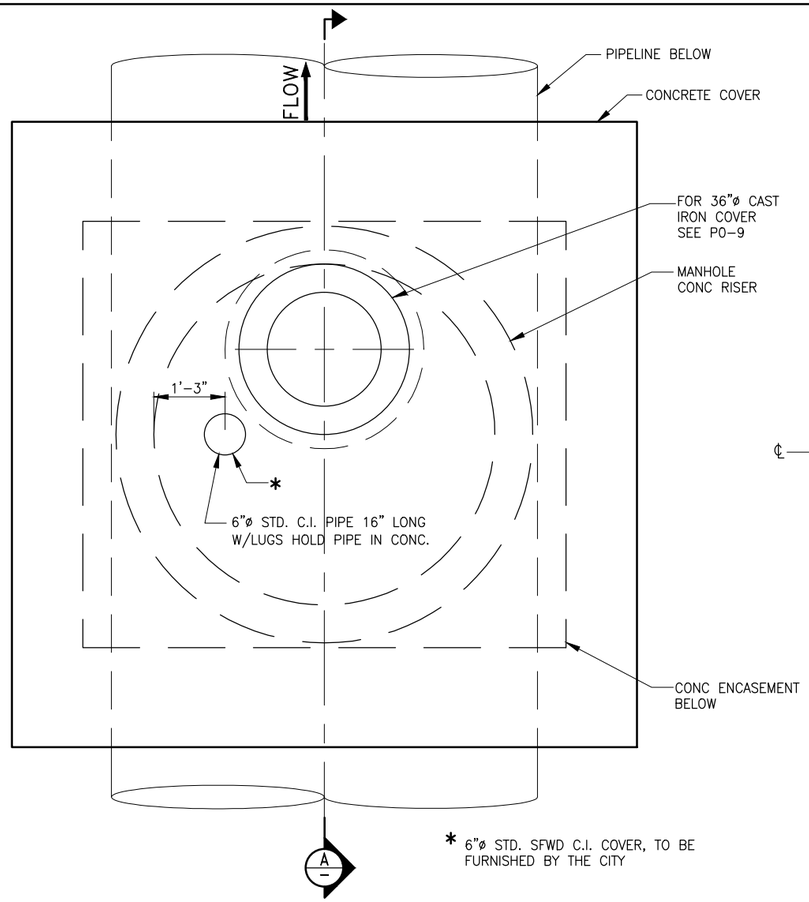
CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

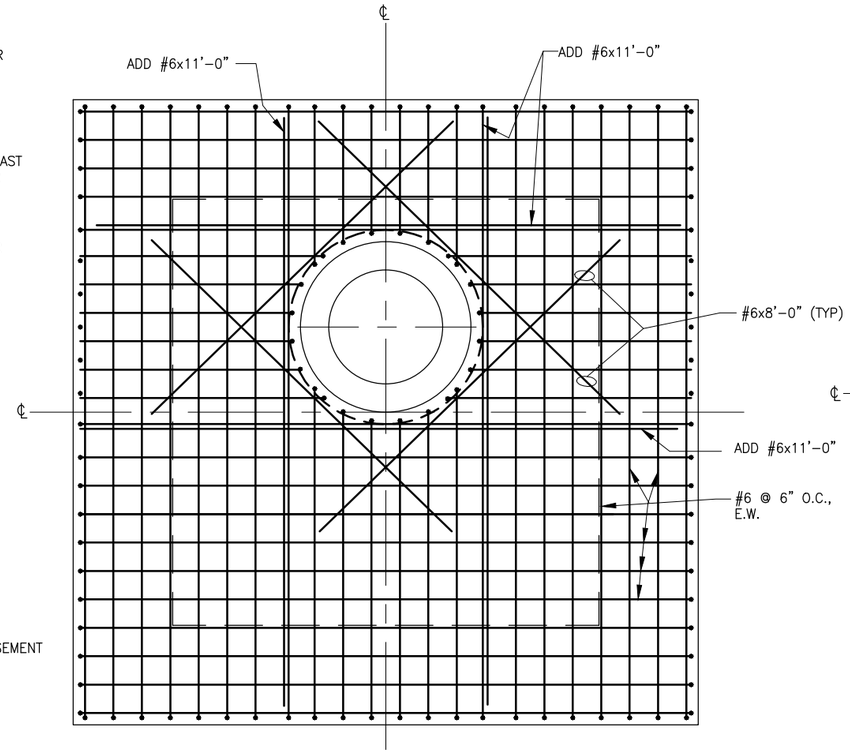
TOP BLOWOFF WITH MANHOLE IN PAVED AREA

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION	
PLAN NO. C-5023	DRAWING / FILE NO. E-	REVISION NO. 0

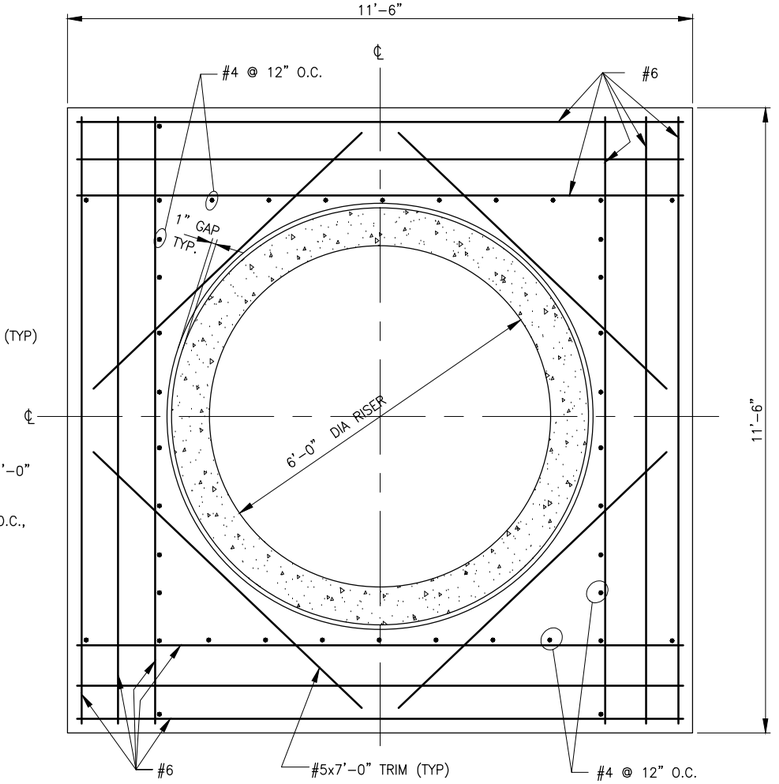


* 6"ø STD. SFWD C.I. COVER, TO BE FURNISHED BY THE CITY

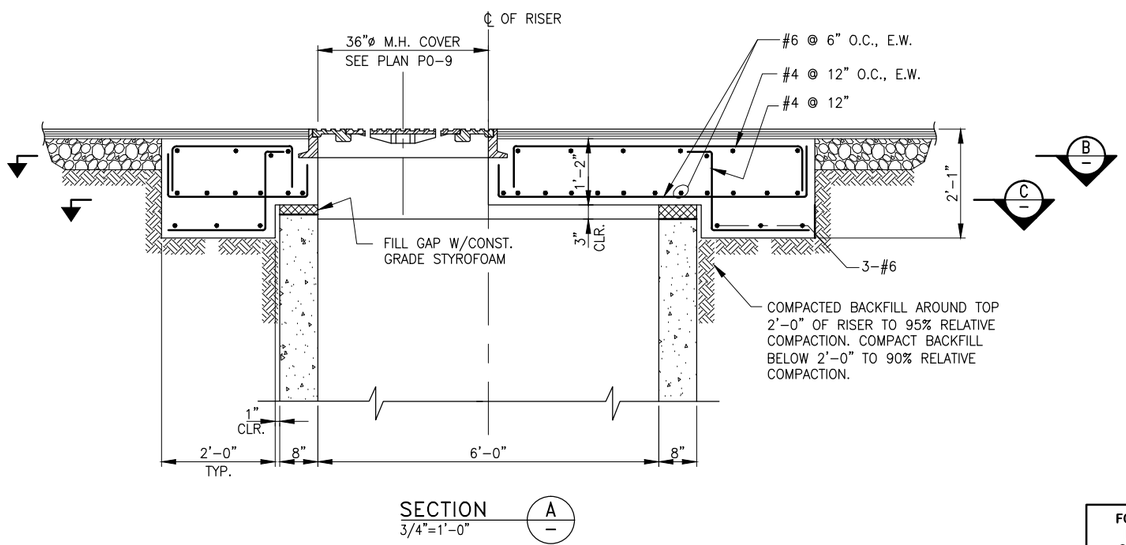
PAVED RISER PLAN
3/4"=1'-0"



BOTTOM REINFORCING LAYOUT – SECTION B
3/4"=1'-0"



CONCRETE COVER FOUNDATION – SECTION C
3/4"=1'-0"



SECTION A
3/4"=1'-0"

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

STANDARD COVER DETAILS FOR CONCRETE RISER IN PAVED AREA

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED	APPROVED
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-5024	E-	0

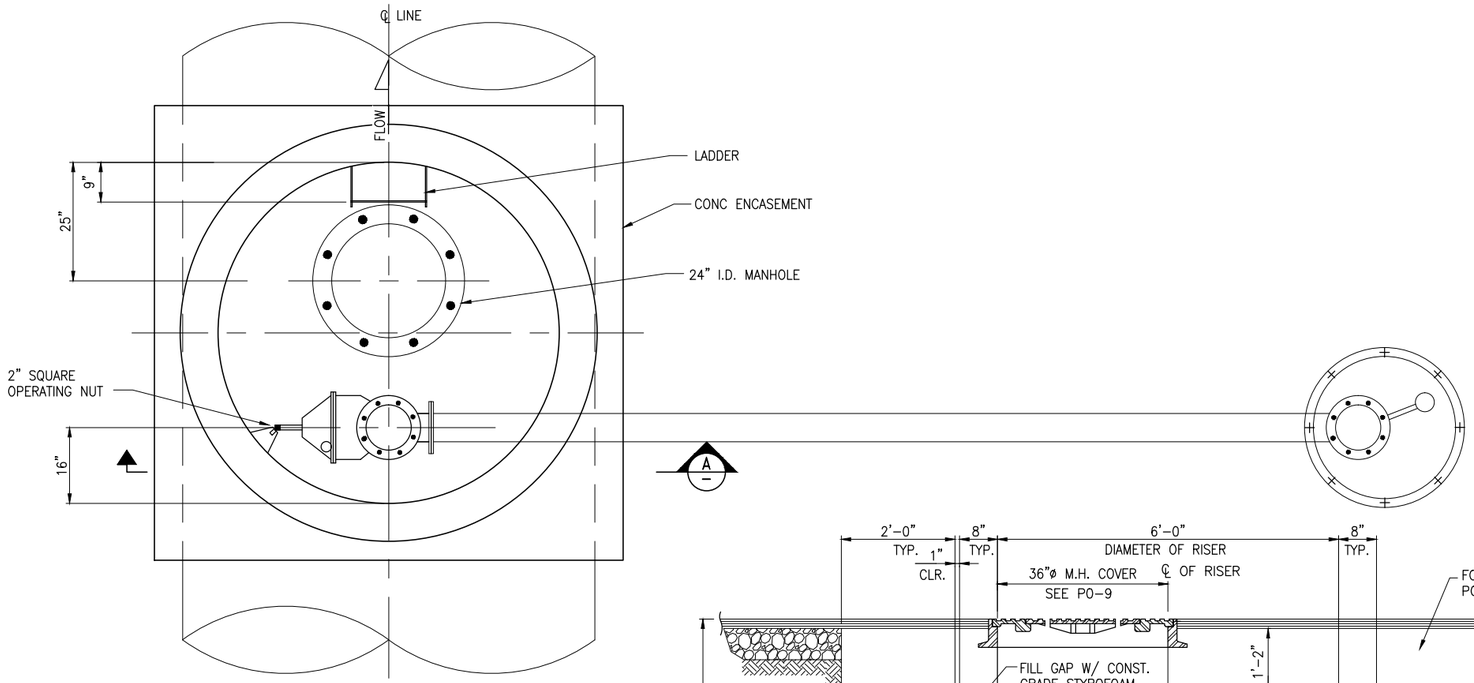
50% SUBMITTAL

REGISTERED PROFESSIONAL ENGINEER ABDELMONIEM H. ABDELSALAM C 81091 CIVIL STATE OF CALIFORNIA

ELEVATION DATUM
NAD83
NAVD88

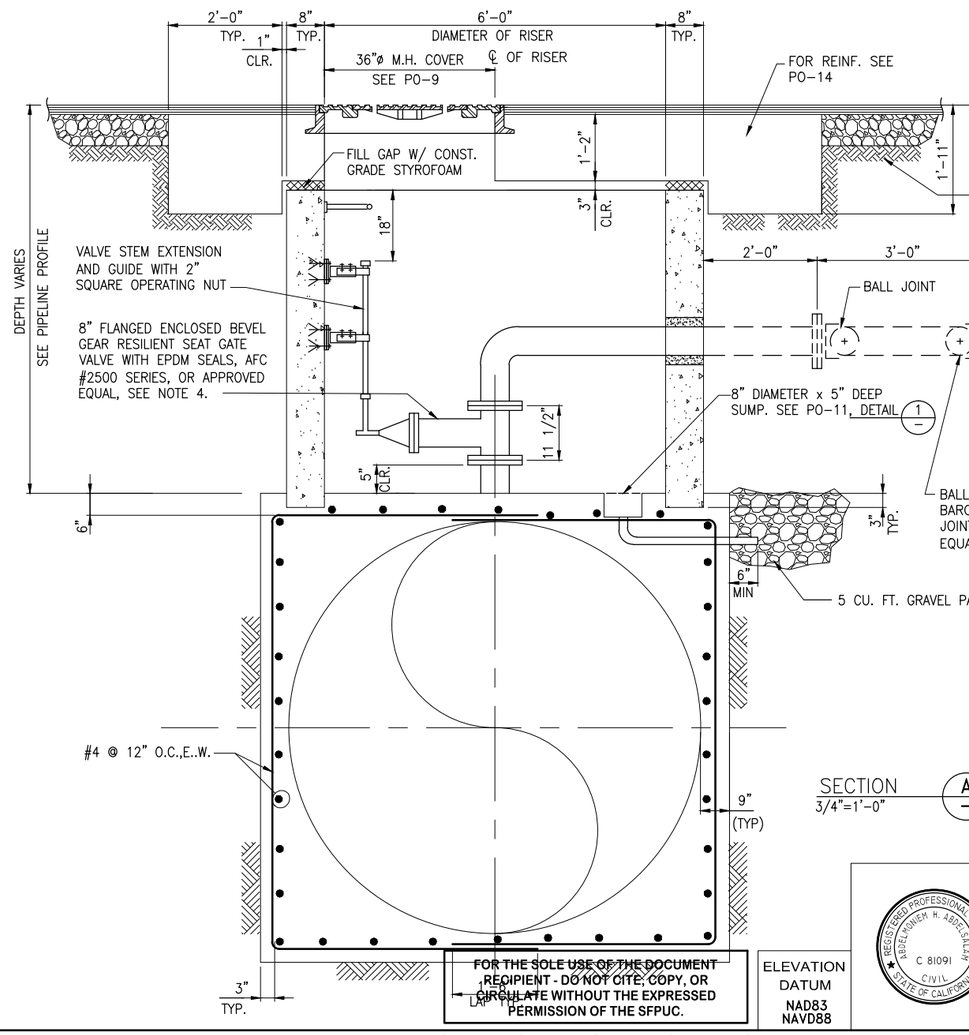
FILE:C:\SJW52273E\SMIL\50% SJEMITTAL ACTIVE\C-5024.DWG

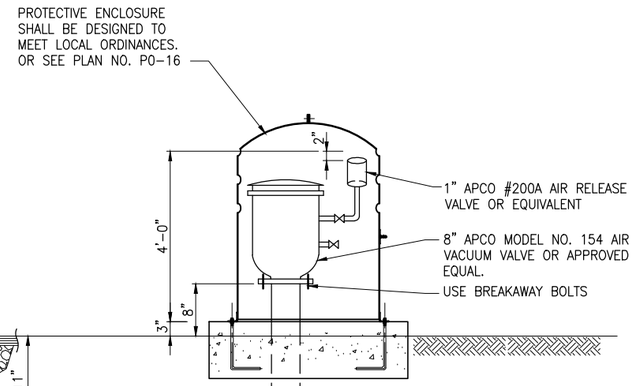
FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4



OFFSET AIR AND VACUUM VALVES WITH MANHOLE IN PAVED AREA – PLAN

3/4"=1'-0"





NOTES:

