



Categorical Exclusion Approval

Project Information:

Park Name: Golden Gate National Recreation Area
Project Title: Replace and Extend Stormwater Outfall IJKL
PEPC Number: 46130
Project Location: Crissy Field
County, State: San Francisco City and County, California
Administrative
Record Location: Fort Mason, Bldg. 101; San Francisco, CA 94123

Introduction: This memorandum with attachments, and the information in the project record, documents and completes the National Environmental Policy Act (NEPA) review and requirements for implementing Replace and Extend Stormwater Outfall IJKL Project, Crissy Field - Golden Gate National Recreation Area.

Compliance Determination: The full project record for this project is available in the GGNRA Environmental Compliance Office (San Francisco, CA 94123).

Project Description: See Attachment A

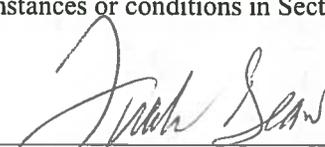
Categorical Exclusion: On the basis of the impact assessment in Attachment A, park interdisciplinary review, public review comments, and the information in the project record, this project is Categorical Excluded (CE) from further NEPA analysis in accordance with DO-12, Sections 3.4:

- C.15 Installation of underground utilities in previously disturbed areas having stable soils, or in an existing utility right-of-way.
- C.18 Construction of minor structures, including small improved parking lots, in previously disturbed or developed areas.

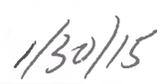
Additional supporting information for this determination is in the following attachments.

- Attachment A: Project Description and Environmental Screening Form, Coastal Process Impact Assessment, Regulatory Permitting, Public Involvement and Response to Comments
- Attachment B: Project Plans
- Attachment B¹: Temporary Trestle Drawing
- Attachment C: Avoidance and Mitigation Measures / Water Pollution Control Plan Drawings
- Attachment D: NHPA

Decision: On the basis of my review of the environmental impact analysis and all information in the project record, I am categorically excluding the Project from further NEPA analysis. No exceptional circumstances or conditions in Section 3-5 of Director's Order 12 apply.



Frank Dean, General Superintendent
Golden Gate National Recreation Area



Date

Attachment A

**Project Description and
Environmental Screening Form,
Coastal Process Impact Assessment,
Regulatory Permitting, Public
Involvement and Response to
Comments**

ATTACHMENT A

Project Description, Environmental Screening Form, Coastal Impact Assessment, Regulatory Permitting, Public Involvement, and Response to Comments

(Prepared by Caltrans with Editing by NPS)

A. PROJECT INFORMATION AND SUMMARY

Park Name: Golden Gate National Recreation Area
Project Title: IJKL Outfall Replacement Project
PEPC Project Number: 46130
Project Location: Crissy Field
County, State: San Francisco, California
District, Section: Presidio, Area A, B
NPS Project Leader: Andrea Lucas
Administrative Record Location: Fort Mason, Bldg. 101; San Francisco, CA 94123
Administrative Record Contact: Andrea Lucas

The document includes an environmental impact assessment regarding changes to the South Access to the Golden Gate Bridge-Doyle Drive Project specifically related to the extension of Outfall IJKL pipeline out into the San Francisco Bay. The purpose of the project is to increase discharge capacity of IJKL, reduce flooding onto Mason Street, and extend the outfall to just beyond the 50-year sand accretion point. This impact assessment reviews and estimates the potential effects from construction and operational activities for applicable physical, natural and cultural environmental resources as listed in Table 1. Minor effects are anticipated for marine and terrestrial resources, species of special concern or their habitats, and Essential Fish Habitat. Minor effects are also anticipated for visitor experience and aesthetic resources. Caltrans submitted a biological assessment (BA) to address terrestrial species and habitats to the U.S. Fish and Wildlife Service (USFWS) and a Letter of Concurrence (LOC) was submitted to the National Marine Fisheries Service (NMFS). Impacts to geologic resource, geohazard, air quality, soundscapes, water quality, floodplains or wetlands, unique or important wildlife or habitat, non-native species, recreational resources, archeological resources, cultural landscapes, energy resources, other agency or tribal land use plans or policies, energy, conservation potential, sustainability, urban quality and long-term management of resources or land/resource productivity would be “Negligible”. No significant impacts regarding the Mandatory Criteria listed in Table 2 would result from the project. Compliance with applicable laws, regulations, and implementation of Best Management Practices (BMPs) will limit the project’s effect on the environment.

B. PURPOSE AND NEED

B.1 Purpose

The purpose of the project is to address deficiencies of the existing Outfall IJKL (outfall) which include: (1) to increase discharge capacity, (2) reduce flooding, and (3) move the outfall to just beyond the 50-year sand accretion point.

B.2 Need

The existing outfall currently drains an urbanized 125-acre (ac) basin which is the largest of the three primary watersheds in the Presidio. This outfall does not provide adequate capacity for current stormwater discharges from the watershed.

The shoreline at Crissy Beach has accreted almost 180 feet (ft) since 1997, burying the outfall in 6 ft of sand. The outfall was last upgraded in 2000 by the Presidio Trust (PT) when a 42-inch (in) outside diameter, 175-ft high density polyethylene (HDPE) pipe extension was installed because of sand accretion. Due to additional and continued sand accretion since 2000, the end of the outfall is again blocked by sand and stormwater often backs up the existing pipe causing flooding on Old Mason Street and Crissy Field during large storm events. Maintaining the ability to discharge from the pipeline requires that the PT regularly use a backhoe to remove the sand from the end of the outfall, so that water from the pipe can discharge into the Bay. Clearing accumulated sand from the outfall has to be done regularly, and especially before, during, and after major storm events. After it is re-opened, the outfall can become blocked again within hours because of tidal action. Outfall maintenance is time-consuming, costly, and can be potentially dangerous in storm conditions. The maintenance activities typically result in an unstable and unsafe sand channel at the end of the excavated outfall opening. In addition, the regular use of equipment and associated human activity to clear the outfall could disturb the western snowy plover on the beach and create turbidity plumes within the intertidal zone when the outfall is cleared.

C. PROJECT DESCRIPTION

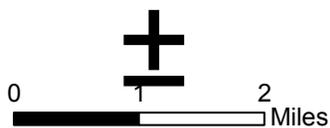
Located on Crissy Beach, at the northern shore of San Francisco, California, the outfall is an existing terminus of a storm drain system that conveys rainfall run-off from a 125-ac watershed within the Presidio to San Francisco Bay (see Figure 1).

To address the deficiency of the existing pipeline, Caltrans, the Federal Highway Administration (FHWA), and the PT propose to replace approximately 170 ft of the existing 42-in outside diameter HDPE pipe from the existing manhole located on the beach, leading to the outfall in the Bay, and extend the pipe another approximately 296 feet, to just beyond the expected 50-year beach accretion point. The replacement and extension will consist of a 54-in outside diameter Solid Wall High Density Polyethylene (SW-HDPE) pipe for a total pipeline length of 460 ft (Figure 2, Attachments B, and C for Project Plans and the Water Pollution Control Plan [WPCP], respectively). The pile and cross-tie configuration that supports and stabilizes the pipe will be similar to the one used for the previous extension of the outfall that was completed in year 2000, which consisted of 13-in-diameter, fiber-reinforced HDPE piles and HDPE cross ties. Aesthetically, the new outfall is designed to be mostly hidden during low tide.

Approximately the first 270 ft of the pipe will be fully buried. Of this length, approximately the last 105 ft will be supported by 8 new 13-in HDPE piles while the first 165 ft is supported by 14 existing 13-in HDPE piles. These new piles will be impact-driven using a hydraulic impact hammer to approximately 30 to 35 ft below the beach surface (Figure 3). The last 190 ft will be supported above the Bay bottom on 16 new 13-in HDPE piles. These 35-ft-long piles will be impact-driven to approximately 24 ft below the bottom of the Bay; the top of the piles are designed to remain below the mean lower-low water (MLLW) mark, except for the last set of pilings. For safety reasons, the last set of pilings will be above the mean higher high water (MHHW) and delineated with signage as recommended by the U.S. Coast Guard.

Construction of the outfall replacement will occur in three distinct stages: Stage 1 will occur in the onshore zone, Stage 2 will occur in the intertidal and offshore subtidal zones, and Stage 3 will occur in the offshore zone (Figure 2).

Figure 1. Project Vicinity



○ Project Location: Crissy Beach



Figure 1: Project Vicinity
IJKL Outfall Replacement Project
NWP 7
EA 1637N4

Source: Caltrans 2014.

In addition, the cover and frame of an existing 24-in manhole vault in Crissy Field, just south of the Crissy Field promenade, will be replaced with a 36-in manhole cover and frame to facilitate future maintenance. This will substantially reduce the future need for PT maintenance staff to access the manhole on the beach to maintain the pipe.

Construction stages are characterized by differing site conditions, which will be subjected to different methods of construction. The onshore and offshore construction means and methods will be determined by the project contractor. Construction will occur between May and October during the dry season to primarily avoid over-wintering western snowy plover and migrating fish. Normal construction activities will occur Monday through Friday from 7:00 am to 6:00 pm with early morning, and weekend work subject to tidal levels and as permitted by the National Park Service (NPS). The new outfall will be constructed in three stages as follows:

Stage 1 (May 15 to July 31): Onshore Construction at Crissy Beach

The onshore (beach) project footprint is 0.75-ac (32,670 ft²). Since the onshore footprint is sandy, temporary timber construction mats will be laid on the sand to provide construction access (see Figure 2). Staging and storage will occur on Crissy Field, described below under “Staging” (see Figure 2). Barges will be used as work and storage platforms and to stockpile dredged material. Outfall construction vehicles and equipment may include support trucks (e.g., pickup trucks, dump trucks, flatbed trucks), trailers, excavators, loader/backhoes, a crane, and a pile driver.

The onshore (Stage 1) construction work is expected to include the following (see Attachment C, WPCP sheet 2 of 4):

1. Installation of a temporary chain link fencing, temporary environmentally sensitive area (ESA) fencing, and signs (i.e., no access, detour, informational, and construction signs).
2. Installation of temporary diversion system.
3. Placement of temporary timber construction mats on the beach.
4. Installation of temporary shoring (vibratory) on the beach, from the existing manhole to the mean higher high water (MHHW) mark, for a total length of approximately 177 ft and buried to a maximum depth of 30 ft. The trench will be approximately 16 ft wide by 15 ft deep.
5. Installation of a temporary timber access ramp approximately 30 feet wide by 48 feet in length on the beach adjacent to the temporary shoring area.
6. Driving 16 temporary 13-in-diameter by 35-ft-long steel casings parallel to the 14 existing 13-in diameter HDPE onshore piles. Installing a temporary timber trestle (approximately 2732 sq ft) supported by the temporary trestle pilings (see Attachment B1, Temporary Timber Trestle SC-1) to the MHHW mark.
7. Installation of a temporary turbidity curtain to enclose the construction site. 52 40-lb galvanized steel anchors will be used to secure the turbidity curtain to the Bay floor (Attachment C, WPCP sheet 2 of 4).
8. Excavation of approximately 1,500 cubic yards (cy) between the temporary shoring to expose and remove the existing pipe.
9. Removal of the existing 42-inch outside diameter by 166-ft pipe and leaving a 6 ft pipe stub.
10. Cutting and modifying the 14 existing 13-in diameter HDPE piles to 18-in above the proposed pipe.

11. Installation of 54-inch outside diameter by 171-ft section SW-HDPE pipe.
12. Backfilling the SW-HDPE pipe with local sand excavated from the existing manhole on the beach to the MHHW, within the temporary shoring limits.
13. Removal of the temporary shoring. Beach construction access is restricted to May 15 – July 31. All work on the beach is prohibited after July 31.
14. Remove the temporary trestle and temporary steel casings at the beach, intertidal, and offshore zones at the completion of Stage 2.
15. Restoration of the beach area, including regrading of dune hummocks with the exception of NPS native plant restoration.

Stage 2 (June 1 to July 31): Intertidal and Offshore Construction in San Francisco Bay

After the outfall on the beach is constructed and backfilled during Stage 1, Stage 2 construction will continue into the intertidal zone and the Bay. Excavation and disposal of dredged material will occur during Stage 2 construction.

The construction vehicles and equipment to be used and stored on off-shore barges may include an excavator, a pile driver, a loader/backhoe, and dump trucks as well as other tools necessary to excavate within the intertidal zone. Divers also will assist in the underwater pipe installation.

The intertidal and offshore construction work will include the following:

1. Excavation and disposal of approximately 735 cy of dredged material at an approved beneficial reuse site. The 735 cy of dredged material is the combined volume for Stage 1A and 2. For safety and stability purposes, excavation and placing of crossties and pipe will be done during low tides.
2. The temporary trestle and supporting temporary steel casings will continue to be constructed parallel to the permanent pile construction as it progresses from the MHHW to the end of Stage 2. There will be 34 temporary 13-in-diameter by 45-ft-long temporary steel casings driven parallel to where the 14 new permanent HDPE piles will be driven (Attachment B1, sheet Temporary Timber Trestle SC-1).
3. Installation of 14 temporary air bubble systems at the specified locations where permanent piles will be installed.
4. Driving the 14 new 13-in-diameter by 35-ft-long HDPE plastic piles into the Bay floor sand.
5. Removal of the 14 temporary air bubble systems immediately after pile driving is complete.
6. Placing a 171-ft-long by 54-in outside diameter SW-HDPE pipe into the water.
7. Connecting the pipe to the 171-ft-long section of SW-HDPE pipe that was installed during Stage 1; this will be completed by marine divers.
8. Removal of the temporary timber construction mats, chain link fencing, and environmentally sensitive area fencing on the beach.
9. Removal of temporary timber trestle and temporary steel casings.

10. Removal of the turbidity curtain during Stage 2. Beach construction access is prohibited after July 31. Any work on the beach after July 31 will be coordinated with NPS, and will require a survey for snowy plover.

Stage 3 (June 1 to October 31): Offshore Construction in San Francisco Bay

During Stage 2 construction in the Bay, the turbidity curtain will be removed and Stage 3 construction will be completed using equipment similar to that used in Stage 2. The removal of the turbidity curtain in Stage 2 may occur simultaneously with Stage 3.

The offshore construction work is expected to include (Attachment C, WPCP sheet 4 of 4):

1. Placement of ten temporary air bubble system at the specified locations where permanent piles will be installed.
2. Driving ten 13-in-diameter HDPE piles inside the temporary air bubble systems.
3. Removal of the ten temporary air bubble systems immediately after pile driving is complete.
4. Placement of a 54-in outside diameter by 118-ft-long SW-HDPE pipe into the water.
5. Connecting the pipe to the 342-ft-long section of SW-HDPE pipe that was installed during Stages 1 and 2; this will be completed by marine divers.

C.1 Temporary Structures Required for Construction

Stage 1 : Onshore Construction (Temporary Shoring, Temporary Trestle, and Turbidity Control)

Temporary shoring (sheet piles) will be installed onshore to provide support for the excavation of Stage 1 work on the beach from May 15 through July 31. The temporary shoring structure will be 16 ft wide by 177 ft long, 0.064 acre (2,816 ft²), extending from the existing manhole on the beach to the MHHW mark. Before the beginning of pipe excavation, the temporary turbidity curtain will be placed as shown in Attachment C, WPCP sheet 2 of 4.

A temporary trestle supported by temporary steel casings will be constructed parallel to the temporary shoring area from the Crissy Beach to the MHHW mark. Since environmental constrains do not allow for barge grounding on shore, it is anticipated that a temporary trestle be constructed to allow access to pile driving and pipe installation within the tidal and subtidal zones. The temporary trestle structure will be approximately 16 ft wide by 135 ft long from the beach to the MHHW mark.

After the completion of Stages 1 and 2 and before July 31, the temporary shoring structures and temporary trestle at the beach, intertidal, and bay will be removed. Any work on the beach after July 31 will be coordinated with NPS and will require a survey for snowy plover. The regrading of the beach and dune area will occur by July 31. NPS will revegetate the disturbed dunes after Caltrans completes regrading.

Stage 2: Intertidal and Offshore Construction (Temporary Trestle and Turbidity Control)

Offshore construction will occur from June 1 to October 31, after or during Stage 2. The temporary trestle and supporting temporary steel casings will continue to be constructed parallel to the permanent pile construction as it progresses from the MHHW mark to the end of Stage 2. Prior to stage 3, the turbidity curtain and temporary trestle will be removed.

C.2 General Project Construction and Caltrans Standard Construction Site Best Management Practices

The following BMPs are general project conditions:

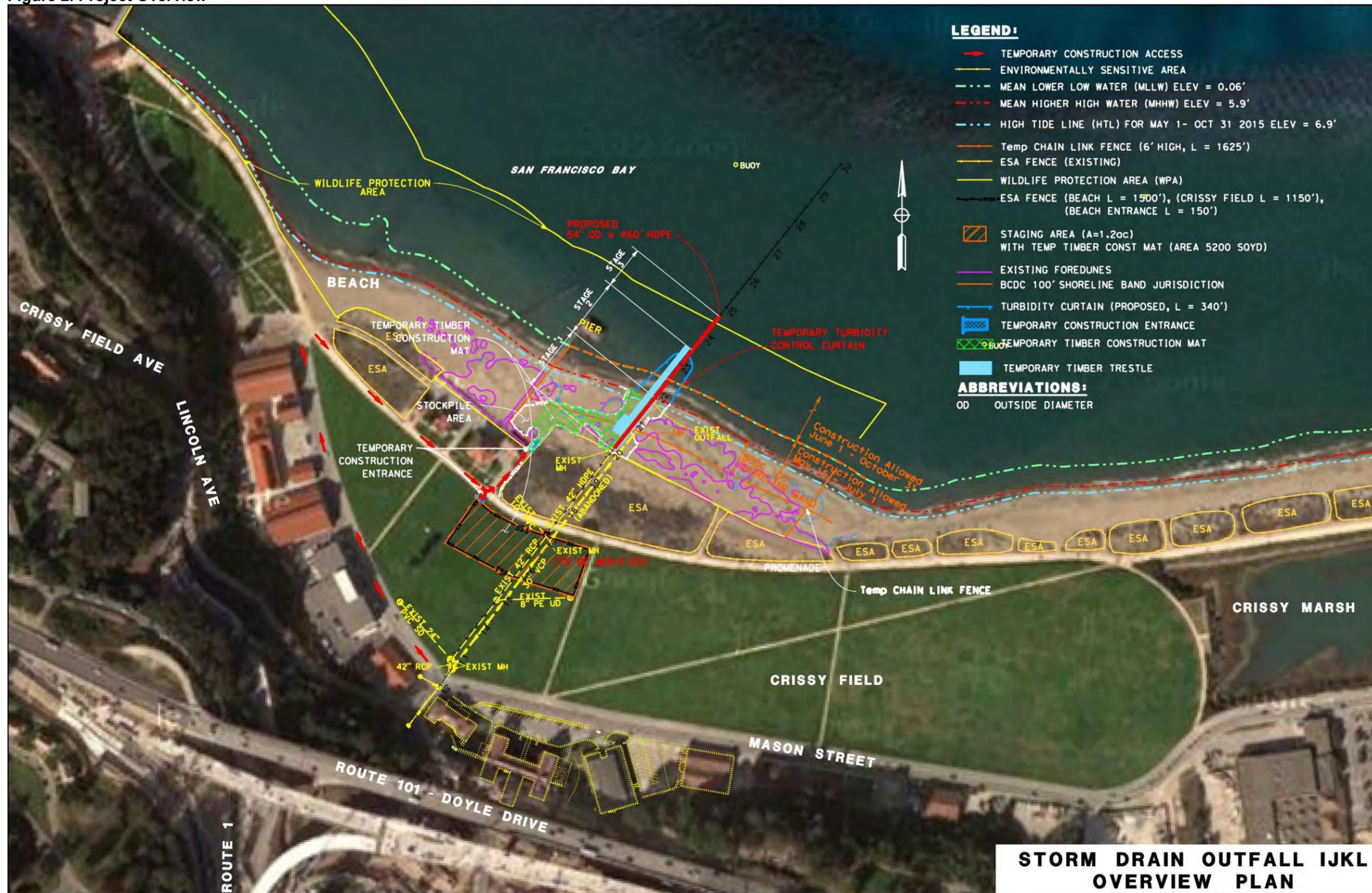
Preservation of Existing Vegetation

Whenever possible, all existing vegetation will be preserved. Some existing vegetation located on the beach and northern foredunes within the project footprint will be temporarily removed and placed in the Golden Gate National Parks nursery by NPS until construction is completed.

Environmentally Sensitive Areas Fence

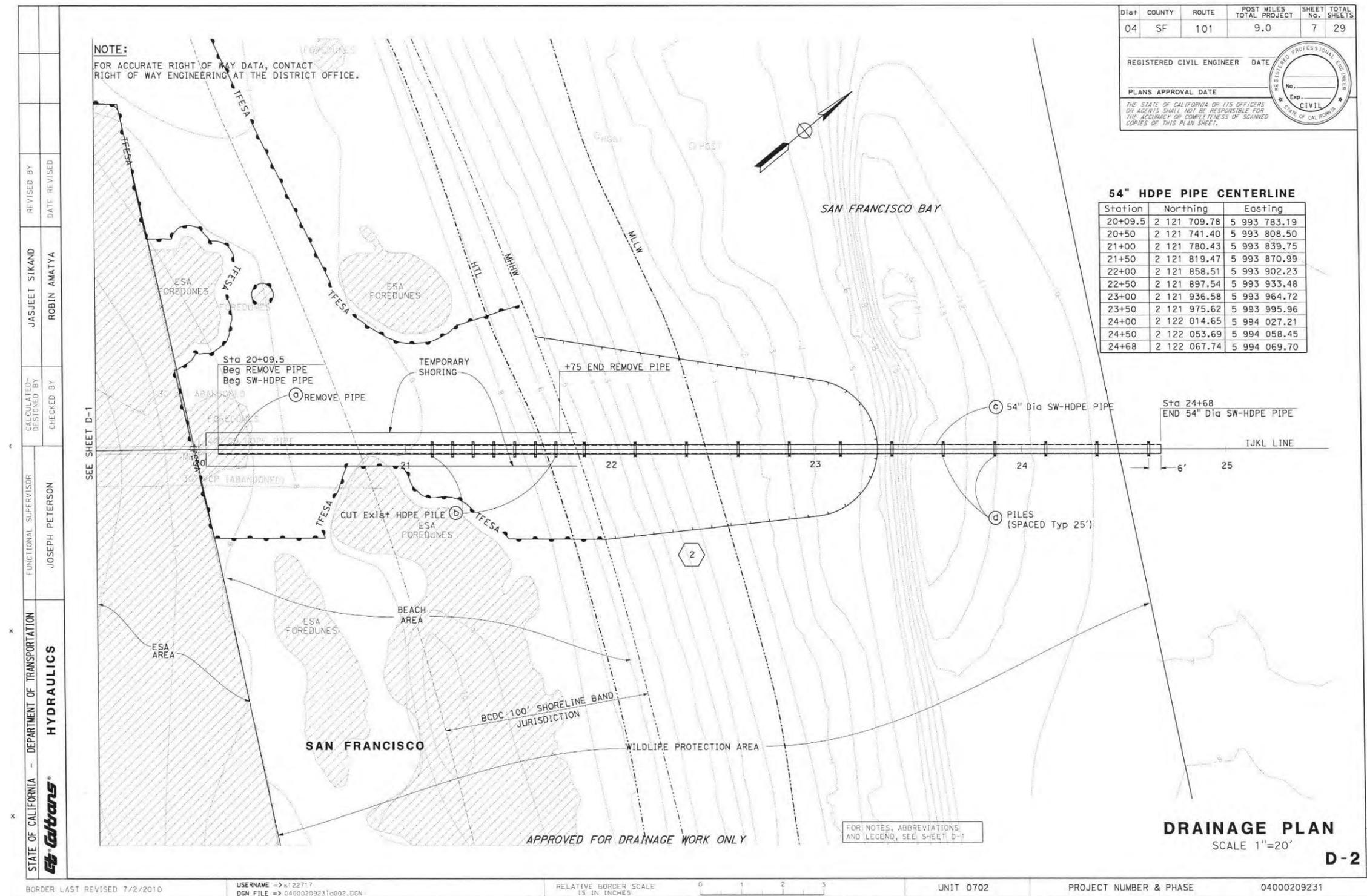
Prior to construction and under the direction of the onsite biologist, temporary environmentally sensitive area (ESA) fencing will be placed as shown on the project plans during Stage 1 and 2 from May 15 to July 31. Caltrans' biologist or site monitor will inspect and maintain the ESA fencing at all times during the project.

6. Figure 2. Project Overview



7.
8. Source: Caltrans 2014, modified by AECOM 2014

Figure 3. Project Plan



Source: Caltrans 2014

Excavation Disposal Plan

Approximately 2,223 cy of excavated material will be generated during Stages 1 and 2 construction. Test results indicate that the 735 cy of dredged material from Stage 2 (intertidal and Bay/subtidal) are not hazardous. The 735 cy will be disposed at an approved beneficial reuse site. The dredged material will not be deposited back in the intertidal and Bay/subtidal zones since this may elevate turbidity levels beyond the allowable NTU levels.

The 1,488 cy of excavated material from Stage 1 will be tested and either stockpiled at the proposed stockpile location or hauled to an approved offsite disposal facility. The earthwork will conform to the requirements of Section 19 (Earthwork) of the Caltrans Standard Specifications. Testing of the material will be conducted in accordance with Caltrans' Materials Engineering and Testing Services California Test Methods (CTM) to determine the presence or absence of hazardous chemicals. If there is no indication of hazardous materials in the excavated material, it will be reused as backfill and/or beach restoration material.

Noise Monitoring

Noise and hydroacoustic monitoring will be conducted during construction activities. Ambient noise readings will be taken to establish base-line measurements before construction begins. Monitoring will also be conducted, once construction begins, during pile driving to reduce or avoid effects on marine mammals, fish, the western snowy plover (June 1 to October 31) and the public.

Biological Monitoring

Biologists will be on-site and will monitor onshore and offshore construction activities during all three stages of construction. Caltrans will also adhere to monitoring requirements per permit requirements.

Water Pollution Control

To avoid and minimize effects on environmental resources during construction, the project contractor will control and prevent spills, store materials, and manage stock piles and waste in accordance with Caltrans Standard Specifications and the Stormwater Pollution Prevention Plan (SWPPP) The SWPPP, prepared by the Contractor and approved by Caltrans, details deployment of Construction Site Best Management Practices (BMPs).

Temporary Sediment and Turbidity Control Measures

The following temporary sediment control measures will be implemented as needed: SC-1 (Silt Fence – per NPS requirements); SC-7 (Street Sweeping); and SC-10 (Drainage Inlet Protection). During Stages 1 and 2, the perimeter of the intertidal and offshore project footprint will be enclosed with a temporary turbidity curtain.

Wind Erosion Control Measures

As needed, WE-1 (Wind Erosion Control) measures, including plastic covers weighted down with gravel bags, will be implemented. Dust control measures will consist of regular truck watering of construction access areas and disturbed soil areas with the use of organic soil stabilizers to minimize airborne dust and soil particles generated from graded areas.

Tracking Control Measures

TC-1 (Stabilized Construction Entrance/Exit) and Temporary Timber Construction Mat will be implemented. Large trucks or equipment entering into the parklands, beach, lawn, or promenade areas, are required to have protective mats placed underneath to prevent damage to ground cover, sand, soil, utilities, trails, and vegetation.

Public Safety Measures

Flaggers will be used in front and back of construction equipment at all times when entering/exiting the project area or on public pathways and pedestrian areas.

Vehicle and Equipment Cleaning, Fueling, and Maintenance Measures

NS-8 (Vehicle and Equipment Cleaning), NS-9 (Vehicle and Equipment Fueling), NS-10 (Vehicle and Equipment Maintenance), and NS-13 (Material and Equipment Use Over Water) measures will be implemented, as needed. Any spills will be cleaned up immediately using spill response equipment in accordance with Caltrans BMPs. Cleaning, fueling, and maintenance will occur only in the designated staging areas, with spill kits/mats. No cleaning, fueling, or maintenance will occur near ESAs or on the beach. NPS will be notified in the event of a spill.

Turbidity Levels

During in-water excavation work (Stages 1 and 2), temporary sediment control measures (such as the installation of a turbidity curtain) will be implemented. A temporary turbidity curtain will be installed to enclose the construction site. Approximately 52 40-lb galvanized steel anchors will be used to secure the turbidity curtain to the Bay floor (see Attachment C, WPCP sheet 3 of 4). During Stage 2, and before Stage 3, the turbidity curtain will be removed.

In addition, testing and monitoring will be implemented so that the waters will be free of changes in turbidity that can cause nuisance or adversely affect marine wildlife and habitat. Increases from normal background light penetration or turbidity related to waste discharge will not be greater than 10 percent in areas where natural turbidity is greater than 50 Nephelometric Turbidity Units (NTUs).

Staging

To minimize effects on the project footprint, staging will only occur in the following locations:

1. Offshore, onboard barges; and
2. On a portion of Crissy Field, near the construction site access gate across the promenade; which is the most environmentally friendly location because of its proximity to the construction site.

The general locations of the staging areas are shown in Figure 2 and Appendix C, WPCP. Caltrans BMP WM-3 (Stockpile Management) will be implemented in all staging areas.

All onshore construction-related staging and equipment storage will be limited to areas outside of waters of the U.S. and sensitive habitat areas (offshore staging will be limited to aboard barges). Access to construction sites will be limited to Old Mason Street and the Crissy Field promenade, and at the project site through the project's beach access gate. The Crissy Field staging area will be enclosed by a 6-ft-tall chain link fence with locked access gates.

Scheduling

Caltrans BMP, SS-1 (Scheduling) will be implemented which will detail the sequencing of construction activities with the implementation of construction site BMPs. The public will be informed of the construction periods through a public access sign plan.

Environmental work windows have been incorporated into the project schedule to reduce or avoid effects to onshore and offshore habitats. Onshore construction activities will be restricted from May 15 through July 31 above the MHHW mark, when the western snowy plover is not present.

Intertidal and offshore construction activities will be restricted to June 1 to July 31 below the MHHW mark. Normal construction activities will occur Monday through Friday from 7:00 am to 6:00 pm with night, early morning, and weekend work subject to tidal levels and as permitted by the National Park Service (NPS)

As described above, some construction work will occur during low tide for safety and stability purposes during Stage 2. These activities will include excavation and placing of crossties and the pipe within the intertidal zone; pile driving in the Bay/subtidal zone; and installation and removal of shoring. To coincide with low tides, these activities could occur early in the morning or at night. Nighttime construction will be minimized to the extent practicable. Low lighting will be used and will be directed to the construction activity area and will be shielded from upward/lateral dispersal. After August 1, when water craft may approach the beach in the early morning, lighting will be directed away from the beach where the western snowy plover may be present. Black-out dates and times for special events, holidays, and environmental work windows are anticipated.

Post-Construction

A Special Use Permit will be agreed upon between Caltrans, the PT and the NPS. NPS will be responsible for beach restoration of disturbed on-site vegetation during the post-construction phase. Caltrans will re-contour Crissy Beach above the MHHW mark back to its original elevations. Caltrans will also provide the NPS with the funds to restore disturbed on-site vegetation through both field salvage and nursery propagation of dune plants for revegetation, within the project footprint beach area. The turf in the staging area, and impact to the promenade pathway due to construction equipment will be restored by Caltrans.

C.3 Avoidance and Minimization Measures as Part of the Project

To avoid or minimize effects on special-status species, marine mammals, and Essential Fish Habitat (EFH), standard BMPs will be implemented, as described in Section C.2. Additional project-specific avoidance and minimization measures below will also be implemented during construction.

- To minimize impacts to western snowy plover protected habitat, construction above the MLLW mark will be restricted to May 15 through July 31, when western snowy plovers are not present. If work is requested to start prior to May 15, surveys for snowy plover will be required by a United States Fish and Wildlife Service (USFWS) approved Biologist, approved by the NPS.
- Work below the MLLW will be seasonally restricted to June 1 through October 31.
- Worker Environmental Awareness Training, required for all project personnel (including those on project-related watercraft), will be conducted by NPS and/or a USFWS and NPS approved Biologist before the start of work.

- Personnel on project-related watercraft will be required to receive marine mammal education, which will include information on regulations regarding distances that must be maintained between watercraft and marine mammals, behavior relative to marine mammals, including steering watercraft so as not to approach marine mammals head-on, and reporting of marine mammal sightings.
- A biological monitor will survey the project area if offshore construction activity occurs during California grunion (*Leuresthes tenuis*) spawning season (nights of the full and new moons, spawning occurs after high tides in spring and summer months). Habitat will be marked to reroute access routes to avoid impacts.
- An aquatic Safety Zone will be established. To reduce the potential effects on special-status aquatic species in the Action Area (The Action Area is the area which may be directly or indirectly affected by the project), a 1,300 ft aquatic Safety Zone will be established. The aquatic Safety Zone will serve as the “Level B” harassment zone, established in accordance with NMFS and the Marine Mammal Protection Act (MMPA). Biological monitor(s) will observe and record their observations of special-status marine mammals and special-status fish within this zone (Caltrans 2014d). Any special-status marine mammal or special-status fish observation within this zone will be reported immediately to the Resident Engineer.
- Biological monitor(s) will be on-site during all construction-related activities at least 30 minutes before, during, and at least 30 minutes after pile driving activities, to monitor the work area for special-status marine mammals and special-status fish.
- At least 30 minutes before the start of all in-water pile driving, a marine mammal monitor will conduct observations on the number, types, location, and behaviors of marine mammals in the designated safety and harassment zone. Pile driving shall not commence if marine mammals are sighted within the Safety Zone. If the time between pile-segment driving is less than 30 minutes, a new 30-minute survey is unnecessary provided the marine mammal monitor continues observations during the interruption. Any marine mammals observed within the Safety Zone shall be reported immediately to the Resident Engineer and implementation of any mitigation measure (e.g., pause construction) shall be conducted accordingly.
- If construction pauses due to a marine mammal sighting, 30 minutes after in-water pile driving stops, the marine mammal monitor will observe the project area and record information on the number, type(s), location(s), and behavior of marine mammals within the Safety Zone.
- If a marine mammal(s) is observed within the turbidity curtain, then an opening in the curtain will be established and will remain open until the animal leaves on its own volition.
- Biological monitor(s) will be on-site during all construction-related activities at least 30 minutes before, during, and at least 30 minutes after pile driving activities, to monitor the work area for special-status marine mammals and special-status fish.
- If a marine mammal is observed within or approaching the Safety Zone before the start of pile driving, the Resident Engineer is required to delay pile driving of the segment until the marine mammal has moved outside of the Safety Zone or the animal has not been re-sighted within 15 minutes. If a marine mammal is sighted within or on a path towards the Safety Zone during pile driving, pile driving must cease until that animal has cleared and is on a path away from the Safety Zone or 15 minutes has lapsed since the last sighting.