1. ALL PRE-FABRICATED CONCRETE SHALL MEET ASTM C-478 SPECIFICATION, HANSON CONCRETE PRODUCTS OR APPROVED EQUAL.
2. THE FLANGED ENCLOSED BEVEL GEAR GATE VALVE WITH 2" OPERATING NUT SHALL BE POSITIONED TO ALLOW VERTICAL CLEARANCE FROM THE EXTENDED VACUUM VALVE PIPING.
3. CONTRACTOR SHALL NOTIFY THE CITY REPRESENTATIVE IN WRITING IF ANY PART OF THIS RISER STANDARD OR SPECIFICATION CAN NOT BE MET. ALTERATIONS OR MODIFICATIONS TO THE RISER MUST BE REVIEWED AND APPROVED BY THE CITY REPRESENTATIVE BEFORE INSTALLATION.
4. CONTRACTOR SHALL SUBMIT THE GATE VALVE OPERATING NUT POSITION FOR REVIEW AND APPROVAL BEFORE INSTALLATION.
5. CONCRETE STRENGTH OF THE PIPE ENCASEMENT SHALL MATCH THE CONCRETE STRENGTH OF THE RISER.
6. THE 250# RATED GATE VALVE FLANGE SHALL CONFORM TO THE SPECIFICATION OF THE AWWA, C207, CLASS E FLANGE DIAMETER AND DRILLING. THESE FLANGES HAVE THE SAME DIAMETER AND DRILLING AS ANSI/ASME B16.1 CLASS 125 CAST-IRON FLANGES. IN SIZE 24" AND SMALLER THEY ALSO MATCH ANSI/ASME B16.5 150 PSI STANDARD STEEL FLANGES.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMONEIM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

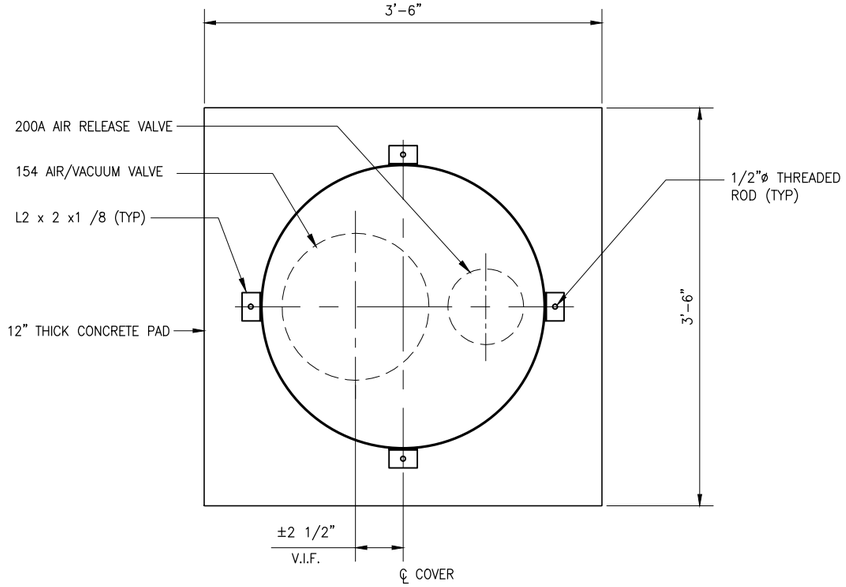
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

OFFSET AIR AND VACUUM VALVES WITH MANHOLE IN PAVED AREA

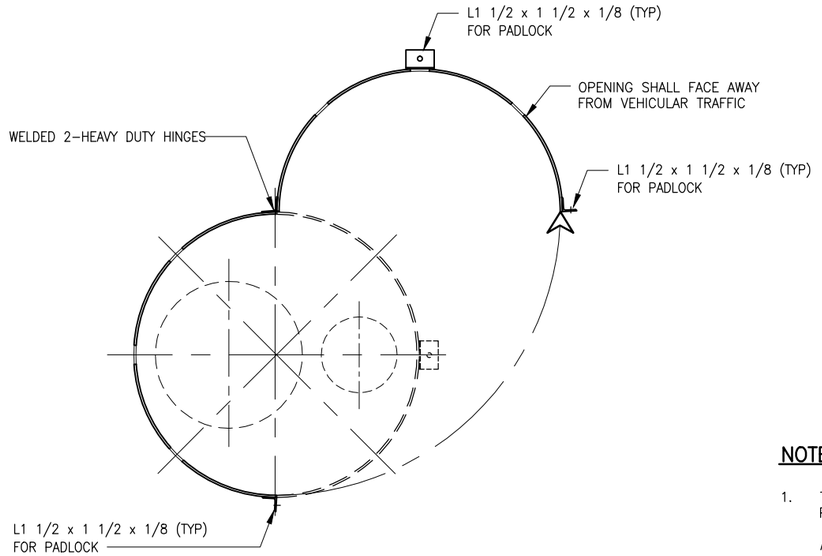
CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED	APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-5025	E-	0



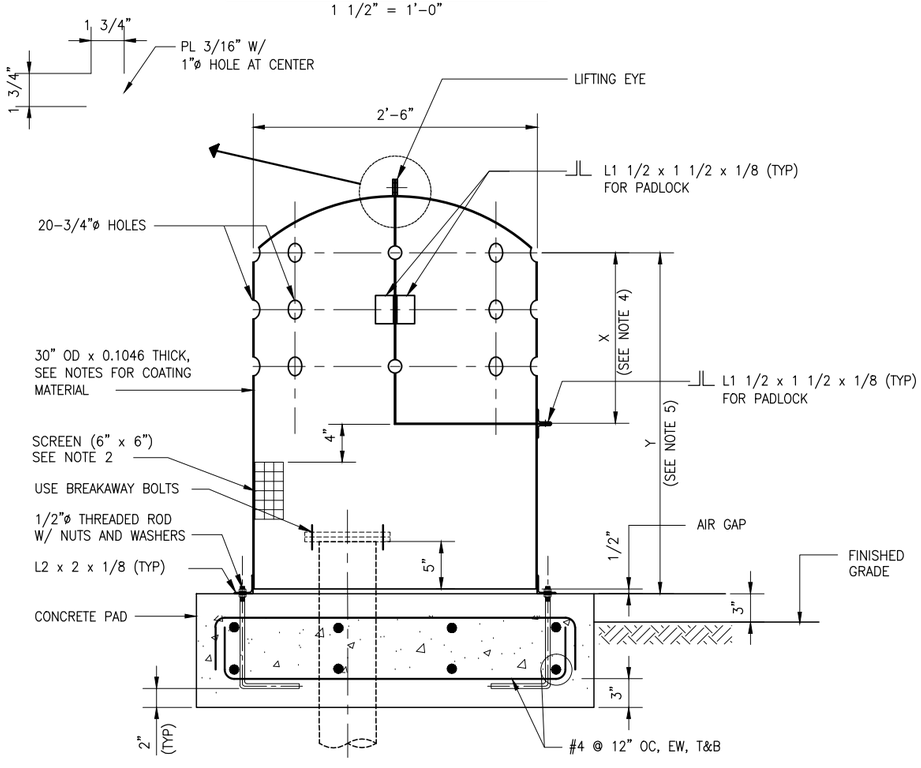
AVV PROTECTIVE COVER – PLAN

1 1/2" = 1'-0"



AVV PROTECTIVE COVER – TOP PLAN

1 1/2" = 1'-0"



AVV PROTECTIVE COVER – ELEVATION

N.T.S.

NOTES:

1. THE INSIDE AND OUTSIDE COATING MATERIAL FOR THE BARE STEEL PIPE PROTECTIVE COVER SHALL BE AS FOLLOWS:
   - A FIRST COAT SHALL BE SINGLE COMPONENT, MOISTURE-CURE URETHANE, WASSER MC-ZINC, (DARK GRAY COLOR) AT 4-5 MILS DFT, OR APPROVED EQUAL.
   - B SECOND COAT SHALL BE SINGLE COMPONENT, MOISTURE-CURE URETHANE, WASSER MC-FERROX B, (WHITE COLOR) 4-5 MILS DFT, OR APPROVED EQUAL.
   - C TOPCOAT SHALL BE SINGLE COMPONENT, MOISTURE-CURE ALIPHATIC URETHANE, WASSER MC-FERROX A, (LIGHT GREEN COLOR) AT 4-5 MILS DFT, OR APPROVED EQUAL.
   - D SURFACE PREPARATION SHALL BE PER SSPC-SP10.
2. A 6"x6" VENT SCREEN SHALL BE INSTALLED ON THE PROTECTIVE ENCLOSURE. SCREEN SHALL BE 10 GA 1/2"x1/2" GALV. WIRED, SCREEN, TACK WELD TO FRAME.
3. HEIGHT OF DOOR OPENING "X" SHALL BE EXTEND 2" BELOW THE BOTTOM TEST TAP.
4. HEIGHT OF VERTICAL WALL "Y" SHALL BE TALL ENOUGH TO ENCLOSURE THE TOP OF AIR RELEASE VALVE PLUS FOUR INCHES. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR CITY REPRESENTATIVE'S APPROVAL.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER ABDELHAMEN H. ABDELSALAM C 81091 CIVIL STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

PROTECTIVE COVER FOR OFFSET AIR AND VACUUM VALVES IN PAVED AREA

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-5026	E-	0

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FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES

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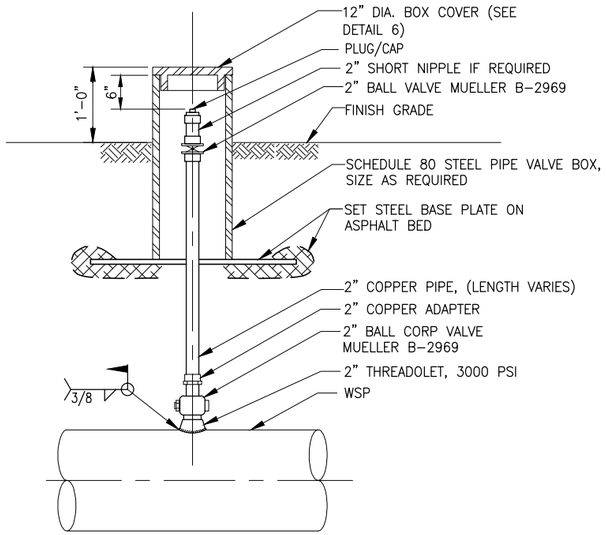
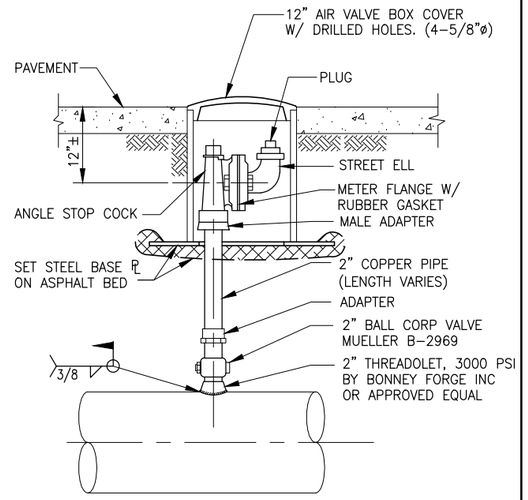


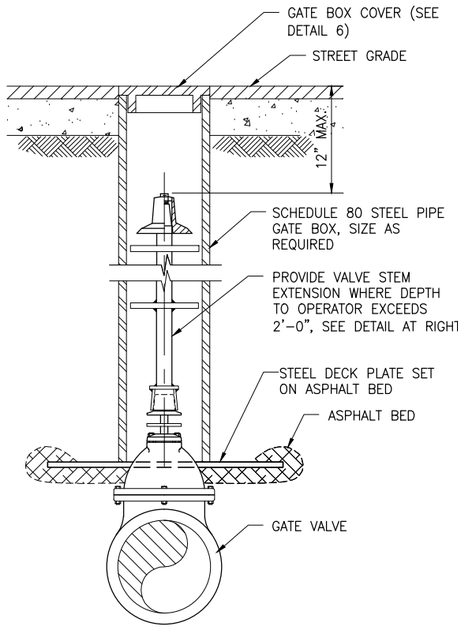
2" TAP DETAIL 2
N.T.S.



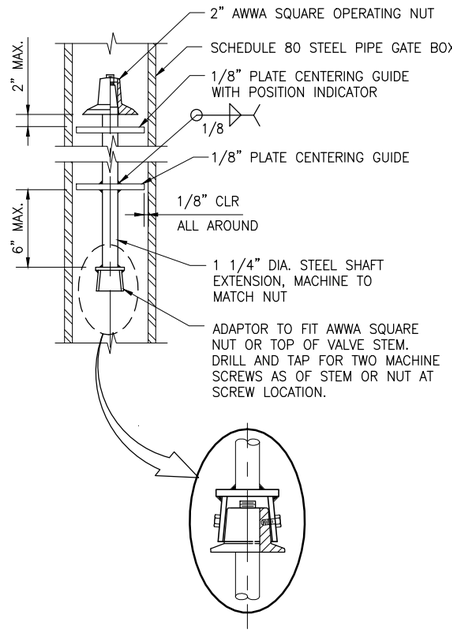
2" AIR VALVE & BLOW OFF – DETAIL 3
N.T.S.

NOT USED 1
N.T.S.

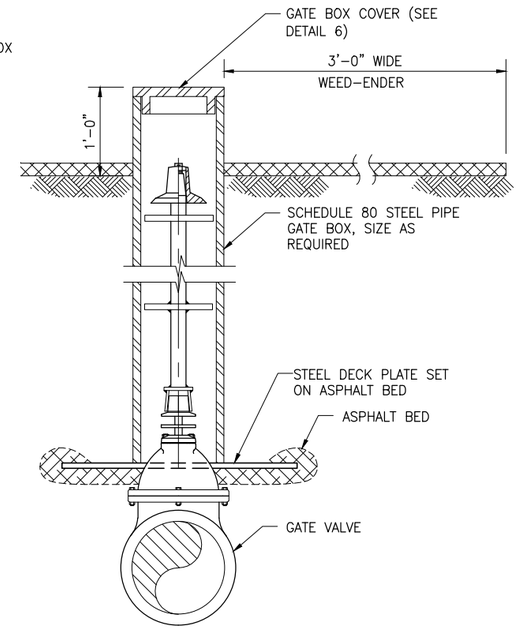
CHECK PRINT
PIPELINE/CIVIL/STRUCTURAL
ELECTRICAL/MECHANICAL/
LANDSCAPE ARCHITECTURE
ORIGINATOR ____ DATE ____
CHECKER ____ DATE ____
BACKCHECKER ____ DATE ____
VERIFIER ____ DATE ____



TYPICAL BURIED VALVE

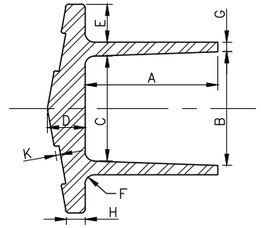


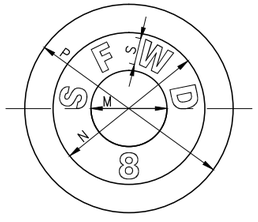
VALVE STEM EXTENSION



TYPICAL 1' ABOVE GROUND VALVE BOX DETAIL 5
N.T.S.

TYPICAL VALVE BOX AND STEM EXTENSION DETAIL 4
N.T.S.





GATE VALVE	BOX
S.C.	6"
4"	6"
6"	6"
8"	8"
12"	8"
16"	8"
24"	12"

BOX & COVER SIZES

SIZE	A	B	C	D	E	F	G	H	K	M	N	P	S
4	3 1/2	3	2 3/4	1	1	1/4	1/4	1/2	1/8	2	4	5 1/2	1
6	3 1/2	5	4 1/2	1	1	1/4	1/4	5/8	1/8	2	4 1/2	7 1/2	1 1/4
8	3 1/2	6 1/2	6	1 1/8	1	1/4	3/8	3/4	1/8	2	6 1/2	9 1/2	1 1/4
12	3 1/2	11	10 1/8	1 1/4	1 1/8	1/4	3/8	3/4	1/8	2	10 1/2	14	1 1/2

*ALL DIMENSIONS ARE IN INCHES.

STANDARD GATE COVER 6
N.T.S.

NOTES:

1. ALL FLANGE SHALL BE FACED AFTER WELDING OF SKIRT.
2. EXPOSED METAL SURFACES, EXCEPT FLANGE FACE SHALL BE COATED WITH COAL TAR EPOXY. FLANGE FACE SHALL BE COATED WITH SHOP PRIMER.
3. FLANGES INSTALLED SHALL CONFORM TO AWWA STANDARD C-207 CLASS "E".
4. THE 250# RATED GATE VALVE FLANGE SHALL CONFORM TO THE SPECIFICATIONS OF THE AWWA C-207 CLASS "E" FLANGED DIAMETER AND DRILLING.
5. RADIAL NOZZLES SHALL BE USED FOR INSTALLATION OF WELD LEADS.

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ROGER F. TAM
C 47898
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

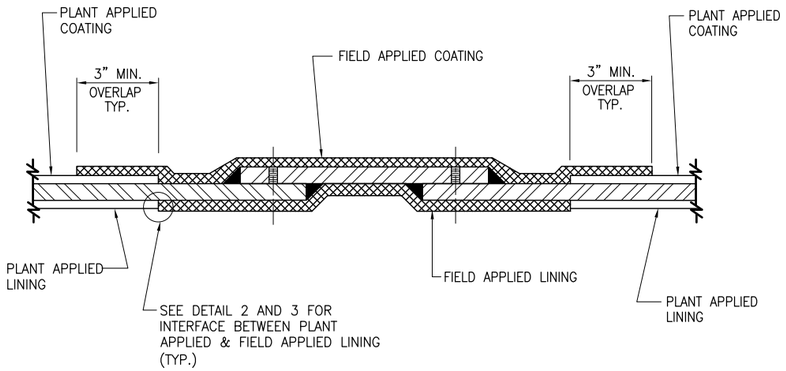
CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

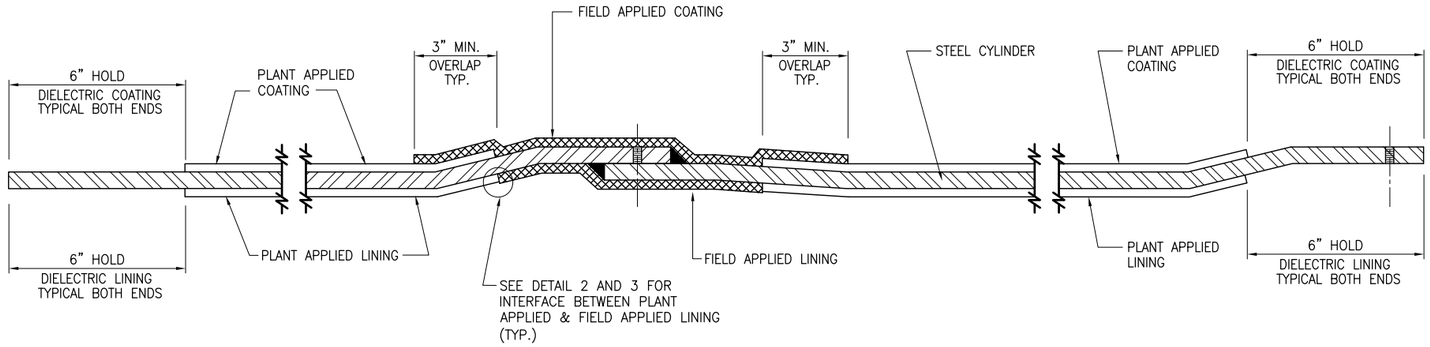
SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

TYPICAL 2" TAP AND
VALVE STEM EXTENSION DETAILS

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: OCTOBER 2016
APPROVED (MANAGER, ENGINEERING MANAGEMENT BUREAU)	APPROVED (MANAGER, WATER SUPPLY AND TREATMENT DIVISION)	
PLAN NO. C-5027	DRAWING / FILE NO. ##	REVISION NO. 0

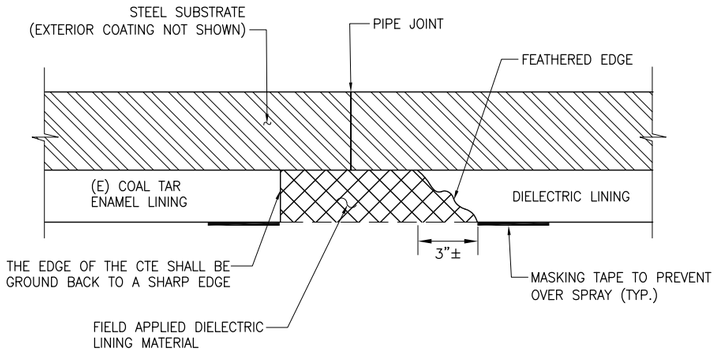


BUTT STRAP JOINT
NOT TO SCALE



BELL & SPIGOT JOINT WITH COATING/LINING SETBACK
NOT TO SCALE

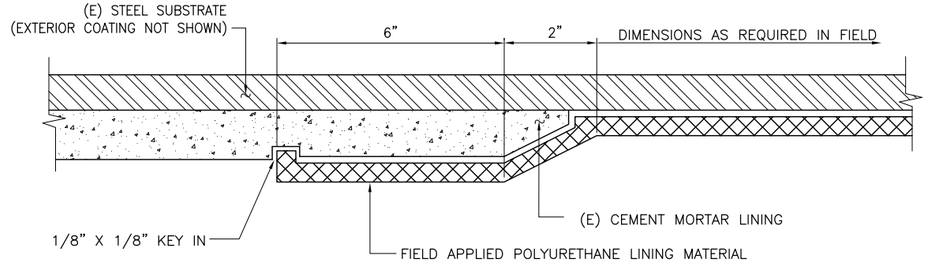
COATING AND LINING DETAIL 1
NOT TO SCALE



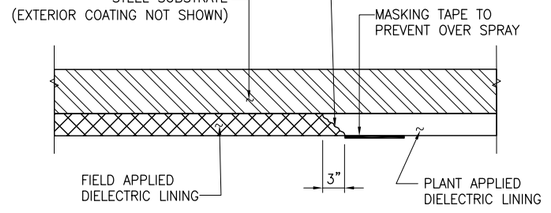
NOTES:

1. REMOVE MASKING TAPE AFTER THE LINING IS CURED.

(E) COAL TAR ENAMEL LINING
NOT TO SCALE



(E) CEMENT MORTAR LINING
NOT TO SCALE



NOTES:

1. REMOVE MASKING TAPE AFTER THE LINING IS CURED.

TYPICAL DIELECTRIC LINING INTERFACE DETAIL 3
NOT TO SCALE

FIELD APPLIED LINING AT THE TIE-IN DETAIL 2
NOT TO SCALE

SHEET NOTES:

1. FOR COATING AND LINING MATERIAL. SEE SPECIFICATION 09 97 72.

ELEVATION DATUM

REGISTERED PROFESSIONAL ENGINEER PONGKOL MAHAVONGTRAKUL E 14854 ELECTRICAL STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D

REVISIONS

CONTRACT NO. WD-2829

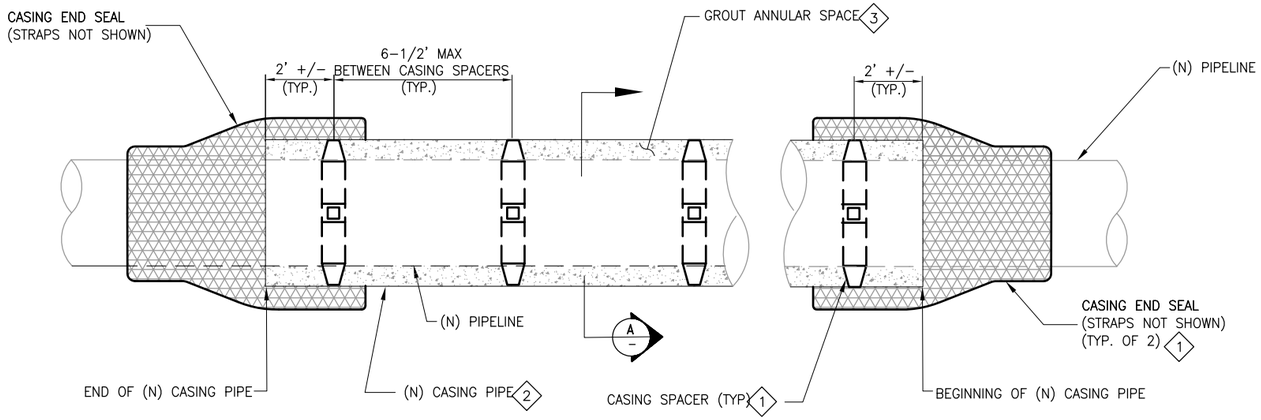
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

DIELECTRIC COATING AND LINING DETAILS

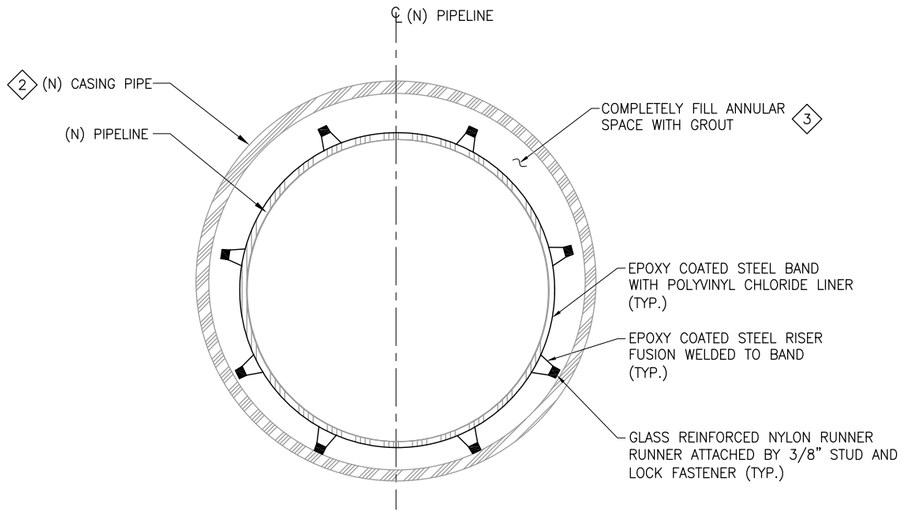
CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: SEPTEMBER 2016
APPROVED: MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED: MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CP-5003	E-	0



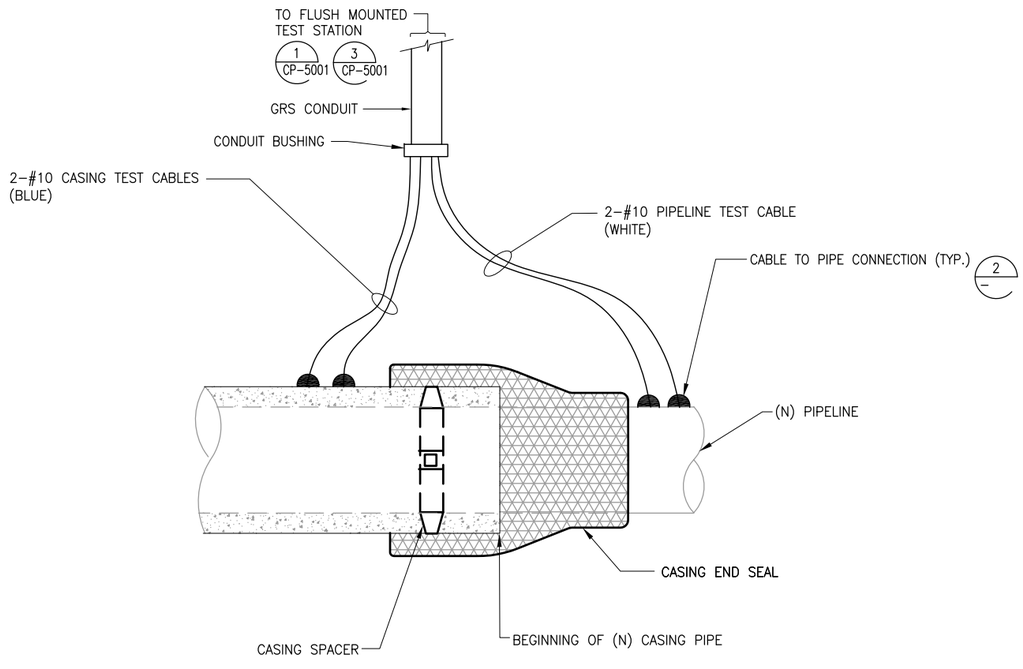
CASING SPACER SCHEMATIC DIAGRAM

DETAIL 1 / 3-P1-01
NOT TO SCALE



CASING SPACERS

SECTION A / –
SCALE: NTS



CASING TEST STATION CONNECTION DIAGRAM

DETAIL 2 / 3-CP1-01
NOT TO SCALE

NOTE:

1. SEE CASING SPACER AND END SEAL REQUIREMENT IN SPECIFICATION 26 42 60.
2. SEE DWG XXXX AND XXXX FOR THE LOCATION OF THE CASING PIPE INSTALLATION.
3. SEE PIPELINE SPECIFICATION FOR THE ANNULAR SPACE GROUT REQUIREMENT.

ELEVATION DATUM

REGISTERED PROFESSIONAL ENGINEER
WONGJOL HAHATONGTRAKUL
E 14854
ELECTRICAL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

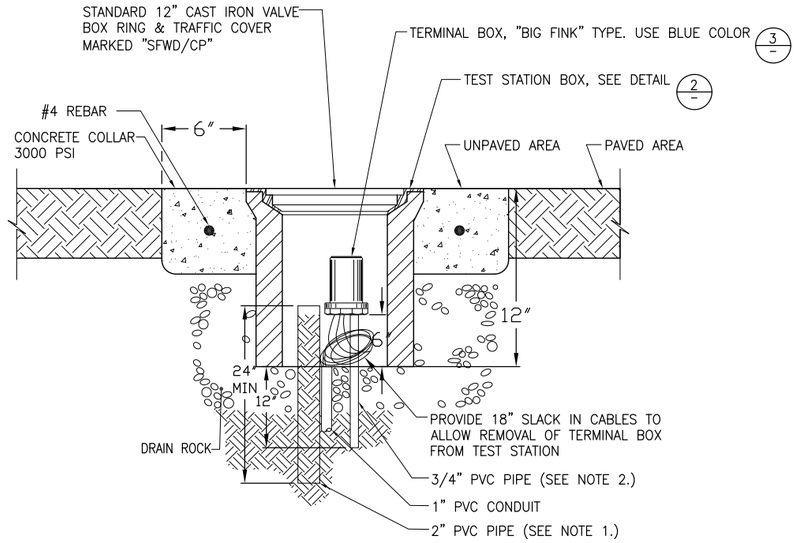
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

CASING SPACER AND TEST STATION DETAILS

CHECKED / APPROVED	DRAWN	
SECTION MANAGER	DESIGNED	
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN	DATE: SEPTEMBER 2016
APPROVED	APPROVED	
MANAGER, ENGINEERING MANAGEMENT BUREAU	MANAGER, WATER SUPPLY AND TREATMENT DIVISION	

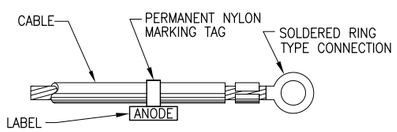
PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CP-5002	E-	0



NOTES:
1. INSTALL 2" PVC PIPE IN CLEAN NATIVE SOIL. FILL PIPE WITH CLEAN SOIL, FREE FROM ROCKS & DEBRIS.
2. INSTALL 18" LENGTH OF 3/ 4" PVC PIPE TO ENSURE THAT THE TERMINAL BOX WILL REMAIN IN THE UPRIGHT POSITION. POSITION THE PIPE SO THAT THE TERMINAL BOX WILL BE AS HIGH AS POSSIBLE WITH THE CAST IRON LID STILL CLOSING PROPERLY.

FLUSH MOUNTED TEST STATION BOX

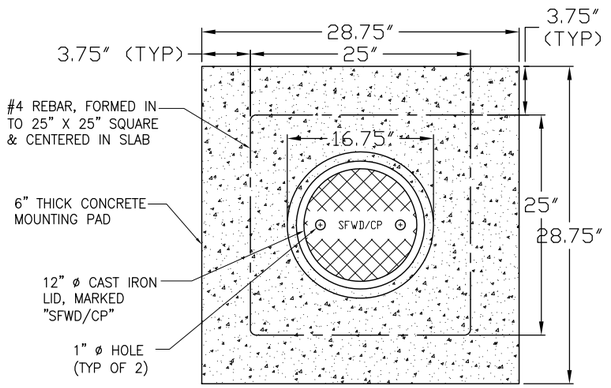
DETAIL 1 / – NOT TO SCALE



ABBREVIATIONS
XXXXX – PIPELINE NAME
TEST – PIPELINE
REF – REFERENCE CELL
ANODE – ANODE HEADER CABLE

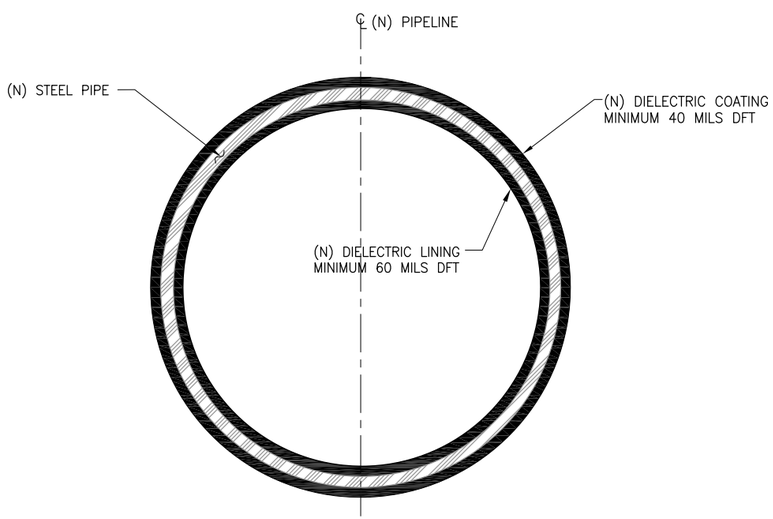
CABLE IDENTIFICATION

DETAIL 4 / – NOT TO SCALE



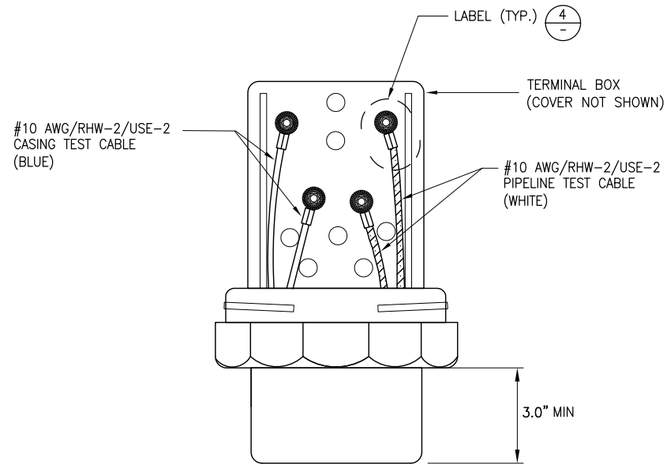
TEST STATION BOX AND COVER DETAIL

DETAIL 2 / – NOT TO SCALE



COATING AND LINING STEEL PIPELINE

DETAIL 5 / – NOT TO SCALE



NOTES:
1. COVER OF THE TERMINAL BOX IS NOT SHOWN FOR CLARITY.
2. SEAL THE END OF THE LOWER PIECE OF THE TERMINAL BOX WITH DUXSEAL, SEALING PUTTY.