- A “soft start” technique will be used at the beginning of each pile installation, to allow any special-status species or marine mammal that may be in the immediate area to leave before impact piling reaches full energy. The soft start will require an initial set of 3 strikes from the impact hammer at 40 percent energy, followed by a 1-minute waiting period, then two subsequent 3-strike sets.
- A fisheries and hydroacoustic monitoring program reviewed and approved by NMFS will be implemented that will include the following:
 - Establishment of base-line ambient noise levels;
 - Underwater sound measurements at various distances and depths from pile driving operations;
 - Evaluation of fish mortality and injury rates by the use of visual observations and collections during pile driving events; and
 - Observations of bird predation and behavior.
 - Data from the monitoring program will be made available to NMFS and NPS on a real-time basis.
- Nighttime construction will be minimized to the extent practicable.
- Lighting of the project footprint by artificial lighting during nighttime hours will be minimized to the maximum extent practicable, except when necessary for construction, driver, or pedestrian safety. Any pre-dawn barge lighting will be directed away from onshore.

D. ENVIRONMENTAL SCREENING FORM

Table 1: Resource Effects to Consider					
Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine / Notes
1. Geologic resources – soils, bedrock, streambeds, etc.			X		Short-term effects related to construction ground disturbance. Permanent impacts to geologic materials estimated at 2,200 cy due to excavation and removal of sand.
2. From geohazards		X			The project will not be susceptible to landslides. Engineering and design will address soil liquefaction.
3. Air quality		X			Air quality impacts will be short-term and temporary during construction activities. Caltrans determined further air quality studies are not required. See discussion below in Section D.3.
4. Soundscapes			X		Soundscape impacts will be short-term and temporary during construction activities.
5. Water quality and quantity			X		With implementation of a SWPPP, impacts on water quality during construction will be minimized, or prevented, to the Maximum Extent Practicable (MEP). During operation

Table 1: Resource Effects to Consider					
Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine / Notes
					of the South Access to the Golden Gate Bridge-Doyle Drive Project, stormwater run-off will be captured and treated via biofiltration swales. The biofiltration swales, however, will not capture and treat 100% of the Golden Gate Bridge-Doyle Drive Project run-off tributary to Outfall IJKL; of the remaining acreage, it is desirable to treat an equivalent acreage elsewhere within the Presidio. Though the quantity of stormwater discharge to the Bay will increase, it is a nominal increase compared to existing conditions.
6. Streamflow characteristics	X				There are no streams at the project site. The replacement pipeline and outfall will be constructed in the same alignment as the current pipe and outfall and will not impact any stream corridors. The project would not alter the course of a stream or waterway.
7. Marine or estuarine resources			X		Temporary effects would occur to 0.75 ac of beach habitat, 0.13 ac of intertidal habitat, and 0.33 ac of Bay/subtidal habitat. There will be permanent impacts to 0.025 ac of Bay/subtidal habitat, as a result of the outfall pipe extension. All temporary aquatic impacts will be expected to return to natural conditions through tidal action upon project completion. The beach and northern foredunes will be restored by NPS.
8. Floodplains or wetlands		X			No wetlands areas are within the project footprint; however, Waters of the U.S. will be impacted both temporarily and permanently as a result of the project. The project will not result in increased flood risk in the project area and project infrastructure is designed to withstand tidal action.
9. Land use, including occupancy, income, values, ownership, type of use	X				The project will not change or conflict with the existing land use of the project area.
10. Rare or unusual vegetation – old growth timber, riparian, alpine			X		There will be 0.02 ac of permanent impact to northern foredune habitat from the project. The project has been specifically designed to avoid the majority of this habitat in the project footprint. Caltrans will

Table 1: Resource Effects to Consider					
Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine / Notes
					provide NPS funds to restore the northern foredunes and beach habitat after project completion. See Section C.2 and the Terrestrial Biological Assessment (BA) in Attachment D for details.
11. Species of special concern (plant or animal; state or federal listed or proposed for listing) or their habitat			X		<p>The project may affect, and is likely to adversely affect the following federally listed and proposed species:</p> <ul style="list-style-type: none"> Western snowy plover (<i>Charadrius nivosus</i>; threatened) <p>The project may affect, but is not likely to adversely affect, the following federally listed and proposed species, or their habitat:</p> <ul style="list-style-type: none"> Green sturgeon southern Distinct Population Segment (DPS) (<i>Acipenser medirostris</i>; threatened) Central California coast Ecologically Significant Unit (ESU) steelhead trout (<i>Oncorhynchus mykiss</i>; threatened) Central Valley ESU steelhead trout (<i>Oncorhynchus mykiss</i>; threatened) Sacramento River winter-run Chinook salmon (<i>Oncorhynchus tshawytscha</i>; endangered) Central Valley spring-run ESU Chinook salmon (<i>Oncorhynchus tshawytscha</i>; threatened) Central California Coast ESU Coho salmon (<i>Oncorhynchus kisutch</i>; endangered) Longfin smelt (<i>Spirinchus thaleichthys</i>; State-endangered) <p>The project will have no effect, on the following federally listed and proposed species:</p> <ul style="list-style-type: none"> Humpback whale (<i>Megaptera novaeangliae</i>; endangered) <p>As described in the Terrestrial BA, Terrestrial BA Addendum, and Aquatic BA (see Attachments D and E) and Section C.2 and C.3, general avoidance and minimization measures would be implemented to reduce potential effects on</p>

Table 1: Resource Effects to Consider					
Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine / Notes
					special-status species in the Action Area of the project.
12. Unique ecosystems, biosphere reserves, World Heritage Sites	X				Golden Gate National Recreation Area (GGNRA) is part of the Golden Gate Biosphere Reserve formed by UNESCO in 1998. The San Francisco Bay has been designated as a Wetland of International Importance under the Ramsar Convention.
13. Unique or important wildlife or wildlife habitat		X			Western snowy plover habitat will be affected, as described in 11. Refer to Terrestrial BA and Terrestrial BA Addendum in Attachment D for details.
14. Unique or important fish or fish habitat			X		The project will have both short-term temporary and long-term minor effects on EFH. Refer to the Aquatic BA in Attachment E for details.
15. Introduce or promote non-native species (plant or animal)		X			Standard BMPs will be implemented to reduce the likelihood that non-native species are introduced or promoted.
16. Recreation resources, including supply, demand, visitation, activities, etc.			X		Access to the area within the project footprint will be temporarily restricted during construction. However, equivalent recreation areas are available adjacent to the project site. Access to all other areas of Crissy Beach, Crissy Airfield, trails and other recreational resources outside of the project limits will remain open and accessible to the public.
17. Visitor experience, aesthetic resources			X		Construction noise and activities during Stage 1 will result in short-term temporary impacts to visitor experiences immediately around the construction area and a short-term impact to the aesthetic character of the project site. The project is designed to minimize visual impacts by ensuring that most of the structure is not visible. For safety reasons, the last two pilings supporting the structure will be above MHHT, and signed with warning signs. This will result in a permanent, but minor, visual impact.
18. Archeological resources		X			No known cultural resources within or near the project footprint. The project

Table 1: Resource Effects to Consider					
Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine / Notes
					components are not anticipated to have an effect on cultural resources.
19. Prehistoric/historic structure	X				No evidence of known prehistoric or historic-period archaeological resources is located within in the project area of potential effect (APE).
20. Cultural landscapes		X			Construction impacts from the project will be short-term and there will be no long-term impacts to the landscape viewshed of the Presidio National Historic Landmark District (NHLD) cultural landscape.
21. Ethnographic resources	X				No impacts to ethnographic resources anticipated.
22. Museum collections (objects, specimens, and archival and manuscript collections)	X				There are no museums in the project footprint.
23. Socioeconomics, including employment, occupation, income changes, tax base, infrastructure	X				The project is the replacement of an outfall structure and will have no effect on socioeconomics.
24. Minority and low income populations, ethnography, size, migration patterns, etc.	X				There are no residents within the project area; therefore, no minority or low income populations will be affected.
25. Energy resources		X			A negligible, short-term impact on energy resources will occur during project construction activities.
26. Other agency or tribal land use plans or policies		X			Construction will comply with The Native American Graves Protection and Repatriation Act (NAGPRA) if remains of Native American origin are discovered.
27. Resource, including energy, conservation potential, sustainability		X			The project will reduce the need for emergency clearing of Outfall IJKL and will reduce flooding potential on Old Mason Street and Crissy Field. The project will result in a beneficial impact to long-

Table 1: Resource Effects to Consider					
Identify potential effects to the following physical, natural, or cultural resources	No Effect	Negligible Effects	Minor Effects	Exceeds Minor Effects	Data Needed to Determine / Notes
					term resource conservation potential.
28. Urban quality, gateway communities, etc.		X			The outfall will not have a long-term impact on the urban quality. Construction impacts will be temporary and short-term in nature.
29. Long-term management of resources or land/resource productivity		X			The Presidio Trust will be responsible for the long-term maintenance of the outfall.
30. Other important environment resources (e.g. geothermal, paleontological resources)?			X		Construction on the beach will occur within the original trench dug for the existing outfall, thus having a low potential for encountering new paleontological resources. Geothermal resources are not present at Crissy Beach.

As indicated in Table 1 above, the following resource areas were determined to have “No Effect” because they will not be affected by the project or do not exist within the project area and are not discussed further: streamflow characteristics, unique ecosystems, prehistoric/historic structures, museum collections, socioeconomics, minority and low income populations, and other important environment resources. Please refer to the notes in Table 1 regarding these resource areas.

D.1 Geologic Resources-soils, Bedrock, Streambeds, etc.

Construction-related ground disturbance could result in temporary erosion of beach sand and permanent loss of sand or other geologic materials excavated and disposed of off-site. Please refer to the “Water Quality or Quantity” discussion below regarding implementation of the SWPPP and BMPs which will reduce the discharge of sediment and other construction materials as well as increases in turbidity of the Bay. There is no bedrock or streambed in the project area. Impacts to geological resources will be negligible.

The project will generate a total of approximately 2,223 cy of excavated material during Stage 1 and Stage 2 construction. All excavated material will be tested and either stockpiled at the proposed staging/stockpile location or hauled to an approved offsite disposal facility. As described in Section C.2, 735 cy of the dredged material from Stage 2 will be disposed at an approved beneficial reuse site. The remaining 1,488 cy of excavated material from Stage 1 will be tested and either stockpiled for reuse as backfill, or hauled to an approved disposal facility. The earthwork will conform to the requirements of Section 19 (Earthwork) of the Caltrans Standard Specifications. Testing of the material will be conducted in accordance with Caltrans’ Materials Engineering and Testing Services CTM to determine the presence or absence of hazardous chemicals. If the excavated material meets requirements, it will be reused as backfill and/or beach restoration material.

D.2 Geohazards

The project site is located in a seismically active region; however there are no known faults that cross the project area. The landside portion of the outfall (immediately south of the beach) is located in an area of potential soil liquefaction (Caltrans 2008). Geotechnical borings taken in 2013 indicated the surface material is loose beach sands. The soil structure gradually increases in density to dense sands at a depth of 20 ft, and young bay muds are encountered at the 30 ft depth. The muds consist of soft clays and silts (Caltrans 2014a). The project area is not within a mapped landslide hazard or area of potential earthquake induced landslide area (Caltrans 2008); therefore the project will not be susceptible to landslides. Implementation of the project will not increase the risk from known earthquake faults, seismic shaking, or ground failure. Soil liquefaction will be addressed through design considerations. The project will have a negligible impact on geohazards.

D.3 Air Quality

The project will have negligible effect on air quality because impacts to air quality will only occur during construction activities, which will be short-term and temporary. The project will be required to implement WE-1 (Wind Erosion Control) measures and will be required to comply with the Bay Area Air Quality Management District's (BAAQMD) basic dust control procedures to minimize construction-related air quality emissions. Basic dust control procedures include, but are not limited to, watering all exposed surfaces two times a day, covering all haul trucks transporting loose material off-site, removing mud or dirt track-out using wet power vacuum street sweepers at least once per day, limiting vehicle speeds to 15 miles per hour. Per the Department of Transportation Office of Environmental Engineering Memorandum on Request for Environmental Studies, dated May 23, 2013, the project is exempt from the requirement of air conformity determination and further air quality studies are not required (Caltrans 2013a). The project will have a negligible impact on air quality.

D.4 Soundscapes

The project will have a minor effect on the surrounding soundscape because noise impacts will only occur during construction activities, which will be short-term and temporary. Short-term and temporary noise impacts will occur from the use of stationary and mobile construction equipment and vehicles. Per the Department of Transportation Office of Environmental Engineering Memorandum on Request for Environmental Studies, dated May 23, 2013, no further noise studies are required (Caltrans 2013a).

A Noise Control Plan (NCP) has been prepared as part of the South Access to the Golden Gate Bridge-Doyle Drive Project (Municon Consultants 2011). The NCP addresses potential impacts to the human/built environment and includes noise-related specifications found in the Caltrans Standard and Special Specifications, and requires noise monitoring of construction. This monitoring is being conducted in concert with the PT and NPS staff, and will continue for this project. This plan will be updated as appropriate to reflect components of this project. The NCP specifies that the A-weighted average hourly noise level (LA_{eq}) and A-weighted hourly maximum noise level (LA_{max}) from the construction cannot exceed the ambient baseline LA_{eq} or baseline LA_{max} by more than five (5) decibels measured at the closest point of the nearest occupied residential tenanted building or occupied commercial tenanted building in which business activity is occurring (Municon Consultants 2011).

To minimize impacts to aquatic species, as described in Section C.3, a hydroacoustic monitoring program will be implemented. The hydroacoustic monitoring program will include the use of hydrophones placed at specified distances from pile driving to determine site-specific transmission loss and directionality of noise to ensure that pile driving noise remains under 170 dB to reduce or avoid impacts to special-status aquatic species and marine mammals (Caltrans 2014d). Noise impacts to sensitive terrestrial species (e.g.

western snowy plover) are minimized by restricting construction within the terrestrial area of the project footprint from May 15 through July 31 (Caltrans 2014c).

Construction activities and equipment will be required to comply with the NCP, Caltrans Standard and Special Specifications, and NPS requirements related to noise control (NPS Policy MP 4.9 and DO-47). Noise control measures include, but are not limited to: equipping mobile equipment with manufacturer recommended mufflers; using dissipative and reactive mufflers and silencers; and restricting hours of heavy equipment operation. In addition, as described in Section C.2, noise monitoring devices will be in place during all construction activities to take and analyze noise readings to ensure that the project meets the noise parameters designated to reduce effects on marine mammals, fish, the western snowy plover, and the public. Through compliance with the applicable laws, regulations and policies, and compliance with permit conditions, the project will have a minor impact on soundscapes.

D.5 Water Quality and Quantity

During construction, the following activities may result in temporary impacts to water quality: excavation of the existing outfall pipe; material stockpiling and staging; equipment movement to/from the site; pile driving; installation of turbidity curtain, or similar measure; use of barges to deliver and store material for marine operations.

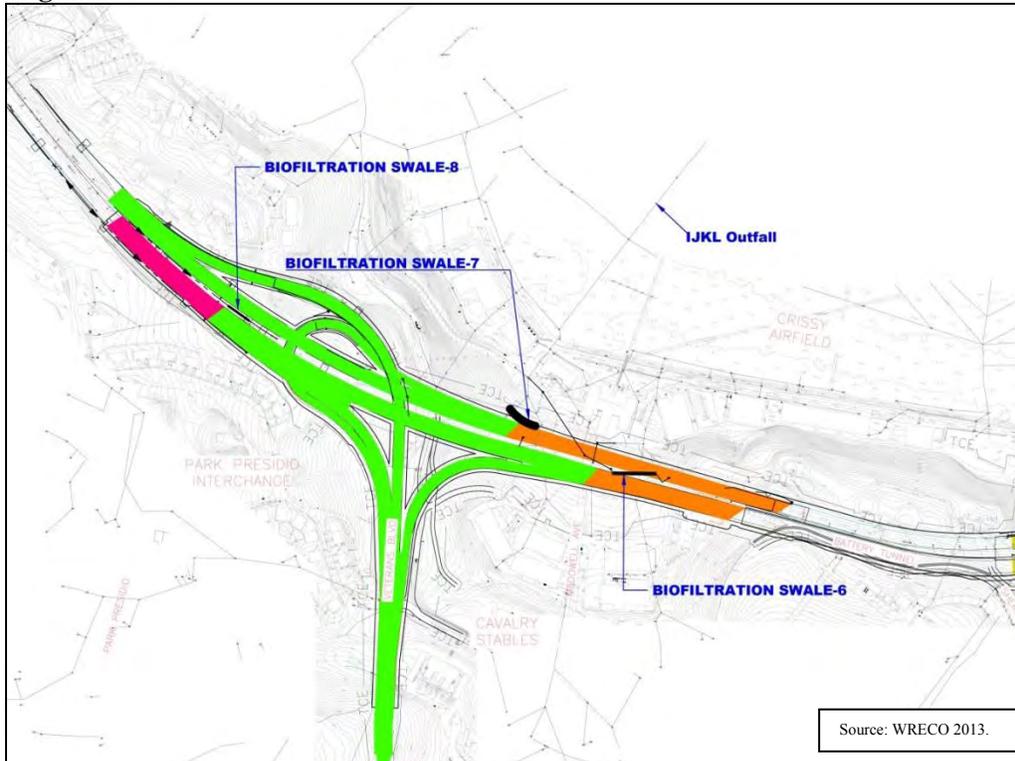
Potential for impacts to existing water quality will be minimized, or avoided, by implementing temporary and permanent BMPs. The State Water Resources Control Board (SWRCB) has issued a National Pollution Discharge Elimination System (NPDES) Statewide Stormwater Permit to Caltrans, to regulate stormwater and non-stormwater discharges from Caltrans facilities. As part of this permit, Caltrans developed a Stormwater Management Plan (SWMP), which is a policy and guidance document for statewide operations. In addition to this permit, the Project must adhere to the NPDES Construction General Permit (Order No. 2009-0009-DWQ, amended 2010-0014-DWQ), hereafter “CGP”, issued by the SWRCB. The CGP is required for any project, by any developer, that disturbs greater-than, or equal to, 1.0 acre of land. As for CGP compliance, a SWPPP must be implemented for the project. The SWPPP will be developed by the Contractor and approved by Caltrans, and shall document deployment of temporary Construction Site BMPs. In contrast, permanent BMPs are included as part of the contract plan set.

All construction work (Stages 1 through 3) will be conducted in the typical non-rainy season between April 15 and October 30, which will reduce the potential for erosion and subsequent sediment discharge to the Bay. Construction Site BMPs, as described in Section C, will be implemented to minimize, or avoid, impacts to existing water quality due to construction-related activities. These include preparation and implementation of a stormwater pollution prevention plan (SWPPP), an excavation disposal plan, and marine turbidity control measure(s). During Stages 1 and 2, the perimeter of the off-shore construction site will be enclosed with a temporary turbidity curtain which will be secured to the Bay floor to minimize the mobilization of sediment from excavation, backfilling, pile driving, and other construction-related activities. Fish and other aquatic species will not become entrapped within the turbidity curtain because they can escape through gaps along the bottom of the curtain. In addition, turbidity testing and monitoring will be implemented. The turbidity curtain will be removed following the completion of Stage 2 construction. Excavated material from Stage 1 will be stockpiled and tested in accordance with Caltrans Standard Specifications to determine whether it will be acceptable for disposal at an approved disposal site or reused as backfill and/or beach restoration material. Dredged material from Stages 2 will be off-hauled to a beneficial use site.

Regarding permanent stormwater treatment, biofiltration swales 6, 7, and 8, as depicted in Figure 4, are planned to capture and treat roadway runoff from the South Access to the Golden Gate Bridge-Doyle Drive Project tributary to Outfall IJKL (WRECO 2013). Biofiltration swales treat stormwater runoff via

filtration through vegetation on the surface, infiltration through soil media, and evapotranspiration. Doyle Drive stormwater runoff is currently discharged to existing drainage facilities, via over-land flow, without treatment. Therefore, since the proposed project includes treatment BMPs (i.e. biofiltration swales), it will provide a net benefit to stormwater runoff quality. The current design for these three biofiltration swales details treatment of approximately 7 acres of the approximately 12 acres of impervious surface, from the South Access to the Golden Gate Bridge – Doyle Drive Project, tributary to Outfall IJKL. A concept is being developed to treat the balance within Presidio Trust Right-of-Way. In addition, highway stormwater pollutant loading is mostly affected by increased traffic, and the South Access to the Golden Gate Bridge-Doyle Drive Project is not likely to increase traffic compared to existing levels (Caltrans 2008).

Figure 4. Biofiltration Swales



D.6 Marine or Estuarine Resources

The project will have the following effects to the marine or estuarine habitats in the Action Area and project footprint¹:

Marine or Estuarine Habitat Type	Total Area within Action Area (acres)	Total Area within Project Footprint (acres)	Temporary Impacts (acres)	Permanent Impacts (acres)	Total Impacts (acres)
Beach	5.40	0.75	0.75	0.00	0.75

¹ The “Action Area” is the area which may be directly or indirectly affected by the project and was defined in the Terrestrial and Aquatic BAs and estimated conservatively, combining a 900-ft buffer on land and a 1,300-ft buffer in the water. The “project footprint” is the area directly affected by the project.

Intertidal	3.95	0.13	0.13	0.00	0.13
Bay/Subtidal	76.76	0.14	0.13	0.01	0.14

Source: Caltrans 2014c,d

Temporary impacts from trenching; the turbidity curtain installation and removal; pile driving; and pipe installation to intertidal, beach, Bay/subtidal habitats will be expected to recover quickly due to tidal action (Caltrans 2014b). A permanent impact of 0.025 ac of Bay/subtidal habitat will result from the extended pipeline that emerges from the bottom 138 feet from the terminus. The permanent impacts are minimal and may likely result in a beneficial effect, as the new pipe could provide a hard substrate surface that will provide habitat for benthic species to colonize (Caltrans 2014b). Construction impacts to marine and estuarine habitats will be minimized through implementation of BMPs and general construction management practices, as described in Section C.2 and C.3. This includes biological monitoring during offshore construction activities, temporary turbidity control measures, and limiting in-water work to June 1 through October 31.

D.7 Floodplains or Wetlands

Caltrans submitted a preconstruction notification to the U.S. Army Corps of Engineers (USACE) in August 2014. The project will result in 0.01 ac of permanent and 0.13 ac of temporary impacts to the Bay due to the extension of the outfall. All areas temporarily disturbed during construction will be returned to pre-construction or improved conditions upon cessation of construction activities. Compensatory mitigation is not required because there will be no impacts to wetlands and the permanent impacts to the Bay are less than the 0.10 ac threshold.

The Federal Emergency Management Agency (FEMA) has not determined the flood hazard for the project area at this time; however, FEMA’s Preliminary Flood Insurance Rate Maps (FEMA 2007) shows the portion of the project area to the north of the San Francisco Bay Trail as within the 100-year flood zone (Zone A). According to San Francisco’s Interim Floodplain Map (CCSF 2008), the portion of the project area located between the San Francisco Bay Trail and the beach is located in a Special Flood Hazard Zone. The project will also serve to alleviate current flooding issues that result when the current outfall gets blocked by accumulated sand. Impacts to floodplains will be minor.

D.8 Rare or Unusual Vegetation-Old Growth Timber, Riparian, Alpine

The project will have a permanent effect to 0.02 ac of northern foredune habitat that will be restored by NPS. As described in Section C.2, Caltrans will provide funds to NPS to replant disturbed on-site vegetation. This direct permanent impact to northern foredune habitat is small compared to the extent of dune habitat currently within the Action Area (6.27 ac), due to the project’s design to specifically minimize effects to this habitat type.

D.9 Species of Special Concern (Plant or Animal; State or Federally Listed or Proposed for Listing or Their Habitat)

The project may affect, but is not likely to adversely affect the following federally listed species:

- Western snowy plover (*Charadrius nivosus*; threatened)

The on-shore construction activities will be completed by July 31 and are not anticipated to have direct effects on western snowy plovers with the exception of the permanent effect to 0.02 ac of northern foredune habitat. Caltrans will provide NPS funds to restore the northern foredunes. This direct permanent impact to northern foredune is small compared to the extent of dune habitat currently within the Action Area (6.27 ac), due to the project’s design to specifically minimize effects to this habitat type. Wintering western snowy plovers will be expected to have sufficient remaining foredune habitat within

the Action Area after construction is completed. In addition, northern foredune habitat will be restored after the completion of construction. Temporary impacts to beach and intertidal habitats that are potentially suitable for western snowy plover will be expected to recover quickly, due to tidal action.

Western snowy plovers are not anticipated to be present during the on-shore construction period. The project may result in direct effects on wintering western snowy plover during Stages 2 and 3 construction due to avoidance behaviors that may result because of construction noise, lighting, and increased human activity. The number of western snowy plovers present in the Action Area from July through October is expected to be relatively low (two to eight), based on previous monitoring from the Terrestrial Biological Assessment (BA) (Caltrans 2014b-Appendix D). In addition, no work will occur on the beach after July 31. Thus, this project is expected to have a negligible and temporary effect on, and will not jeopardize the continued existence of the western snowy plover in the Action Area.

The project may affect, but is not likely to adversely affect, the following federally listed and proposed species, or their habitat:

- Green sturgeon southern Distinct Population Segment (DPS) (*Acipenser medirostris*; threatened)
- Central California coast Ecologically Significant Unit (ESU) steelhead trout (*Oncorhynchus mykiss*; threatened)
- Central Valley ESU steelhead trout (*Oncorhynchus mykiss*; threatened)
- Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*; endangered)
- Central Valley spring-run ESU Chinook salmon (*Oncorhynchus tshawytscha*; threatened)
- Central California Coast ESU Coho salmon (*Oncorhynchus kisutch*; endangered)
- Longfin smelt (*Spirinchus thaleichthys*; California State-listed)

The project will have no effect on:

- Humpback whale (*Megaptera novaeangliae*; endangered)

The project has the potential to affect individuals of the above mentioned aquatic species through changes in water quality, short-term exclusion of a small amount of benthic foraging habitat, and noise from trenching and pile driving. Noise from pile driving may cause individuals to leave or avoid the project area. During construction, turbidity curtain deployment and pile driving may reduce the amount of habitat for foraging and shelter. Project effects on species and habitats are considered to be temporary and limited to construction Stages 2 and 3. Long-term effects will result from placement of the extended pipeline, which will be minimal. The new pipe could provide a hard substrate surface that will provide habitat for benthic species to colonize. These benthic species can be found throughout the Bay on hard substrates that provide a surface for colonization.

As described in the Terrestrial BA (Caltrans 2014b), Terrestrial BA Addendum (Caltrans 2014c), and Aquatic BA (Caltrans 2014d) and in Section C.2 and C.3, general avoidance and minimization measures will be implemented to reduce potential effects on special-status species in the Action Area. These measures will include minimizing the area of impact; seasonal restrictions and work restrictions during extreme tidal events; conducting worker environmental awareness training for construction workers; conducting preconstruction surveys; establishing nest buffers for snowy plover, if necessary; delineating the construction site with high-visibility fencing; on-site biological monitoring; and construction site BMPs.

D.10 Unique or Important Wildlife or Wildlife Habitat

The project will have a temporary impact to the western snowy plover, as described above. Please refer to the discussion under Section D.9, above.

D.11 Unique or Important Fish or Fish Habitat

The project will have both short-term temporary and long-term minor effects on EFH. Temporary effects are associated with the installation of the temporary turbidity curtain, trenching the bay bottom, and driving new piles. Long-term effects will result from extending the pipe, which will be minimal. The new pipe could provide a hard substrate surface that will provide habitat for benthic species to colonize. Detailed information is provided in the Aquatic BA, Attachment E.

The National Park Service reports that California grunion (*Leuresthes tenuis*) recently have begun to enter San Francisco Bay and on the rare occasion, spawn on Crissy Beach. Grunion typically spawn during the nights of the full and new moons, spawning occurs after high tides in spring and summer months (CDFW 2014). Artificial lights on the beach may adversely affect spawning activity. Lighting will only be used when necessary and will be directed to minimize stray light. As described in Section C.3, should intertidal construction activity occur during an anticipated spawn event from May till August, the biological monitor will survey the project footprint during any anticipated spawning event.

D.12 Introduce or Promote Non-Native Species (Plant or Animal)

Standard Caltrans construction site BMPs will be implemented to reduce the likelihood that non-native species are introduced or promoted in compliance with Executive Order (EO) 13112.

D.13 Recreation Resources, Including Supply, Demand, Visitation, Activities, etc.

The San Francisco Bay Trail along Old Mason Street and the Presidio Promenade trail receive heavy day use by joggers, walkers, bicyclists, and tourists. Construction activities have the potential to disrupt general and special event use along these trails, as well as within the beach and Crissy Airfield areas that are located within the construction area. At the start of construction, temporary chain link fencing will be installed and signs (i.e., no access, detour, informational, and construction signs) will be posted to prevent the public from accessing construction areas and materials. Intertidal and offshore construction work conducted as part of Stages 2 (June 1 to July 31) will still require the use of the onshore stockpiling area on the beach and Crissy Airfield staging. A temporary construction access road crossing the beach area will also be required through July 31. Thus, some portions of Crissy Airfield and the beach will not be accessible. The use of these areas for construction activities will result in a temporary and short-term closure of the portion of the Crissy Beach and Crissy Airfield within the construction area. However, there are comparable recreation areas adjacent to the project area. The closure of these areas will only slightly reduce the area available for recreation within the larger Crissy Field area and will not be expected to decrease recreation demand or visitation. The project will not require closure of Old Mason Street or the access points to the San Francisco Bay Trail and Presidio Promenade trail. Recreationists will continue to use the trails while the project is under construction except for the portion within the construction area. The public will be provided a detour around the construction area. Access to Crissy Airfield, portions of Crissy Beach, and trails outside of the construction limits will remain open to the public during construction.

The Traffic Management Plan will describe how continuous access by park visitors to the trails will be maintained during construction, as well as safety measures, including safety lighting, signage and sign location, flag persons, visitor points of contact, and any other elements to ensure visitor and park staff safety during construction. In addition, construction activity timing will be coordinated with NPS to avoid

special events and disruption of public programs at Crissy Field and the Crissy Field Center. As stated in Section C.2, the public will be informed of the construction windows and public access will be maintained outside of the project limits at all times. Impacts to recreation resources will be negligible, short-term and temporary.

D.14 Visitor Experience, Aesthetic Resources

Construction noise during Stage 1 activities will have short-term impacts to visitor experiences immediately around the construction area. The construction activities during Stage 1 (excavation, pipe removal and installation, stockpiling, and installation of fencing onshore) and presence of construction equipment will have a short-term impact to the aesthetic character of the project site. Stage 2 and 3 construction activities will primarily be located underwater; however, construction staging on shore as well as on floating barges will be present through Stage 3 which will be visible to visitors. To minimize impacts to visitor experience during construction, as stated in Section C.2, the public will be informed of the construction periods and public access will be maintained outside of the project limits. Public information signage and website information will be available during construction of this project. Normal construction activities will occur Monday through Friday from 7:00 am to 6:00 pm with early morning, and weekend work subject to tidal levels and as permitted by the National Park Service (NPS). Impacts to visitor experience and aesthetic resources will be negligible, short-term and temporary.

The portion of the outfall located on land (approximately the first 270 ft) will be fully buried and the portion located off-shore (approximately the last 190 ft) will be located below the MLLW mark and will not be visible below low tide, except for the last piling which will extend above the MHHW. As a safety precaution recommended by the U.S. Coast Guard, the last piling at the end of the pipeline will have a "Danger Submerged Pipeline" sign, visible from all directions. The sign will be fashioned to U.S. Coast Guard Standards. Because the pipe will be submerged, except for the pile with safety signage, no long-term impacts to aesthetic resources will be anticipated after construction is complete.

In addition, by enlarging and extending the outfall, emergency clearing events, which also temporarily affect aesthetic resources and visitor experiences, will be greatly reduced. No long-term impacts to aesthetic resources or the visitor experience will occur.

D.15 Cultural Resources

The Archaeological Treatment Plan (ATP) for the South Access to the Golden Gate Bridge-Doyle Drive Project identified the Outfall IJKL extension area as a sensitive location for the San Carlos Shipwreck (ICF, International and SEARCH 2011). Archaeological identification efforts for the project included offshore remote sensing followed by diver confirmation that anomalies identified during remote sensing efforts were modern debris (ICF, International and SEARCH 2011). The remains of the San Carlos, or any other historic shipwreck are located within the offshore portion of the APE. The Outfall IJKL is also outside of the reported boundaries of the prehistoric resource, CA-SFr-6/26, and no impacts to that resource are anticipated. No historic built environment resources are present in the Outfall IJKL extension area, and project components as proposed will have no effect on the built environment.