CASING TEST STATION TERMINAL BOX

DETAIL 3 / – NOT TO SCALE

ELEVATION DATUM

REGISTERED PROFESSIONAL ENGINEER — MONGKOL MAHAYONGTRAKUL — E 14854 — ELECTRICAL — STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APP'D

REVISIONS

CONTRACT NO. WD-2829

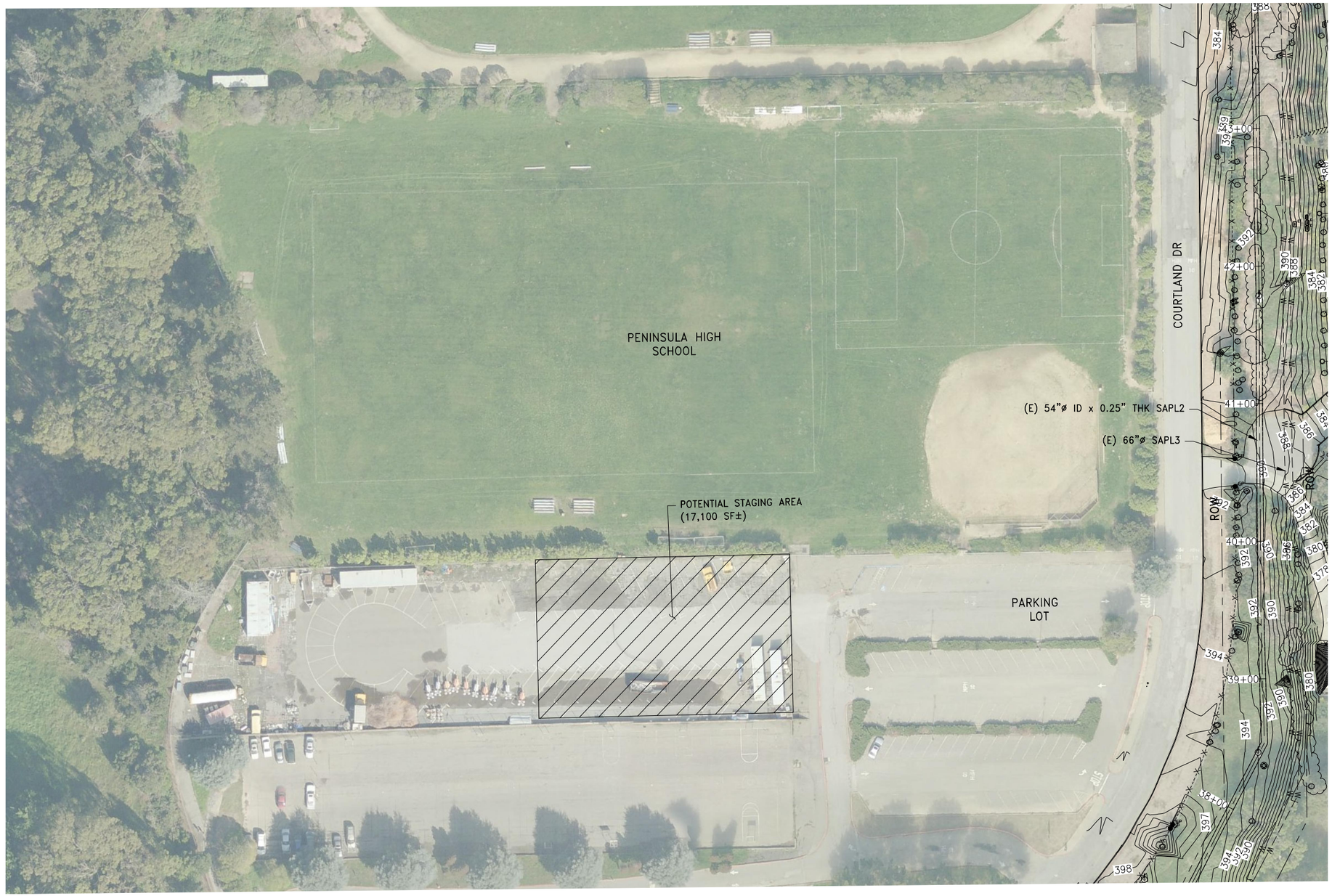
CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2 LOCKBAR REPLACEMENT

CORROSION CONTROL DETAILS

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: SEPTEMBER 2016
APPROVED — MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED — MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
CP–5001	E–	0



STAGING AREA
SCALE:1"=40'

NOTES:

1. LOCATION OF EXISTING PIPELINES AND UTILITIES SHOWN IN THE DRAWINGS AREA APPROXIMATE AND SHALL BE VERIFIED IN FIELD PRIOR TO CONSTRUCTION.
2. EXISTING PIPELINES AND UTILITIES SHOWN ON THIS PLAN ARE FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL EXISTING PIPELINE AND UTILITIES. CONTRACTOR SHALL PERFORM UNDERGROUND UTILITY SURVEY AND POTHOLE THE EXISTING PIPELINES TO VERIFY THE ALIGNMENT PRIOR TO DEVELOPING AND SUBMITTING SHORING PLAN AND COMMENCING ANY GRADING, TRENCHING OR TUNNEL EXCAVATION.
3. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT (USA) BY CALLING 1-800-227-2600 PRIOR TO DIGGING.

0 40 80 120
SCALE: 1" = 40'-0"

ELEVATION DATUM
NAD83
NAVD88

REGISTERED PROFESSIONAL ENGINEER
ABDELMANIEM H. ABDELSALAM
C 81091
CIVIL
STATE OF CALIFORNIA

50% SUBMITTAL

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONTRACT NO. WD-2829

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
INFRASTRUCTURE DIVISION
ENGINEERING MANAGEMENT BUREAU

SAN ANDREAS PIPELINE No. 2
LOCKBAR REPLACEMENT

STAGING AREA AT PENINSULA HIGH SCHOOL
PARKING LOT

CHECKED / APPROVED	DRAWN
SECTION MANAGER	DESIGNED
MAINTENANCE ENGINEERING MANAGER	SCALE: AS SHOWN; DATE: OCTOBER 2016
APPROVED MANAGER, ENGINEERING MANAGEMENT BUREAU	APPROVED MANAGER, WATER SUPPLY AND TREATMENT DIVISION

PLAN NO.	DRAWING / FILE NO.	REVISION NO.
C-7001	E-	0

FILE:Q:\CJW5227351\CIVIL\50% SUBMITTAL ACTIVE\C-7001.DWG

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4

Adopted Mitigation Measures	Monitoring and Reporting Program Responsible Party	Reviewing and Approval Party	Monitoring and Reporting Actions	Implementation Schedule
Land Use and Land Use Planning				
<u>Required for segments 1-4</u> **Mitigation Measure M-LU-1a: Notice of Construction Activities** This mitigation measure applies to all the project sites. The following notification procedures shall be implemented prior to construction: 1. The SFPUC shall provide advance notification to businesses, property owners, facility managers, and residents of adjacent areas potentially affected by the PPSU project about the nature, extent, and duration of construction activities, at least 1 week prior to construction. The SFPUC or its contractor will coordinate with the City of San Bruno to agree on a public notification process and notification boundaries in San Bruno. The SFPUC shall also provide interim updates to these parties during periods of active construction to inform them of the status of the construction activities and schedule. Notices shall be sent to sensitive receptors and affected adjacent properties identified below: • **Colma Site** – Kohl's Department Store; Home Sweet Home Assisted Living Facility if occupied; Creekside Villas, residential units in front of Kohl's Department Store to the East; and Cypress Lawn Memorial Cemetery; • **South San Francisco Site –**Residences adjacent to the construction zone along Arroyo Drive; Clubview Apartments; and California Golf Club of San Francisco; • **San Bruno Segments 1 through 4 –** Residences adjacent to the construction zone along Crystal Springs Road, Courtland Road, the 280 North off-ramp to San Bruno Avenue, San Bruno Avenue and Cedarwood Court, and within the Peninsula Place Homeowners and Cherry Avenue Villas condominium complexes. • **San Bruno North Site** – Residences adjacent to the construction zone along Cedarwood Court and Pepper Drive; • **San Bruno South Site** – Park Plaza Apartments and Shelter Creek Condominiums; Residences adjacent to the construction zone along Courtland Drive; Peninsula High School and other uses at the former Crestmoor High School campus; Peninsula High School Athletic Fields; and San Bruno Chinese Church; and • **Millbrae Site** – Green Hills Country Club; Meadows Elementary School; Residences along Ridgewood Drive; Residences adjacent to the construction zone along Ridgewood Drive, Hacienda Way, Helen Drive, Banbury Lane; Millwood Drive and Barcelona Drive; and Glen Oaks and Millbrae Montessori Schools; 2. The SFPUC shall coordinate with managers of facilities including, but not limited to, Kohl's Department Store, San Bruno Chinese Church, Peninsula High School, and the Green Hills Country Club to minimize disruptions to facility operations and activities, to the extent feasible. 4. Should weekend work be necessary, the SFPUC shall notify adjacent properties, including reasonable advance notification to the businesses, owners, and residents of adjacent areas potentially affected by the proposed project, and interim updates shall be provided.	1) SFPUC Communications 2) SFPUC Communications/CM Team 3.	1) SFPUC BEM 2) SFPUC BEM	1) Provide advance notification to businesses, property owners, facility managers, and residents. 2) Coordinate with facility managers to ensure that construction is scheduled in times that would have the least impact on these facilities. Provide advance notification of weekend work. Provide interim updates about construction to businesses, property owners, facility managers, and residents.	1) Prior to construction (at least 1 week) 2) Pre-construction/ construction

BAAQMD = Bay Area Air Quality Management District
BEM = (SFPUC) Bureau of Environmental Management
CDFG = California Department of Fish and Game
CM Team = (SFPUC) Construction Management Team
CMB = (SFPUC) Construction Management Bureau
Communications = (SFPUC) Communications Department
EMB = (SFPUC) Engineering Management Bureau
ERO = SF Planning Department Environmental Review Officer
NRLMD = (SFPUC) Natural Resources and Lands Management Division
RWQCB = California Regional Water Quality Control Board
SF Planning = SF Planning Department
SFPUC = San Francisco Public Utilities Commission
USFWS = U.S. Fish and Wildlife Service

Adopted Mitigation Measures	Monitoring and Reporting Program Responsible Party	Reviewing and Approval Party	Monitoring and Reporting Actions	Implementation Schedule
<u>Required for segments 1-4</u> **M-LU-1b: Minimum 2-Week Notice of Construction Activities to Homes with Significant Unavoidable Noise Impacts** This mitigation measure applies to South San Francisco, San Bruno North, San Bruno South, and Millbrae sites only. The SFPUC or its contractor shall provide 14-day advance notice by mail or hand delivery to all residents, tenants, and/or property owners in those homes listed below as being potentially subject to significant and unavoidable noise impacts, even after administrative and source controls are implemented. • **South San Francisco Site –** Arroyo Drive (address numbers 105, 107 and 108); • **San Bruno Segments 1 through 4 –** Residences adjacent to the construction zone along Boardwalk Place and Boardwalk Drive within the Peninsula Place Homeowners condominium complex and adjacent to the unnamed roadway within the Cherry Avenue Villas; • **San Bruno North Site** – Cedarwood Court (address numbers 1790, 1791, 1800, 1801, 1820, 1821, 1840, and 1841); and Pepper Drive (address numbers 763, 769, 773, 779, 783, 789, 793, and 795); • **San Bruno South Site –** Courtland Drive (address numbers 300, 306, 310, 316, 320, 326, 330, 336, 340, 350, 360, and 370); Shelter Creek Condominiums Buildings 4A, 4B, and 4D; and Park Plaza Apartments; and • **Millbrae Site –** Hacienda Way (address numbers 859, 869, 873, 877, 881, 885, 889, 913, and 917); Ridgewood Drive (address numbers 1078, 1086, 1094, 1100, 1101, 1106, 1110, 1116, 1120, 1126, and 1130); and Banbury Lane (address number 971). The notice will state the construction location, anticipated activities, and schedule, including whether nighttime construction is proposed. The notice will provide information about anticipated construction-related noise impacts and provide suggestions for avoiding or reducing exposure to such impacts (e.g., planning alternative schedules, closing windows facing the planned construction sites). The SFPUC shall identify and provide a public liaison person before and during construction to respond to the concerns of neighboring property owners. Procedures for contacting the public liaison officer via a toll-free telephone number, email, or in person will be included in the notices. Prior to construction, the SFPUC communications manager, resident engineer, and construction manager shall develop and review procedures for receiving and responding to questions and complaints.	1) SFPUC Communications 2) SFPUC Communications/CM Team 3) SFPUC Communications/CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Provide advance notification to residents and/or property owners. 2) Identify a public liaison. Develop and review procedures for receiving and responding to questions and complaints. 3) Provide interim updates and respond to complaints.	1) Prior to construction (at least 14 days) 2) Pre-construction 3) Construction
Aesthetics				
<u>Required for segments 1-4</u> **M-AE-2: Site-Specific Construction Lighting Plan** This mitigation measure applies to the San Bruno North site only. The SFPUC shall require the contractor to develop and implement a site-specific nighttime lighting plan. A qualified lighting professional shall prepare the plan, which shall specify lighting sources for nighttime operations, and require that lighting be shielded and directed specifically onto work areas to minimize light spillover. The plan shall also provide for light source monitoring to ensure that feasible adjustments are made as necessary to provide maximum shielding during all phases of construction. The contractor shall submit the plan to the SFPUC for review and approval prior to commencing nighttime construction operations, at which time the plan shall be implemented continuously until the end of nighttime construction.	1) SFPUC EMB 2) CM Team 3) CM Team	1) SFPUC BEM 2) SFPUC CMB 3) SFPUC BEM	1) Ensure that contract documents include requirement for contractor to develop lighting plan requirements. 2) Ensure that contractor prepares lighting plan and submits to SFPUC for review and approval. 3) Monitor to ensure that the contractor implements plan requirements. Report noncompliance and ensure corrective action.	1) Design 2) Prior to nighttime construction 3) Construction

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SF Planning = SF Planning Department
SFPUC = San Francisco Public Utilities Commission
USFWS = U.S. Fish and Wildlife Service