There is no evidence of known prehistoric or historic-period archaeological resources in the project APE, and the site area has been previously graded. The disturbed nature of the site, however, does not preclude the presence of buried archaeological deposits. The 2001 Archaeological Study Report (ASR), 2002 Finding of Effect (FOE), and the 2011 San Carlos Shipwreck identification report (ICF, International and SEARCH 2011) have determined that there exists an elevated archaeological sensitivity in the project vicinity. The onshore (landside) portion of the work will occur within the footprint for the existing outfall, and, therefore, there is a low potential to encounter intact archaeological deposits. If cultural resource artifacts, features, or sites are observed during construction, discovery protocols and treatment approaches will be followed as outlined in the Undertaking Programmatic Agreement (PA) (Section III. 2. b - e) and

in the ATP (ICF Jones & Stokes 2009), as well as the South Access to the Golden Gate Bridge-Doyle Drive Final Cultural Resource Monitoring Manual.

D.16 Cultural Landscapes

Construction activities will disturb the landscape viewshed of the Presidio NHLD cultural landscape. This impact will be short-term and temporary and no contributing structures to the cultural landscape will be affected. A relatively small portion of Crissy Airfield, a historic vegetation feature of the cultural landscape will be temporarily disturbed. Because most of the outfall will be buried and not visible at low tide and landside construction areas will be restored, only minor long-term impacts to the cultural landscape are not expected. In addition, project improvements are expected to eliminate emergency clearing events, which also temporarily disturb the landscape viewshed of the Presidio NHLD cultural landscape.

D.17 Ethnographic Resources

Project compliance documentation and ongoing consultation as part of the South Access to the Golden Gate Bridge-Doyle Drive Section 106 compliance process have not resulted in the identification of ethnographic resources within the current project APE. As such, no impacts to ethnographic resources are anticipated.

D.18 Energy Resources

Impacts to energy resources will occur during construction and will be temporary and short-term. Construction equipment during Stage 1/1A likely will include support trucks (e.g., pickup trucks, dump trucks, flat-bed trucks), trailers, excavators, loader/backhoes, a crane, and a pile driver. Stage 2 and 3 will include barges to be used as work and storage platforms and to stockpile dredged material. The construction vehicles and equipment to be used and stored on these barges may include an excavator, a pile driver, a loader/backhoe, and dump trucks. Since the impact on energy resources is temporary and will only occur during construction, the impact will be negligible. In addition, by enlarging and extending the outfall, emergency clearing events, which also temporarily impact energy resources, will be greatly reduced. Furthermore, there will be no operational impact on energy resources.

D.19 Other Agency or Tribal Land Use Plans or Policies

Although it is unlikely that human remains could be encountered during excavation in the project area, in the event human remains of Native American origin are discovered, the project will comply with the Native American Graves Protection and Repatriation Act (NAGPRA), which specifies the procedures federal agencies must follow when burials of Native American origin are found on federal land. If human remains of Native American origin are discovered during trenching activities or construction-related ground-disturbing activities, the following provisions will be followed to comply with NAGPRA regulations: notify, in writing, the responsible federal agency; and cease activity in the area of discovery and protect the human remains. Construction activities will occur within the original trench dug for the existing outfall, making the potential for encountering human remains low. If cultural resources, artifacts, features, or sites are observed during construction, discovery protocols and treatment approaches will be followed as outlined in the Undertaking's Section 106 Programmatic Agreement (PA) and Archaeological Treatment Plan (ATP; ICF Jones & Stokes 2009), as well as the Doyle Drive Final Cultural Resource Monitoring Manual. Impacts to agency or tribal land use plans or policies will be negligible.

D.20 Resources, Including Energy, Conservation Potential, Sustainability

Construction activities will enlarge and extend the existing outfall, reducing the need for emergency clearing events, which also temporarily impact energy resources. This will result in beneficial impacts to

long-term resource conservation potential. In addition, construction related impacts will be temporary and short-term; therefore the impact will be negligible.

D.21 Urban Quality, Gateway Communities, etc.

Construction activities during Stage 1 will have short-term impacts to urban quality immediately around the construction area. Construction activities and the presence of construction equipment will also result in short-term impacts to urban quality during Stage 1. Stage 2 and 3 construction activities will primarily be located underwater and will therefore have reduced impacts to urban quality. Because the outfall will be buried and will not be visible below low tide, except for the last set of support piers, and the landside construction areas will be restored, only minor long-term impacts to aesthetic resources will be anticipated. In addition, by enlarging and extending the outfall, emergency clearing events and flooding on Old Mason Street and Crissy Field, which also temporarily affect the urban quality of the area, will be greatly reduced. Impacts to urban quality will be negligible and beneficial.

D.22 Long-term Management of Resources or Land/Resource Productivity

Modifying Outfall IJKL will reduce flooding events on Old Mason Street and Crissy Airfield from backed up stormwater and also reduce emergency operations to clear accumulated sand from the end of the outfall after large storm events. This will result in beneficial impacts to long-term management of resources within the area. Because the outfall will be buried in the same location as the existing outfall and supported above the Bay bottom, long-term land/resource productivity will not be reduced. Impacts to long-term management of resources or land/resource productivity will be negligible.

D.23 Other Important Environment Resources (e.g., Geothermal and Paleontological Resources)

Construction will occur in the original trench dug for the existing outfall, thus having a low potential for encountering paleontological resources. If paleontological resources are observed during construction, work will cease in the vicinity until a qualified paleontologist can evaluate the discovery. Impacts to other important environment resources will be negligible.

E. MANDATORY CRITERIA

Table 2: Mandatory Criteria				
Mandatory Criteria: If implemented, would the proposal:	Yes	No	N/A	Comment or Data Needed to Determine
A. Have significant impacts on public health or safety?		X		The project’s Traffic Management Plan will include safety measures, such as safety lighting, signage and sign location, flag persons/visitor points of contact, and any other elements to ensure visitor and park staff safety during construction. No impacts to utilities are anticipated.
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant		X		The project will have minor to no effect to these resource areas. Please refer to the discussion in Section D.

Table 2: Mandatory Criteria				
Mandatory Criteria: If implemented, would the proposal:	Yes	No	N/A	Comment or Data Needed to Determine
or critical areas?				
C. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?		X		The project will not have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources.
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?		X		No significant impacts are anticipated and the project includes commonly used construction equipment and routine construction activities.
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?		X		The project will not establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects.
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?		X		The modification of Outfall IJKL is directly tied to the Doyle Drive project, which underwent NEPA review and impacts assessed in the South Access to the Golden Gate Bridge-Doyle Drive FEIS/R. The modification of Outfall IJKL will result in short-term construction related impacts. Through the implementation of BMPs, compliance with applicable laws and regulations, and compliance with permit conditions, construction impacts will be negligible to minor. The project will not result in new significant impacts or impacts of greater severity than what was previously analyzed and disclosed in the FEIS/R. Therefore, no cumulative environmental effects will occur.
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?		X		There are no significant impacts anticipated to the Presidio NHL, which is listed on the National Register of Historic Places. There are no other historic properties within the project APE.
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?		X		The project will have no significant impacts on species listed or proposed to be listed (see Section D).
I. Violate a federal law, or a state, local, or tribal law or requirement imposed for the protection of the environment?		X		The project will not violate a federal law, or a state, local, or tribal law or requirement imposed for the protection of the environment.
J. Have a disproportionately high and adverse effect on low income or minority populations		X		There are no residents at the project site. The project is the replacement of an existing outfall. Therefore, no minority or low

Mandatory Criteria: If implemented, would the proposal:	Yes	No	N/A	Comment or Data Needed to Determine
(Executive Order 12898)?				income populations will be affected.
K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites (Executive Order 13007)?		X		No impact to ethnographic resources are anticipated.
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and EO 13112)?		X		Standard BMPs will be implemented to reduce the likelihood that non-native species are introduced or promoted. Therefore, the project is unlikely to contribute to the introduction, existence, or spread of noxious weeds or non-native invasive species or promote the introduction, growth or expansion of such species.

For the purpose of interpreting these procedures within the NPS, any action that has the potential to violate the NPS Organic Act by impairing park resources or values would constitute an action that triggers the DOI exception for actions that threaten to violate a federal law for protection of the environment.

F. IMPACT ASSESSMENT: COASTAL PROCESS AND NEARSHORE BIOLOGICAL AND PHYSICAL PROCESS

F.1 Introduction

The Outfall IJKL Replacement Project will require work on beach, intertidal, and Bay/subtidal habitats within the coastal zone. A discussion of the *Coastal Process and the Nearshore Biological and Physical Processes* will be discussed in the following sections.

F.2 Background

The Stormwater Management Plan developed for the Presidio in 1994 and an analysis of the outfall found that 15,000 linear ft of pipeline was under capacity for 10-year flow events and replacement of approximately 2,000 ft of damaged pipe was recommended. Storm drain lines I, J, K and L were combined in the late 1990s into a single buried 42-in diameter HDPE outfall pipe. Only a few years after the combination of the drain lines, the end of Outfall IJKL also became problematic as beach accretion moved the shoreline beyond the end of the pipe. Flooding occurs on Old Mason Street during large storm (or rainfall) events because the outfall is blocked by sand. The current management of Outfall IJKL is mechanical removal of sand from the pipe outlet to allow drainage onto Crissy Beach and into San Francisco Bay.

With the South Access to the Golden Gate Bridge-Doyle Drive Project (currently under construction and which would also increase the stormwater runoff from into the outfall), stormwater management for the new roadway configuration provided the opportunity to resolve the issues associated with Outfall IJKL. As described in Section C, the project will replace the existing outfall from the manhole located on the beach, and extend it by 296 ft beyond the expected 50-year beach accretion point into the Bay for a total pipeline length of 460 ft.

F.3 Baseline Condition

The following provides a summary of the baseline conditions of the project area related to sand transport, beach accretion, water quality, and biological resources.

F.3.1 Sand Transport and Existing Maintenance

The rapid changes in beach width at Crissy Beach indicate this littoral-system is highly dynamic and non-linear. Sediment is moved through this system by waves and currents. Sand pulses enter San Francisco Bay around Fort Point and the volume of sand transport has increased since the early 1980s. These sand pulses deposit as shoals immediately north of Crissy Beach and the sand migrates eastward and onshore, although some volume of sand is retained at Crissy Beach. The accumulation of sand on the beach is most evident in the current location of Outfall IJKL.

The shoreline in the vicinity of the existing outfall has historically accreted while also oscillating (fluctuations of erosion and accretion) as evident from analysis of nearly 90 years of aerial photography (ESA PWA 2011). Rapid accretion since the mid-1990s has occurred at an unprecedented rate and as of 2009, the shoreline had accreted almost 180 ft compared to 1997, burying the outfall in 6 ft of sand. The geomorphology of Crissy Beach is actively changing and the beach should be expected to accrete for some time (ESA PWA 2011). A 2008 deposition of sediment observed on the shoals is anticipated to supply large volumes of sand for continued shoreline accretion in the coming years should wave conditions remain similar to current observations.

Currently, sand accretion blocks the end of the outfall resulting in stormwater backing up in the existing pipe contributing to flooding on Old Mason Street and Crissy Airfield during large rain events. The Presidio Trust regularly uses a backhoe to remove the sand from the end of the outfall, so that water from the pipe can discharge into the Bay. Clearing accumulated sand from the outfall has to be done regularly, and especially before, during, and after major storm events. After it is re-opened, the outfall can become blocked again within hours because of tidal action. Outfall maintenance requirements also result in an unstable and unsafe sand channel at the end of the excavated outfall opening on Crissy Beach.

F.3.2 Beach Elevation

The beach elevation from the existing manhole on the beach to the MHHW descends from 10 to 7 ft above sea level. The top of the existing outfall is approximately 5 ft above sea level and runs under the beach.

F.3.3 Water Quality

The Bay in the vicinity of the project is characterized as the Central San Francisco Bay and included on the U.S. Environmental Protection Agency (EPA) 303(d) list of water quality limited segments for: chlordane, dichlorodiphenyltrichloroethane (DDT), dieldrin, dioxin compounds, furan compounds, invasive species, mercury, mercury in sediment, polycyclic aromatic hydrocarbons (PAHs) (sediment), polychlorinated biphenyls (PCBs), PCBs (dioxin-like), and selenium (SWRCB and USEPA 2011). A total maximum daily load (TMDL) was developed and approved by the EPA for mercury on February 12, 2008. TDMLs establish the maximum amount of a given pollutant that can enter a waterbody without exceeding water quality standards set pursuant to applicable federal and state regulations. TDMLs are implemented through NPDES permits issued to point source dischargers, including municipal storm drain systems like the one that discharges through the outfall.

The San Francisco Bay Regional Water Quality Control Board (RWQCB) adopted a Water Quality Control Plan for the San Francisco Bay Basin (the Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the Basin Plan (San Francisco RWQCB 2011).

The outfall discharges into Central San Francisco Bay and the Basin Plan lists the existing beneficial uses of this surface water to be: industrial service supply, industrial process supply, commercial and sport fishing, shellfish harvesting, estuarine habitat, fish migration, preservation of rare and threatened species, fish spawning, wildlife habitat, water contact recreation, noncontact water recreation, and navigation.

F.3.4 Biological Resources

The project Action Area² contains the following land types which support a number of plant and animal species: developed, northern foredune, beach, intertidal, and Bay/subtidal (Caltrans 2014b). The developed land cover types include buildings, paved areas, and the Crissy Airfield – because the developed land cover type is outside of the project footprint and is not discussed further. The following describes habitat and species associated with the remaining four land types.

Northern Foredune: northern foredune is the ridge of sand parallel with the beach, positioned above the mean high tide line that is formed by the accumulation of sand. The accumulation of sand encourages the formation of hummocks that can be colonized by plants where they are elevated above the inundating tides, reducing the effects from direct exposure to saltwater. The plants on Crissy Beach are tolerant of brief exposures to saltwater, but can be killed by direct and prolonged exposure. Species common in this community include sand-verbena (*Abronia* spp.), beach strawberry (*Fragaria chiloensis*), beach primrose (*Camissonia cheiranthifolia*), silvery beachweed (*Ambrosia chamissonis*), and coastal sagewort (*Artemisia pycnocephala*). Western snowy plover and killdeer can be observed foraging and scurrying within the foredunes and beach habitats of Crissy Beach.

Beach: The beach is the expanse of sandy substrate above the MHHW mark and the northern foredunes. Since the northern foredunes and beach habitats come together at Crissy Beach, many plants and animals are common to both, such as, sand-verbena, beach strawberry, western snowy plover and killdeer. The plants that colonize the beach are susceptible to direct saltwater exposure during high tide events. Large areas of beach within the project footprint are devoid of plants because they have been killed by direct salt water exposure.

Intertidal: The intertidal is the area between the MHHW and MLLW marks that is inundated by tides. Intertidal habitat includes sandy beaches, natural and artificial rock (quarried riprap), mud flats, and pier pilings. The proximity to the Golden Gate Bridge and Pacific Ocean results in an intertidal zone that is inhabited by a highly diverse coastal and estuarine marine flora and fauna.

Bay/Subtidal: The project's in-water Action Area occurs in a portion of the Central San Francisco Bay. Because of its proximity to the Pacific Ocean, the Central Bay is characterized by strong tidal currents, with waters that are cold, saline, low in suspended sediment, and with less fluctuation in water quality relative to other portions of the Bay that are more influenced by freshwater and industrial inputs. Central Bay biota most closely resembles open coast plant, invertebrate, and vertebrate marine communities,

² The "Action Area" includes northern foredunes, beach, intertidal, and Bay/subtidal land types, as well as, developed areas (e.g., buildings, roads, and walkways) and is approximately 118 acres.

shifting to estuarine communities that become established farther into the Bay–Delta estuary from the Golden Gate Bridge.

San Francisco Bay in the vicinity of the Action Area is classified as EFH³ under the Magnuson-Stevens Fisheries Conservation and Management Act (MSA). Habitat for 18 species of commercially important fish and sharks that may at least occasionally be present in the vicinity of the Action Area are federally managed by the Pacific States Marine Fisheries Council under two fisheries management plans (FMPs): the Coastal Pelagic FMP and the Pacific Groundfish FMP. The Coastal Pelagic FMP identifies the Bay–Delta as EFH for Pacific herring, northern anchovy, and Pacific sardine (PMFC 1998). Under the Pacific Coast Salmon FMP, the entire Bay–Delta estuary has been designated as EFH for spring-, fall-, and late fall- Central Valley and Sacramento River winter-run Chinook salmon (Pacific salmon) (PMFC 2003). Two species of Pacific salmon are federally managed under the Pacific Coast Salmon FMP.

The Bay–Delta is an important wintering and stopover site for the Pacific Flyway. More than 300,000 wintering waterfowl use the region and associated waters (NOAA 2007). Bird guilds that use the open waters of the Bay–Delta include the diving birds, which feed in deeper water on benthic invertebrates; dabblers, which feed in the upper water column of shallow subtidal areas; piscivores, which feed on fish; and opportunistic predators (NOAA 2007).

Seven species of marine mammals occur in the Bay–Delta. The harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), harbor porpoise (*Phocoena phocoena*), and gray whale (*Eschrichtius robustus*) are the most common species that use the open waters of the Bay–Delta for migrating, foraging, and resting (NOAA 2007). Although these species typically concentrate their activities in the Central Bay and adjacent portions of the South Bay and North Bay, some harbor seals, harbor porpoise, and California sea lions travel throughout the Bay–Delta and up into the Sacramento River, in search of salmon and other prey.

The Central Bay contains habitat such as eelgrass and native Olympia oyster beds. The Central Bay contains both soft sediment and hard substrate subtidal (submerged) habitat; the subtidal bottom in the Action Area is the soft sediment type made of sand. Eelgrass is indigenous to the soft bottom bays and estuaries of the Northern Hemisphere, however no eelgrass beds are present in the Action Area. Olympia oyster beds occur in the intertidal zone between Point Pinole to south of Dumbarton Bridge with the highest abundances reported in the Central Bay (Caltrans 2014b). The piers in the Action Area do not provide a substantial amount of hard substrate to support Olympia oysters in substantial numbers, thus Olympia oyster beds are not expected in the Action Area.

Table 4 shows the potential for federally listed species and their habitats to occur in the Action Area, based on a characterization of habitats present.

³ Aquatic habitat where fish spawn, breed, feed, or grow to maturity.

Table 4. Potential for Federally Listed or Proposed Aquatic Species to Occur in the Action Area				
Common Name	Scientific Name	Status¹	General Habitat	Species Presence/Timing
Mammals				
Humpback whale	<i>Megaptera novaeangliae</i>	E	Predominantly coastal waters although occasional individuals enter the Bay-Delta.	Very Low: potential to occur from April to December during migration, occasional transients enter the Bay-Delta.
Pacific harbor seal	<i>Phoca vitulina</i>	MMPA	Coastal waters, and throughout the San Francisco Bay-Delta (Bay-Delta).	Present: could occur year-round.
California sea lion	<i>Zalophus californianus</i>	MMPA	Coastal waters, and throughout the Bay-Delta.	Present: could occur year-round.
Harbor porpoise	<i>Phocoena phocoena</i>	MMPA	An inshore species inhabiting shallow, coastal waters and occasional large rivers, including the Bay-Delta.	Present: could occur year-round.
California gray whale	<i>Eschrichtius robustus</i>	MMPA	Predominantly coastal waters although occasional individuals enter the Bay-Delta and have been observed swimming up the Sacramento River and into the South Bay.	Low: potential to occur from December to April during migration from Alaska to Baja California, occasional transients enter the Bay-Delta
Southern sea otter*	<i>Enhydra lutris nereis</i>	T/MMPA	Coastal waters within 1.2 mi of shore, especially shallows with kelp beds and abundant shellfish. In rough weather, takes refuge among kelp, or in coves and inlets. Rarely comes ashore. Range along the central California coast, south of Half Moon Bay to Point Conception.	None: Outside of official known range. NPS reports that occasional individuals are observed in park waters, including inside of the Bay, however, reports are rare and individuals are reported to be transient.
Fish				
Green Sturgeon (Southern DPS)	<i>Acipenser medirostris</i>	T	Marine and estuarine environments and the Sacramento River; all of the Bay-Delta.	Low: year-round.
Central California coast DPS steelhead trout	<i>Oncorhynchus mykiss</i>	T	Ocean waters, Sacramento and San Joaquin Rivers; in-migrates from the Pacific Ocean through the Bay-Delta to freshwater spawning grounds.	Low: Adults-winter; Juveniles-year-round.
Central Valley	<i>Oncorhynchus mykiss</i>	T	Ocean waters, Sacramento	Low: Adults-winter and

Table 4. Potential for Federally Listed or Proposed Aquatic Species to Occur in the Action Area

Common Name	Scientific Name	Status ¹	General Habitat	Species Presence/Timing
DPS steelhead trout			and San Joaquin Rivers; in-migrates from the Pacific Ocean through the Bay-Delta to freshwater spawning grounds.	spring; Juveniles–year-round.
Longfin smelt	<i>Spirinchus thaleichthys</i>	C	Throughout the nearshore coastal waters and open waters of the Bay-Delta, including the river channels and sloughs of the Bay-Delta.	Low: potentially year-round, but most often during fall.
Sacramento River winter-run ESU Chinook salmon	<i>Oncorhynchus tshawytscha</i>	E	Ocean waters, Sacramento and San Joaquin Rivers; in-migrates from the Pacific Ocean through the Bay-Delta to freshwater spawning grounds.	Low: Adults - November and December; Juveniles – fall and winter.
Central Valley spring-run ESU Chinook salmon	<i>Oncorhynchus tshawytscha</i>	T	Ocean waters, Sacramento and San Joaquin Rivers; in-migrates from the Pacific Ocean through the Bay-Delta to freshwater spawning grounds.	Low: Adults - late winter to spring; Juveniles–fall through spring
Central California coast ESU Coho salmon	<i>Oncorhynchus kisutch</i>	E	Ocean waters, Sacramento and San Joaquin Rivers; in-migrates from the Pacific Ocean through the Bay-Delta to freshwater spawning grounds.	Low: Adults–fall and winter; Juveniles–spring through fall.
Tidewater goby*	<i>Eucyclogobius newberryi</i>	E	Coastal lagoons, estuaries, and marshes in coastal California, from the Smith River (Del Norte County) to Aqua Hedionda Lagoon (San Diego County).	None: species extirpated from San Francisco Bay-Delta.
Delta smelt*	<i>Hypomesus transpacificus</i>	T	Sacramento-San Joaquin River Delta, Suisun Bay, San Pablo Bay, river channels and sloughs in the Bay-Delta.	None: outside known range.

Notes:

- Federal Status Codes:
E= Endangered
T = Threatened

C= Candidate
MMPA= Marine Mammal Protection Act

2. Other

* = Determined that species was not present within the Action Area or extirpated from the Central Bay.

Source: Caltrans 2014b (Table 1)

F.4 Coastal Impact Assessment

The following provides an analysis of the project on the coastal process as it relates to construction and maintenance impacts to long-shore transport; beach elevation changes; biological resources; water quality; vessel operations; mariner and human safety; exclusions and signage; and aesthetics. The analysis is based on information in the Coastal Processes Report prepared for Outfall IJKL (ESA PWA 2011).

F.4.1 Construction Impacts on Long-Shore Sand Transport and Beach Elevation

Long-Shore Sand Transport

The Coastal Processes Report evaluated eight alternatives, of which the project is closest to Alternative 4.a.i, which was an alternative to extend the pipe horizontally several hundred feet offshore with support structures. The report acknowledged that while Alternative 4.a.i is the most practical, the pipe and support structure could potentially cause some impediment to shore sand transport, likely resulting in beach accretion on the western side of the outfall and erosion on the eastern side (ESA PWA 2011). The preliminary design of Alternative 4.a.i as shown in Figure 6.1 of the Coastal Processes Report included piles that are spaced approximately 14 ft apart from one another (ESA PWA 2011).

The design of the outfall has been refined to build-level and show that the piles will be typically spaced 25 ft apart (Attachment B, sheet D-2), allowing flow to pass above, around, and under the outfall pipe and its supports. Two studies have evaluated the long-shore transport by wave and current action in the IJKL Outfall area and found that the potential for long-shore transport due to wave action is almost exclusively in the eastward direction with a small potential for transport westward (Moffatt & Nichol 2014). Further they note that bed load transport by tidal currents is typical in the deeper channel area offshore of the Crissy Field area, which are less affected by waves and exhibit stronger currents, and the potential for bed load transport is significantly less than that of the wave driven transport at the project site (Moffatt & Nichol 2014).

Long-shore sediment transport is typically impeded by structures (groin or jetty) which block flow, thus impounding sand. For these structures to be effective they must reach from the sea bottom to above the MHHW level with a continuous structure. Therefore, the outfall and support piles are designed in the following two ways to minimize the amount of potential block to flow: (1) the outfall pipe and pile supports are submerged below the MLLW, and (2) the outfall pipe is held by its supports above the bay bottom (Moffatt & Nichol 2014). These two features allow flow to pass above, around, and under the pipe and its support, limiting the ability to block flow and trap sand (Moffatt & Nichol 2014). Based on these assumptions in the discussion above, construction of the project will not significantly impact long-shore sediment transport.

Beach Accretion

Based on mid-range sea level rise estimates (14-in by 2050 and 55-in by 2100), the area in proximity to the outfall will most likely see the largest amount of shoreline retreat due to sea level rise, with an estimated 47-ft by 2050 and 183 ft by 2100 (ESA PWA 2011).

Although the outfall area is expected to see shoreline retreat due to sea level rise, sand is anticipated to accumulate at a higher rate, resulting in a net growth of the beach over the next 90 years, with a potentially large amount of beach growth in the next 50 years. The maximum likely net growth of the beach in the vicinity of the outfall in the next 50 years, accounting for both sand accumulation and sea level rise, is 193-ft, while the expected mean net growth is 94-ft. Similarly, the maximum likely beach growth in the next 90 years is 60-ft with an expected net growth of 56-ft. The decline in expected beach

growth between 50 and 90 years from now is due to the accelerated beach retreat due to sea level rise (ESA PWA 2011).

The outfall will be buried on the beach and any excavations will be temporary, and subsequently backfilled. Beach areas will be restored to their original elevations following the completion of construction. Therefore, construction of the project will not have any impact on the forecasted beach elevation changes.

F.3.2 Maintenance Impacts on Long-Shore Sand Transport and Beach Elevation

Long-Shore Sand Transport

Analysis of the future shoreline position provided a planning range of possible shoreline distances from the current location as 1.4 ft to 192 ft in 50 years, with a mean estimate of 94 ft (ESA PWA 2011). From a conservative (low risk) perspective (maximum shoreline accretion rate combined with sea level rise projections), the pipe extension is required to be at least 195 ft from the current location to exceed the projected 50-year shoreline profile. The project will extend the outfall by approximately 100 ft beyond the expected 50-year beach accretion point into the Bay (up to 192 feet), which will be sufficient to maintain an outfall that does not get buried and blocked by sand. As described under Section F.3.1 above, the design allows flow to pass above, around, and under the pipe and its supports, limiting the ability to block flow and trap sand (Moffatt & Nichol 2014). The pipe will therefore maintain its ability to discharge to the Bay without requiring regular maintenance to clear accumulated sand.

Beach Accretion

Once the outfall construction is complete, the beach areas will be restored to their original elevations. The modified outfall will convey stormwater discharges 100 ft beyond the expected 50-year beach accretion point into the Bay. Conveyance of the stormwater into the Bay will not contribute to beach accretion. In addition, maintenance of the outfall will not require activities that will modify the beach elevation. Therefore, maintenance of the outfall will have no impact to beach elevation.

F.3.3 Construction Impacts on Nearshore Biological Resources and Water Quality

Aquatic Biological Resources

Caltrans prepared a BA in August 2014 (Caltrans 2014b) that addresses potential effects of the project's construction on federally listed aquatic species, aquatic species protected under the MMPA, and EFH. The following discussion is based on information in the BA. The project will have short-term temporary effects from construction activities associated with installation of a temporary turbidity curtain, trenching the bay bottom, and driving new piles. This will be associated with construction during Stage 2 within the intertidal and Bay/subtidal zones and Stage 3 within the Bay/subtidal zone.

The aquatic BA determined that the project may affect, but is not likely to adversely affect the following federally listed and proposed species or critical habitat:

- Green Sturgeon Southern DPS (*Acipenser medirostris*; threatened)
- Central California Coast ESU steelhead trout (*Oncorhynchus mykiss*; threatened)
- Central Valley ESU steelhead trout (*Oncorhynchus mykiss*; threatened)
- Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*; endangered)
- Central Valley spring-run ESU Chinook salmon (*Oncorhynchus tshawytscha*; threatened)
- Central California Coast ESU Coho salmon (*Oncorhynchus kisutch*; endangered)

- Longfin smelt (*Spirinchus thaleichthys*; State-threatened)

After consultation with NMFS it was determined that the project would have no effect on:

- Humpback whale (*Megaptera novaeangliae*; endangered)

As described previously in Sections C.2 and C.3 regarding construction practices, offshore construction activities below the MHHW mark to the end of Stage 2 will be limited to June 1 through July 31, during the typical dry season, to avoid migrating fish. Underwater hydrophones will be in-place during all aquatic construction activities to ensure that pile driving and other construction activities do not exceed 170 dB to avoid or reduce effects on marine mammals and fish. No aquatic mitigation measures are proposed for the project, as project effects are temporary and self-mitigating. No adverse effects on listed species or critical habitat will occur.

Terrestrial Biological Resources

A terrestrial BA published by Caltrans in July 2014, analyzed the potential effects to federally listed terrestrial species in the Action Area (Caltrans 2014c). The terrestrial BA determined that the project is expected to have a negligible and temporary effect on, and will not jeopardize the continued existence of the western snowy plover in the Action Area. The timing of Stage 1 construction is designed to avoid onshore work when western snowy plovers are expected to be present (August to April) in the Action Area. Temporary impacts to beach and intertidal habitats that are potentially suitable for western snowy plover will be expected to recover quickly, due to tidal action. The small portion of northern foredune habitat that will be permanently impacted will be replanted by NPS. Barges and construction activities may disturb western snowy plovers after July 31 during Stages 2 when construction is offshore but within the intertidal zone. Stage 3 construction will be far enough offshore to not cause any disturbance to western snowy plovers. The number of western snowy plovers present in the Action Area from July through October is expected to be relatively low (two to eight) and thus, the project is expected to have a negligible and temporary effect on, and will not jeopardize the continued existence of the western snowy plover in the Action Area. No other federally listed terrestrial species will be affected by the project.

Water Quality

Trenching for the pipeline extension and the installation of the new piles and pipeline will temporarily disturb sediment along the beach and bay bottom, which will cause a localized increase in turbidity and possible contaminants. A temporary and localized elevation in turbidity will occur when the turbidity curtain is deployed, retrieved, and during excavation and pile driving activities. Pile driving will create strong vibrations displacing bottom sediments, and thereby increasing turbidity.

Increased turbidity is unavoidable, yet will be short term, considering the duration of excavation and pile driving (8 days), diurnal tidal cycle, and presence of sandy material.

Impacts to existing water quality from project construction activities will be reduced, or prevented, primarily because of the installation of a turbidity curtain (Stages 1 and 2), as well as through implementation of temporary Construction Site BMPs. The temporary turbidity curtain will be secured to the Bay floor using 52 40-lb galvanized steel anchors (though the curtain itself will not extend to the Bay bottom), which will help keep the turbidity in a controlled area. Project Construction Site BMPs will be described and implemented via the Stormwater Pollution Prevention Plan (SWPPP) and Excavation Disposal Plan; refer to Section D.5 above. In addition, testing and monitoring will be implemented to ensure the waters will be free of changes in turbidity that can cause nuisance or adversely affect marine wildlife and habitat. Increases in turbidity will not be greater than 10 percent (%) in areas where

background turbidity is greater than 50 NTUs. Please refer to Sections C.2 and C.3 for further details of Construction Site BMPs.

No water quality mitigation measures are proposed for the project, as project effects will be temporary. No adverse water quality impacts will occur.

Water Quality - Vessel Operations and Fuel Spills

Barge tugboat propellers could stir up sediment in shallow waters and similarly create turbidity plumes. The increase in turbidity is unavoidable, but will be short term, occurring only during the mobilization and demobilization of barges. The use of barges will not include any discharge of ballast water, bilge water, or sewage that could impact water quality. Construction-related effects on water quality from the use of barge platforms (e.g., potential spills of construction materials and wastes) will be minimized through Construction Site BMPs described previously Sections C.2 and C.3. These include implementation of a SWPPP and temporary sediment and turbidity control measures, including monitoring. The turbidity curtain will also serve to contain turbidity plumes generated by barge operations. No adverse water quality impacts as a result of vessel operations are anticipated.

F.3.4 Maintenance Impacts on Nearshore Biological Resources and Water Quality

Aquatic and Terrestrial Biological Resources

As described in the terrestrial and aquatic BAs, long-term effects will result from extending the pipe, which will be minimal and may likely result in a beneficial effect, as the new pipe can provide a hard substrate surface that will provide habitat for benthic species to colonize. No adverse effects on listed species or critical habitat will occur as a result of maintenance and operation of the project.

Water Quality

Completion of this project will result in less active maintenance on the beach, in contrast to the existing condition. Maintenance access will be available via the two manholes (one on Crissy Field, south of the San Francisco Bay Trail; the other on Crissy Beach, north of the protected dune area). This project will have a net benefit in regard to Outfall maintenance.

F.3.5 Construction Impacts on Safety – (Mariner / Human)

Completion of this project will result in less active maintenance on the beach, in contrast to the existing condition. Maintenance access will be available via the two manholes (one on Crissy Field, south of the San Francisco Bay Trail; the other on Crissy Beach, north of the protected dune area). This project will have a net benefit in regard to Outfall maintenance.