Cultural and Paleontological Resources				
<u>Required for segments 1-4</u> **M-CP-2a: Distribute "ALERT" Sheet** This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. At these sites, there is a potential for the inadvertent discovery of archaeological resources because all require excavation into previously undisturbed soils. To avoid any potential adverse effects on accidentally discovered buried cultural resources, as defined in CEQA Guidelines Section 15064.5(a)(c), the SFPUC shall distribute the San Francisco Planning Department's archaeological resource "ALERT" sheet to the project prime contractor; to any subcontractors (including firms subcontracted to perform demolition, excavation, grading, foundation, and pile driving); and/or to any utilities firms involved in any and all soil-disturbing activities within the PPSU C-APE. Prior to any soil-disturbing activities, each contractor shall be responsible for ensuring that the ALERT sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, and supervisory personnel. The SFPUC shall provide the Environmental Review Officer (ERO) with the sign-in sheet from the responsible parties (i.e., prime contractor, subcontractor[s], and utilities firm) confirming that all field personnel have received copies of the ALERT sheet. Should any indication of an archeological resource be encountered during any soil-disturbing activity, SFPUC and/or the contractor shall immediately suspend the soil-disturbing activities within 50 feet of the discovery, and shall notify the ERO immediately. Ground-disturbing activities in the vicinity of the discovery shall remain suspended until the ERO has determined what additional measures should be undertaken.	1) SFPUC EMB 2) CM Team 3) CM Team (qualified archaeologist)	1) SFPUC BEM 2) SFPUC BEM/ERO 3) SFPUC BEM	1) Ensure that the contract documents include measures related to archaeological discoveries. 2) Ensure that all personnel attend environmental training prior to beginning work, receive the ALERT sheet, and sign the training sign-in sheet. Maintain file of signature sheets for submittal to ERO. Monitor to ensure that the contractor implements measures in contract documents including halting activities within 50 feet of discovery. Report noncompliance and ensure corrective action. 3) Evaluate the potential discovery and advise the ERO as to the significance of the discovery.	1) Design 2) Pre-construction 3) Construction
If an archaeological resource is present, the archaeological monitor retained for the project (see **Mitigation Measure M-CP-2b**) shall identify and evaluate the archaeological resource. The archaeological monitor shall make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by the SFPUC. These measures might include preservation in situ of the archaeological resource; or an archaeological evaluation program (see **Mitigation Measure M-CP-2c**).				
<u>Required for segments 1-4</u> **M-CP-2b: Conduct Archaeological Monitoring in Accordance with Approved Archaeological Monitoring Plan** This mitigation measure applies to the Colma, South San Francisco, and San Bruno South sites only. At these sites, portions of the C-APE are of elevated archaeological sensitivity. The SFPUC will retain a qualified archaeologist meeting the Secretary of the Interior's professional standards for archaeology and, as necessary, a Native American monitor to be present during specific ground disturbing activities at specific locations within the Colma, South San Francisco, and San Bruno South sites as stipulated within the Archaeological Monitoring Plan (AMP) to be prepared for the project (URS, 2012a). The monitoring shall be conducted in accordance with the approved AMP. Archaeological monitoring is not required at the Millbrae site, given the low archaeological sensitivity of the soils occurring within that portion of the C-APE.	1) SFPUC EMB 2) CM Team (qualified archaeologist)	1) SFPUC BEM 2) SFPUC BEM	1) Ensure that contract documents include requirement that contractor implement measures related to archaeological monitoring. 2) Monitor ground disturbing activities in compliance with the Archaeological Monitoring Plan.	1) Design 2) Pre-construction/ Construction

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RWQCB = California Regional Water Quality Control Board
SF Planning = SF Planning Department
SFPUC = San Francisco Public Utilities Commission
USFWS = U.S. Fish and Wildlife Service

<u>Required for segments 1-4</u> **M-CP-2c: Prepare and Comply with an Archaeological Evaluation Plan and Evaluation Report** This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. In the event archaeological resources are inadvertently exposed during any project-related construction, all ground-disturbing work within 50 feet of the discovery shall immediately cease, and the SFPUC Project Manager and the ERO shall be notified immediately. In consultation with the SFPUC, the ERO, and the San Francisco Planning Department's Environmental Planning Division archaeologist or Designee, the monitoring archaeologist shall prepare an Archaeological Evaluation Plan (AEP) consistent with the requirements of the San Francisco Planning Department, Environmental Planning Division (EP) WSIP Archaeological Guidance No. 5. The AEP shall create a program to determine the potential of the expected resource to meet the California Register criteria—particularly Criterion 4, the resource's potential to address important research questions identified in the AEP—and the archaeologist shall submit this plan to the ERO for approval. The archaeologist shall then conduct an evaluation consistent with the ERO-approved AEP. The methods and findings of the evaluation shall be presented in an Archaeological Evaluation and Effects Report consistent with EP WSIP Archaeological Guidance No. 6, which shall be submitted to the ERO upon completion.	1) SFPUC BEM (qualified archaeologist) 2) SFPUC BEM (qualified archaeologist)	1) SFPUC BEM/ERO 2) SFPUC BEM/ERO	1) Prepare an Archeological Evaluation Plan for Review and Approval by ERO. 2) Conduct evaluation consistent with the ERO-approved AEP and document findings in an Archeological Evaluation and Effects Report that is to be submitted to the ERO.	1) Construction 2) Construction
Based on the conclusions of the Archaeological Evaluation and Effects Report, the Environmental Planning Division Archeologist or Designee shall determine if the project will adversely affect a CEQA-significant archaeological resource. If the project will have an adverse effect on such a resource, an Archaeological Research Design and Treatment Plan shall be prepared by the archaeologist and submitted to the ERO. The Archaeological Research Design and Treatment Plan shall be prepared consistent with the EP (formerly MEA) WSIP Archaeological Guidance No. 7. Once approved by the ERO, a data-recovery investigation and/or other treatment shall be conducted by the archaeologist.				
<u>Required for segments 1-4</u> **M-CP-3: Prepare and Implement a Paleontological Resources Monitoring Program** This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. Prior to the initiation of any site preparation or start of construction, SFPUC shall retain a qualified professional paleontologist or a California Professional Geologist with appropriate paleontological expertise, as defined by the Society of Vertebrate Paleontology's Conformable Impact Mitigation Guidelines Committee (SVP, 1995), to carry out a paleontological resources training program for construction workers and to develop a paleontological monitoring program, except at the San Bruno North site. The SFPUC shall require the paleontologist to be on call throughout the duration of ground-disturbing activities. At a minimum, the monitoring program shall include: **Preparation of a Paleontological Monitoring Plan.** Based on the results of the paleontological investigation completed for the PPSU project (URS, 2012b), the volume and depth of proposed soil excavations, and professional judgment, the paleontologist shall identify the specific locales and depths within the project components where geologic units of high paleontological sensitivity occur, and to determine the frequency in which monitoring will be undertaken to ensure the proper management of paleontological resources. The SFPUC shall review and approve the plan in consultation with the ERO. **Paleontological Resources Training.** All construction forepersons and field supervisors shall be trained in the recognition of potential fossil materials prior to the initiation of any site preparation or start of construction. Training on paleontological resources shall also be provided to all other construction workers, but may include videotape of the initial training and/or the use of written materials rather than in-person training by the qualified paleontologist. In addition to fossil recognition, the training shall convey procedures to follow if construction crews encounter potential fossil materials in the course of earthwork, excavation, or grading, as described below.	1) SFPUC EMB 2) CM Team (qualified paleontologist or CA registered geologist) 3) CM Team (qualified paleontologist or CA registered geologist) 4) CM Team (qualified paleontologist or CA registered geologist) 5) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM/ERO 4) SFPUC BEM and SF Planning Department 5) SFPUC BEM	1) Ensure that contract documents include requirements related to paleontological resources including training and discoveries. 2) Obtain and review resume or other documentation of paleontologist's qualifications. Ensure that contractor's staff participate in the environmental training prior to beginning work and sign the training sign-in sheet. Maintain file of sign-in sheets. 3) Prepare Paleontological Monitoring Plan for ERO review and approval. 4) File documentation of paleontologist's qualifications (e.g., resume). If monitoring is required in the Paleontological Monitoring Plan, document paleontological monitoring activities in logs. In the event of a discovery, confirm suspension of work, examine fossil, and report as required. 5) Monitor to ensure that the contractor implements measures in contract documents report noncompliance, and ensure corrective action.	1) Design 2) Pre-construction and construction 3) Pre-construction 4) Construction 5) Construction

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Active Monitoring of Construction Sites for Paleontological Resources, if Recommended in the Paleontological Monitoring Plan. Paleontological monitoring shall consist of inspecting disturbed, graded, and excavated surfaces, as well as soil stockpiles and disposal sites in accordance with the schedule and methods outlined in the Paleontological Monitoring Plan. The monitor (i.e., the professional paleontologist or a designee of the paleontologist) shall have authority to divert grading or excavation away from exposed surfaces temporarily in order to examine disturbed areas more closely and/or recover fossils. The monitor shall coordinate with the construction manager to ensure that monitoring is thorough but does not result in unnecessary delays. If the monitor encounters a paleontological resource, he or she shall assess the fossil, and record or salvage it, as described above. **Assessment and Salvage of Potential Fossil Finds.** If the paleontological monitor or construction crews discover potential fossils, all earthwork or other types of ground disturbance within 50 feet of the find shall stop immediately until the qualified professional paleontologist can assess the nature and importance of the find. Based on the scientific value or uniqueness of the find, the monitor may record the find and allow work to continue, or recommend salvage and recovery of the fossil. The monitor may also propose modifications to the stop-work radius based on the nature of the find, site geology, and the activities occurring on the site. Recommendations for any necessary treatment shall be consistent with the SVP 1995 and 1996 guidelines and currently accepted scientific practices. If required, treatment for fossil remains may include preparation and recovery of fossil materials so that they can be housed in an appropriate museum or university collection, and may also include preparation and publication of a report describing the finds. The monitor's recommendations shall be subject to review and approval by the ERO or designee. The SFPUC shall be responsible for ensuring that treatment is implemented and reported to the San Francisco Planning Department. If no report is required, the SFPUC shall nonetheless ensure that information on the nature, location, and depth of all finds is readily available to the scientific community through university curation or other appropriate means.				
<u>Required for segments 1-4</u> **M-CP-4: Treatment of Inadvertently Discovered Human Remains** This mitigation measure applies to the Colma, South San Francisco, San Bruno South, and Millbrae sites only. The treatment of any human remains and associated funerary objects discovered during soil-disturbing activities shall comply with applicable state laws. Such treatment would include immediate notification of the San Mateo County coroner and, in the event of the coroner's determination that the human remains are Native American, notification of the NAHC, which would appoint a Most Likely Descendant (MLD) (PRC Section 5097.98). The archaeological consultant, SFPUC, and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated objects (CEQA Guidelines Section 15064.5[d]). The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties could not agree on the reburial method, the SFPUC shall follow Section 5097.98(b) of the PRC, which states that "the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance." All archaeological work performed under this mitigation measure shall be subject to review by the ERO or designee.	1) SFPUC EMB 2) CM Team (qualified archaeologist) 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that contract documents include measures related to discovery of human remains. 2) If potential human remains are encountered, mobilize an archaeologist to confirm existence of human remains. If human remains are confirmed, perform required coordination and notifications. 3) Monitor to ensure that the contractor implements measures in contract documents including insuring that all potential human remains are reported as required and that contractor suspends work in the vicinity. Report noncompliance and ensure corrective action.	1) Design 2) Construction 3) Construction

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Transportation and Circulation				
<u>Required for segments 1-4</u> **M-TR-3: Traffic Control Plan** This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractor(s) shall prepare and implement a traffic control plan. The [traffic control] plan shall conform to the *California Manual on Uniform Traffic Control Devices* (Caltrans, 2012) and shall incorporate the applicable requirements of the jurisdictions of the Town of Colma and the cities of South San Francisco, San Bruno, and Millbrae. It shall be provided for review and comment if requested by these jurisdictions. **General Measures for All Project Sites** • Advance warning signs shall be placed upstream of work areas advising motorists, bicyclists, and pedestrians of the construction zone ahead in order to minimize hazards associated with construction activities, including the vehicular entry and egress of project-related construction activities. • A public information system shall be developed and implemented to advise motorists, bicyclists, and nearby property owners of the impending construction activities (e.g., direct distribution of flyers to affected properties, email notices, portable message signs, and informational signs). • All equipment and materials shall be stored within the designated work areas so as to avoid obstructing traffic. • At all project sites, roadside safety protocols shall be implemented such as advance "Road Work Ahead," "One Lane Road Ahead," "Flagger Ahead," "Prepare to Stop," and "Trucks Entering Road" signs. Warning signs and speed control shall be provided to achieve speed reductions for safe traffic flow through the work zone. • At all sites, pedestrian and bicycle access and circulation shall be maintained during project construction where it is safe to do so. Where appropriate, detours shall be included for bicycles and pedestrians in areas affected by project construction.	1) SFPUC EMB 2) SFPUC Communications/CM Team 3) CM Team 4) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM 4) SFPUC BEM	1) Ensure that the contract documents include all applicable measures and the requirement to prepare a Traffic Control Plan including submittals to the San Bruno Fire Marshal. 2) Develop and implement a notification program to notify public as required. 3) Ensure that contractor submits a Traffic Control Plan and verify that it complies with the requirements. Ensure that the contractor coordinates with Caltrans and other applicable agencies and cities for affected roadways and intersections. 4) Monitor to ensure that the contractor implements measures in Traffic Control Plan Including submittals to the San Bruno Fire Marshal. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction 3) Pre-construction/ Construction 4) Construction
• To the maximum extent feasible, truck trips (i.e., haul trucks and heavy construction equipment) shall be scheduled outside of the a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak commute periods. • At all project sites, construction shall be coordinated with facility owners or administrators of sensitive land uses such as schools, police and fire stations, churches, hospitals, and residences. Facility owners or operators shall be notified in advance by the SFPUC regarding the timing, location, and duration of construction activities, and the locations of detours and lane closures. • Roadway rights-of-ways shall be repaired or restored to their original conditions or better upon completion of construction. ***Specific Measures for Project Sites*** • At the **Colma** site, construction worker parking shall be accommodated within the project area boundary. At the Colma Site, flaggers shall be provided at the Serramonte Boulevard driveway to the staging area and Kohl's department store site, to reduce the potential for conflicts between construction vehicles and customers accessing the Kohl's parking lot via Serramonte Boulevard. If construction activities occur on weekends, flaggers shall also be provided. • At the **South San Francisco** site, flaggers shall be provided at new project driveway on West Orange Avenue to facilitate pedestrian travel adjacent to the project site. Construction worker parking shall be accommodated within the project staging area, or within the common staging area; carpooling between the South San Francisco site and the common staging area shall be established. • At the **San Bruno North** site, the construction contractor shall obtain an encroachment permit from Caltrans, and comply with Caltrans requirements for traffic control activities within the State right-of-way, as described in Section 3.10, Required Permits.				

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• At the **San Bruno South** site, travel lane closures on Whitman Way shall be limited during the a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak periods to the maximum extent feasible. Outside of allowed working hours or when work is not in progress, Whitman Way shall be restored to normal operations by covering all trenches with steel plates. When sidewalk closures are required on Whitman Way, pedestrian detour routes shall be maintained. At the intersection of Shelter Creek Lane and the driveway to the Shelter Creek Condominiums (Intersection #5), the construction contractor shall provide flaggers to facilitate truck access into and out of the project work area at the Shelter Creek Condominiums. Access to lower Garage 4, Lot B, and Lot C shall be maintained to the maximum extent feasible, and alternative fire access to building #3B shall be maintained.				
The construction contractor shall be required to have ready at all times the means necessary to accommodate emergency vehicles, such as plating over excavations through the use of steel place to provide for a fire lane with a minimum width of 12 feet. The traffic control plan shall include flaggers with radio communication to allow ingress/egress to the parking areas. Flaggers shall be provided on Courtland Drive at the construction vehicle access to the staging area within the Peninsula High School site, to reduce the potential for conflicts between construction vehicles and vehicles destined to other parking or passenger loading/unloading areas within the site. If construction activities occur on weekends, flaggers shall be provided. Plans and Specifications at 65 percent design completion, along with the traffic control plan, shall be submitted to the San Bruno Fire Marshal when available for review and comment. Construction worker parking shall be accommodated within the project area boundary. • At the **Millbrae** site, the SFPUC or the construction contractor shall coordinate with the schedule of schools to minimize impacts on school operations to the maximum extent feasible. At the Millbrae site, to the maximum extent feasible, construction haul trips shall not be conducted prior to 9 a.m. or after 3 p.m. when children are traveling to and from the Meadows Elementary School and the Glen Oaks/ Millbrae Montessori School. Similarly, if determined appropriate by the school administrators, the SFPUC or the construction contractor shall provide traffic control officers at the intersections of Helen Drive/Larkspur Drive (Intersection #9) near the Meadows Elementary School, and Santa Margarita Avenue/Capuchino Drive (Intersection #11) near the Glen Oaks/Millbrae Montessori School. If sidewalk closures are required on Ridgewood Drive, pedestrian detour routes shall be provided. • At the **Common Staging Area**, construction worker parking for the PPSU project shall be accommodated within the site, as feasible.				
Noise				
<u>Required for segments 1-4</u> **M-NO-1: Prepare and Implement Administrative and Source Controls** This mitigation measure applies to all project sites, but does not apply to the common staging area. The SFPUC shall include in construction contract specifications the requirement to prepare a noise control plan. The contractor shall submit a noise control plan, prepared by a qualified noise consultant, to the SFPUC for review and approval at least 21 days before the start of mobilization/construction. The SFPUC shall require the noise consultant to be a board-certified Institute of Noise Control Engineering member or other qualified consultant or engineer, to be approved by the SFPUC project construction manager. The noise control plan shall contain performance standards based on the more-restrictive of the 60-dBA [A-weighted-decibels] Leq [equivalent continuous noise level] sleep interference threshold (applicable to nighttime construction), the 70 dBA Leq speech interference threshold (for daytime construction) and the limits established in noise ordinances of San Mateo County, the Town of Colma, and the cities of San Bruno and Millbrae. The noise control plan shall identify the applicable threshold for each project site. The noise control plan shall, at a minimum, contain the following elements:	1) SFPUC EMB 2) CM Team 3) SFPUC Communications/CM Team 4) SFPUC Communications/CM Team 5) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM 4) SFPUC BEM 5) SFPUC BEM	1) Ensure that contract documents include noise performance standards and the requirement that contractor's qualified noise consultant prepare and implement a noise control plan. 2) Ensure that contractor's qualified noise consultant prepares and submits a noise control plan that complies with noise performance standards. 3) Designate project liaison responsible for responding to noise complaints. Develop procedures for receiving and responding to questions and complaints. Ensure public questions and complaints are responded to and corrective actions taken as needed. 4) If contractor is unable to mitigate noise by measures described in this	1) Design 2) Pre-construction 3) Construction 4) Construction 5) Construction

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			mitigation measure, the contractor shall work with the SFPUC communications liaison and construction management team to provide alternative solutions as described in item (i) of the Mitigation Measure.	
• Location of equipment, parking, and other noise generating sources. • Detailed list of potential noise control methods to meet the performance standards. Locations where it is not feasible to meet the performance standards shall be identified • Proposed staging and schedule of noise control measures. • Anticipated performance of noise control measures. • Number and location of monitoring locations and relation to stationary noise controls and sensitive receptors. • Schedule for ongoing monitoring and reporting of construction noise levels to meet performance standards. Monitoring shall occur at least weekly, or more often if needed, in response to complaints. Specific noise control measures that shall be contained in the plan may include, but are not limited to, the following: a) Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) will be used for all equipment and trucks in order to minimize construction noise impacts. b) If impact equipment (e.g., concrete/rock breaker, rock drill) is used during project construction, hydraulically or electric-powered equipment will be used to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust will be used (a muffler can lower noise levels from the exhaust by up to 10 dBA). External jackets on the tools themselves will be used, which could achieve a reduction of 5 dBA. Quieter procedures, such as drilling or vibratory methods rather than impact equipment, will be used. c) Alternative shoring installation techniques, such as beam-and-plate or drilled soldier piles, shall be employed to meet noise thresholds. d) The use of vibratory rollers and pile drivers shall be limited to the hours between 7 a.m. and 5 p.m., except in the City of San Bruno, where such equipment shall be limited to the hours between 9 a.m. and 5 p.m.; and in the City of Millbrae, where such equipment shall be limited to the hours between 8 a.m. and 5 p.m. e) Locate stationary noise sources away from sensitive receptors. If the sources must be located near receptors, adequate muffling (with enclosures where appropriate) will be used to ensure performance standards are met. Enclosure openings or vents will face away from sensitive receptors. If any stationary equipment (pumps, ventilation fans, generators) is operated beyond the ordinance time limits, this equipment will conform to the affected jurisdiction's noise limits.			5) Monitor to ensure that the contractor implements the specified noise control measures/plan. Report noncompliance and ensure corrective action.	
f) Erect temporary noise barriers to maintain construction noise levels at or below the performance standards. Barriers shall be constructed with a solid material with a density of at least 2 pounds per square foot with no gaps. The location, height, and specification of the barriers shall be determined by the approved noise consultant as part of the noise control plan. g) Designate a project liaison to be responsible for responding to noise complaints during construction. The name and phone number of the liaison will be conspicuously posted at construction areas and on all advanced notifications. The liaison will take steps to resolve complaints, including the arrangement of periodic noise monitoring, if necessary. Results of noise monitoring will be presented at regular project meetings with the project contractor, and the liaison will coordinate with the contractor to modify any construction activities that generated excessive noise levels.				

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h) In the event of noise complaints, the contractor shall provide information to the SFPUC within 48 hours of being notified of the complaint regarding the noise levels measured and activities that correspond to the complaints. The SFPUC will compare the noise levels to the information in the noise control plan, and the effectiveness of the noise control measures will be verified by the contractor. The contractor will be responsible for the correct installation and use of all implemented noise control measures and for complying with noise specifications. i) For the limited locations where the contractor is unable to mitigate noise through the measures described above (a through h), the contractor shall work with the SFPUC communications liaison and construction management team to provide alternative solutions. The contractor will provide a white noise machine* to residents adjacent to the construction work area whose exterior nighttime noise level due to project construction activities exceeds 60 dBA, or exceeds the daytime speech interference threshold of 70 dBA Leq. Exceedances of the dBA criterion shall first be verified by field acoustical measurements. On a case-by-case basis, when the white noise machine does not provide an effective solution and when there are special circumstances such as those home owners with verified special medical conditions or those who work at night and therefore need to sleep during daytime hours, the SFPUC will offer to temporarily relocate them to a nearby hotel. Special medical conditions shall be verified by a doctor. * *A white noise machine is a device that produces a soothing humming or a fan-like sound.*				
To mitigate the contribution to elevated noise levels from back-up alarms, the contractor may use administrative controls instead of audible back-up alarms, subject to safety priorities and consistency with state and federal worker safety laws. Administrative controls may include designing traffic patterns at the project sites to minimize the need for backward movement, or requiring a spotter or flagger in clear view of the operator to direct the backing operation, or requiring the operator to dismount and circle the vehicle immediately prior to starting a reverse operation. Alternatively, the SFPUC may consult with the California Division of Occupational Safety and Health (Cal/OSHA) to determine whether additional noise reductions may be achieved through Cal/OSHA-approved alternatives to back-up alarms without compromising site safety. If Cal/OSHA indicates that such alternatives are a viable option and the SFPUC, in consultation with the contractor, determines that site safety would not be compromised, then the contractor shall apply for a variance from Cal/OSHA and use such alternatives consistent with Cal/OSHA requirements. Such alternatives could include, but are not limited to: • "Smart" alarms that have an audible range of 77 to 103 dBA (but limit the warning signal to 5 dBA over ambient noise levels). • Radar presence-sensing alarms that identify objects in the reversing path of a truck. • Use of "bbs-tek" broadband back-up alarm systems that use a broadband sound instead of a more noticeable single-frequency sound. • Use of strobe lights instead of audible alarms. The administrative source controls and alternatives identified above that are approved by Cal/OSHA instead of back-up alarms shall be included in the noise control plan. If none of these alternatives to back-up alarms can be implemented, the use of back-up alarms shall be minimized by routing the trucks and equipment through sites in a manner that reduces the need to back up.				

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<u>Required for segments 1-4</u> **M-NO-4: Develop and Implement Vibration Planning, Monitoring, and Reporting** This mitigation measure applies to the South San Francisco, San Bruno North, San Bruno South, and Millbrae sites. The SFPUC shall include in construction contract specifications the requirement to prepare and implement a vibration control plan. The contractor shall submit a vibration control plan, prepared by a qualified vibration consultant, to the SFPUC for review and approval at least 21 days before the start of mobilization/construction. The vibration control plan shall contain measures to reduce construction-related vibration to meet the 0.3 in/sec PPV damage potential threshold. In addition, at the San Bruno North site, the plan shall contain measures to reduce construction-related vibration to meet the 0.01 in/sec PPV nighttime annoyance potential threshold, to the extent feasible. The vibration control plan shall, at a minimum, contain the following elements: • Procedures outlining the coordination among the SFPUC, the contractor, field monitors, and property owners. • Address the use of low-vibration equipment (or using lower power equipment or lower power setting) and methods when working near residential receptors.	1) SFPUC EMB 2) SFPUC Communications/CM Team 3) CM Team 4) CM Team 5) CM Team 6) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM/CMB 4) SFPUC BEM 5) SFPUC BEM 6) SFPUC CMB	1) Ensure that contract documents include the requirement for the preparation of a vibration control plan and the specific requirements listed therein. 2) Provide outreach and information to affected residential receptors and offer to perform pre-construction crack surveys to homes within 200 feet of the project. 3) Consult with a California-licensed geotechnical engineer to develop procedures to reduce vibration impacts on adjacent sensitive receptors. 4) Ensure contractor's qualified vibration specialist monitors vibration in accordance with the plan. 5) Monitor the contractor to ensure the recommendations of the final geotechnical report are implemented. Report noncompliance and ensure corrective action. 6) Perform post-construction structure evaluations.	1) Design 2) Pre-construction/ Construction 3) Pre-construction/ Construction 4) Construction 5) Construction 6) Post-construction
Specific vibration control measures that could be addressed in the plan include, but are not limited to, the following: a) Avoiding or reducing simultaneous operation of multiple pieces of construction equipment in proximity to buildings. b) The use of vibratory rollers and pile drivers shall be limited to the hours between 7 a.m. and 5 p.m., except in the City of San Bruno and the City of Millbrae where such equipment shall be limited to the hours between 9 a.m. and 5 p.m. and between 8 a.m. and 5 p.m., respectively. c) Continuous monitoring of vibration levels when vibratory equipment is in use within 50 feet of residential receptors. d) Continuous monitoring of pile driving vibration levels within 150 feet of residential receptors. e) Pile driving is not to occur within 60 feet of residential structures; the contractor must provide trench shoring using another less-vibration-intensive method within 60 feet of residential structures. f) Weekly reporting of the vibration monitoring results, including distribution of reports to interested parties that have requested them.				

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If construction vibration monitoring demonstrates that the project-generated vibration is lower than the values estimated, then the SFPUC could allow these activities to be conducted within the buffer zones, based on evaluation of monitoring data by a qualified vibration consultant. The SFPUC will consult with a California-licensed geotechnical engineer to develop procedures to reduce vibration impacts on adjacent sensitive receptors. The SFPUC will ensure that the construction contractor follows the recommendations of the final geotechnical report regarding excavation and construction. The SFPUC will also ensure that the construction contractor monitors adjacent residential receptors during construction as recommended by the geotechnical engineer. The construction contractor will use low-vibration equipment and appropriate trench shoring when working close to buildings, when required by the geotechnical engineer. If necessary, trench shoring near buildings will be designed with the capacity to support the soil loading, as determined by the project structural and/or geotechnical engineer. The construction contractor will monitor the building until the trench is backfilled.				
SFPUC and the contractor will coordinate with property owners to attempt to gain property access where necessary for vibration monitoring. Where access is granted, the SFPUC shall conduct monitoring to assess construction vibration impacts on adjacent buildings. The SFPUC shall assess the building's pre-construction conditions, identify potential sources of background vibration, and monitor construction vibration near adjacent residential receptors using appropriate monitoring equipment. The SFPUC will coordinate with the construction contractor to adjust construction techniques so as to keep vibration levels below the 0.3 in/sec PPV threshold potential damage criterion. The SFPUC will conduct visual surveys during construction, monitor for cracks and other damage, and conduct a post-construction structural evaluation. SFPUC will provide outreach and information to affected residential receptors regarding projected vibration. At a minimum, this will be provided to residences with structures within approximately 200 feet of construction activities. For residential structures within these zones, the SFPUC will convey to the owners the fact that structural damage occurs at very high vibration levels, far above the threshold of human perception, and that vibration from construction activities will be monitored to prevent structural damage.				
Air Quality				
Required for segments 1-4 **M-AQ-1: BAAQMD Basic Construction Measures** This mitigation measure applies to all project sites and the common staging area. The SFPUC shall post one or more publicly visible signs with the telephone number and person to contact at the SFPUC with complaints related to excessive dust or vehicle idling. This person shall respond to complaints and, if necessary, take corrective action within 48 hours. The telephone number and person to contact at the BAAQMD's Compliance and Enforcement Division shall also be provided on the sign(s) in the event that the complainant also wishes to contact the applicable air district. In addition, to limit dust, criteria pollutants, and precursor emissions associated with project construction, the following BAAQMD-recommended Basic Construction Measures shall be included in all construction contract specifications for the proposed project: • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • All haul trucks transporting soil, sand, or other loose material offsite shall be covered.	1) SFPUC EMB 2) SFPUC Communication Team 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that the contract documents include specified dust control measures and exhaust control measures, including signage requirements. 2) Designate project liaison responsible for developing and implementing procedures responding to complaints related to dust or vehicle idling. Monitor to ensure that the contractor implements measures in contract documents. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction/ Construction 3) Construction

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• All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. • Vehicle speeds on unpaved areas shall be limited to 15 mph. • All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • Idling times for construction equipment (including vehicles) shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes. Clear signage of this requirement shall be provided for construction workers at all access points to construction areas. • All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.				
Utilities and Service Systems				
<u>Required for segments 1-4</u> **M-UT-1b: Safeguard Employees from Potential Accidents Related to Underground Utilities** This mitigation measure applies to all project sites, as well as the common staging area. While any excavation is open, the SFPUC or its contractors shall protect, support, or remove underground utilities as necessary to safeguard employees. As part of contractor specifications, the contractor(s) shall be required to provide updates on planned excavations for the upcoming week, and to specify when construction will occur near a high-priority utility. SFPUC construction managers shall attend tailgate meetings with contractor staff, as required by the California Occupational Safety and Health Administration, to record all protective and avoidance measures regarding such excavations.	1) SFPUC EMB 2) CM Team 3) CM Team	1) SFPUC BEM 2) SFPUC CMB 3) SFPUC CMB	1) Ensure that contract documents include applicable requirements to safeguard employees from potential accidents. 2) Conduct weekly tailgate meetings with contractor prior to any work near high-priority utility lines, and record all protective and avoidance measures that will be implemented in such excavations. 3) Monitor to ensure that the contractor implements measures in contract documents and the protective and avoidance measures identified at tailgate meetings. Report noncompliance and ensure corrective action.	1) Design 2) Construction 3) Construction
<u>Required for segments 1-4</u> **M-UT-1c: Notify Local Fire Departments** This mitigation measure applies to all project sites, as well as the common staging area. In the event that construction activities result in damage to high-priority utility lines, including leaks or suspected leaks, the SFPUC or its contractors shall immediately notify local fire departments to protect worker and public safety.	1) SFPUC EMB 2) CM Team	1) SFPUC BEM 2) SFPUC CMB	1) Ensure that contract documents include the requirement that the contractor notify local fire departments in the event of damage to high-priority utility lines. 2) Obtain documentation from contractor of their notification to local fire departments if damage to a gas utility results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.	1) Design 2) Construction

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Required for segments 1-4 **M-UT-1d: Emergency Response Plan** This mitigation measure applies to all project sites, as well as the common staging area. Prior to commencing construction activities, the SFPUC shall develop an emergency response plan that outlines procedures to follow in the event of a leak or explosion. The emergency response plan shall identify the names and phone numbers of PG&E staff who would be available 24 hours per day in the event of damage or rupture of the high-pressure PG&E natural gas pipelines. The plan shall also detail emergency response protocols including notification, inspection, and evacuation procedures; any equipment and vendors necessary to respond to an emergency, such as an alarm system; and routine inspection guidelines.	1) SFPUC EMB 2) CM Team 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC CMB	1) Ensure that contract documents include applicable measures including requirement to prepare emergency response plan. 2) Ensure that contractor prepares the emergency response plan and verify compliance with requirements. 3) Monitor to ensure that contractor implements measures in contract documents and emergency response plan. Report non-compliance, and ensure corrective action.	1) Design 2) Pre-construction 3) Construction
Required for segments 1-4 **M-UT-1e: Ensure Prompt Reconnection of Utilities** This mitigation measure applies to all project sites, as well as the common staging area. Any utilities inadvertently damaged during construction shall be repaired to pre-project conditions. The SFPUC or its contractors shall promptly notify utility providers to reconnect any disconnected utility lines as soon as it is safe to do so.	1) SFPUC EMB 2) CM Team	1) SFPUC BEM 2) SFPUC CMB	1) Ensure that applicable measure is included in contract documents. 2) Monitor to ensure that contractor notifies utility providers as necessary. Report noncompliance and ensure corrective action is taken.	1) Design 2) Construction
Required for segments 1-4 **M-UT-1f: Coordinate Final Construction Plans with Affected Utilities** This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall coordinate final construction plans and specifications with affected utilities.	1) SFPUC EMB 2) CM Team	1) SFPUC BEM 2) SFPUC CMB	1) Provide final construction plans to affected utilities. Ensure contract documents include requirements to notify affected utilities in advance of work near their facilities. 2) Monitor to ensure that contractor notifies utility providers as necessary. Report noncompliance and ensure corrective action is taken.	1) Design 2) Construction
Required for segments 1-4 **M-UT-5: Prepare and Implement a Construction Solid Waste Recycling Plan** This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC or its contractors shall prepare a construction solid waste recycling plan/waste management plan. The plan should identify the goal of salvaging the maximum amount of demolition debris at all projects sites. The plan should also include identification of the types of debris generated by the project and of how waste streams will be handled; and identification of actions to reuse or recycle construction debris and clean excavated soil to the extent possible. The plan shall include actions to divert waste with disposal in a landfill in accordance, at a minimum, with the solid waste diversion goal set by the California Integrated Waste Management Act, and with local ordinance requirements as follows:	1) SFPUC EMB 2) CM Team 3) CM Team	1) SFPUC BEM 2) SFPUC CMB 3) SFPUC CMB	1) Ensure that contract documents include applicable measures including requirement to prepare solid waste recycling plan. 2) Ensure that contractor prepares and submits solid waste management recycling plan. 3) Monitor to ensure that contractor implements the plan. Report noncompliance and ensure that corrective action is taken.	1) Design 2) Pre-construction 3) Construction