F.3.6 Construction Exclusions / Signage

Construction activities have the potential to disrupt general and special event use along the San Francisco Bay Trail and the Presidio Promenade trail, as well as within the beach and Crissy Field that are located within the construction footprint. Please refer to Sections D.13 and D.14 which describes short term construction-related closures within the project footprint and how and when exclusions (fencing) will be installed.

F.3.7 Construction Impacts on Visual Quality

Construction activities will have a short-term impact on the visual quality of the Presidio. Please refer to Section D.14, which describes impacts to aesthetic resources.

G. REGULATORY PERMITTING

The following regulatory documents have been prepared and submitted for the project:

- Clean Water Act Section 401 Water Quality Certification Application; submitted by California Department of Transportation (Caltrans), **August 2014**
- Clean Water Act Section 404 Nationwide Permit to Discharge Dredged or Fill Material; submitted by Caltrans District 4, **August 2014**
- [Terrestrial] Biological Assessment, South Access to the Golden Gate Bridge–Doyle Drive: IJKL Outfall Replacement Project; submitted by Caltrans District 4, **February 2014**
- Addendum to the [Terrestrial] Biological Assessment, South Access to the Golden Gate Bridge–Doyle Drive: IJKL Outfall Replacement Project; submitted by Caltrans District 4, **July 2014**
 - FHWA has initiated formal consultation with the USFWS pursuant to Section 7 of the Endangered Species Act and anticipates a USFWS Biological Opinion (BO) on the potential effects of the project to the listed western snowy plover.
 - USFWS delivered a BO in **October 2014**.
- [Aquatic] Biological Assessment, South Access to the Golden Gate Bridge–Doyle Drive: IJKL Outfall Replacement Project; submitted by Caltrans District 4, **August 2014**
 - NMFS is consulting informally on listed fish and marine mammals.
 - NMFS has delivered a Letter of Concurrence to Caltrans in **October 2014**.

H. RESPONSE TO PUBLIC COMMENTS

This proposal was released to the public for a three-week public notice period, from November 14, to December 5, 2014, during which NPS accepted public comments. A total of two correspondences were received, which are included in Attachment D.

Public comments received addressed the following themes:

- **Theme 1 – Beach Access and Closures**

Concerns were expressed by National Oceanic and Atmospheric Administration (NOAA) regarding beach access for their marine science program for students who walk through the Shop/Garage (Building 1907) gate and requested if the closure fencing could be staked instead of anchored to the pier to allow access. NOAA would like to access the Crissy Beach by taking students through the gate at the west end of their designated parking area because the added walk will cut into their program time and require students to go through an active parking area (potential hazard). In addition, the commenter noted that shorter term temporary closures between July and October would be a better strategy since there would be less construction activity on the Crissy Beach while phase 3 work in the Bay would be performed.

Responses:

- For the safety and well-being of the public, Caltrans prefers to anchor the fencing closure to properly secure the construction site area to limit any potential hazard to the public.
- Due to the limited space available for construction equipment and staging, the area of Crissy Beach indicated on Figure 2, is required to remain closed. However, after the public comment

period concluded, Caltrans began evaluating an option of constructing a temporary trestle. The trestle could reduce the size of the staging areas on Crissy Beach. The trestle would be parallel to the new outlet and constructed on piles as construction of the outfall progresses (see sheet SC-1 in Attachment B). If the trestle is deemed feasible, access to parts of Crissy Beach may be possible after construction on the beach portion of the project has been completed. Section C has been updated to reflect this possibility.

- **Theme 2 – Construction Noise**

The NOAA commenter expressed concern regarding loud construction noise affecting their outside marine science program. They requested to be informed of the types and times of potential noise disruptions such that they can arrange their programming to avoid certain periods.

Responses:

- See Section C.2 regarding noise monitoring practices during construction and Section D.4 above for a description of noise impacts (soundscape).
- The loudest construction noise will be due to pile driving activities in the intertidal, offshore, and subtidal zones. As described in Section D.4, the construction activities and equipment will be required to comply with the NCP, Caltrans Standard and Special Specifications, and NPS requirements related to noise control measures. Noise monitoring devices will be in place during all construction activities to ensure that the project meets the noise parameters and to reduce effects on the public. GGNRA believes that through compliance with the applicable laws, regulations and policies, and compliance with permit conditions, avoiding programming will not be necessary.

- **Theme 3 – Parking and Site Safety**

NOAA explained that daily education classes with children grades K-12 are conducted outside of Lifeboat Station (Building 1903). NOAA indicated that there would be an increased safety risk by using their campus as the access route to the construction site. They requested that no vehicles or related equipment be staged or parked in the area occupied by NOAA, nor should our parking lot and driveway be used as a throughway for access to the construction site or staging area.

Responses:

- No vehicles or related equipment will be staged or parked in the area occupied by NOAA, and the parking lot and driveway will not be used as a throughway for access to the construction site or staging area. As shown in Figure 2, only the segment of the Promenade adjacent to NOAA's area will be used as temporary construction access.
- The Traffic Management Plan will require the implementation of safety measures to ensure the public's safety. A number of safeguards will be required to ensure safe construction activities such as workers will flag in front and back of construction equipment at all times when entering/exiting the project area or on public pathways including pedestrian areas such as the Promenade.

- **Theme 4- Signage**

NOAA requested that directional signage be installed at the two entrances to their campus from the Promenade to direct would-be beach goers to the entrance gate west of the campus, adjacent to the West Bluff Picnic Area.

Response:

- Caltrans will provide the appropriate signage to provide wayfinding and ensure safe passage around the construction site area.

- **Theme 5- Aesthetics**

NOAA expresses that Crissy Field offers one of the only unobstructed views of the Bay for millions of visitors to San Francisco each year and request that the new outfall not be exposed or visible to the naked eye, even during the lowest tides of the year.

Response:

- Aesthetically, the outfall is designed to be hidden during low tide. However, the last two piles must be elevated in order to put in permanent signage to alert helmsman and demarcate that the pipeline is present. Placement of a sign is a requirement by the US Coast Guard, and NPS for safety reasons. There is no other way to avoid this requirement.

- **Theme 6- Corrections**

A commenter pointed out that the accepted taxonomic binomial for the Western Snowy Plover is now *Charadrius nivosus*.

Response:

- *Charadrius alexandrinus nivosus* was used in all supporting and related documentation because consultation with agencies began prior to the formal name change in 2012. However, given that Caltrans consultation with NPS began in 2014, all references within the environmental document pertaining to this species has been corrected to this proper nomenclature.

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Attachment B

Project Plans

INDEX OF PLANS

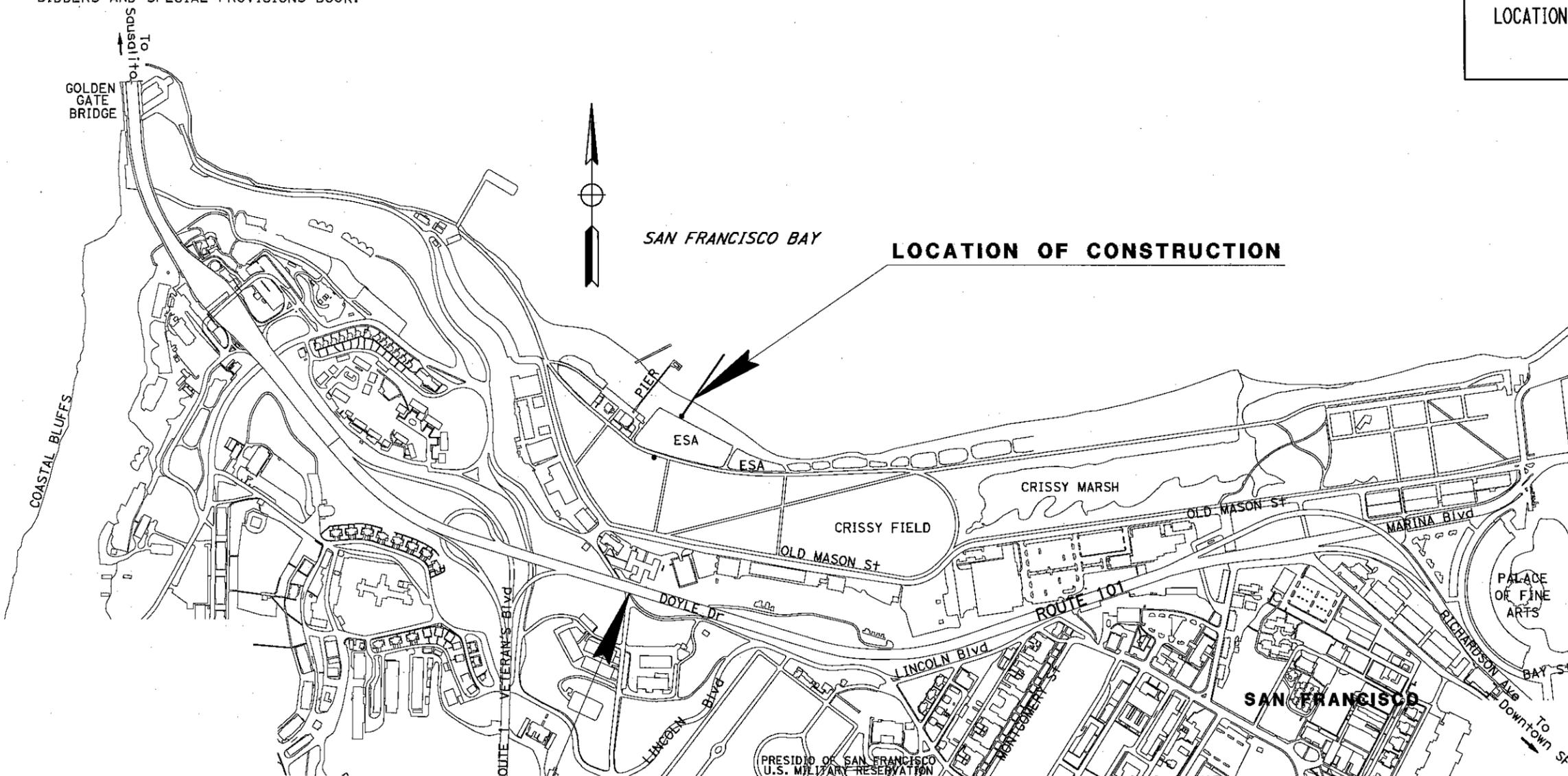
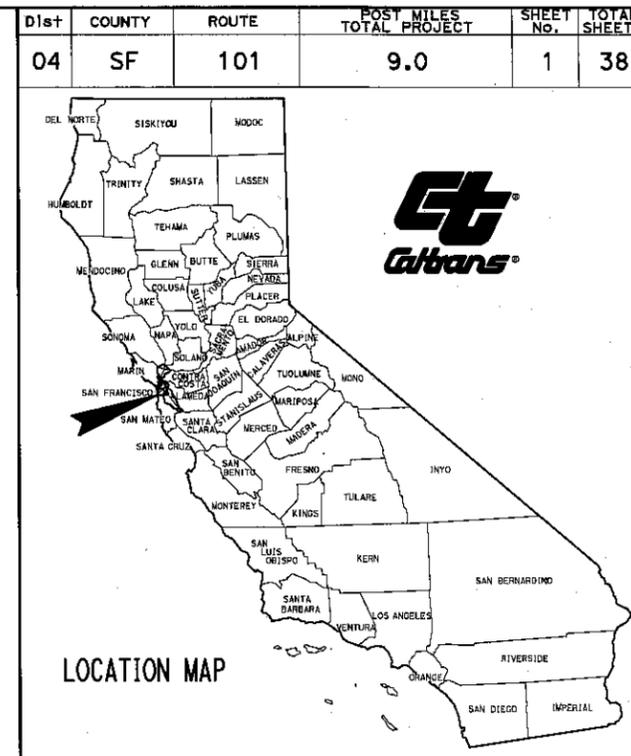
SHEET No.	DESCRIPTION
1	TITLE SHEET AND LOCATION MAP
2	LAYOUT
3	CONSTRUCTION DETAILS
4 - 6	TEMPORARY WATER POLLUTION CONTROL PLAN AND DETAILS
7 - 12	DRAINAGE PLAN, PROFILES, DETAILS AND QUANTITIES
13	CONSTRUCTION AREA SIGNS
14 - 15	STAGE CONSTRUCTION PLAN AND DETAILS
16	TRAFFIC HANDLING PLAN
17	SUMMARY OF QUANTITIES
18 - 22	LOG OF TEST BORINGS
23	ROADSIDE CLEARING PLAN
24 - 27	IRRIGATION SPRINKLER SCHEDULE, REMOVAL PLAN, PLAN (CONSTRUCTION STAGING AREA) AND QUANTITIES
28 - 29	PLANT LIST AND PLAN
30 - 31	EROSION CONTROL LEGEND AND QUANTITIES AND PLAN
32 - 38	REVISED STANDARD PLANS

THE STANDARD PLANS LIST APPLICABLE TO THIS CONTRACT IS INCLUDED IN THE NOTICE TO BIDDERS AND SPECIAL PROVISIONS BOOK.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR DRAINAGE CONSTRUCTION NEAR
STATE HIGHWAY
IN THE CITY AND COUNTY
OF SAN FRANCISCO
AT CRISSY FIELD

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010



PM 9.0

NO SCALE

Peter Aguilera 10/24/14
PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER
January 20, 2015
PLANS APPROVAL DATE
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

CONTRACT No.	04-1637N4
PROJECT ID	0400020923

PROJECT MANAGER NIDAL TUAN
DESIGN MANAGER ARLISSA PANG

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	2	38

10/24/14
 REGISTERED CIVIL ENGINEER DATE

1-20-15
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER
 Peter Aquilera
 No. 55287
 Exp. 2-31-16
 CIVIL
 STATE OF CALIFORNIA

NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

ABBREVIATIONS:

- ACOE US ARMY CORPS OF ENGINEERS
- AMA ARCHAEOLOGICAL MONITORING AREA
- BCDC SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
- EOP EDGE OF PATH
- HTL HIGH TIDE LINE
- KTL KING TIDE LINE
- MHHW MEAN HIGHER HIGH WATER
- MLLW MEAN LOWER LOW WATER

LEGEND:

-  STAGING AREA (NO CONTRACTOR VEHICLE PARKING)
-  ACCESS PATH

NOTES:

1. PLACE Temp FENCE (TYPE CL-6) WEST OF Exist FENCE.
2. MARINE VESSELS SHOWN ARE CONCEPTUAL ONLY.
3. BATHYMETRIC CONTOURS ARE BASED UPON BATHYMETRIC SURVEY AND LIDAR DATA CONDUCTED IN MAY AND JUNE 2013. DATUM IN NAVD88.
4. DO NOT BLOCK OR HINDER SF BAY TRAIL AND OLD MASON STREET.
5. EXACT LOCATION OF WILDLIFE PROTECTION AREA, Temp FENCE (TYPE ESA), AND Temp FENCE (CL-6) TO BE DETERMINED BY THE ENGINEER.

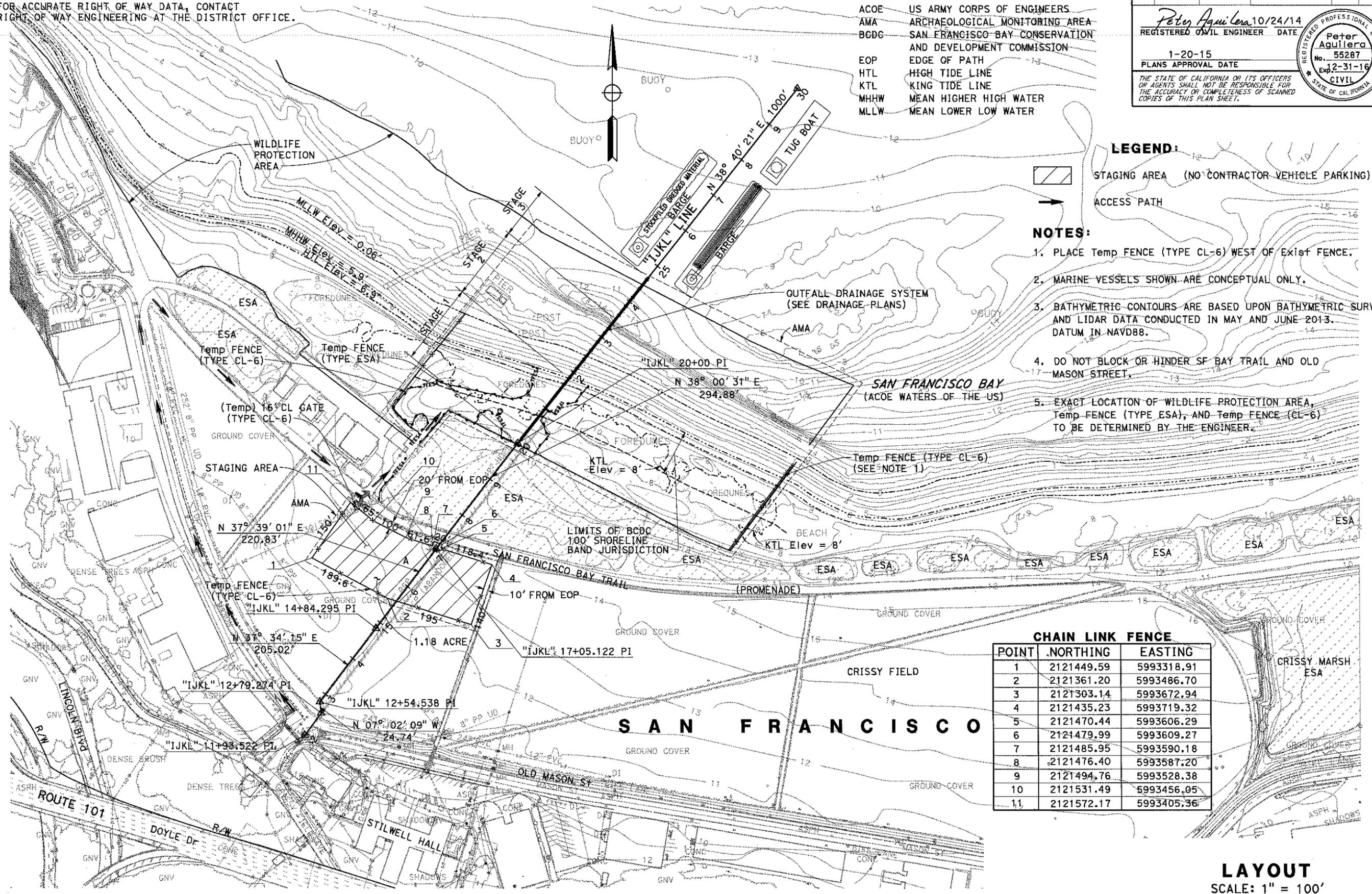
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 DESIGN

FUNCTIONAL SUPERVISOR
 ARLISSA PANG

CHECKED BY

PETER AGUILERA
 SUSANA ONATE

REVISED BY
 DATE REVISED
 PA
 9/30/14



CHAIN LINK FENCE

POINT	NORTHING	EASTING
1	2121449.59	5993318.91
2	2121361.20	5993486.70
3	2121303.14	5993672.94
4	2121435.23	5993719.32
5	2121470.44	5993606.29
6	2121479.99	5993609.27
7	2121485.95	5993590.18
8	2121476.40	5993587.20
9	2121494.76	5993528.38
10	2121531.49	5993456.05
11	2121572.17	5993405.36

LAYOUT
 SCALE: 1" = 100'

L-1

LAST REVISION DATE PLOTTED => 21-JAN-2015 TIME PLOTTED => 08:33

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CD **Gilbert**
 DESIGN
 FUNCTIONAL SUPERVISOR
 ARLISSA PANG
 CHECKED BY
 PETER AGUILERA
 SUSANA ONATE
 REVISOR BY
 PA
 DATE REVISOR
 1/17/15

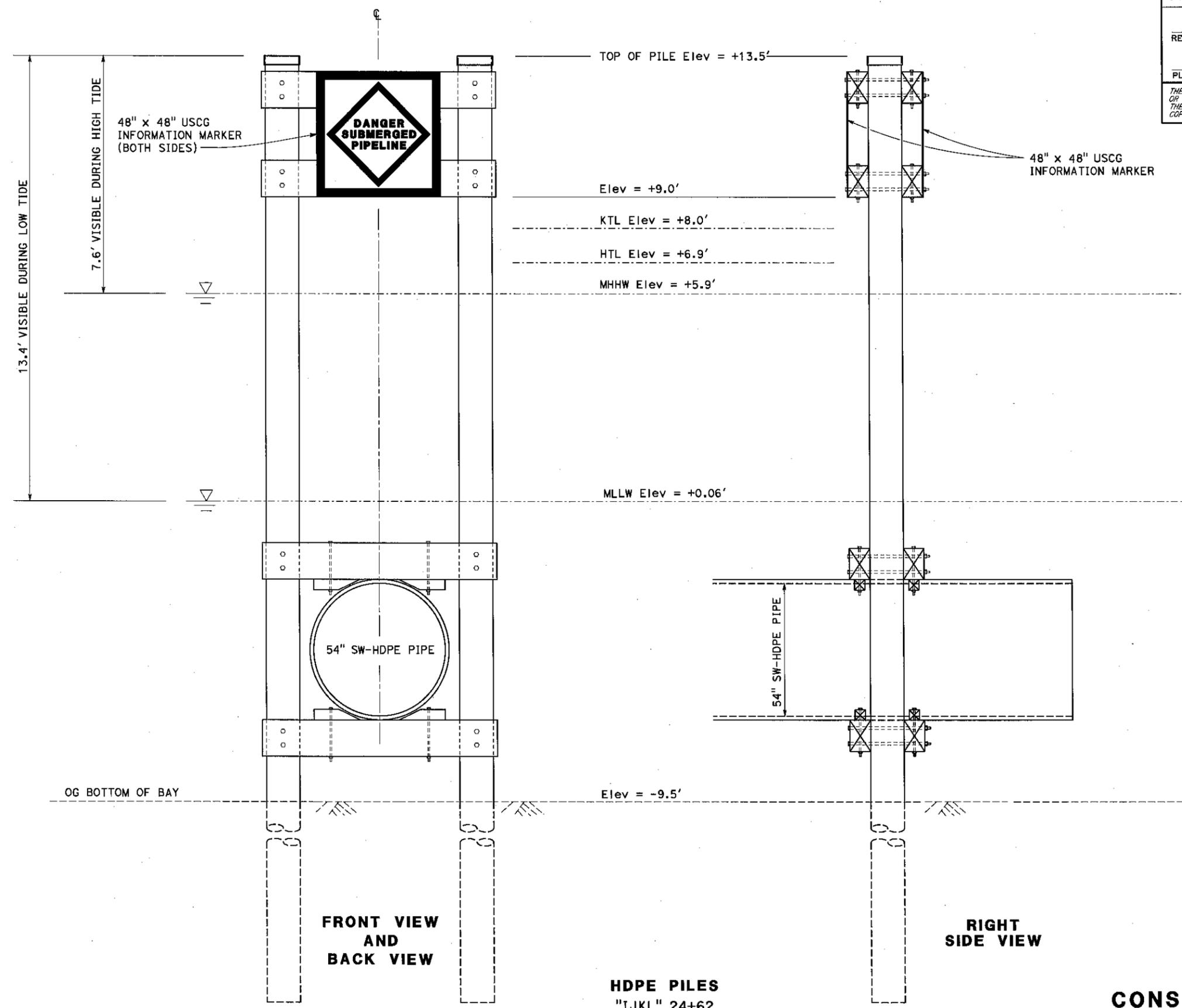
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04	SF	101	9.0	3	38

Peter Aguilera 1/16/15
 REGISTERED CIVIL ENGINEER DATE

1-20-15
 PLANS APPROVAL DATE

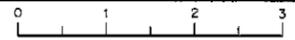
REGISTERED PROFESSIONAL ENGINEER
Peter Aguilera
 No. 55287
 Exp. 2-31-16
 CIVIL
 STATE OF CALIFORNIA

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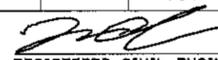


CONSTRUCTION DETAILS
 NO SCALE

C-1



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	4	38

 REGISTERED CIVIL ENGINEER DATE 10/24/14		
PLANS APPROVAL DATE 1-20-15		
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>		

NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

ABBREVIATIONS:

- HTL HIGH TIDE LINE
- KTL KING TIDE LINE
- MHHW MEAN HIGHER HIGH WATER
- MLLW MEAN LOWER LOW WATER

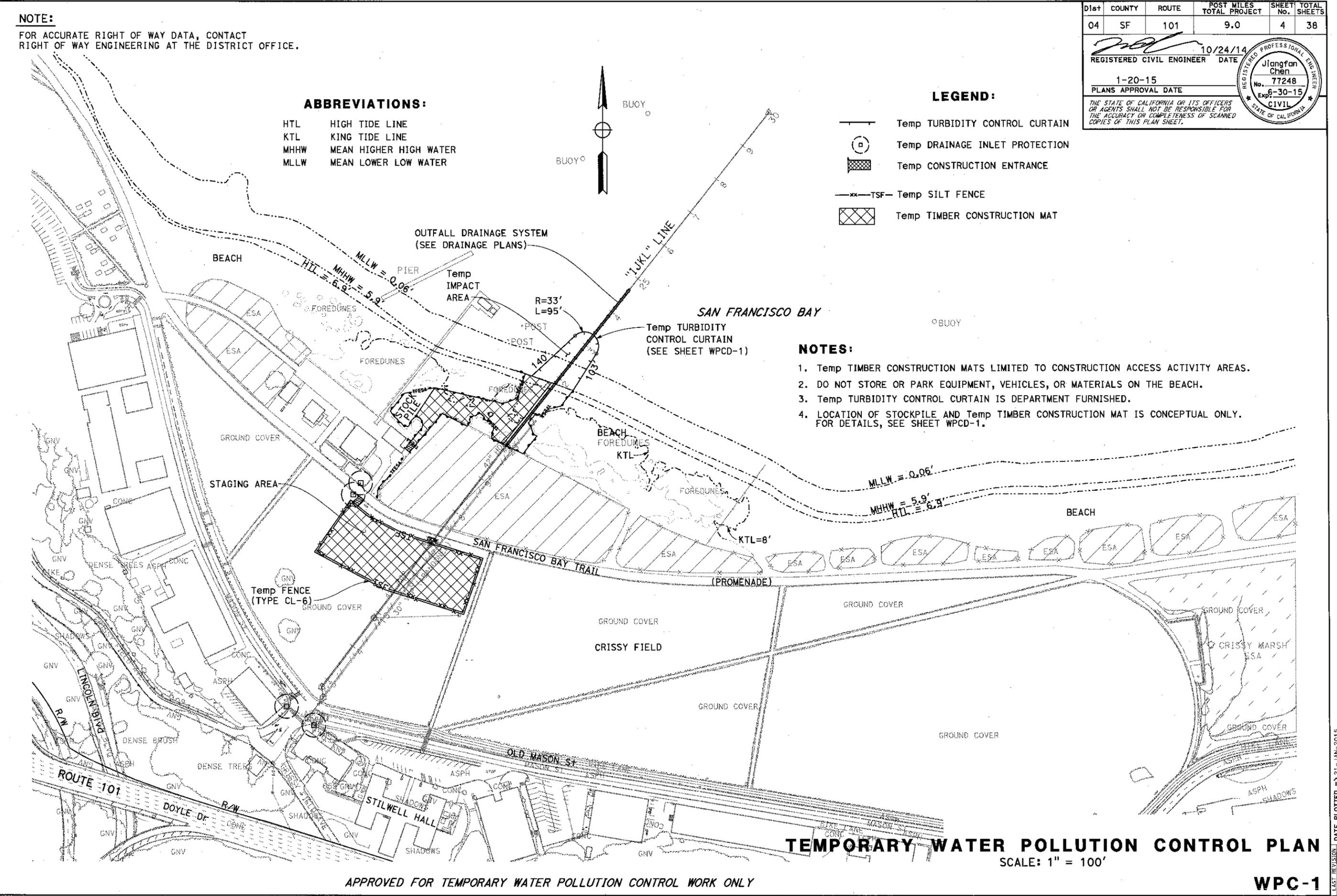
LEGEND:

-  Temp TURBIDITY CONTROL CURTAIN
-  Temp DRAINAGE INLET PROTECTION
-  Temp CONSTRUCTION ENTRANCE
-  Temp SILT FENCE
-  Temp TIMBER CONSTRUCTION MAT

NOTES:

1. Temp TIMBER CONSTRUCTION MATS LIMITED TO CONSTRUCTION ACCESS ACTIVITY AREAS.
2. DO NOT STORE OR PARK EQUIPMENT, VEHICLES, OR MATERIALS ON THE BEACH.
3. Temp TURBIDITY CONTROL CURTAIN IS DEPARTMENT FURNISHED.
4. LOCATION OF STOCKPILE AND Temp TIMBER CONSTRUCTION MAT IS CONCEPTUAL ONLY. FOR DETAILS, SEE SHEET WPCD-1.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
WATER QUALITY
 GIBBONS



TEMPORARY WATER POLLUTION CONTROL PLAN
 SCALE: 1" = 100'

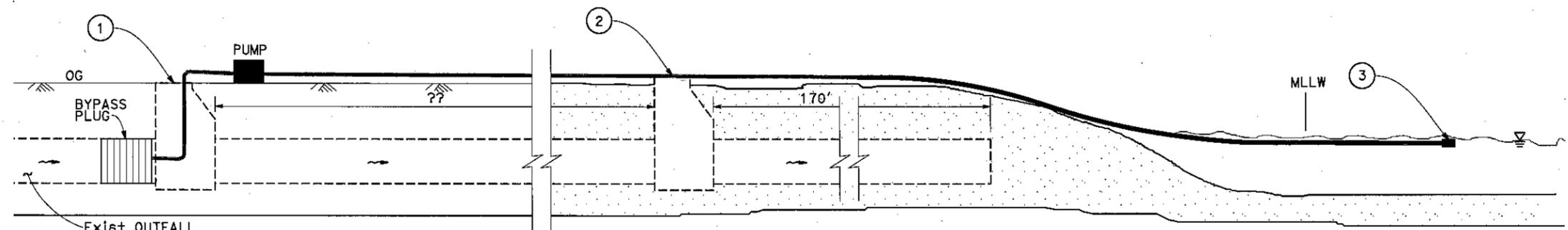
APPROVED FOR TEMPORARY WATER POLLUTION CONTROL WORK ONLY

WPC-1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	5	38

10/24/14
 REGISTERED CIVIL ENGINEER DATE
 1-20-15
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

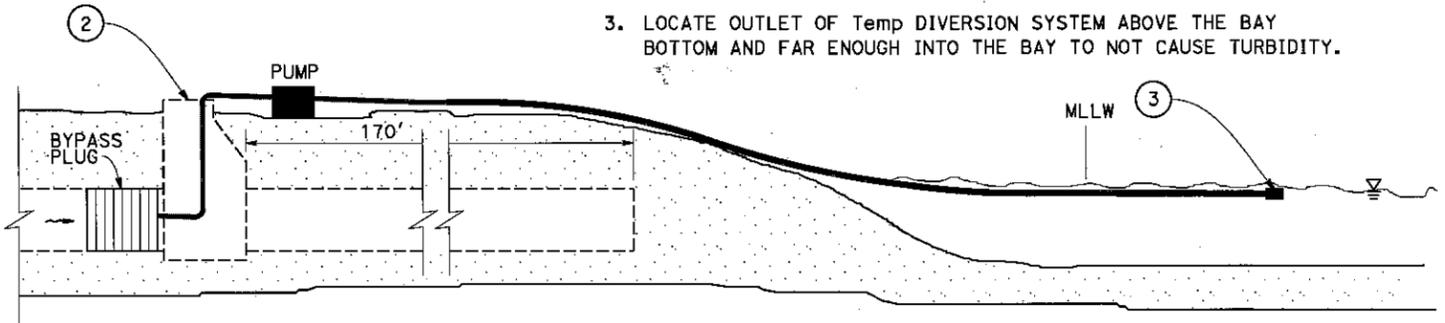
REGISTERED PROFESSIONAL ENGINEER
 Jiangfan Chen
 No. 77248
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA



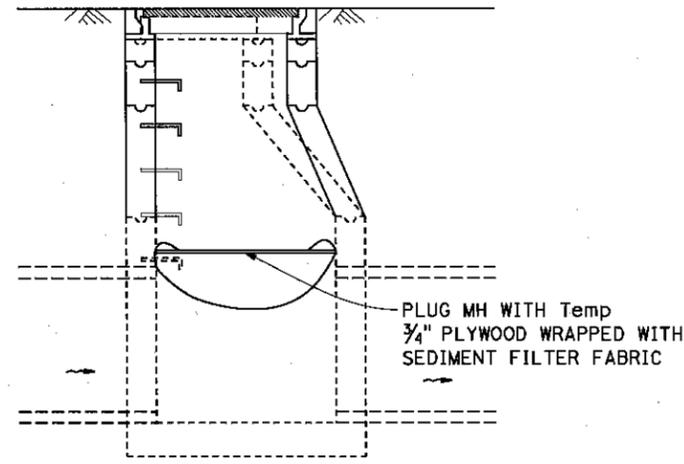
PROFILE VIEW
TEMPORARY DIVERSION SYSTEM (CRISSY FIELD MH)

NOTES:

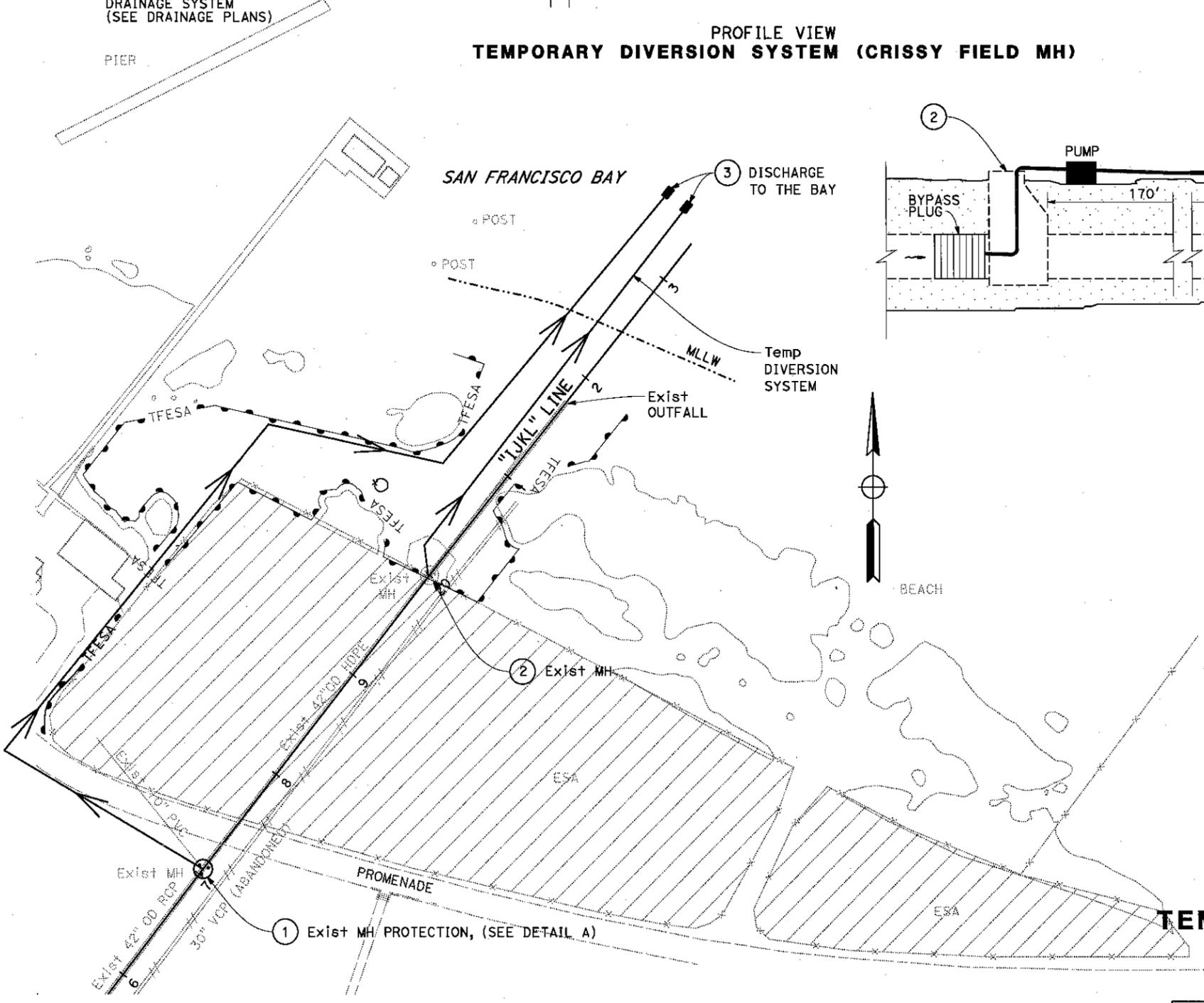
1. BURY Temp DIVERSION SYSTEM WHEN CROSSING ANY PUBLIC PATHWAY.
2. INSTALL Temp DIVERSION SYSTEM BEFORE STARTING DRAINAGE SYSTEM CONSTRUCTION. SEE DRAINAGE PLANS.
3. LOCATE OUTLET OF Temp DIVERSION SYSTEM ABOVE THE BAY BOTTOM AND FAR ENOUGH INTO THE BAY TO NOT CAUSE TURBIDITY.



PROFILE VIEW
TEMPORARY DIVERSION SYSTEM



DETAIL A



**TEMPORARY WATER POLLUTION CONTROL PLAN
 (TEMPORARY MANHOLE PROTECTION
 AND DIVERSION SYSTEM)**

NO SCALE

APPROVED FOR TEMPORARY WATER POLLUTION CONTROL WORK ONLY

FOR ABBREVIATIONS AND LEGEND, SEE SHEET WPC-1

WPC-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Water Quality
 KAMRAN NAKHJURI
 FUNCTIONAL SUPERVISOR
 KAMRAN NAKHJURI
 CHECKED BY
 JENNIFER CHEN
 KAMRAN NAKHJURI
 DESIGNED BY
 JC
 10/23/14
 REVISED BY
 DATE REVISED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans WATER QUALITY

FUNCTIONAL SUPERVISOR
 KAMRAN NAKHJURI

DESIGNED BY
 KAMRAN NAKHJURI

CHECKED BY
 KAMRAN NAKHJURI

REVISOR
 JENNIFER CHEN

DATE REVISOR
 10/23/14

DESIGNED BY
 JC

ABBREVIATIONS:

MHHW MEAN HIGHER HIGH WATER
 MLLW MEAN LOWER LOW WATER

NOTES:

1. REFER TO Std PLAN T53 FOR Temp COVER ON STOCKPILE.
2. FOR Temp TURBIDITY CONTROL CURTAIN DETAILS, REFER TO MANUFACTURERS INSTALLATION MANUAL.
3. REFER TO JOB SITE MANAGEMENT FOR STOCKPILE MANAGEMENT.
4. PROTECT Exist UTILITIES IN PLACE.

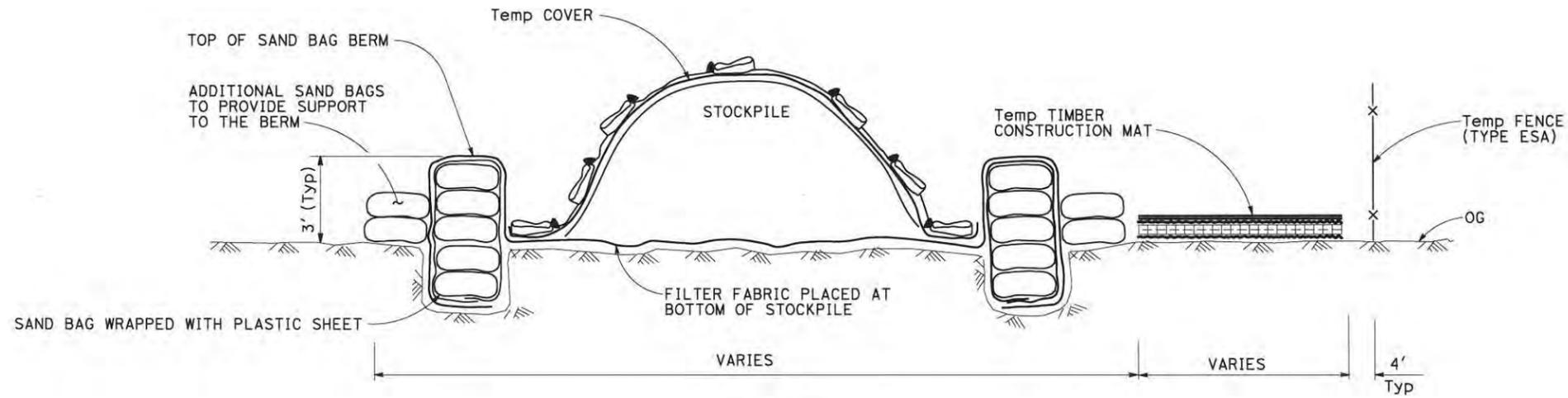
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	6	38

10/24/14
 REGISTERED CIVIL ENGINEER DATE

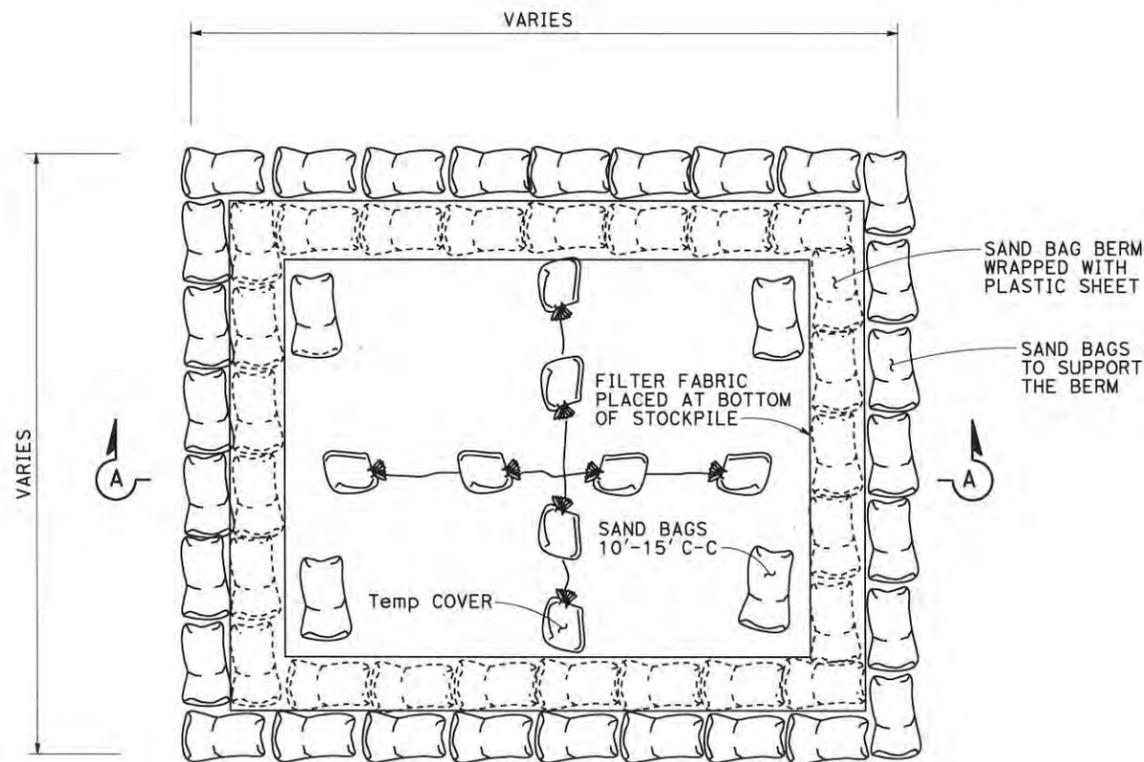
1-20-15
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 Jiangfan Chen
 No. 77248
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

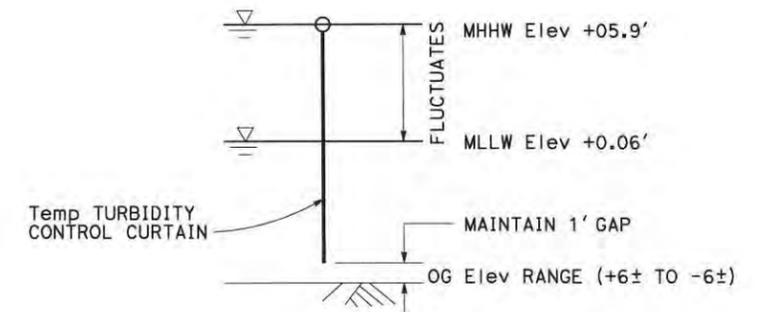
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SECTION A-A



PLAN
 TEMPORARY STOCKPILE DETAIL



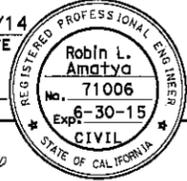
TEMPORARY TURBIDITY CONTROL CURTAIN DEPTH DETAIL

TEMPORARY WATER POLLUTION CONTROL DETAILS
 NO SCALE

WPCD-1



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	7	37
			10/29/14	DATE	
			REGISTERED/CIVIL ENGINEER	DATE	
			1-20-15	PLANS APPROVAL DATE	
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					



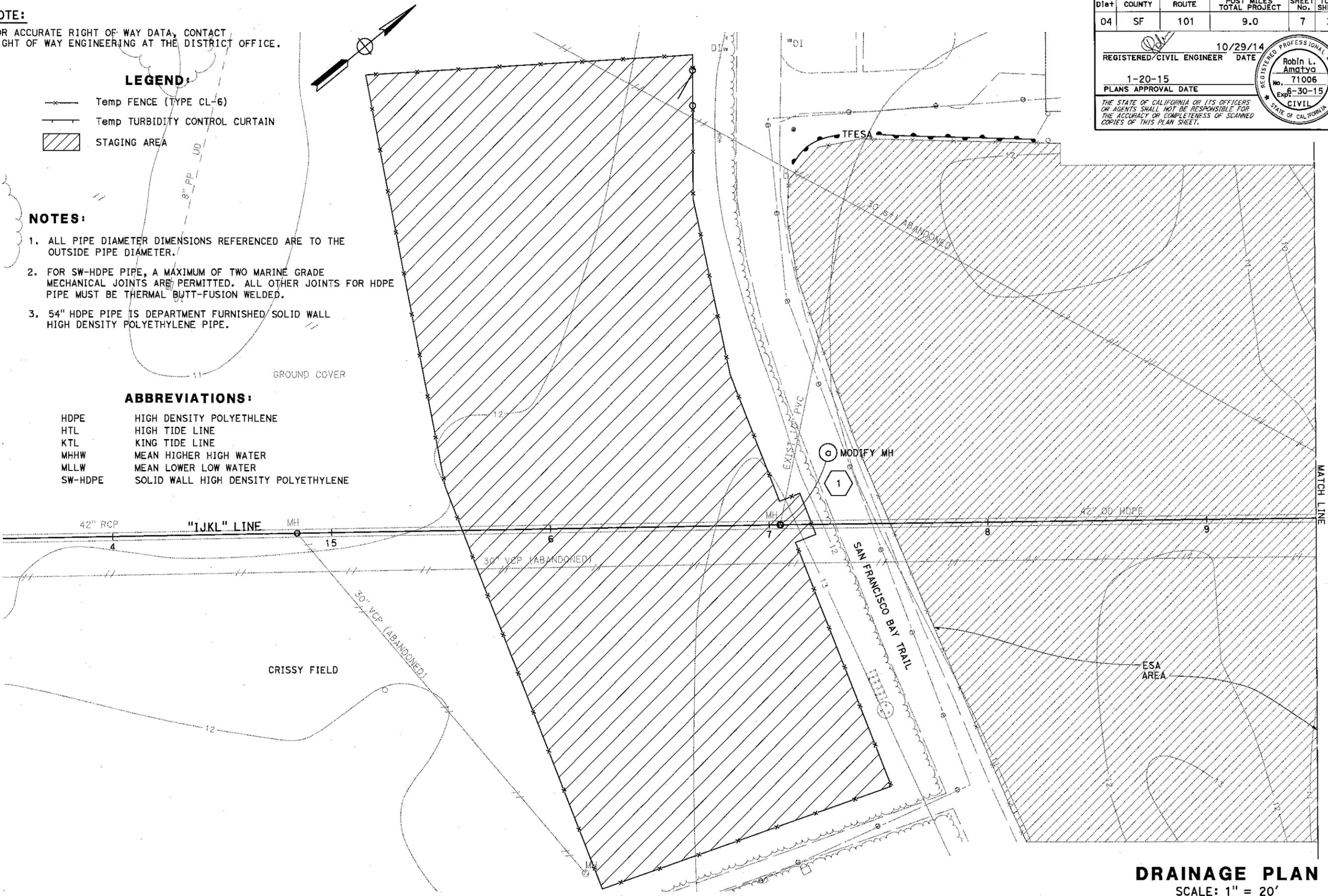
NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

- LEGEND:**
- Temp FENCE (TYPE CL-6)
 - Temp TURBIDITY CONTROL CURTAIN
 - ▨ STAGING AREA

- NOTES:**
- ALL PIPE DIAMETER DIMENSIONS REFERENCED ARE TO THE OUTSIDE PIPE DIAMETER.
 - FOR SW-HDPE PIPE, A MAXIMUM OF TWO MARINE GRADE MECHANICAL JOINTS ARE PERMITTED. ALL OTHER JOINTS FOR HDPE PIPE MUST BE THERMAL BUTT-FUSION WELDED.
 - 54" HDPE PIPE IS DEPARTMENT FURNISHED SOLID WALL HIGH DENSITY POLYETHYLENE PIPE.

- ABBREVIATIONS:**
- HDPE HIGH DENSITY POLYETHYLENE
 - HTL HIGH TIDE LINE
 - KTL KING TIDE LINE
 - MHHW MEAN HIGHER HIGH WATER
 - MLLW MEAN LOWER LOW WATER
 - SW-HDPE SOLID WALL HIGH DENSITY POLYETHYLENE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Hydraulics
 FUNCTIONAL SUPERVISOR: JOSEPH PETERSON
 CHECKED BY: ROBIN AMATYA
 REVISIONS: 10/6/14
 DESIGNED BY: JASJEET SIKAND
 CALCULATED BY:



DRAINAGE PLAN
SCALE: 1" = 20'

APPROVED FOR DRAINAGE WORK ONLY

D-1

LAST REVISION: DATE PLOTTED => 21-JAN-2015 TIME PLOTTED => 08:34

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	8	38

REGISTERED CIVIL ENGINEER	DATE
10/29/14	
PLANS APPROVAL DATE	
1-20-15	

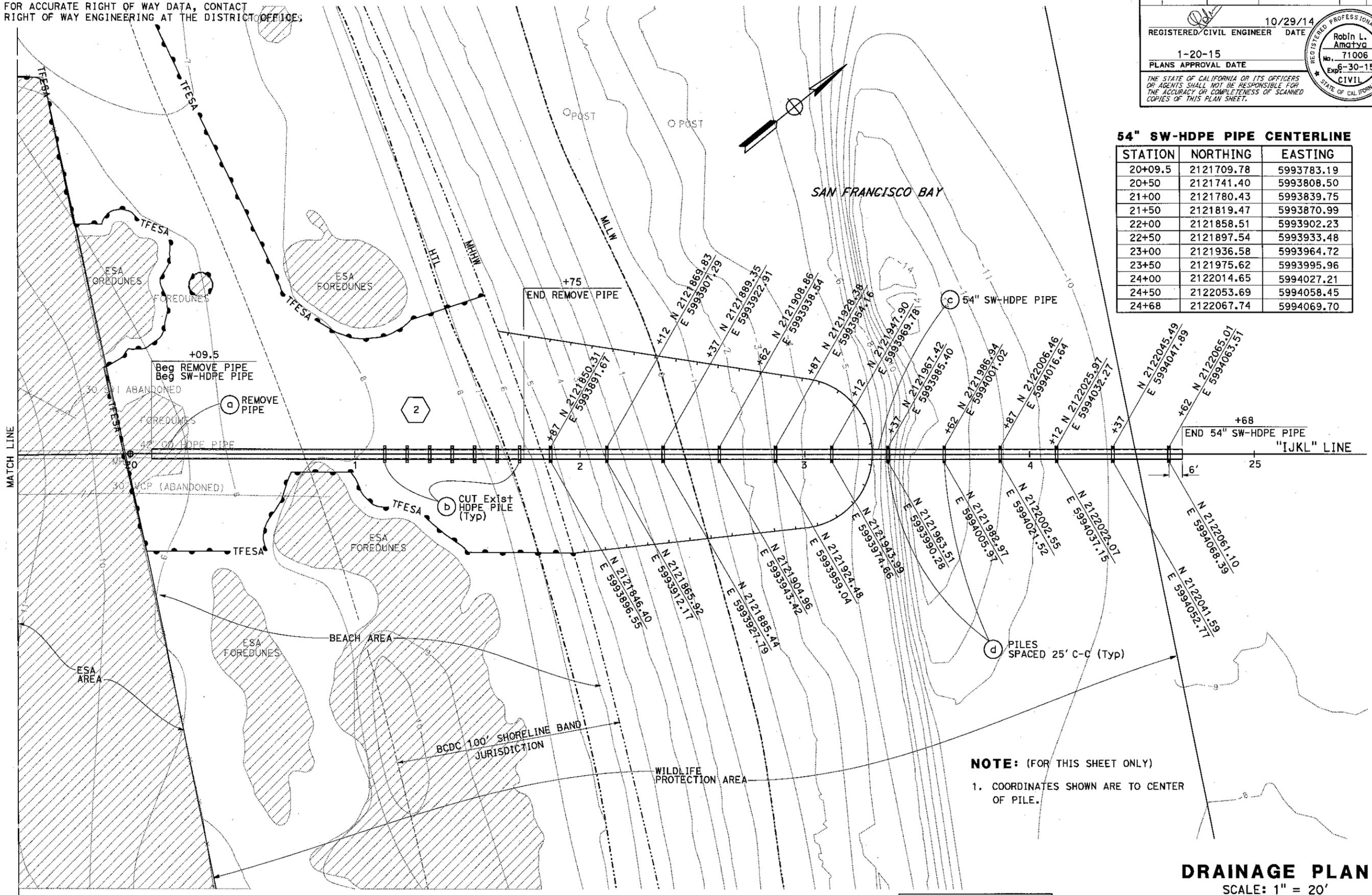
REGISTERED PROFESSIONAL ENGINEER	
Robin L. Amatya	
No. 71006	
Exp. 6-30-15	
CIVIL	

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

54" SW-HDPE PIPE CENTERLINE

STATION	NORTHING	EASTING
20+09.5	2121709.78	5993783.19
20+50	2121741.40	5993808.50
21+00	2121780.43	5993839.75
21+50	2121819.47	5993870.99
22+00	2121858.51	5993902.23
22+50	2121897.54	5993933.48
23+00	2121936.58	5993964.72
23+50	2121975.62	5993995.96
24+00	2122014.65	5994027.21
24+50	2122053.69	5994058.45
24+68	2122067.74	5994069.70



NOTE: (FOR THIS SHEET ONLY)
1. COORDINATES SHOWN ARE TO CENTER OF PILE.

DRAINAGE PLAN
SCALE: 1" = 20'

APPROVED FOR DRAINAGE WORK ONLY

FOR NOTES, ABBREVIATIONS AND LEGEND, SEE SHEET D-1

D-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans HYDRAULICS
FUNCTIONAL SUPERVISOR: JOSEPH PETERSON
CHECKED BY: JASJEET SIKAND
DESIGNED BY: SUSANA ONATE
DATE REVISED: 10/6/14
REVISOR: SO

BORDER LAST REVISED 7/2/2010

USERNAME => s128787
DGN FILE => 04000209231a002.dgn

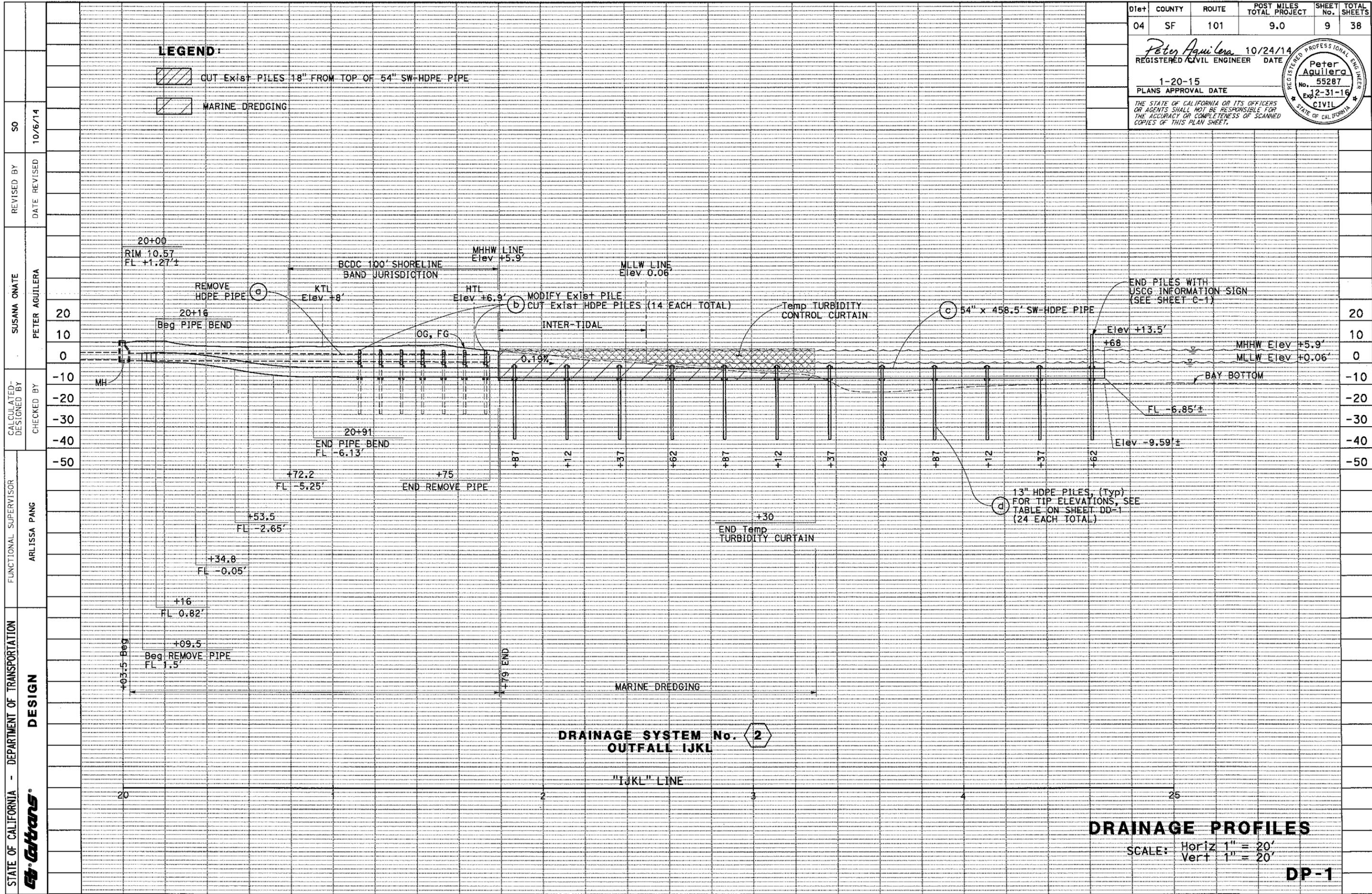
RELATIVE BORDER SCALE IS IN INCHES

UNIT 0702

PROJECT NUMBER & PHASE

04000209231

LAST REVISION DATE PLOTTED => 21-JAN-2015
10-29-14 TIME PLOTTED => 08:34



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	9	38

Peter Aguilera 10/24/14
 REGISTERED CIVIL ENGINEER DATE
 1-20-15
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

Peter Aguilera
 No. 55287
 Exp. 2-31-16
 CIVIL
 STATE OF CALIFORNIA

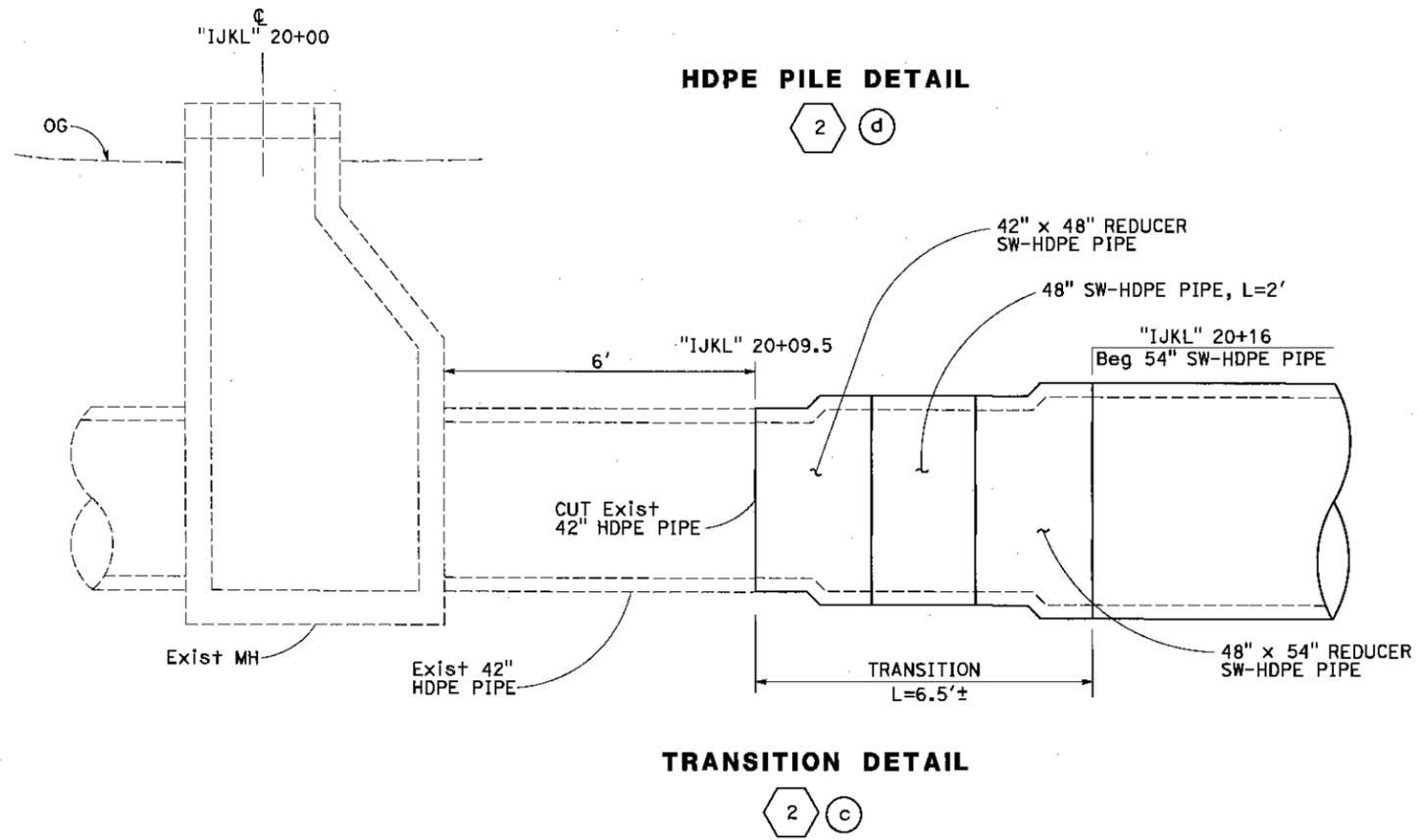
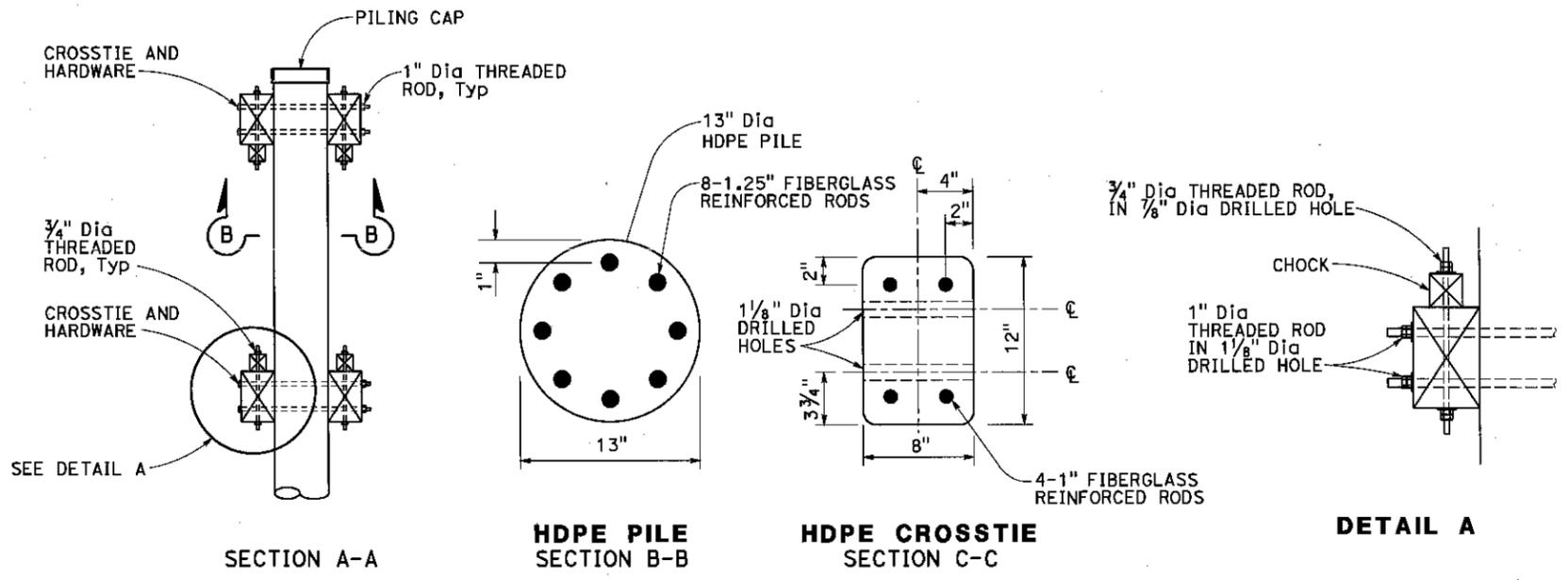
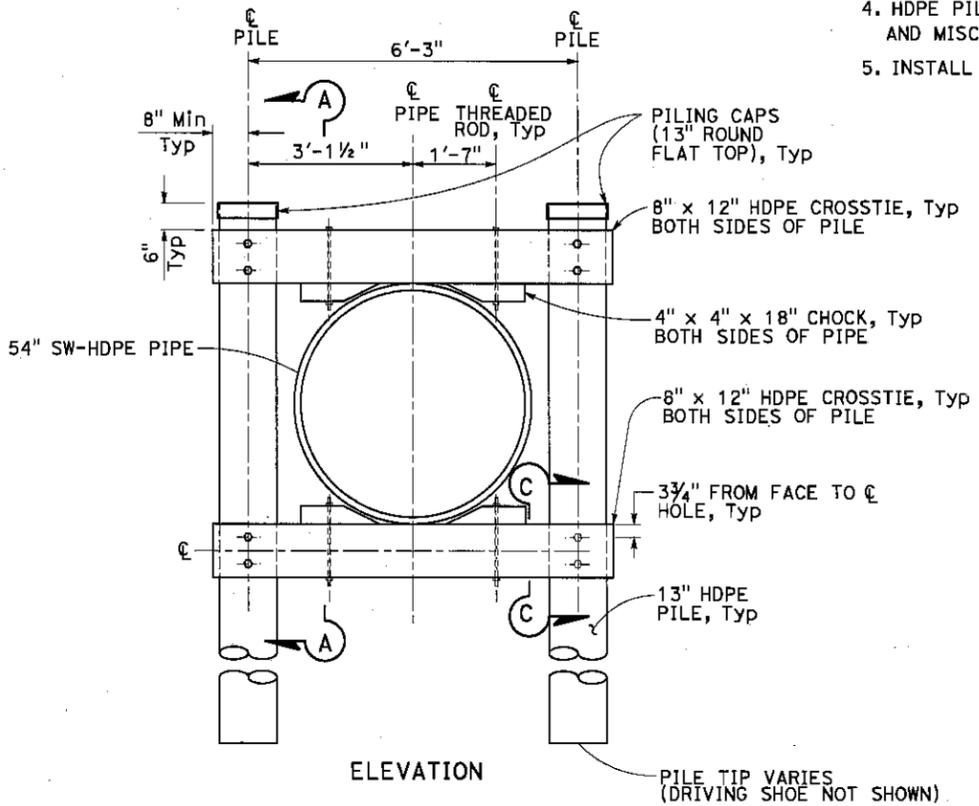
SUSANA ONATE
 PETER AGUILERA
 ARLISSA PANG
 SUSANA ONATE
 PETER AGUILERA
 ARLISSA PANG
 SUSANA ONATE
 PETER AGUILERA
 ARLISSA PANG

LAST REVISION DATE PLOTTED => 21-JAN-2015
 01-18-15 TIME PLOTTED => 08:34

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Hydraulics
 FUNCTIONAL SUPERVISOR: JOSEPH PETERSON
 CHECKED BY: ROBIN AMATYA
 REVISIONS:
 10/6/14 JS
 10/29/14 REVISOR: ROBIN AMATYA
 DATE: 10/29/14
 REVISION: 10/29/14
 REVISION: 10/29/14

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	10	38
			10/29/14	REGISTERED CIVIL ENGINEER DATE	
			1-20-15	PLANS APPROVAL DATE	
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.					