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• At the Colma site – 50 percent recycling of the waste tonnage from any demolition project where the waste includes concrete and asphalt (or 15 percent where there is no concrete and/or asphalt); and 50 percent recycling of waste tonnage; • At the South San Francisco site and Common Staging Area – 100 percent recycling of inert solids; and at least 50 percent recycling of the remaining construction and demolition debris tonnage; and • At the Millbrae site – 50 percent recycling of all waste generated for the project by weight, with at least 25 percent achieved through reuse and recycling of materials other than source separated dirt, concrete and asphalt. No local ordinances apply at the San Bruno North and South sites; therefore, diversion shall be consistent with State law (at least 50 percent recycling of solid wastes).				
Biological Resources				
<u>Required for segments 1-4</u> **M-BI-1a: General Protection Measures** This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC shall ensure that the following general measures are implemented by the contractor(s) during construction to minimize or avoid impacts on biological resources: • Construction contractor(s) shall minimize the extent of the construction disturbance as much as feasible, which shall be limited to boundaries of the project sites. • For trees to be retained or trimmed: – A qualified arborist or a qualified biologist will identify trees to be retained, and exclusion fencing will be installed no closer than the drip line of these trees. – Prior to the start of construction, SFPUC or its contractors will install exclusion fencing at the limits of construction, outside the dripline of all trees bordering the limits. – All necessary tree pruning will be completed either by a certified arborist or by the contractor under the supervision of either an International Society of Arboriculture qualified arborist, American Society of Consulting Arborists consulting arborist, or a qualified horticulturist. • Project-related vehicles shall observe a 15 mile-per-hour speed limit on unpaved roads in the work area, or as otherwise determined by the applicable regulatory agencies. • The contractor shall provide closed garbage containers for the disposal of all food-related trash items (e.g., wrappers, cans, bottles, food scraps). All garbage shall be collected daily from the project site and placed in a closed container from which garbage shall be removed weekly. • Construction personnel shall not feed or otherwise attract wildlife in the project area. • No pets shall be allowed in the project area. • No firearms shall be allowed in the project area. • Staging areas shall be located at least 100 feet from riparian habitat, creeks, and wetlands, where feasible. If not feasible, then staging areas shall be situated outside of the dripline of riparian trees. If a 100-foot setback is not feasible due to field constraints, the project biologist will work with the contractor to determine where the silt fence erected for perimeter control should be placed, and what additional BMPs may be required to prevent construction spoils and sediment from leaving the work area. Sediment controls, such as silt fence or straw wattles, shall be erected along the perimeter of all construction and staging areas to minimize the transport of sediment from the site. If silt fence is used, the fence shall be installed so that the stakes face toward the outside of the work area.	1) SFPUC EMB 2) CM Team	1) SFPUC BEM 2) SFPUC BEM	1) Ensure that the contract documents include the general protection measures including requirement to provide qualified arborist. 2) Monitor to ensure that contractor implements measures. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction/ Construction
• Exclusion fencing shall be erected along the boundaries of construction and staging areas to provide perimeter control, and to prevent construction personnel and activities from entering sensitive areas, as determined to be needed by the project biologist. • If vehicle or equipment fueling or maintenance is necessary, it shall be performed in the designated staging area, consistent with **Mitigation Measure M-HY-1: Preparation and Implementation of a SWPPP** (see Section 5.16, Hydrology and Water Quality).				

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Required for segments 1-4 **M-BI-1b: Worker Training and Awareness Program** This mitigation measure applies to all project sites, as well as the common staging area. The SFPUC shall ensure that mandatory biological resources awareness training is provided to all construction personnel as follows: • The training shall be developed and provided by a qualified biologist or construction compliance manager familiar with the sensitive species that may occur in the project area. If a consulting biologist prepares the training program, SFPUC staff shall approve the program prior to implementation. • The training shall be provided before any work, including vegetation clearing and grading, occurs within the work area boundaries. • The training shall provide education on the natural history of the special-status species potentially occurring in the project area, and discuss the required mitigation measures to avoid impacts on the special-status species and the penalties for failing to comply with biological mitigation requirements. • The environmental awareness training program for construction personnel shall include an orientation regarding the importance of preventing the spread of invasive nonnative plants. • If new construction personnel are added to the project, the contractor shall ensure that they receive training prior to starting work. The subsequent training of personnel can include a videotape of the initial training and/or the use of written materials rather than in-person training by a biologist.	1) SFPUC EMB 2) SFPUC CMB (qualified biologist) 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure the contract documents include the requirement that all construction personnel attend training. 2) Prepare biological-resources awareness program. Include documentation of qualifications of the consulting biologist developing the training program (e.g., resume). 3) Monitor to ensure that all personnel attend training prior to beginning work and sign training sign-in sheet. Maintain file of sign-in sheets. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction 3) Construction
Required for segments 1-4 **M-BI-1c: Prepare and Implement a Vegetation Restoration Plan** This mitigation measure applies to all project sites, but does not apply to the common staging area. The SFPUC or contractor shall prepare and implement a vegetation restoration plan with detailed specifications for minimizing the introduction of invasive weeds, and for restoring all temporarily disturbed areas. The plan shall include methods to ensure that the contractor successfully implements the vegetation restoration plan after the project is completed, so that proposed success criteria can be achieved subsequent to construction. • The plan shall be developed by a qualified restoration ecologist familiar with the ecological requirements of special-status species. Willows removed from the South San Francisco site, north of Westborough Boulevard, shall be replaced with vegetation that would provide shelter for California red-legged frog, as specified in the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007). • The plan shall be developed with the intent to replace (to the extent possible) the function and values of trees removed during the construction project with plants that are acceptable for planting within the SFPUC ROW. • The plan shall indicate the best time of year for seeding to occur and will be consistent with the SFPUC's ROW Integrated Vegetation Management Policy (SFPUC, 2007). The restoration plan shall specify measures to remove and/or control weeds in the project area. For grassland and ruderal areas, the affected areas shall be reseeded with a native or noninvasive grass and forb seed mix. • Replacement of ordinance-protected trees shall be completed as described in **Mitigation Measure M-BI-4: Replacement of Trees to Be Removed.** As specified therein, a qualified biologist shall conduct post-construction monitoring of the replacement trees for 5 years. • The SFPUC or contractor shall ensure that topsoil is salvaged during grading and earthmoving activities (including during the preparation of spoils sites), stockpiled separately from subsoils, and protected from erosion (e.g., covered or watered); that composting amendments are added if necessary; and, if needed, that potentially compacted construction work areas are properly prepared prior to reuse of the soil in the post-construction restoration of temporarily disturbed areas. The SFPUC shall ensure that a minimum of 12 inches of topsoil is salvaged; or, if there is less than 12 inches of topsoil, as much as practicable.	1) SFPUC EMB 2) SFPUC BEM (qualified botanist) 3) CM Team 4) SFPUC NRLMD/BEM	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM 4) SFPUC NRLMD/BEM	1) Ensure that contract documents include on-site restoration requirements, including invasive weed control measures. 2) Develop vegetation restoration plan in accordance with mitigation requirements, include documentation of qualifications of botanist (e.g., resume), and perform detailed vegetation surveys. Submit to applicable agencies for approval. 3) Monitor to ensure that the contractor implements measures in contract documents. Report noncompliance and ensure corrective action. 4) Perform and document long-term monitoring of on-site restoration in accordance with Vegetation Restoration Plan.	1) Design 2) Pre-construction 3) Construction 4) Post-construction

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• Construction equipment shall arrive at the project areas free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species. • Any soil amendments, gravel, etc., required for construction and/or restoration activities that would be placed within the upper 12 inches of the ground surface shall be free of vegetation and plant material, and certified pathogen-free. Imported fill material shall be covered with the topsoil layer to prevent any imported seed bed from growing. • Certified, weed-free, imported erosion-control materials (or rice straw in upland areas) shall be used exclusively, as applicable (this measure concerns biological material and does not preclude the use of silt fences, etc.). Erosion-control materials shall be natural and biodegradable, such as burlap wattles, and not have plastic netting, especially in areas with the potential for California red-legged frog, to prevent wildlife entanglement. • No invasive nonnative plant species shall be used in any restoration plantings.				
<u>Required for segments 1-4</u> **M-BI-1d: Minimize Disturbance to Nesting Birds and Raptors** This mitigation measure applies to all project sites, as well as the common staging area. As feasible, the SFPUC shall conduct tree and shrub removal in the project areas during the nonbreeding season (generally August 15 through February 15) for migratory birds, raptors, and special-status bird species. If trees cannot be removed outside of the bird breeding season, nesting bird surveys will be conducted on all trees prior to removal. If construction activities must occur during the bird breeding season (February 15 to August 15), the SFPUC shall retain a qualified wildlife biologist who is experienced in identifying birds and their habitat to conduct nesting-raptor surveys in and within 300 feet of the project area. Migratory passerine bird surveys shall be conducted within 50 feet of all work areas (as feasible) unless otherwise directed by CDFW. If an area is not accessible for survey, the project biologist shall make a determination if further survey is necessary, and may request assistance to enter properties that may need closer investigation. All migratory bird and active raptor nests within these areas shall be mapped. These surveys must be conducted within 2 weeks prior to initiation of construction activities at any time between February 15 and August 15. If no active nests are detected during surveys, no additional mitigation is required.	1) SFPUC EMB 2) CM Team (qualified biologist) 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that contract documents specify measures. 2) If tree removal is not completed during the nonbreeding season, then obtain and review resume or other documentation of consulting biologist's qualifications. Conduct surveys, mapping, and agency coordination. Document activities in monitoring logs. 3) Monitor to ensure that the contractor implements measures in contract documents. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction/ Construction 3) Construction
If migratory bird and/or active raptor nests are found in the project areas or in the adjacent surveyed area, the SFPUC shall establish a no-disturbance buffer around the nesting location to avoid disturbance or destruction of the nest site until after the breeding season or after a wildlife biologist determines that the young have fledged (usually late June through mid-July). The extent of these buffers would be determined by a wildlife biologist in consultation with CDFW and would depend on the species' sensitivity to disturbance (which can vary among species); the level of noise or construction disturbance; line of sight between the nest and the disturbance; ambient levels of noise and other disturbances; and consideration of other topographical or artificial barriers. The wildlife biologist shall analyze and use these factors to assist the CDFW in making an appropriate decision on buffer distances.				
<u>Required for segments 1-4</u> **M-BI-1e: Pre-construction Surveys for Special-Status Bats and Avoidance and Minimization Measures** This mitigation measure applies to the Millbrae site. Not more than 1 week prior to tree removal in the project areas, a qualified biologist (i.e., one familiar with the identification of bats and signs of bats) shall identify trees that might be potential day or maternity roosts. Bats may be present any time of the year. The biologist shall thoroughly search the tree or snag that provides appropriate habitat (trees with foliage or cavities or that are hollow) for the presence of roosting bats or evidence of bats. If bats are found or evidence of use by bats is present, the following procedures shall be implemented before felling the tree:	1) SFPUC EMB 2) CM Team (qualified biologist) 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that contract documents specify measures. 2) Obtain and review resume or other documentation of consulting biologist's qualifications. Conduct surveys and agency coordination if needed. Document activities in monitoring logs. 3) Monitor to ensure that the contractor implements required measures. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction 3) Construction

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1. Trees shall be removed under the warmest possible conditions. Peel any sections of the exfoliated bark off the tree gently and search for any roosting bats underneath. Create noise and vibrations on the tree itself. Noise and vibrations may include running a chain saw and making shallow cuts in the trunk (where bark has been), and striking the tree base with fallen limbs or tools such as hammers. Disturbance shall be near-continuous for 10 minutes, and then another 10 minutes shall pass before the tree is felled. When cutting sections of the trunk, if any hollows or cavities (such as woodpecker holes) are discovered, be especially careful to check for the presence of bats in those areas. Cut slowly and carefully at all times. If possible, section trunk near cavities to focus noise and vibrations, and open hollows by sectioning off a side. 2. The SFPUC will ensure that trees are not removed or altered until CDFW has been contacted for guidance on measures to avoid and minimize disturbance of the bats. Additional measures may include monitoring trees, excluding bats from a tree until it is removed and/or restricting the timing of tree removal, and use of a construction buffer to avoid breeding disturbance of young before they are able to fly (for pallid bats, this period is between April and August).				
<u>Required for segments 1</u> **M-BI-1g: Mitigation for San Francisco Dusky-Footed Woodrat Middens** This mitigation measure applies to the South San Francisco and Millbrae sites. Not more than 2 weeks prior to the onset of work activities (including equipment mobilization) and immediately prior to commencing work, the qualified biologist shall survey the areas to be disturbed within the Central Coast riparian scrub (South San Francisco site) and eucalyptus grove and coast live oak woodland (Millbrae site) for San Francisco dusky-footed woodrat and their nests. If no middens are found within such areas, no further action is required. If middens are found and can be avoided, the biologist shall direct the contractor in placing orange barrier fencing between the proposed construction clearing and the midden, allowing as much room as possible to avoid indirect disturbance to the midden, but no less than 2 feet from and along the construction side of the middens to protect them from construction activities. If avoidance is not feasible and the minimum fencing distance cannot be achieved, a qualified biologist shall disassemble middens or, if adjacent habitat is not suitable, trap and relocate woodrats out of the construction area (using live-traps) prior to the start of construction. In addition, the biologists shall attempt to relocate the disassembled midden to the same area where the woodrats are released. If young are present during disassembling, discontinue disassembling and inspect every 48 hours until young have relocated. The midden may not be fully disassembled until the young have left.	1) SFPUC EMB 2) CM Team (qualified biologist) 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that contract documents specify measures. 2) Obtain and review resume or other documentation of consulting biologist's qualifications. Conduct surveys, and fence protected species or relocate species. Document activities in monitoring logs. 3) Monitor to ensure that the contractor avoids fenced/flagged areas. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction 3) Construction
<u>Required for segments 1-4</u> **M-BI-2a: Minimize Disturbance to Riparian Habitat** This mitigation measure applies to the South San Francisco site. To minimize impacts to Central Coast riparian scrub and water quality in the drainage situated adjacent to the northwest end of the work area, a silt fence shall be placed along the work area boundaries adjacent to the drainage. This would prevent construction personnel from damaging riparian vegetation outside of the work area, and prevent sediment and debris from entering the drainage.	1) SFPUC EMB 2) CM Team	1) SFPUC BEM 2) SFPUC BEM	1) Ensure that the contract document include measures. 2) Monitor to ensure that contractor implements measures in contract documents. Report noncompliance and ensure corrective action.	1) Design 2) Construction

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Required for segments 1-4 **M-BI-2b: Supplemental Measures for the Vegetation Restoration Plan** This mitigation measure applies to the South San Francisco site. The following activities shall be completed for the Vegetation Restoration Plan at the site: • To facilitate preparation of the plan, the SFPUC shall ensure that prior to construction a qualified botanist (i.e., one experienced in identifying plant species in the project area) performs additional pre-construction surveys of the areas to collect more detailed vegetation composition data, including species occurrence, vegetation characterization (tree diameter size, etc.), and percent cover of plant species. Photo documentation shall be used to show pre-project conditions. • If required, the SFPUC shall provide the vegetation restoration plan to the CDFW and RWQCB during the permitting process, as any vegetation to be removed may provide habitat for special-status species and may also be within areas under the jurisdiction of the Corps and the RWQCB. • Although trees cannot be replanted within the SFPUC ROW, native plant species allowed for planting as described in the Right of Way Integrated Vegetation Management Policy (SFPUC, 2007) should be selected and planted in appropriate locations. Enhancement of the riparian corridor outside of the ROW may be incorporated into the Vegetation Restoration Plan (see Impact BI-1, above, for description). • To ensure success, vegetation planted as part of the vegetation restoration plan will be monitored for up to 5 years following installation. In addition, monitoring shall be conducted for 5 years for any tree species planted; except for tree species planted in riparian habitat, for which the monitoring period shall be 10 years.	1) SFPUC BEM (qualified botanist) 2) SFPUC EMB 3) CM Team 4) SFPUC NRLMD/BEM	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM 4) SFPUC NRLMD/BEM	1) Develop vegetation restoration plan in accordance with mitigation requirements, include documentation of qualifications of botanist (e.g., resume), and perform detailed vegetation surveys. Submit to applicable agencies for approval. 2) Ensure that contract documents include on-site restoration requirements, including replanting per the Right-of-Way Integrated Vegetation Management Policy. 3) Monitor to ensure that the contractor implements measures in contract documents. Report noncompliance and ensure corrective action. 4) Perform and document long-term monitoring of on-site restoration.	1) Design 2) Design 3) Construction 4) Post-construction
Required for segments 1-4 **M-BI-3: Avoidance and Protection Measures for Jurisdictional Water Bodies** This mitigation measure applies to the Colma, San Bruno South, and Millbrae sites. The SFPUC and its contractors shall minimize impacts on waters of the United States and waters of the State by implementing the following measures: • Erosion and sedimentation control measures such as a silt fence shall be installed adjacent to all water conveyance features to be avoided within 100 feet of any proposed construction activity, and signs installed indicating the required avoidance. If a 100 foot setback is not feasible due to field constraints, the project biologist or qualified environmental inspector will work with the contractor to determine where the silt fence erected for perimeter control should be placed, and what additional erosion and sedimentation controls, such as sediment traps, may be required to prevent construction spoils and sediment from leaving the work area. No equipment mobilization, grading, clearing, or storage of equipment or machinery, or similar activity, shall occur until a representative of the SFPUC has inspected and approved the fencing installed around these features. The SFPUC shall ensure that the temporary fencing is continuously maintained until all construction activities are completed. No construction activities, including equipment movement, material storage, or temporary spoil stockpiling, shall be allowed within the fenced areas protecting water features. • Exposed slopes shall be stabilized immediately upon the completion of construction activities.	1) SFPUC EMB 2) CM Team	1) SFPUC BEM 2) SFPUC BEM	1) Design project to minimize disturbance to waters of the United States and state. Ensure appropriate language is included in contract documents. 2) Monitor to ensure that the contractor implements measures in contract documents. Report noncompliance and ensure corrective action.	1) Design 2) Construction