- NOTES:**
1. ALL THREADED RODS FOR CROSSTIES AND CHOCKS MUST RECEIVE WASHERS AND DOUBLE NUTS ON BOTH SIDES.
 2. CUT AND DEBURR THREADED ROD SO THAT ITS END EXTENDS 1" BEYOND THE OUTSIDE NUT.
 3. FOR PILE CAP INSTALLATION, PREDRILL AND USE 10 GAUGE 1/2" STAINLESS STEEL RING SHANK NAILS ALONG THE RIM AND EQUALLY SPACED (3 PER PILING).
 4. HDPE PILES WITH DRIVING SHOES, SW-HDPE PIPE AND PIPE TRANSITION, CROSSTIES, CHOCKS, PILE CAPS, AND MISCELLANEOUS STAINLESS STEEL HARDWARE (THREADED RODS, WASHERS, BOLTS) ARE DEPARTMENT FURNISHED.
 5. INSTALL DEPARTMENT FURNISHED PILE CAPS ON ALL EXIST CUT PILES AND NEW PILES.



13" DIAMETER HDPE PILE AND CROSSTIE

STATION	TOP OF LOWER CROSSTIE	TOP HDPE PILE	HDPE PILE TIP*
	Elev (FT)		
21+87	-6.56	-0.56	-35.56
22+12	-6.61	-0.61	-35.61
22+37	-6.66	-0.66	-35.66
22+62	-6.70	-0.70	-35.70
22+87	-6.75	-0.75	-35.75
23+12	-6.80	-0.80	-35.80
23+37	-6.85	-0.85	-35.85
23+62	-6.89	-0.89	-35.89
23+87	-6.94	-0.94	-35.94
24+12	-6.99	-0.99	-35.99
24+37	-7.04	-1.04	-36.04
24+62	-7.08	6.92	-36.08

* PILE TIP ELEVATION IS TO BOTTOM OF PILE NOT INCLUDING DRIVING SHOE. NOMINAL DRIVING RESISTANCE IS 170 KIPS FOR THE PURPOSE OF SELECTING DRIVING SYSTEM.

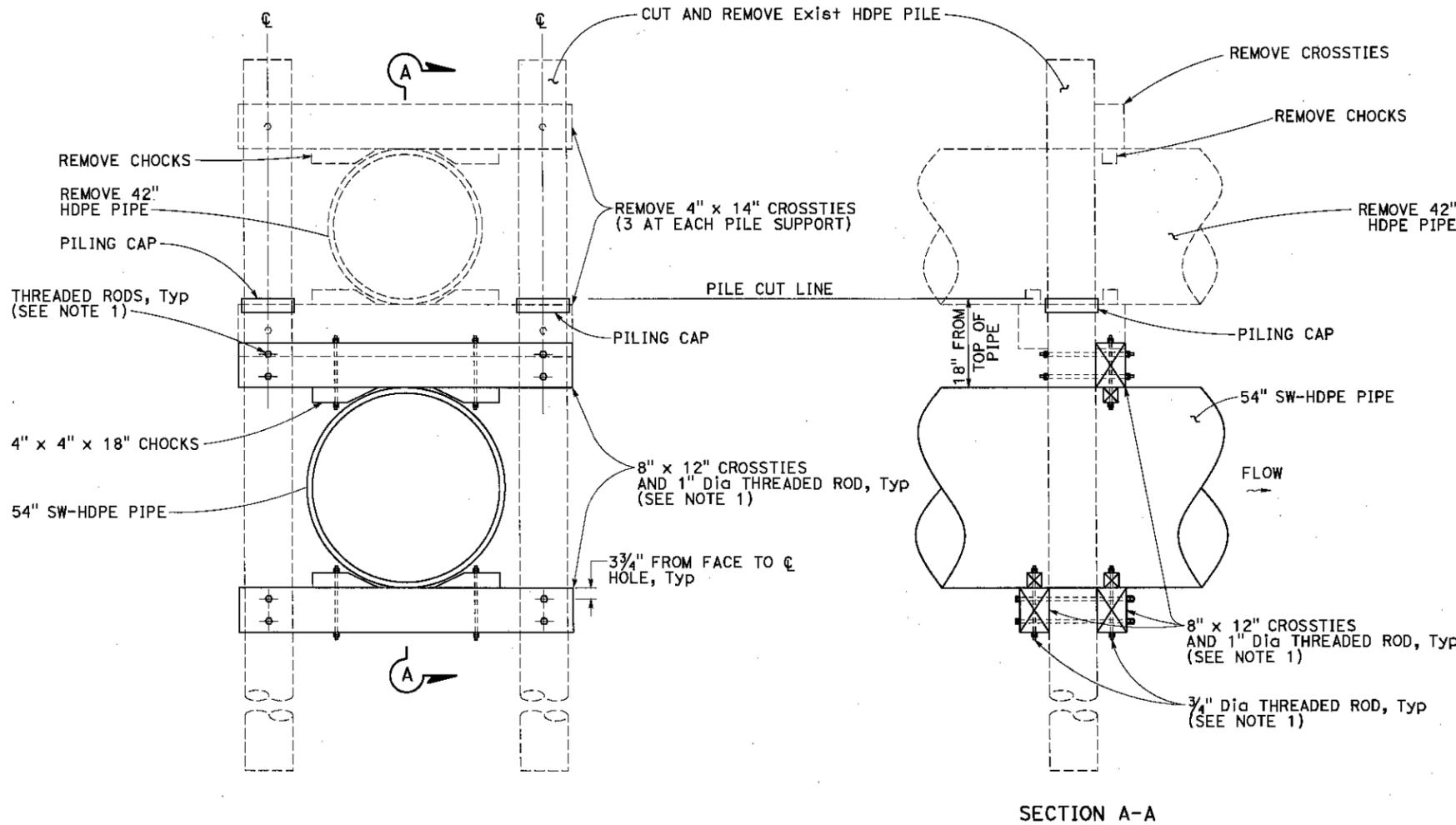
DRAINAGE DETAILS
 NO SCALE
DD-1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL SHEETS
04	SF	101	9.0	11 38
			10/29/14	
REGISTERED CIVIL ENGINEER			DATE	
1-20-15				
PLANS APPROVAL DATE				
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.				

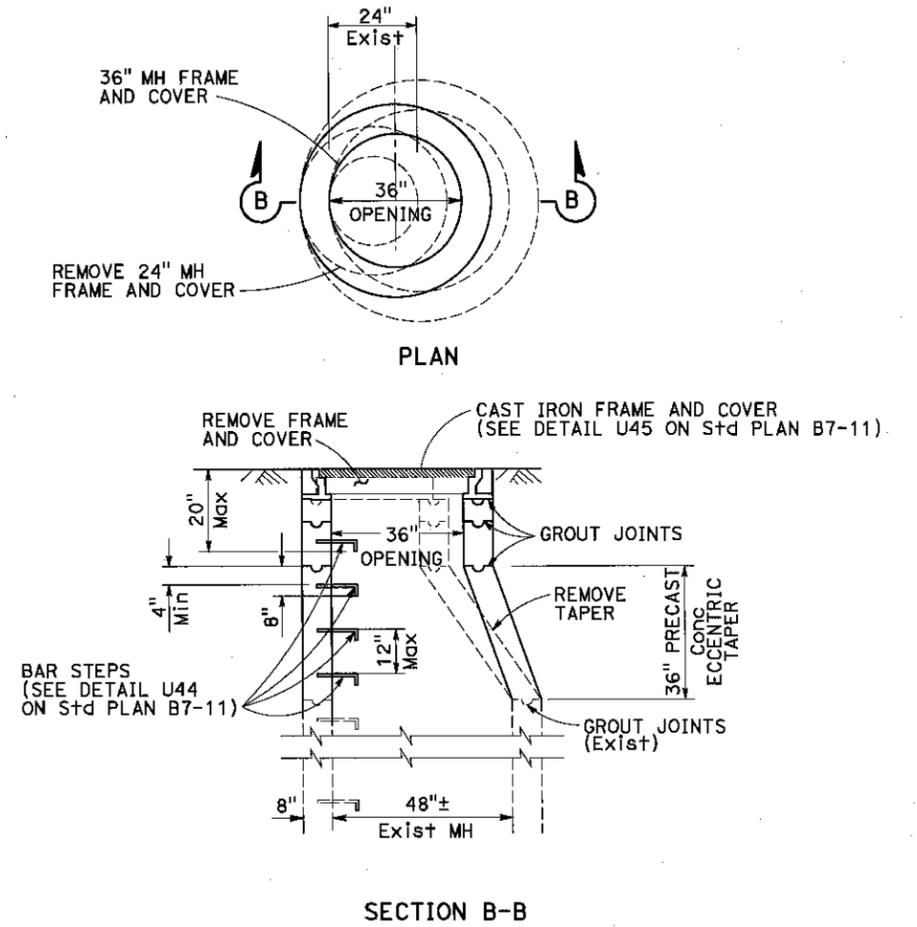
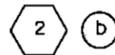
NOTE:

1. THREADED RODS MUST BE INSTALLED WITH WASHERS ON BOTH SIDES AND DOUBLE NUTS.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 HYDRAULICS
 FUNCTIONAL SUPERVISOR: JOSEPH PETERSON
 CHECKED BY: JASJEET SIKAND, ROBIN AMATYA
 DESIGNED BY: JASJEET SIKAND, ROBIN AMATYA
 REVISIONS: JS 10/6/14
 REVISOR: JASJEET SIKAND, ROBIN AMATYA
 DATE: 10/6/14



MODIFY PILE SUPPORTS



MODIFY MANHOLE



DRAINAGE DETAILS
NO SCALE

DD-2

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	12	38

Peter Aquilera 10/24/14
 REGISTERED CIVIL ENGINEER DATE

1-20-15
 PLANS APPROVAL DATE

Peter Aquilera
 No. 55287
 Exp. 2-31-16
 CIVIL
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

DRAINAGE QUANTITIES

DRAINAGE SHEET No.	DRAINAGE SYSTEM No.	DRAINAGE UNIT	MODIFY MANHOLE	INSTALL 54" SW-HDPE PIPE	REMOVE PIPE	CUT EXISTING HDPE PILE	DRIVE 13" HDPE PILE	DEPARTMENT FURNISHED								MISCELLANEOUS IRON AND STEEL	MAXIMUM COVER	36" MANHOLE FRAME AND COVER	DESCRIPTION	STATION	DRAINAGE SYSTEM No.	DRAINAGE UNIT
								EA	LF	EA	LF	EA	LF	EA	LF							
D-1	1	a	1												435		1	MODIFY MANHOLE	"IJKL" 17+05	1	a	
D-2	2	a			166													REMOVE 42" HDPE PIPE	"IJKL" 20+09.5 TO 21+75	2	a	
		b				14												CUT Exis+ 13" HDPE PILE AND INSTALL PILE CAP	"IJKL" 21+10 TO 21+75		b	
		c		458.5				1	2	1	458.5				10			54" SW-HDPE PIPE	"IJKL" 20+09.5 TO 24+68		c	
		d					24											13" HDPE PILES, INSTALL PILE CAP AND DRIVING SHOE	"IJKL" 21+10 TO 24+62		d	
														73				HDPE CROSSTIE	"IJKL" 21+10 TO 24+62			
																		HDPE CHOCK	"IJKL" 21+10 TO 24+62			
SHEET TOTAL			1	458.5	166	14	24	1	2	1	458.5	870	73	138								
																SHEET TOTAL						

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY

DRAINAGE QUANTITIES

DQ-1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	13	38

REGISTERED CIVIL ENGINEER	DATE
<i>Jerilyn L. Struven</i>	10/24/14
PLANS APPROVAL DATE	
1-20-15	

REGISTERED PROFESSIONAL ENGINEER	
<i>Jerilyn L. Struven</i>	
No. 49964	
Exp. 2-31-16	
CIVIL	

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NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

CONSTRUCTION AREA SIGNS

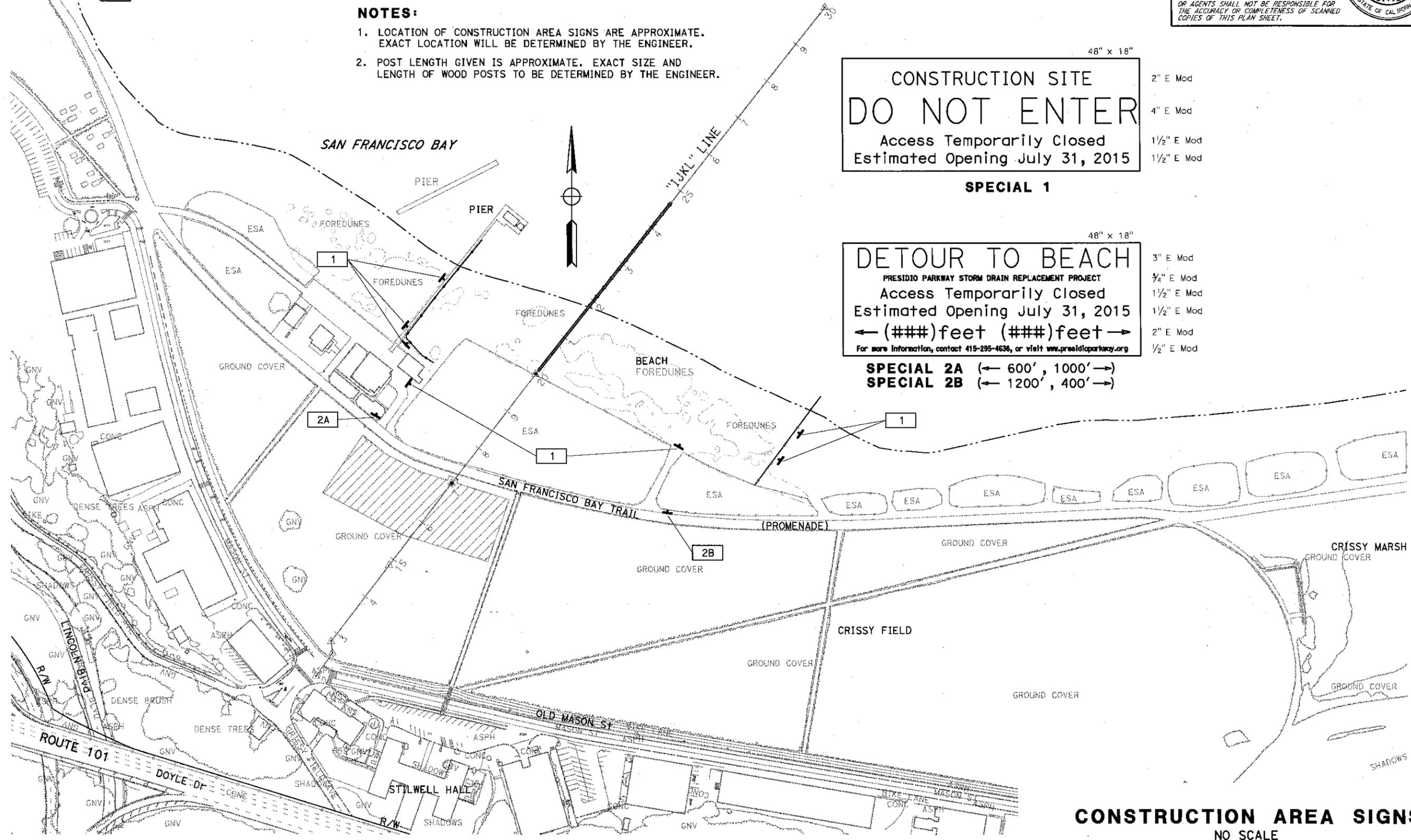
SIGN	CODE	PANEL SIZE (INCH X INCH)	SIGN MESSAGE	NUMBER OF SIGNS	No. OF POSTS AND SIZE (EA-INCH X INCH)
1	Spec 1	48 x 18	SEE SPECIAL 1	7	(ONE) - 4 x 6
2	Spec 2A, 2B	48 x 18	SEE SPECIAL 2A, 2B	2	(ONE) - 4 x 6

LEGEND:

No. CONSTRUCTION AREA SIGN NUMBER

NOTES:

1. LOCATION OF CONSTRUCTION AREA SIGNS ARE APPROXIMATE. EXACT LOCATION WILL BE DETERMINED BY THE ENGINEER.
2. POST LENGTH GIVEN IS APPROXIMATE. EXACT SIZE AND LENGTH OF WOOD POSTS TO BE DETERMINED BY THE ENGINEER.



48" x 18"
CONSTRUCTION SITE
DO NOT ENTER
 Access Temporarily Closed
 Estimated Opening July 31, 2015

SPECIAL 1

48" x 18"
DETOUR TO BEACH
 PRESIDIO PARKWAY STORM DRAIN REPLACEMENT PROJECT
 Access Temporarily Closed
 Estimated Opening July 31, 2015
 ←(###)feet (###)feet→
 For more information, contact 415-295-4636, or visit www.presidtoparkway.org

SPECIAL 2A (← 600', 1000' →)
SPECIAL 2B (← 1200', 400' →)

- 2" E Mod
- 4" E Mod
- 1 1/2" E Mod
- 1 1/2" E Mod
- 3" E Mod
- 3/4" E Mod
- 1 1/2" E Mod
- 1 1/2" E Mod
- 2" E Mod
- 1/2" E Mod

CONSTRUCTION AREA SIGNS
NO SCALE

APPROVED FOR CONSTRUCTION AREA SIGN WORK ONLY

CS-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
TRAFFIC
 JERILYN STRUVEN
 FUNCTIONAL SUPERVISOR
 CHECKED BY
 ULICES VEGA
 JERILYN STRUVEN
 REVISOR
 DATE REVISOR
 9/30/14
 PA

NOTES:

1. LAND ACCESS AND STAGE 1 AND STAGE 2 CONSTRUCTION ACTIVITIES NOT ALLOWED AFTER JULY 31ST.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE GROUNDWATER LEVEL DURING CONSTRUCTION. GROUNDWATER AND BAYWATER WILL BE PRESENT AND WILL FLUCTUATE WITH SEASONAL AND TIDAL CONDITIONS.
3. LIMIT OF MARINE DREDGING SHOWN IS APPROXIMATE AND MAY BE ADJUSTED TO SUIT SITE CONDITIONS WITH APPROVAL BY THE ENGINEER.
4. STAGE WORK IS LIMITED TO THE LIMITS SHOWN. BEFORE JUNE 1ST NO WORK IS ALLOWED WITHIN INTERTIDAL ZONE OR BAY WATER.
5. ANY Temp SHORING PLAN MUST BE AUTHORIZED BY THE ENGINEER BEFORE STARTING WORK AND MUST NOT EXTEND BEYOND STAGE 1 LIMITS (MHHW).
6. ANY Temp TRESTLE PLAN MUST BE APPROVED BY THE ENGINEER AND MUST NOT EXTEND BEYOND STAGE 2 LIMITS, MUST BE REMOVED, AND BEACH RESTORED BY JULY 31.
7. LIMITS OF Temp TURBIDITY CONTROL CURTAIN MUST NOT EXTEND BEYOND ELEVATION -6'.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	14	38

Peter Aquilera 10/24/14
 REGISTERED CIVIL ENGINEER DATE

1-20-15
 PLANS APPROVAL DATE

Peter Aquilera
 REGISTERED PROFESSIONAL ENGINEER
 No. 55287
 Exp. 2-31-16
 CIVIL
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 DESIGN

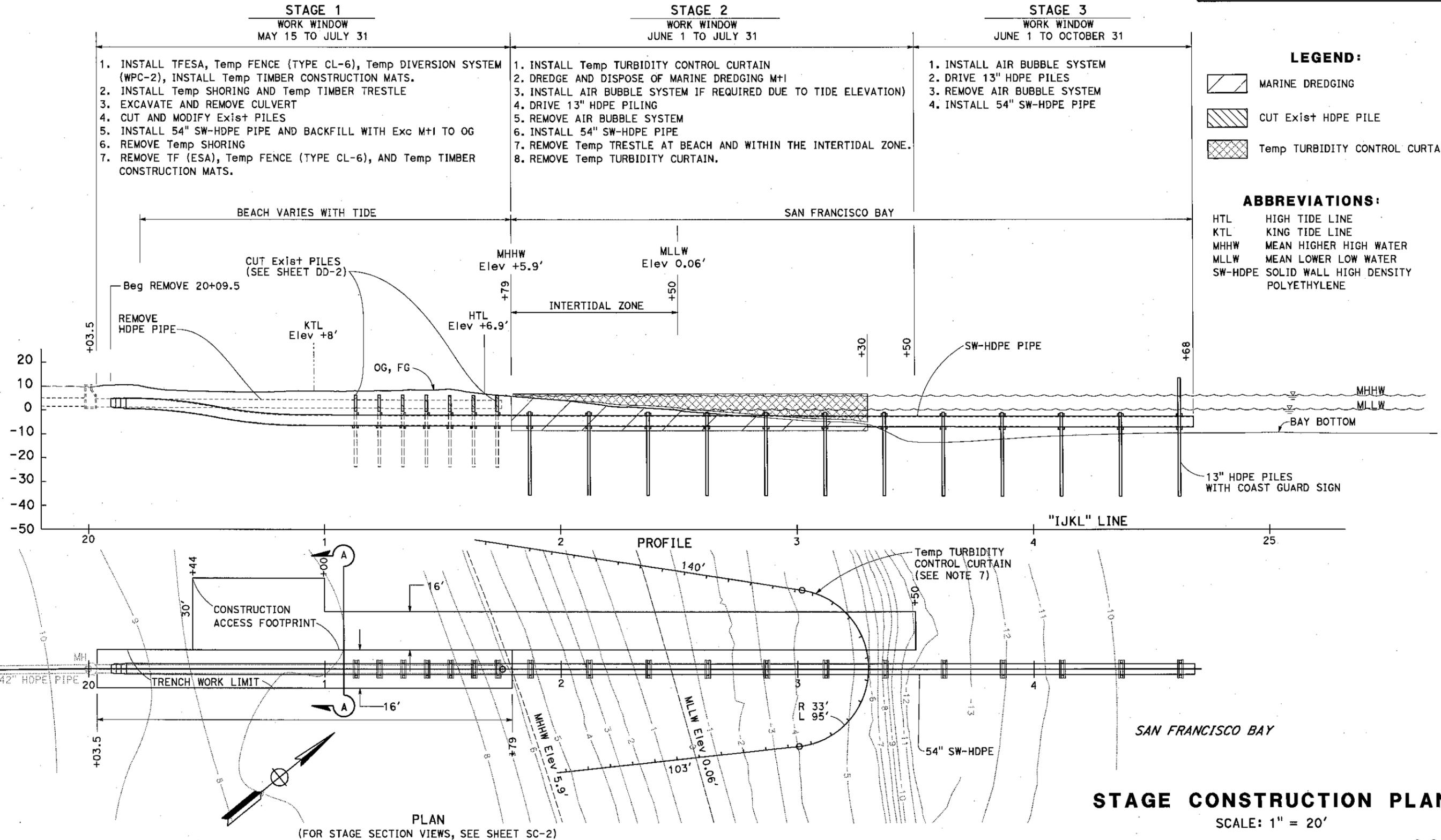
FUNCTIONAL SUPERVISOR
 ARLISSA PANG

CALCULATED-DRAWN BY
 PETER AGUILERA

CHECKED BY
 SUSANA ONATE

REVISED BY
 PA

DATE REVISED
 9/30/14



- LEGEND:**
- MARINE DREDGING
 - CUT Exist HDPE PILE
 - Temp TURBIDITY CONTROL CURTAIN
- ABBREVIATIONS:**
- HTL HIGH TIDE LINE
 - KTL KING TIDE LINE
 - MHHW MEAN HIGHER HIGH WATER
 - MLLW MEAN LOWER LOW WATER
 - SW-HDPE SOLID WALL HIGH DENSITY POLYETHYLENE

STAGE CONSTRUCTION PLAN

SCALE: 1" = 20'

SC-1

APPROVED FOR STAGE CONSTRUCTION WORK ONLY

LAST REVISION DATE PLOTTED => 21-JAN-2015 TIME PLOTTED => 08:34

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CD Caltrans
 DESIGN

FUNCTIONAL SUPERVISOR
 ARLISSA PANG

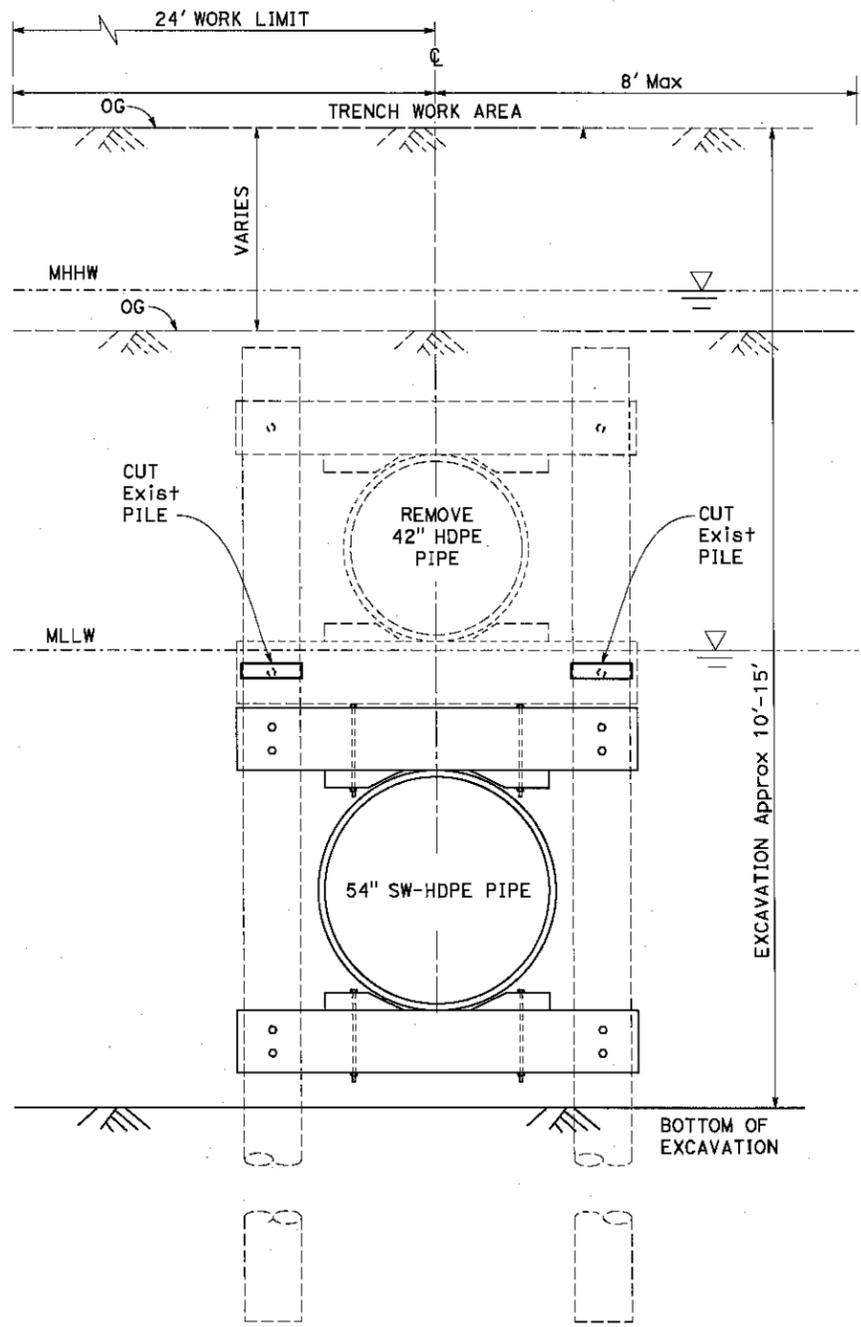
CALCULATED-DESIGNED BY
 CHECKED BY

PETER AGUILERA
 SUSANA ONATE

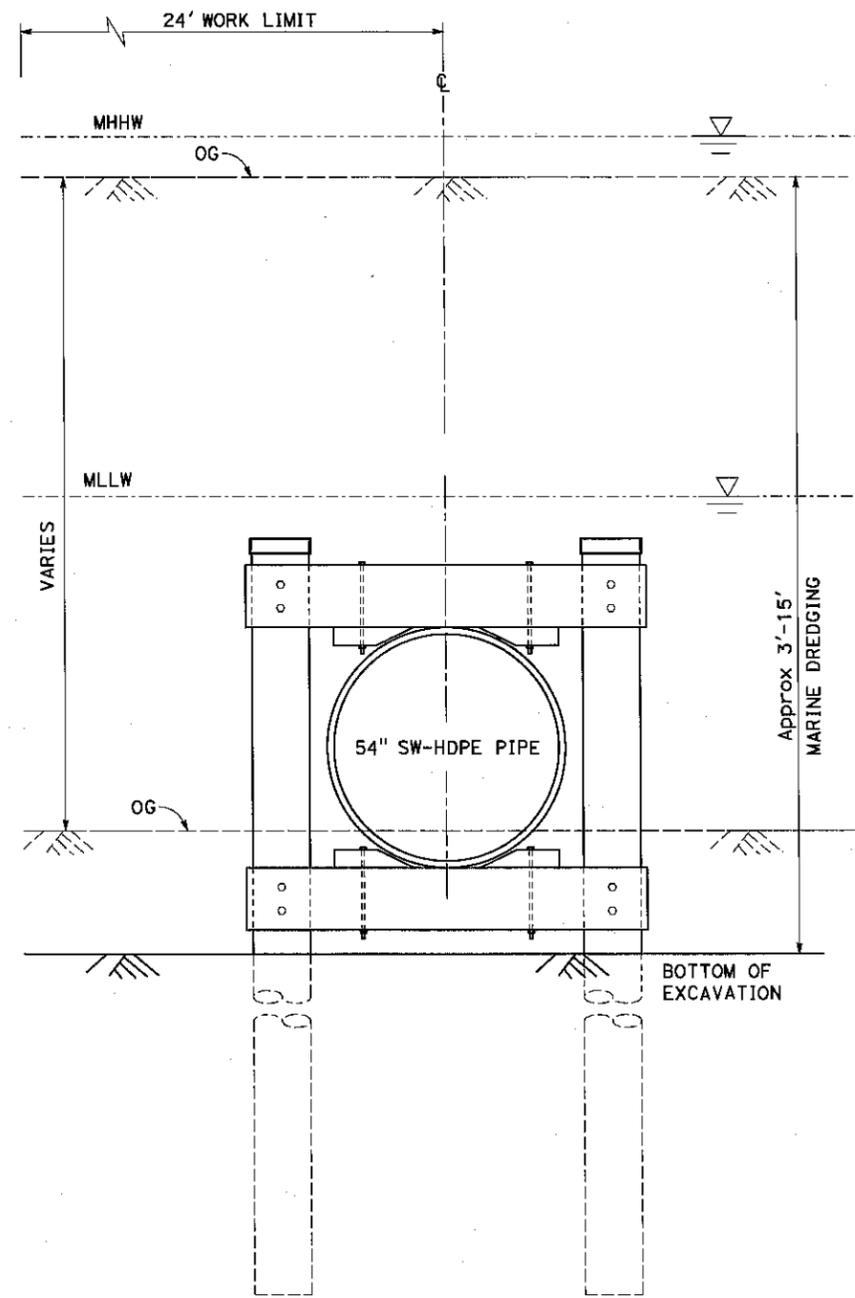
REVISED BY
 DATE REVISED

PA
 9/30/14

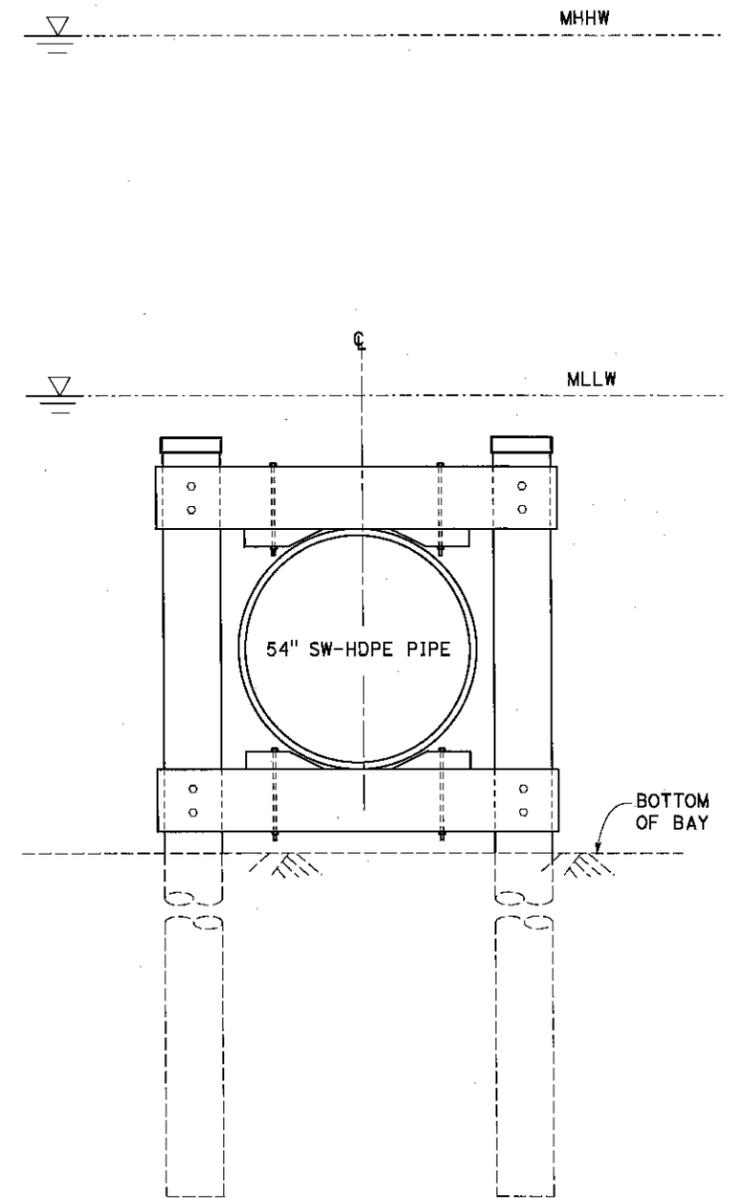
x
x
x
x
x



**OUTFALL
 STAGE 1**



**OUTFALL
 STAGE 2**



**OUTFALL
 STAGE 3**

STAGE CONSTRUCTION DETAILS
 NO SCALE

SCD-1

NOTES:

1. PLAN SHOWS RELATIONSHIP BETWEEN OG, BOTTOM OF EXCAVATION, EXCAVATED MATERIAL, MARINE DREDGING, MHHW, MLLW, Exist AND NEW DRAINAGE SYSTEMS WITHIN THE VARIOUS STAGES.
2. EXCAVATION AND MARINE DREDGING LIMITS SHOWN MAY VARY DUE TO SEASONAL AND TIDAL FLUCTUATION. TO BE FIELD VERIFIED BY THE CONTRACTOR.
3. FOR WORK LIMIT FOOTPRINT, SEE SHEET SC-1.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	15	38

Peter Aguilera 10/24/14
 REGISTERED CIVIL ENGINEER DATE

1-20-15
 PLANS APPROVAL DATE

Peter Aguilera
 REGISTERED PROFESSIONAL ENGINEER
 No. 55287
 Exp. 2-31-16
 CIVIL
 STATE OF CALIFORNIA

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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	16	38

<i>Peter Aguilera</i> 10/24/14	
REGISTERED CIVIL ENGINEER	DATE
1-20-15	
PLANS APPROVAL DATE	

--	--

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

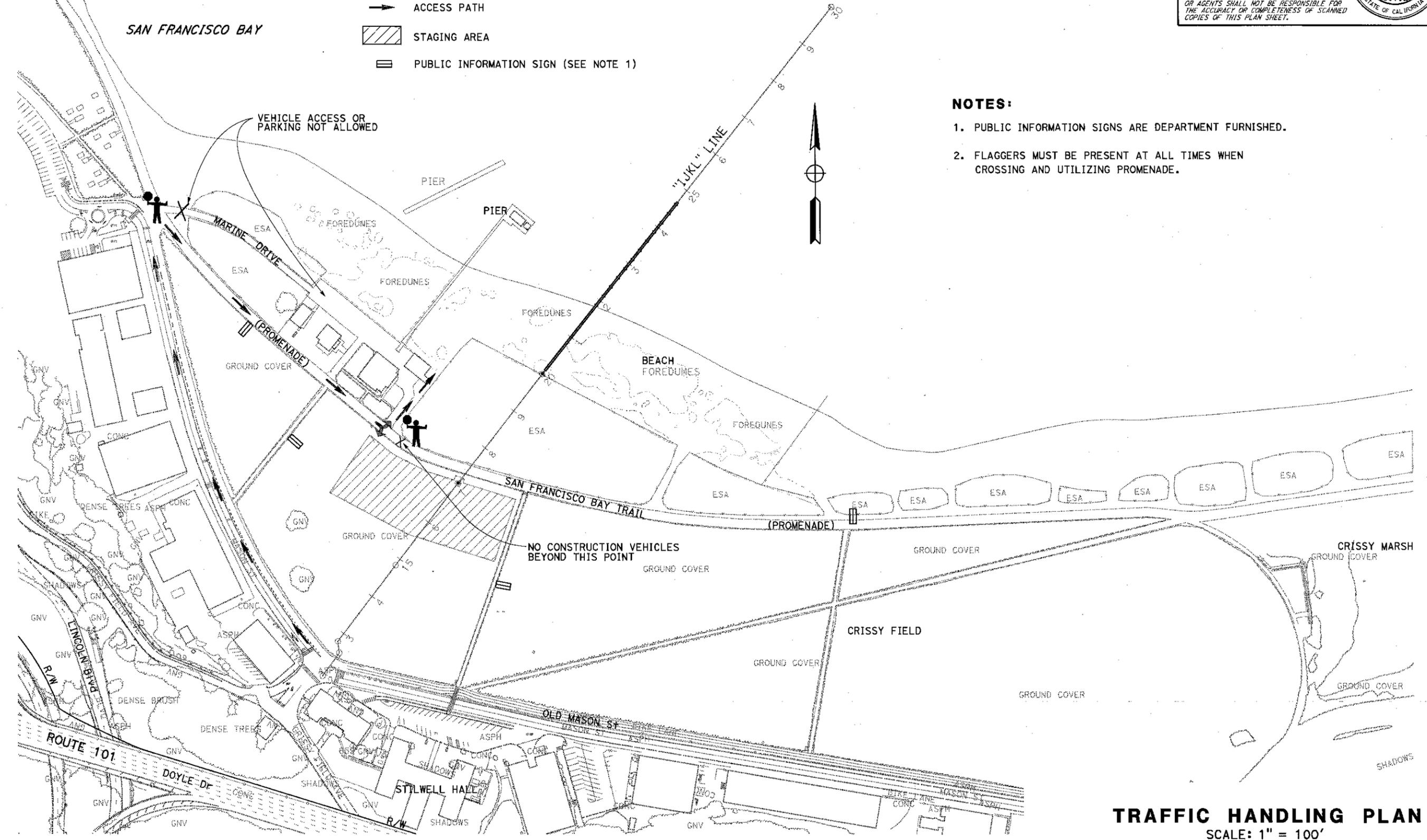
LEGEND:

- FLAGGER
- ACCESS PATH
- STAGING AREA
- PUBLIC INFORMATION SIGN (SEE NOTE 1)

NOTES:

1. PUBLIC INFORMATION SIGNS ARE DEPARTMENT FURNISHED.
2. FLAGGERS MUST BE PRESENT AT ALL TIMES WHEN CROSSING AND UTILIZING PROMENADE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
DESIGN
 ARLISSA PANG
 FUNCTIONAL SUPERVISOR
 CHECKED BY
 SUSANA ONATE
 PETER AGUILERA
 REVISOR
 DATE REVISOR
 9/30/14
 PA



TRAFFIC HANDLING PLAN
SCALE: 1" = 100'

APPROVED FOR TRAFFIC HANDLING WORK ONLY

TH-1

LAST REVISION: DATE PLOTTED => 21-JAN-2015
 01-20-15 TIME PLOTTED => 08:34

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	17	38

Peter Aquilera 10/24/14
REGISTERED CIVIL ENGINEER DATE

1-20-15
PLANS APPROVAL DATE

Peter Aquilera
REGISTERED PROFESSIONAL ENGINEER
No. 55287
Exp. 2-31-16
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TEMPORARY WATER POLLUTION CONTROL QUANTITIES

SHEET No.	LOCATION	TEMPORARY CONSTRUCTION ENTRANCE	TEMPORARY DRAINAGE INLET PROTECTION	INSTALL TEMPORARY TURBIDITY CONTROL CURTAIN (N)	TEMPORARY SILT FENCE	TEMPORARY TIMBER CONSTRUCTION MAT	TEMPORARY DIVERSION SYSTEM	TEMPORARY COVER
		EA		LF		SQYD	EA	SQYD
WPC-1	CRISSY FIELD	1	4		1000	5222		
	BEACH	1		340		2178		
	OFFSHORE							
WPC-2							2	
WPCD-1	CRISSY FIELD							5000
TOTAL		2	4	340	1000	7400	2	5000

(N) NOT A SEPARATE PAY ITEM, FOR INFORMATION ONLY

EXISTING IRRIGATION FACILITIES

SHEET No.	ADJUST VALVE BOX FRAME AND COVER TO GRADE	REPLACE VALVE BOX COVER
	EA	
IR-1	8	8
TOTAL	8	8

TEMPORARY FENCE (TYPE ESA)

SHEET No.	LOCATION	LENGTH
		LF
L-1	CRISSY BEACH	1500
	BEACH ENTRANCE	150
EC-1	CRISSY FIELD	1150
TOTAL		2800

TEMPORARY FENCE AND GATE

SHEET No.	LOCATION	TEMPORARY FENCE (TYPE CL-6)	TEMPORARY 16' CHAIN LINK GATE (TYPE CL-6)
		LF	EA
L-1	CRISSY BEACH (WEST SIDE)	347	
	CRISSY BEACH (EAST SIDE)	237	
	CRISSY FIELD STAGING AREA	1041	1
TOTAL		1625	1

SUMMARY OF QUANTITIES

Q-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CDOT
DESIGN

FUNCTIONAL SUPERVISOR
ARLISSA PANG

CALCULATED-DESIGNED BY
PETER AGUILERA
CHECKED BY
SUSANA ONATE

REVISOR
PA
DATE REVISOR
9/30/14

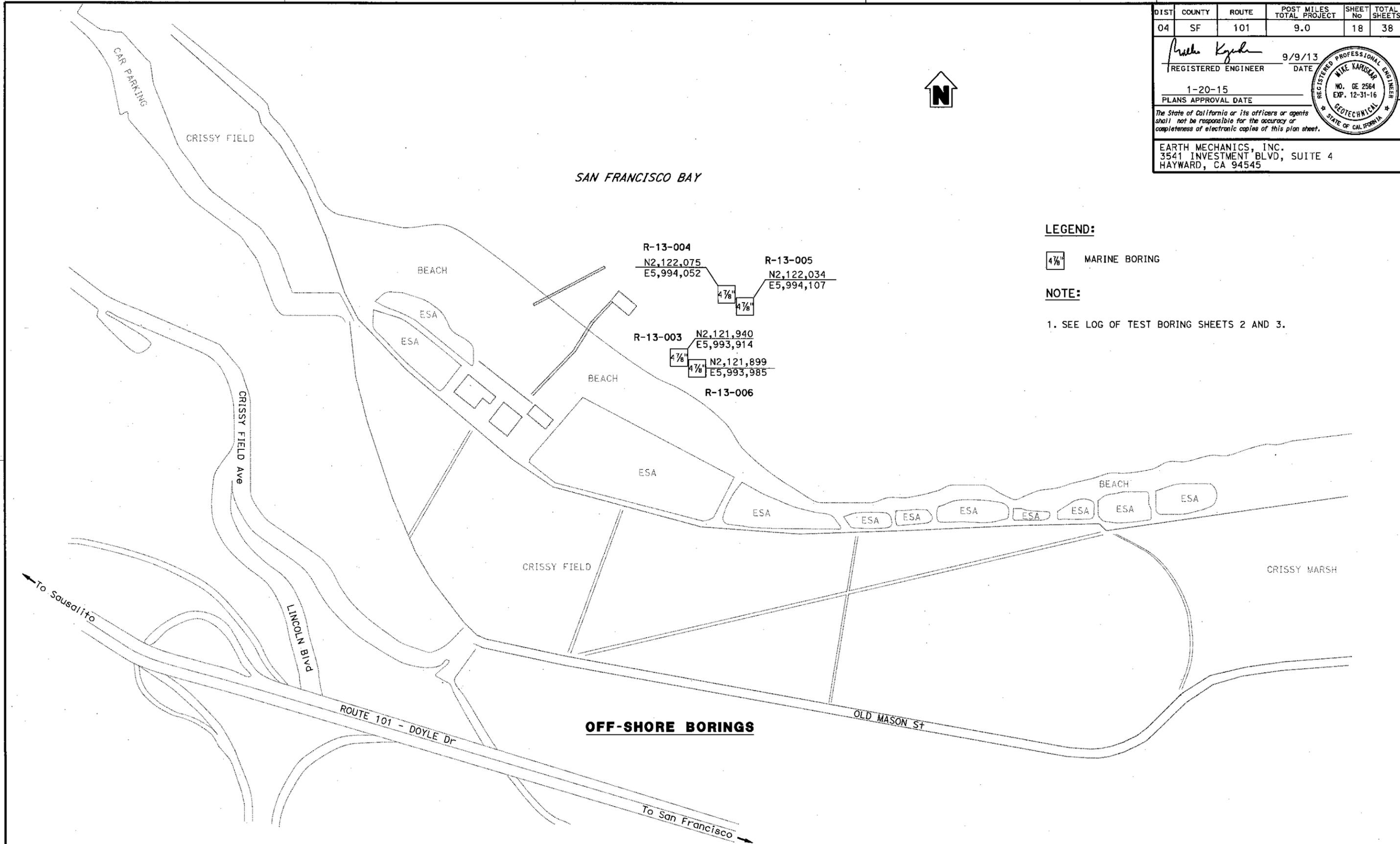
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	101	9.0	18	38

Mike Kapuskar
 REGISTERED ENGINEER DATE 9/9/13
 1-20-15
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 MIKE KAPUSKAR
 NO. GE 2564
 EXP. 12-31-16
 GEOTECHNICAL
 STATE OF CALIFORNIA

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

EARTH MECHANICS, INC.
 3541 INVESTMENT BLVD, SUITE 4
 HAYWARD, CA 94545



LEGEND:

4 7/8" MARINE BORING

NOTE:

1. SEE LOG OF TEST BORING SHEETS 2 AND 3.

DESIGN OVERSIGHT	DRAWN BY K. THANT, J. FANG	J. CASTLE FIELD INVESTIGATION BY: DATE: AS DATED	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	M. KAPUSKAR PROJECT ENGINEER	BRIDGE NO.	DOYLE DRIVE OUTFALL IJKL STORMDRAIN, SAN FRANCISCO LOG OF TEST BORINGS 1 OF 5
SIGN OFF DATE	CHECKED BY M. KAPUSKAR				POST MILES	
US GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: PROJECT NUMBER & PHASE:	CONTRACT NO.: 04-1637N1	DISREGARD PRINTS BEARING EARLIER REVISION DATES
			0 1 2 3	FILE => 0400020923qa001.dgn		REVISION DATES
						SHEET OF
						PROJECT ID:04000209231

USERNAME => s128787 DATE PLOTTED => 21-JAN-2015 TIME PLOTTED => 11:36

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	101	9.0	19	38

Mike Kyzek
 REGISTERED ENGINEER DATE 9/9/13
 1-20-15
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



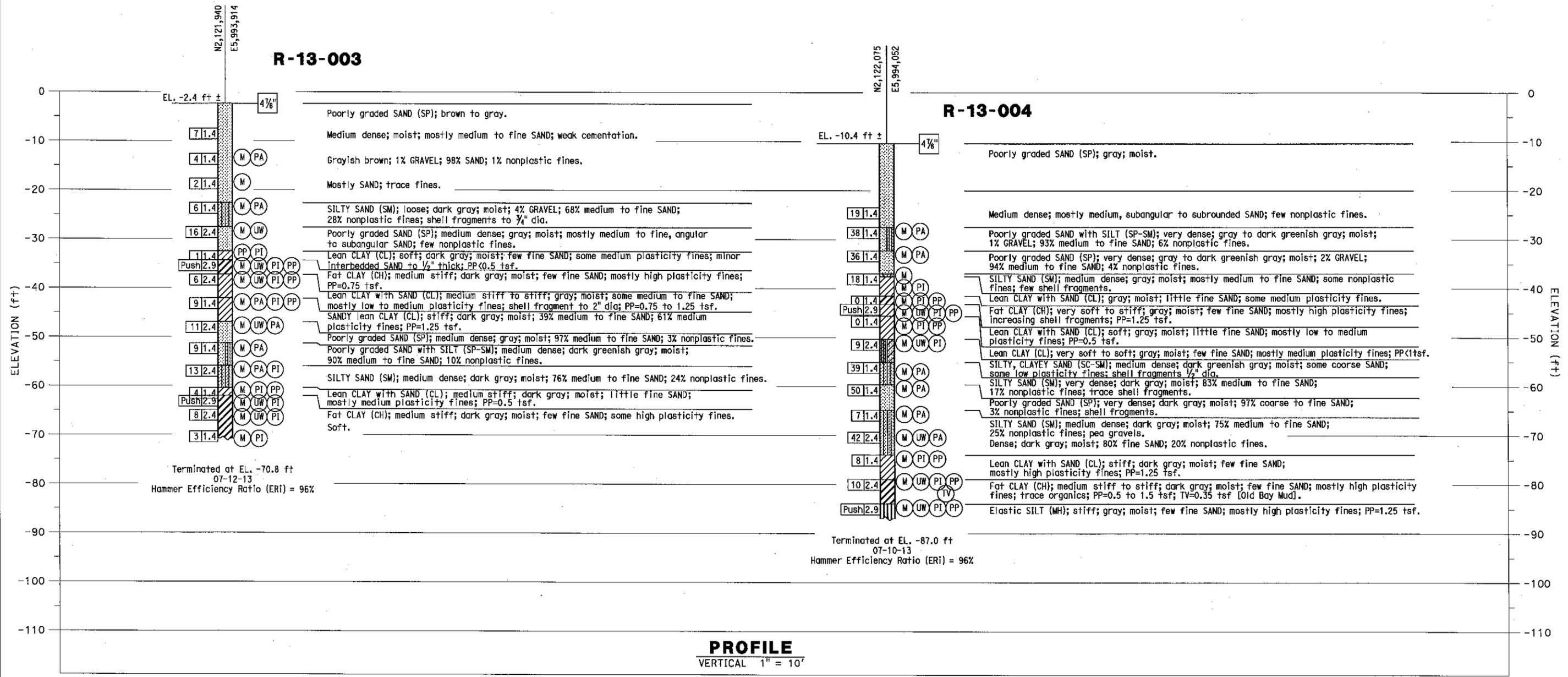
EARTH MECHANICS, INC.
 3541 INVESTMENT BLVD, SUITE 4
 HAYWARD, CA 94545

NOTES:

- (1) This LOTB sheet (Boring Record) was prepared in accordance with Caltrans Soil and Rock Logging, Classification and Presentation Manual (2010).
- (2) 2.4" samples were taken using a California Modified Sampler (3.0" OD and 2.4" ID).
- (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs and 30" drop was used to advance the California Modified sampler.
- (4) For plan view, refer to Log of Test Borings Sheet 1.

BENCHMARK:

Temporary benchmarks were calculated for each boring from vessel deck to mudline based on MLLW Datum and tide table from National Oceanic and Atmospheric Administration.



DESIGN OVERSIGHT	DRAWN BY K. THANT, J. FANG	J. CASTLE FIELD INVESTIGATION BY: DATE: AS DATED	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	M. KAPUSKAR PROJECT ENGINEER	BRIDGE NO.	DOYLE DRIVE OUTFALL IJKL STORMDRAIN, SAN FRANCISCO
SIGN OFF DATE	CHECKED BY M. KAPUSKAR				POST MILES	LOG OF TEST BORINGS 2 OF 5
GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: PROJECT NUMBER & PHASE:	CONTRACT NO.: 04-1637N1	DISREGARD PRINTS BEARING EARLIER REVISION DATES
				FILE => 0400020923qe002.dgn		REVISION DATES
						SHEET 19 OF 38
						PROJECT ID:04000209231

USERNAME => 6128787 DATE PLOTTED => 21-JAN-2015 TIME PLOTTED => 11:36

NOTES:

- (1) This LOTB sheet (Boring Record) was prepared in accordance with Caltrans Soil and Rock Logging, Classification and Presentation Manual (2010).
- (2) 2.4" samples were taken using a California Modified Sampler (3.0" OD and 2.4" ID).
- (3) An automatic trip hammer system consisting of a hammer weight of 140 lbs and 30" drop was used to advance the California Modified sampler.
- (4) For plan view, refer to Log of Test Borings Sheet 1.

BENCHMARK:

Temporary benchmarks were calculated for each boring from vessel deck to mudline based on MLLW Datum and tide table from National Oceanic and Atmospheric Administration.

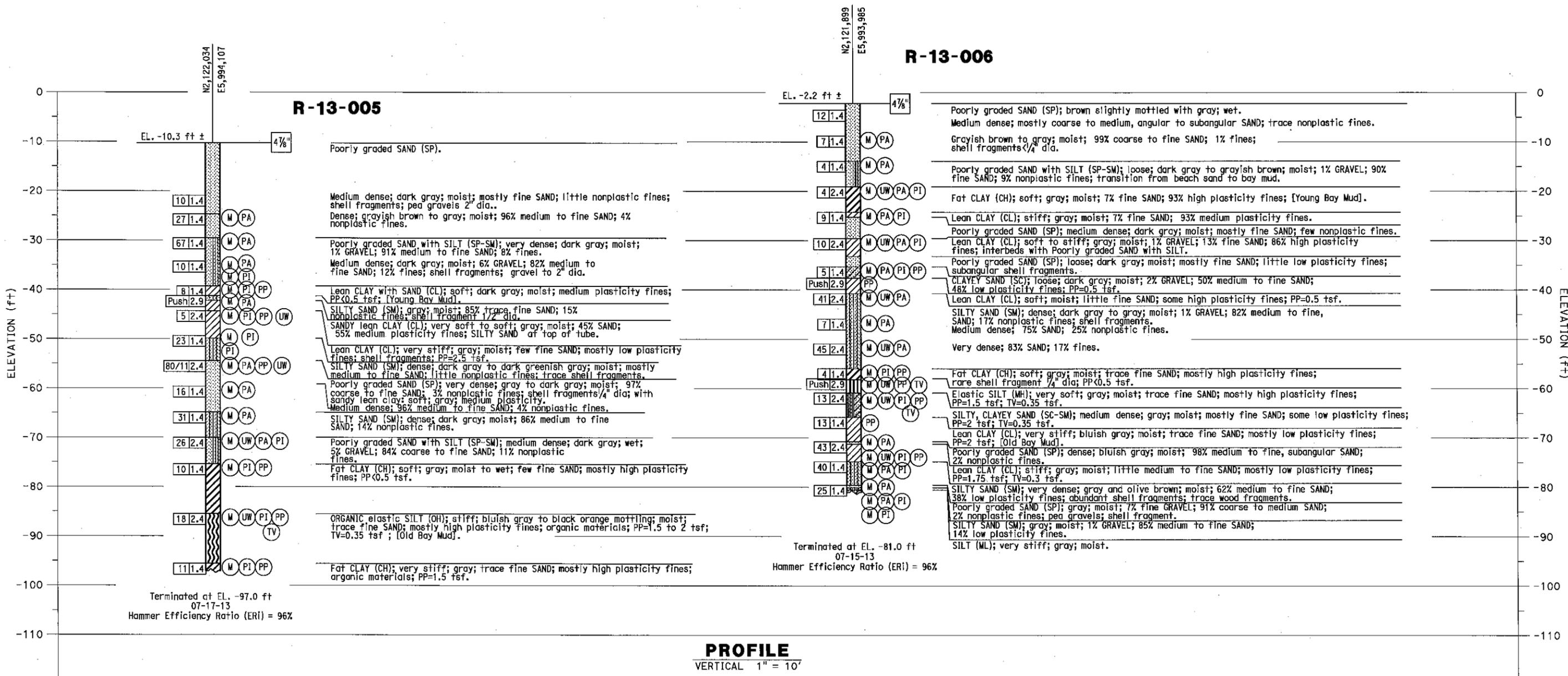
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	SF	101	9.0	20	38

Mike Kapuskar
 REGISTERED ENGINEER DATE 9/9/13
 1-20-15
 PLANS APPROVAL DATE

STATE OF CALIFORNIA
 REGISTERED PROFESSIONAL ENGINEER
 NO. GE 2564
 EXP. 12-31-16
 GEOTECHNICAL

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EARTH MECHANICS, INC.
 3541 INVESTMENT BLVD, SUITE 4
 HAYWARD, CA 94545

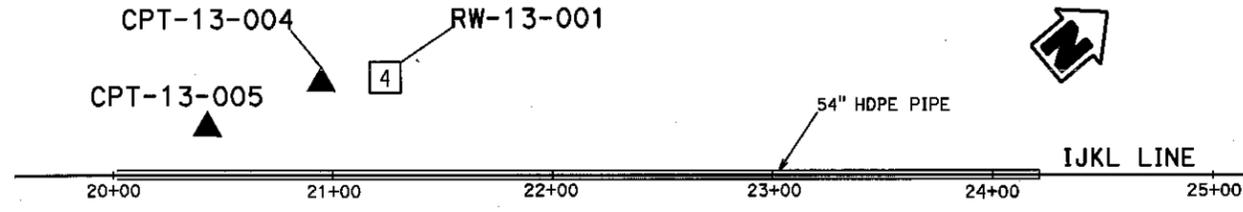


DESIGN OVERSIGHT	DRAWN BY K. THANT, J. FANG	J. CASTLE FIELD INVESTIGATION BY:	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	M. KAPUSKAR PROJECT ENGINEER	BRIDGE NO.	DOYLE DRIVE OUTFALL IJKL STORMDRAIN, SAN FRANCISCO LOG OF TEST BORINGS 3 OF 5
SIGN OFF DATE	CHECKED BY M. KAPUSKAR	DATE: AS DATED	CONTRACT NO.: 04-1637N1	POST MILES	REVISION DATES	
GS GEOTECHNICAL LOG OF TEST BORINGS SHEET (ENGLISH) (REV. 7/16/10)			ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	UNIT: PROJECT NUMBER & PHASE:	DISREGARD PRINTS BEARING EARLIER REVISION DATES	SHEET OF
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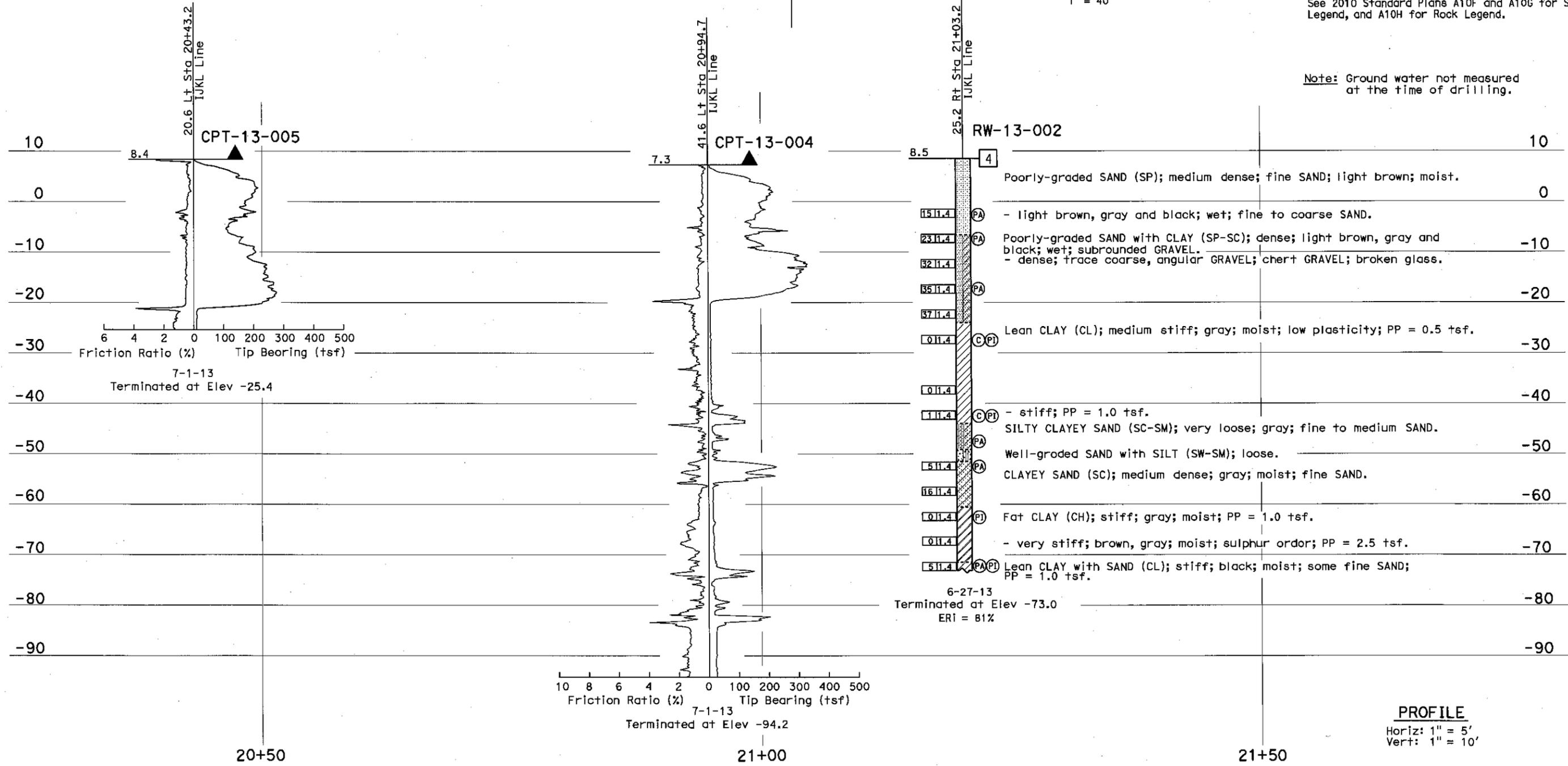
DATE PLOTTED => 21-JAN-2015 USERNAME => s128787

BENCH MARK

1" Caltrans Brass Plug SF"15"
 N 2,120,923.973
 E 5,995,469.423
 Elev 10.09
 NAVD 88



PLAN
 1" = 40'



Note: Ground water not measured at the time of drilling.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	21	38

REGISTERED CIVIL ENGINEER DATE 7/15/14
 1-20-15
 PLANS APPROVAL DATE

Caroline Chen
 No. C62438
 Exp. 9-30-15
 CIVIL ENGINEER
 STATE OF CALIFORNIA

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This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition). See 2010 Standard Plans A10F and A10G for Soil Legend, and A10H for Rock Legend.