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<td><u>Required for segments 1-4</u>

M-BI-4: Replacement of Trees to Be Removed
This mitigation measure applies to the South San Francisco and San Bruno North sites only, where affected trees meet the parameters of the applicable ordinance outlined in the summary table below. The SFPUC will avoid and minimize impacts on ordinance-protected trees by implementing the following measures:
• A tree survey will be conducted prior to construction by a qualified arborist (defined as an International Society of Arboriculture certified arborist or consulting arborist who is a member of the America Society of Consulting Arborists) or a qualified biologist to identify the protected and heritage trees within the project footprint. Protected trees and heritage trees are defined in Table 5.14 6 (on the following page) for the City of South San Francisco and the City of San Bruno.
• Removal of ordinance-protected trees or work within the dripline of such trees will be avoided to the extent feasible during construction. If construction must occur within the dripline of a tree, a qualified arborist will determine where the protective fencing should be placed in order to protect the tree.
• Where feasible, native trees to be removed that are located within the existing SFPUC ROW, shall be replaced according to the SFPUC's Right of Way Integrated Vegetation Management Policy. If it is not feasible to compensate for all native tree removal in SFPUC's ROW in the vicinity of the project, then native tree compensation shall occur at a suitable offsite location.
• For each removed landscape tree that meets ordinance criteria, the SFPUC shall plant two 24-inch box size trees or one 36-inch box size replacement tree of similar species. If replanting trees on the same site is infeasible, the SFPUC shall find a suitable alternative location.
• A qualified biologist or arborist shall conduct post-construction monitoring of replacement trees for 5 years. Any replacement trees that fail within the first 5 years shall be replaced. The survival period shall be extended, as necessary, until the planted trees have survived for a period of 5 years, and show signs that they are permanently established.</td>
<td>1) SFPUC EMB
2) SFPUC BEM (qualified arborist)
3) CM Team
4) SFPUC NRLMD/BEM</td>
<td>1) SFPUC BEM
2) SFPUC BEM
3) SFPUC BEM
4) SFPUC NRLMD/BEM</td>
<td>1) Ensure that contract documents include protection of ordinance trees.
2) Obtain and review resume or other documentation of consulting arborist's qualifications. Conduct surveys. Document activities in monitoring logs.
3) Monitor to ensure that the contractor implements measures in contract documents. Report noncompliance and ensure corrective action.
4) Replant trees or provide compensation for trees. Perform and document long-term monitoring of restoration.</td>
<td>1) Design
2) Pre-construction
3) Construction
4) Post-construction</td>
</tr>
<tr>
<td>Summary of Applicable Tree Ordinances
<table>
<tr><th>City</th><th>Protected Trees</th></tr>
<tr><td>South San Francisco</td><td>• Any tree with a circumference of 48 inches or more when measured 54 inches above natural grade; or
• A tree or stand of trees so designated based upon findings that it is unique and of importance to the public due to its unusual appearance, location, or historical significance; or
• A stand of trees whereby each tree is dependent upon the others for survival.</td></tr>
<tr><td>San Bruno</td><td>• Any native bay (Umbellularia californica), buckeye (Aesculus species), oak (Quercus species), redwood, or pine tree that has a diameter of 6 inches or more measured at 54 inches above natural grade;
• Any tree or stand of trees designated by resolution of the City Council to be of special historical value or of significant community benefit;
• A stand of trees, the nature of which makes each dependent on the others for survival; or
• Any other tree with a trunk diameter of 10 inches or more, measured at 54 inches above natural grade.</td></tr>
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Hydrology and Water Quality				
<u>Required for segments 1-4</u> **M-HY-1: Preparation and Implementation of a Storm Water Pollution Prevention Plan** This mitigation measure applies to all project sites, as well as the common staging area. In accordance with the Construction General Permit, the SFPUC or its contractor(s) would submit the required notices, prepare a SWPPP, and implement site-specific BMPs to control and reduce discharges of sediments and pollutants associated with construction stormwater runoff that could discharge to storm drains or creeks. BMPs would include, but are not limited, to the following. ***Scheduling*** • Schedule construction to minimize ground disturbance during the rainy season to the extent practicable. • Install erosion and sediment control BMPs prior to the start of any ground-disturbing activities. • Provide plans to stabilize soil with vegetation or physical means in the event that rainfall is expected. Stabilize all disturbed soils as soon as possible following the completion of soil-disturbing activities. ***Erosion and Sedimentation*** • Install silt fences or fiber rolls, or implement other suitable measures around the perimeters of the construction zone, staging areas, temporary stockpiles, and drainage features. • Use filter fabric or other appropriate measures to prevent sediment from entering storm drain inlets.	1) SFPUC EMB 2) CM Team 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that contract documents require that the contractor design, install, and maintain stormwater controls and prepare a SWPPP. 2) Review SWPPP to ensure that it complies with the requirements and submit to RWQCB per the Construction General Permit. 3) Monitor to ensure the contractor implements the measures in the contract documents and SWPPP including reporting per the Construction General Permit. Ensure contractor performs post-construction BMPs. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction 3) Construction/Post Construction
• When dewatering, regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow. • Detain and treat water produced by construction site dewatering using sedimentation basins, sediment traps (when water is flowing and there is sediment), or other measures, to ensure that discharges to receiving waters meet applicable water quality objectives. • Locate stockpiles a minimum of 50 feet away from concentrated flows of stormwater, water bodies, ditches, and inlets. Contain all stockpiles using perimeter controls such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers. Cover all stockpiles with visqueen or other impermeable materials. • Preserve existing vegetation in areas where no construction activity is planned or where construction activity will occur at a later date. • Stabilize and revegetate disturbed areas as soon as possible after construction by planting or seeding and/or using mulch (e.g., straw or hay, erosion control blankets, hydromulch, or other similar material). • LUP [linear underground/overhead projects] dischargers shall provide effective soil cover for inactive areas and all finished slopes, and utility backfill. • Install slope breakers at spacing intervals required by the RWQCB. ***Nonstormwater Control*** • Prevent raw cement, concrete or concrete washings, asphalt, paint or other coatings, and oils or other petroleum products from entering watercourses or storm drains. If possible, all concrete waste and wash water should be returned with each concrete truck for disposal at the concrete batch plant. • Locate the entrance and exit pit at each end of the jack-and-bore construction area at least 10 feet from the creek, ditch, or canal. • Cofferdam materials used to create dams upstream and downstream of diversion should be erosion-resistant and could include materials such as steel plate, sheetpile, sandbags, continuous berms, inflatable or water bladders. • Keep construction vehicles and equipment clean; do not allow excessive buildup of oil and grease. • Check construction vehicles and equipment daily at startup for leaks, and repair any leaks immediately. • To prevent run-on and runoff and to contain spills, do not refuel vehicles and equipment within 100 feet of surface waters.				

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• Conduct all refueling and servicing of equipment with absorbent material or drip pans underneath to contain spilled fuel. Collect any fluid drained from machinery during servicing in leak-proof containers and deliver to an appropriate disposal or recycling facility. • Contain fueling areas to prevent run-on and runoff and to contain spills. ***Tracking Controls*** • Grade and stabilize construction site entrances and exits to prevent runoff from the site, and to prevent erosion. • Employ street sweeping to remove any soil or sediment tracked off paved roads during construction. ***Waste Management and Hazardous Materials Pollution Controls*** • Control the discharge of pollutants in stormwater from vehicles and equipment by using drip pans, spill kits, berms, and secondary containment. • Remove trash and construction debris from the project area regularly. Provide an adequate number of waste containers with lids or covers to keep rain out of the containers, and to prevent trash and debris from being blown away during high winds. • Locate sanitary facilities a minimum of 200 feet from creeks. • Ensure the containment of sanitation facilities (e.g., portable toilets) to prevent discharges of pollutants to the stormwater drainage system or receiving water. • Maintain sanitary facilities regularly. • Store all hazardous materials in an area protected from rainfall and stormwater run-on, and prevent the offsite discharge of leaks or spills. • Minimize the potential for contamination of surface water bodies by maintaining spill containment and cleanup equipment onsite, and by properly labeling and disposing of hazardous wastes. • Inspect dumpsters and other waste and debris containers regularly for leaks, and remove and properly dispose of any hazardous materials and liquid wastes placed in these containers. • Train construction personnel in proper material delivery, handling, storage, cleanup, and disposal procedures.				
BMP Inspection, Maintenance, and Repair • Inspect all BMPs on a regular basis to confirm proper installation and function. • Inspect all stormwater BMPs daily during storms. • Inspect sediment basins, sediment traps, and other detention and treatment facilities regularly throughout the construction period. • Provide sufficient devices and materials (e.g., silt fence, fiber rolls, and erosion blankets) throughout project construction to enable immediate repair or replacement of failed BMPs. • Inspect all seeded areas regularly for failures, and remediate or repair as soon as feasible. ***Permitting, Monitoring, and Reporting*** • Provide the required documentation for SWPPP inspections, maintenance, and repair requirements. • Maintain written records of inspections, spills, BMP-related maintenance activities, corrective actions, and visual observations of any offsite discharge of sediment or other pollutants, as required by the RWQCB. • Monitor water quality to assess the effectiveness of control measures. • Notify the RWQCB and other agencies as required (e.g., California Department of Fish and Wildlife, California Emergency Management Agency) if the criteria for turbidity, oil/grease, or foam are exceeded, and undertake corrective actions. • Immediately notify the RWQCB and other agencies as required (e.g., California Department of Fish and Wildlife) of any spill of petroleum products or other organic or earthen materials, and undertake corrective action.				

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Post-Construction BMPs • Revegetate all temporarily disturbed areas as required after construction activities are completed. • Remove any remaining construction debris and trash from the project area and staging areas upon project completion. • Phase the removal of temporary BMPs as necessary to ensure stabilization of the site. • Maintain post-construction site conditions to avoid any unintended drainage channels, erosion, or areas of sedimentation. • Correct post-construction site conditions as necessary to comply with the SWPPP and any other pertinent RWQCB requirements. The SWPPP will be provided for review and comment, upon request, to the jurisdictions in which the project is located.				
Hazards and Hazardous Materials				
<u>Required for segments 1-4</u> **M-HZ-2a: Prepare and Implement a Hazardous Material Handling and Disposal Plan** This mitigation measure applies to all project sites, as well as the common staging area. The contractor shall prepare, submit to SFPUC, and implement a Hazardous Material Handling and Disposal Plan during the construction of the project. The Hazardous Material Handling and Disposal Plan shall include, but would not be limited to, the following information: • Results of the pre-construction hazardous assessment and descriptions of potential hazardous wastes to be generated. • Onsite waste management protocols, which will require that all excavated materials suspected of being hazardous be inspected prior to initial stockpiling, and that excavated materials that are visibly stained, have noticeable odor, and/or are known or suspected to contain contaminants be stockpiled separately, to minimize the amount of material that may require special handling. • Hazardous waste characterization protocols, and waste profiling and acceptance criteria. To properly evaluate suspected contaminated soil, a qualified professional will collect a representative sample and submit it to a California-certified laboratory for analysis of contaminants-of-concern. The analytical results will be used to classify the spoils as hazardous or nonhazardous waste, in accordance with applicable federal and state laws and regulations for offsite disposal at an appropriate disposal facility or for onsite reuse. • Transportation and disposal for hazardous wastes in accordance with applicable federal and state regulations. • Hazardous waste management documentation and reporting.	1) SFPUC EMB 2) CM Team 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that contract documents include the requirement that the contractor prepare and implement a Hazardous Material Handling and Disposal Plan. 2) Review the plan to ensure that it complies with requirements. 3) Monitor to ensure that the contractor implements the measures in the contract documents and the plan. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction 3) Construction
<u>Required for segments 1-4</u> **M-HZ-2b: Develop and Implement a Hazardous Material Business Plan** This mitigation measure applies to all project sites, as well as the common staging area. A Hazardous Material Business Plan (HMBP) shall be required when any of the following conditions are met: • 55 gallons or more of liquid hazardous material, such as fuel products, are present on site at any one project site; • 500 pounds of solid hazardous material are present at any one project site; • 200 cubic feet of compressed gases including flammable gases for welding are present at any one project site; • Any amount of an extremely hazardous substance is present, as specified in 40 CFR Part 355, Appendix A or B; or • Any amount of radiological materials that are present in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40, or 70.	1) SFPUC EMB 2) CM Team 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that contract documents include the requirement that the contractor prepare and implement a Hazardous Material Business Plan that is certified by a qualified professional (e.g., CA licensed civil engineer.) 2) Review the plan to ensure that it complies with requirements. 3) Monitor to ensure that the contractor implements the measures in the contract documents and the plan. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction 3) Construction

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In the event that the above criteria are applicable to the construction activities, the contractor will prepare, submit to SFPUC, and implement a HMBP for the construction. The HMBP shall be certified by a qualified professional (such as a California-licensed civil engineer) from the contractor, and will include step-by-step procedures for the use, storage, and handling of hazardous materials during construction. The HMBP shall include, but not be limited to, the following elements: • Descriptions of planned operation for which the HMBP is applicable; • Procedures for handling, transporting, storing, and disposing all hazardous materials used for the project component activities; • Location where the hazardous materials are stored; • Spill prevention protocols; • Protocols including response equipment to address any accidental spill and releases of hazardous materials to be used during the operation; • Personnel training requirement to implement the HMBP; and • Emergency response and spill contingency protocols to address any emergencies and contingencies resulting from hazardous chemicals or waste from the project components. The HMBP will be prepared in compliance with the requirements of the local environmental department (San Mateo County, SMCEH Division).				
<u>Required for segments 1-4</u> **M-HZ-2c: Develop and Implement an Health and Safety Plan** This mitigation measure applies to all project sites, as well as the common staging area. This mitigation measure will be applicable when any of the following conditions is observed: • Handling of hazardous materials during construction is required; • Visual signs of hazardous wastes are observed during construction; or • Potential presence of hazardous wastes is anticipated for the construction activities. Prior to the start of any construction activities, the contractor shall prepare, submit to SFPUC, and implement a Health and Safety Plan (HASP) to address chemical hazards identified for the construction. The contractor shall not start any construction activities until the contractor receives SFPUC's notification that all submittal requirements regarding the health and safety plan have been fulfilled in accordance with the project contract bid and specification documentation. The HASP shall be consistent with all applicable CCR Title 8 or other applicable regulations and SFPUC's health and safety requirements. The HASP shall establish, in detail, the protocols necessary for the recognition, evaluation, and control of all hazards associated with the construction activities performed by the contractor and its subcontractors. The HASP will include, but not be limited to, the following major elements:	1) SFPUC EMB 2) CM Team 3) CM Team	1) SFPUC BEM 2) SFPUC BEM 3) SFPUC BEM	1) Ensure that contract documents include the requirement that the contractor prepare and implement a Health and Safety Plan. 2) Review the plan to ensure that it complies with requirements. 3) Monitor to ensure that the contractor implements the measures in the contract documents and the plan. Report noncompliance and ensure corrective action.	1) Design 2) Pre-construction 3) Construction

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• Chemicals to be encountered, handled, or used; • Chemical hazard analyses to identify potential health and safety hazards associated with the chemicals identified for the project; • Chemical action levels for site worker safety; • Name and qualifications of all the site health and safety personnel designated for the project; • Health and safety organization for the project including, but not limited to, lines of authority, responsibility, and communication protocols • Worker safety monitoring requirement and protocols; • Confined space entry permit and plan, if applicable; • Crane critical lift plan, if applicable; • Fall protection and prevention plan; • Personal protective equipment; • Emergency response and contingency planning procedures, including emergency and first aid equipment; and information on the nearest emergency room, including address, phone number, and routing from each of the project sites; and • Inspection, incident investigation, and reporting requirements, including documentation and record keeping procedures.				

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