PROFILE
 Horiz: 1" = 5'
 Vert: 1" = 10'

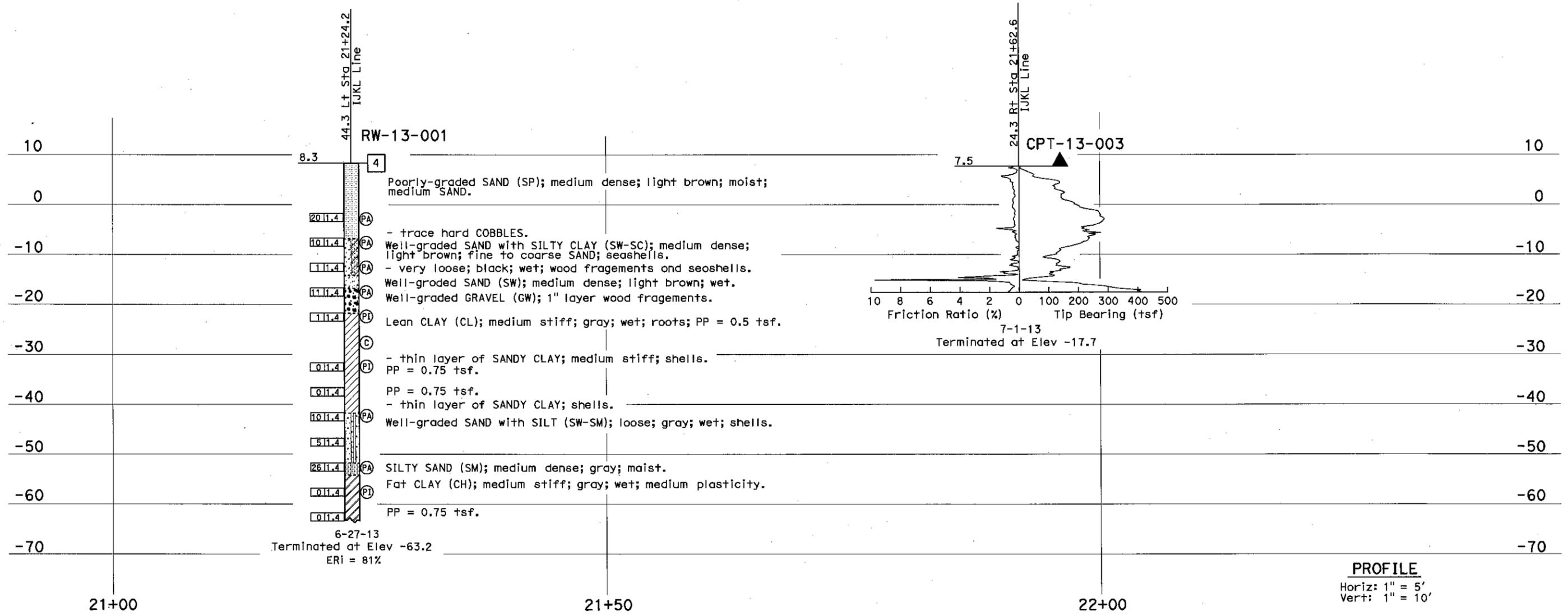
ENGINEERING SERVICES		MATERIALS AND GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.		DOYLE DRIVE OUTFALL IJKL STORM DRAIN	
FUNCTIONAL SUPERVISOR		DRAWN BY: W. Tang 5/14		FIELD INVESTIGATION BY:		STRUCTURE DESIGN		POST MILE		LOG OF TEST BORINGS 4 OF 5	
NAME: M. Momenzadeh		CHECKED BY: XX		M. Gaffney		DESIGN BRANCH X		9.0		REVISION DATES	
O&G CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		UNIT: 3643		PROJECT NUMBER & PHASE: 04000209234		CONTRACT NO.: 04-1637N4		SHEET OF	
				DISREGARD PRINTS BEARING EARLIER REVISION DATES		DATE PLOTTED => 21-JAN-2015		TIME PLOTTED => 08:34		USERNAME => 8128787	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	22	38
			7/15/14		
REGISTERED CIVIL ENGINEER			DATE		
1-20-15			PLANS APPROVAL DATE		
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.					

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition). See 2010 Standard Plans A10F and A10G for Soil Legend, and A10H for Rock Legend.

NOTE:

- (1) Ground water not measured at the time of drilling.
- (2) For plan view, refer to Log of Test Borings Sheet 4 of 5.



PROFILE
 Horiz: 1" = 5'
 Vert: 1" = 10'

ENGINEERING SERVICES		MATERIALS AND GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN		BRIDGE NO.	DOYLE DRIVE OUTFALL IJKL STORM DRAIN	
FUNCTIONAL SUPERVISOR NAME: M. Momenzadeh		DRAWN BY: W. Tang 5/14 CHECKED BY: D. Nesbitt		FIELD INVESTIGATION BY: M. Gaffney		DEPARTMENT OF TRANSPORTATION		POST MILE 9.0	LOG OF TEST BORINGS 5 OF 5	
DESIGN BRANCH X		UNIT: 3643 PROJECT NUMBER & PHASE: 04000209234		CONTRACT NO.: 04-1637N4		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES 06/28/14 07/07/14 08/11/14		SHEET 5 OF 5
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS FILE => 0400020923qc005.dgn										

DATE PLOTTED => 21-JAN-2015 TIME PLOTTED => 08:34 USERNAME => 8128787

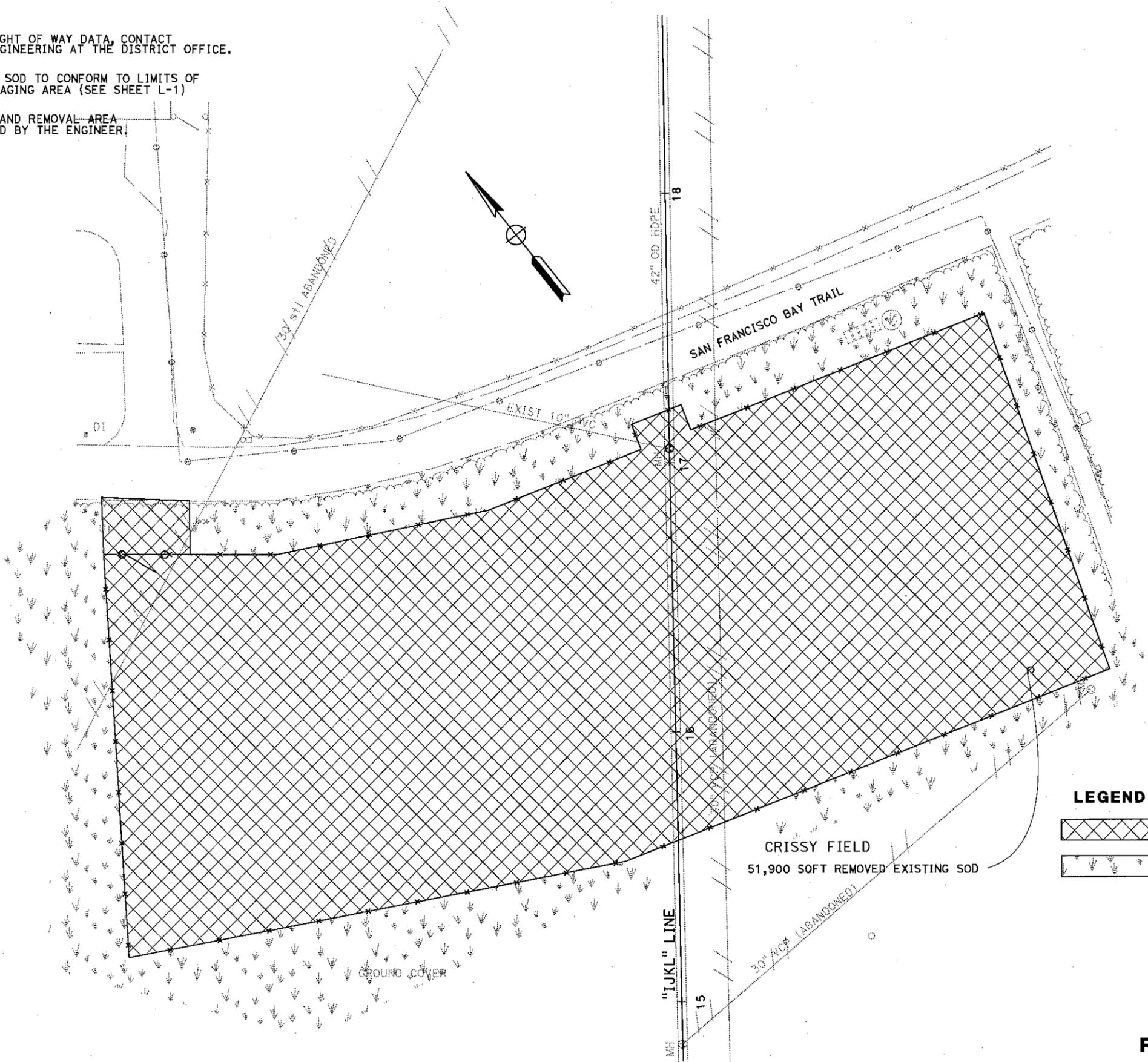
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Water Quality
 SENIOR LANDSCAPE ARCHITECT
 DAVID YAM
 CHECKED BY
 DAVID YAM
 REVISOR
 ANGELA KWAN
 DATE REVISOR
 9/22/14
 REVISOR
 DAVID YAM
 DATE REVISOR
 9/22/14

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
2. REMOVE EXISTING SOD TO CONFORM TO LIMITS OF CONSTRUCTION STAGING AREA (SEE SHEET L-1)
3. EXACT LOCATION AND REMOVAL AREA TO BE DETERMINED BY THE ENGINEER.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF		9.0	23	38

1-20-15
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



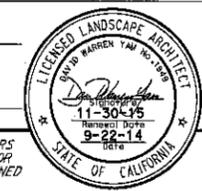
LEGEND:

REMOVE EXISTING SOD
 EXISTING SOD TO REMAIN

APPROVED FOR PLANTING WORK ONLY

ROADSIDE CLEARING PLAN
 SCALE: 1" = 20' RC-1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	24	38


 LICENSED LANDSCAPE ARCHITECT
 1-20-15
 PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

IRRIGATION SPRINKLER SCHEDULE

SYMBOL	ITEM DESCRIPTION	SPRINKLER TYPE	SPRAY PATTERN	OPERATING PRESSURE (psi)	PRESSURE COMPENSATING	PLUS/MINUS 5% ②		RADIUS (ft)	WIDTH x LENGTH (ft)	MATERIAL	INLET CONNECTION (NPT INCH)	POSITIVE-LOCKING ADJ ARC STOP IMPACT	BACKSPASH PREV. IMPACT	DIFFUSER PIN	DISTANCE CONTROL FLAP	Adj DISCHARGE	FLOW SHUTOFF DEVICE	CHECK VALVE	RISER					POP-UP		TREE WELL		REMARKS				
						GALLONS PER MINUTE (GPM)	GALLONS PER HOUR (GPH)												ASSEMBLY (TYPE)	MATERIAL		SIZE (IPS INCH)	HEIGHT (INCH)	SWING JOINT (TYPE) *	ASSEMBLY (TYPE)	HEIGHT (INCH)	SPRINKLER PROTECTOR (TYPE) ④		HEIGHT (INCH)	SWING JOINT (TYPE)		
																				PLASTIC	STAINLESS STEEL											
④	POP-UP SPRINKLER ASSEMBLY (GEAR DRIVEN)	GD	-	90	X	43	-	40	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	4"	-	-	-	-	-	-	-	-

X IN BOX DENOTES REQUIREMENT

APPLICABLE WHEN CIRCLED BELOW:

- 1 - SEE SPECIAL PROVISIONS.
- 2 - IF A PRESSURE COMPENSATING DEVICE IS SPECIFIED, THE DISCHARGE AND RADII SHOWN REFLECT ITS USE.
- 3 - ARC STOP MUST BE FITTED WITH A NUT AND BOLT
- 4 - VINYL-COATED CAST IRON HOUSING.
- 5 - SPRINKLER PROTECTORS REQUIRED ADJACENT TO SHOULDERS, CURBS, SIDEWALKS, AND DIKES.
- 6 - UNLESS OTHERWISE SHOWN ON PLANS.

- 7 - INSTALL ON UPHILL SIDE OF PLANT BASIN
- 8 - INSTALL TWO SPRINKLERS PER PLANT. LOCATE ON OPPOSITE SIDES OF ROOTBALL
- 9 - INSTALL AT LOWEST POINT OF PLANT BASIN
- 10 - BUILT-IN CHECK VALVE
- 11 - EXTERNAL CHECK VALVE
- 12 - IN-LINE EMITTER SPACING ___" ON CENTER
- 13 - LENGTH AS NECESSARY BETWEEN SWING JOINT AND POP-UP INLET

SPRINKLER TYPE ABBREVIATIONS

- DE - DRIP EMITTER
- FB - FLOOD BUBBLER
- GD - GEAR DRIVEN ROTOR
- ID - IN -LINE DRIP EMITTER
- IM - IMPACT
- MS - MICRO SPRAY
- SP - SPRAY

IRRIGATION SPRINKLER SCHEDULE

NO SCALE ISS-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - WATER QUALITY

SENIOR LANDSCAPE ARCHITECT: DAVID YAM

CHECKED BY: BART VAN DER ZEEUW, ANGELA KWAN

DESIGNED BY: BART VAN DER ZEEUW

REVISIONS:

AK	9/22/14
REVISOR	DATE

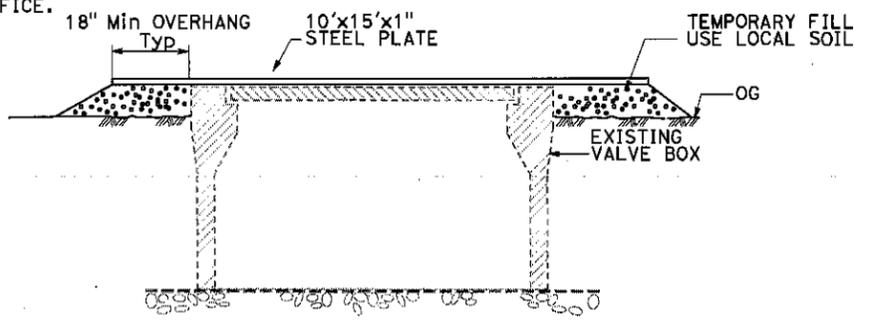
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	25	38

1-20-15
PLANS APPROVAL DATE

LICENSED LANDSCAPE ARCHITECT

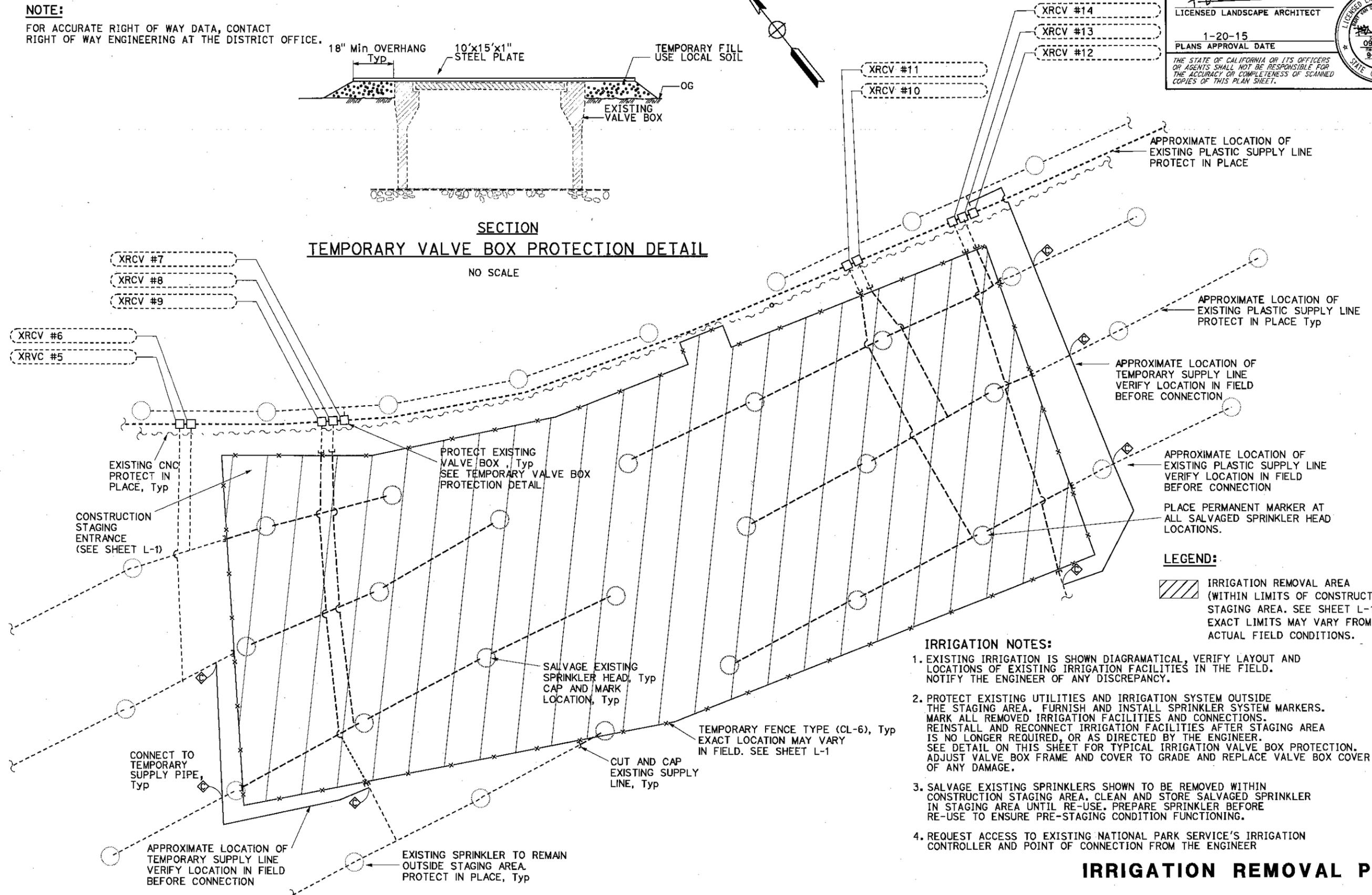
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE:
FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



SECTION
TEMPORARY VALVE BOX PROTECTION DETAIL

NO SCALE



LEGEND:

IRRIGATION REMOVAL AREA (WITHIN LIMITS OF CONSTRUCTION STAGING AREA. SEE SHEET L-1. EXACT LIMITS MAY VARY FROM ACTUAL FIELD CONDITIONS.)

- IRRIGATION NOTES:**
- EXISTING IRRIGATION IS SHOWN DIAGRAMATICAL, VERIFY LAYOUT AND LOCATIONS OF EXISTING IRRIGATION FACILITIES IN THE FIELD. NOTIFY THE ENGINEER OF ANY DISCREPANCY.
 - PROTECT EXISTING UTILITIES AND IRRIGATION SYSTEM OUTSIDE THE STAGING AREA. FURNISH AND INSTALL SPRINKLER SYSTEM MARKERS. MARK ALL REMOVED IRRIGATION FACILITIES AND CONNECTIONS. REINSTALL AND RECONNECT IRRIGATION FACILITIES AFTER STAGING AREA IS NO LONGER REQUIRED, OR AS DIRECTED BY THE ENGINEER. SEE DETAIL ON THIS SHEET FOR TYPICAL IRRIGATION VALVE BOX PROTECTION. ADJUST VALVE BOX FRAME AND COVER TO GRADE AND REPLACE VALVE BOX COVER OF ANY DAMAGE.
 - SALVAGE EXISTING SPRINKLERS SHOWN TO BE REMOVED WITHIN CONSTRUCTION STAGING AREA. CLEAN AND STORE SALVAGED SPRINKLER IN STAGING AREA UNTIL RE-USE. PREPARE SPRINKLER BEFORE RE-USE TO ENSURE PRE-STAGING CONDITION FUNCTIONING.
 - REQUEST ACCESS TO EXISTING NATIONAL PARK SERVICE'S IRRIGATION CONTROLLER AND POINT OF CONNECTION FROM THE ENGINEER

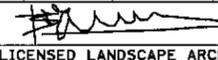
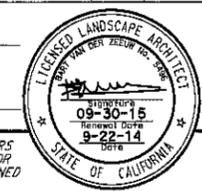
IRRIGATION REMOVAL PLAN

SCALE 1" = 20' **IR-1**

APPROVED FOR IRRIGATION WORK ONLY

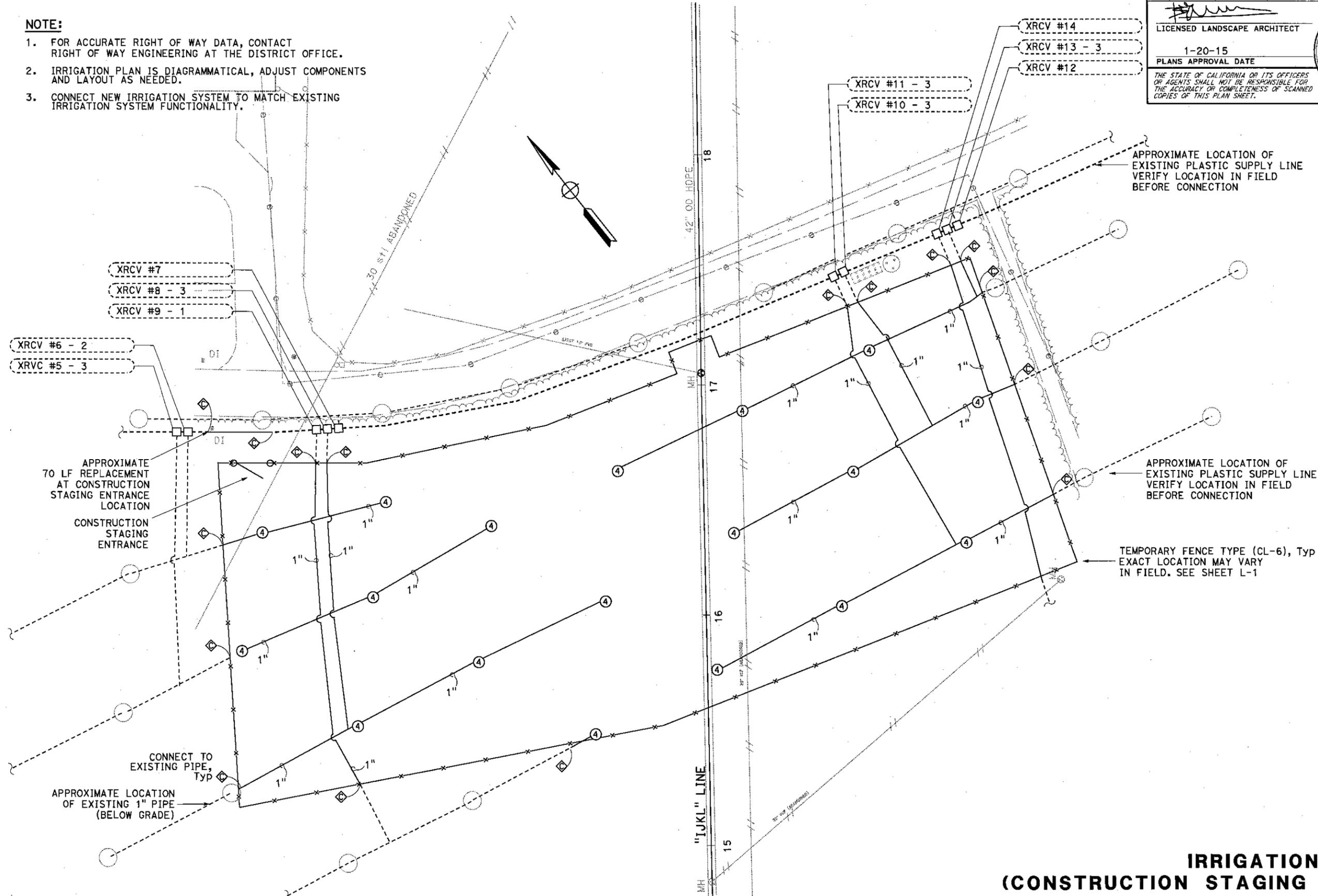
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DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	26	38

 LICENSED LANDSCAPE ARCHITECT		
PLANS APPROVAL DATE 1-20-15		

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

- NOTE:**
- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
 - IRRIGATION PLAN IS DIAGRAMMATICAL, ADJUST COMPONENTS AND LAYOUT AS NEEDED.
 - CONNECT NEW IRRIGATION SYSTEM TO MATCH EXISTING IRRIGATION SYSTEM FUNCTIONALITY.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION - WATER QUALITY

Caltrans

SENIOR LANDSCAPE ARCHITECT: DAVID YAM

CHECKED BY: ANGELA KWAN

REVISOR: BART VAN DER ZEEUW

DATE REVISED: 9/22/14

**IRRIGATION PLAN
(CONSTRUCTION STAGING AREA)**

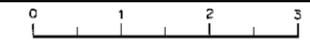
SCALE 1" = 20' **IP-1**

APPROVED FOR IRRIGATION WORK ONLY

BORDER LAST REVISED 7/2/2010

USERNAME => s128787
DGN FILE => 0400020923sp001.dgn

RELATIVE BORDER SCALE IS IN INCHES



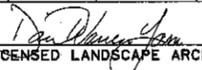
UNIT 0792

PROJECT NUMBER & PHASE

04000209231

LAST REVISION: DATE PLOTTED => 21-JAN-2015
09-22-14 TIME PLOTTED => 08:34

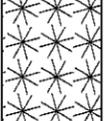
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	28	38


 LICENSED LANDSCAPE ARCHITECT
 1-20-15
 PLANS APPROVAL DATE



THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

PLANTING LEGEND

PLANT GROUP	PLANT No.	SYMBOL	BOTANICAL NAME	COMMON NAME	PERCENTAGE ③	SIZE	QUANTITY EACH ⑦	HOLE SIZE (INCH)		BASIN TYPE	SOIL AMENDMENT ①		IRON SULFATE ①	ORGANIC FERTILIZER ①		BASIN MULCH		STAKING	PLANTING LIMITS						REMARKS
								Di	DEPTH		TYPE	RATE		RATE	PLANTING	PLT ESTB	TYPE		CY	MINIMUM DISTANCE (ft) FROM			ON CENTER (ft)		
																				ETW	Pvm+	FENCE		WALL	
T	1		FESTUCA OCCIDENTALIS FESTUCA IDAHOENSIS FESTUCA RUBRA	WESTERN MOKELUMNE FESCUE IDAHO FESCUE MOLATE FESCUE	35-40 35-40 35-40	—	⑦	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	SOD		

APPLICABLE WHEN CIRCLED:

- ① - QUANTITIES SHOWN ARE "PER PLANT" UNLESS SHOWN AS SQFT OR SOYD APPLICATION RATES
- 2 - BASIN MULCH IS INCLUDED WITH MULCH QUANTITIES SHOWN ON PLANTING PLAN
- 3 - SUFFICIENT TO RECEIVE ROOT BALL AND AMENDMENTS IF REQUIRED
- 4 - SEE DETAIL
- 5 - SEE SPECIAL PROVISIONS

- 6 - SEE STANDARD SPECIFICATIONS
- ⑦ - AS SHOWN ON PLANS
- 8 - UNLESS OTHERWISE SHOWN ON PLANS
- 9 - FOLIAGE PROTECTOR REQUIRED
- 10 - ROOT PROTECTOR REQUIRED
- 11 - ROOT BARRIER REQUIRED
- 12 - DEPARTMENT-FURNISHED
- ③ - SEED MIX PERCENTAGE

ABBREVIATIONS:

- S - SPHAGNUM PEAT MOSS
- N - NITROLIZED FIR BARK
- V - VERMICULITE
- P - PERLITE
- TB - TREE BARK
- WC - WOOD CHIP
- SB - SHREDDED BARK
- TT - TREE TRIMMING

NOTE:

UNDERLINED PORTIONS OF BOTANICAL NAME INDICATE ABBREVIATIONS USED ON PLANTING PLANS.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

 WATER QUALITY

SENIOR LANDSCAPE ARCHITECT
 DAVID YAM

CHECKED BY
 DAVID YAM

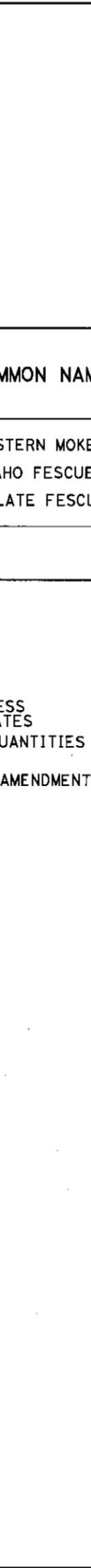
CALCULATED-DESIGNED BY
 DAVID YAM

REVISOR
 AK
 9/22/14

BORDER LAST REVISED 9/9/2010

USERNAME => s128787
 DGN FILE => 0400020923s1001.dgn

RELATIVE BORDER SCALE IS IN INCHES



UNIT 0792

PROJECT NUMBER & PHASE

04000209231

PLANT LIST
PL-1

LAST REVISION
 09-22-14
 DATE PLOTTED => 21-JAN-2015
 TIME PLOTTED => 08:34

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	29	38

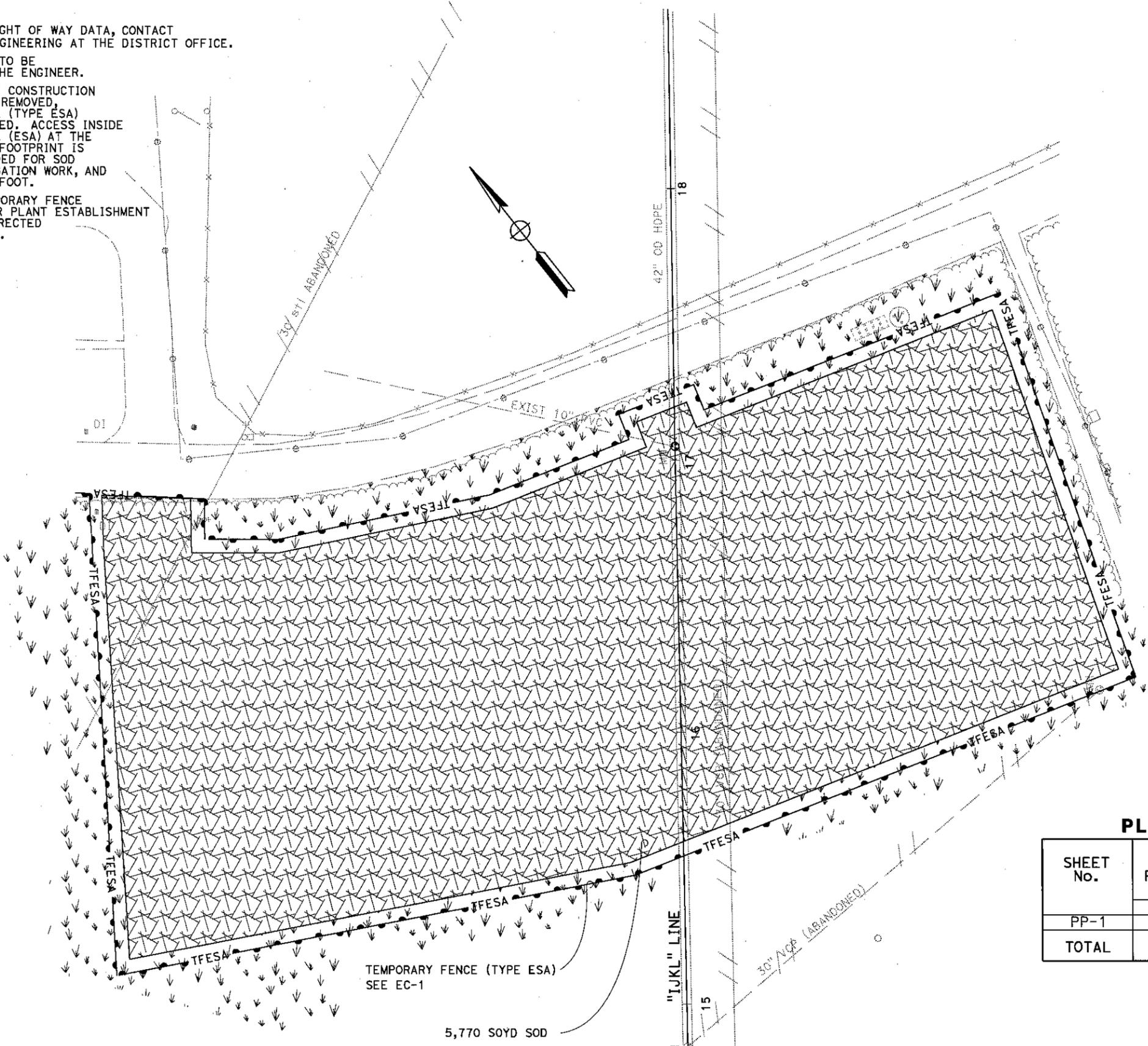
1-20-15
 PLANS APPROVAL DATE

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NOTE:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- EXACT LOCATION TO BE DETERMINED BY THE ENGINEER.
- AFTER TEMPORARY CONSTRUCTION FENCE HAS BEEN REMOVED, TEMPORARY FENCE (TYPE ESA) MUST BE INSTALLED. ACCESS INSIDE TEMPORARY FENCE (ESA) AT THE FORMER STAGING FOOTPRINT IS ALLOWED AS NEEDED FOR SOD PLACEMENT, IRRIGATION WORK, AND MAINTENANCE ON FOOT.
- REMOVAL OF TEMPORARY FENCE (TYPE ESA) AFTER PLANT ESTABLISHMENT PERIOD OR AS DIRECTED BY THE ENGINEER.



PLANTING QUANTITIES

SHEET No.	ORGANIC FERTILIZER	SOD	CULTIVATION
	LB	SQYD	
PP-1	320	5,770	5,770
TOTAL	320	5,770	5,770

5,770 SOYD SOD

APPROVED FOR PLANTING WORK ONLY

PLANTING PLAN
SCALE: 1" = 20' PP-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 WATER QUALITY
 SENIOR LANDSCAPE ARCHITECT
 DAVID YAM
 CHECKED BY
 DAVID YAM
 REVISOR
 ANGELA KWAN
 DATE REVISOR
 9/22/14
 REVISIONS
 9/22/14

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans WATER QUALITY
 SENIOR LANDSCAPE ARCHITECT DAVID YAM
 CALCULATED-DESIGNED BY CHECKED BY
 ANGELA KWAN DAVID YAM
 REVISED BY DATE REVISED
 AK 9/22/14

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	30	38

David Yam
 LICENSED LANDSCAPE ARCHITECT
 1-20-15
 PLANS APPROVAL DATE

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EROSION CONTROL (TYPE 1)

SEQUENCE	ITEM	MATERIAL		APPLICATION RATE	DEPTH
		DESCRIPTION	TYPE		
1	IMPORTED TOPSOIL	TOPSOIL	IMPORTED	420 CY/ACRE	3"
2	COMPOST	MANURE	FINE	135 CY/ACRE	1"

EROSION CONTROL QUANTITIES

SHEET No.	IMPORTED TOPSOIL	COMPOST
	CY	SQFT
EC-1	480	51,900
TOTAL	480	51,900

EROSION CONTROL LEGEND AND QUANTITIES

NO SCALE **ECL-1**

LAST REVISION DATE PLOTTED => 21-JAN-2015 09-22-14 TIME PLOTTED => 08:34

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	31	38

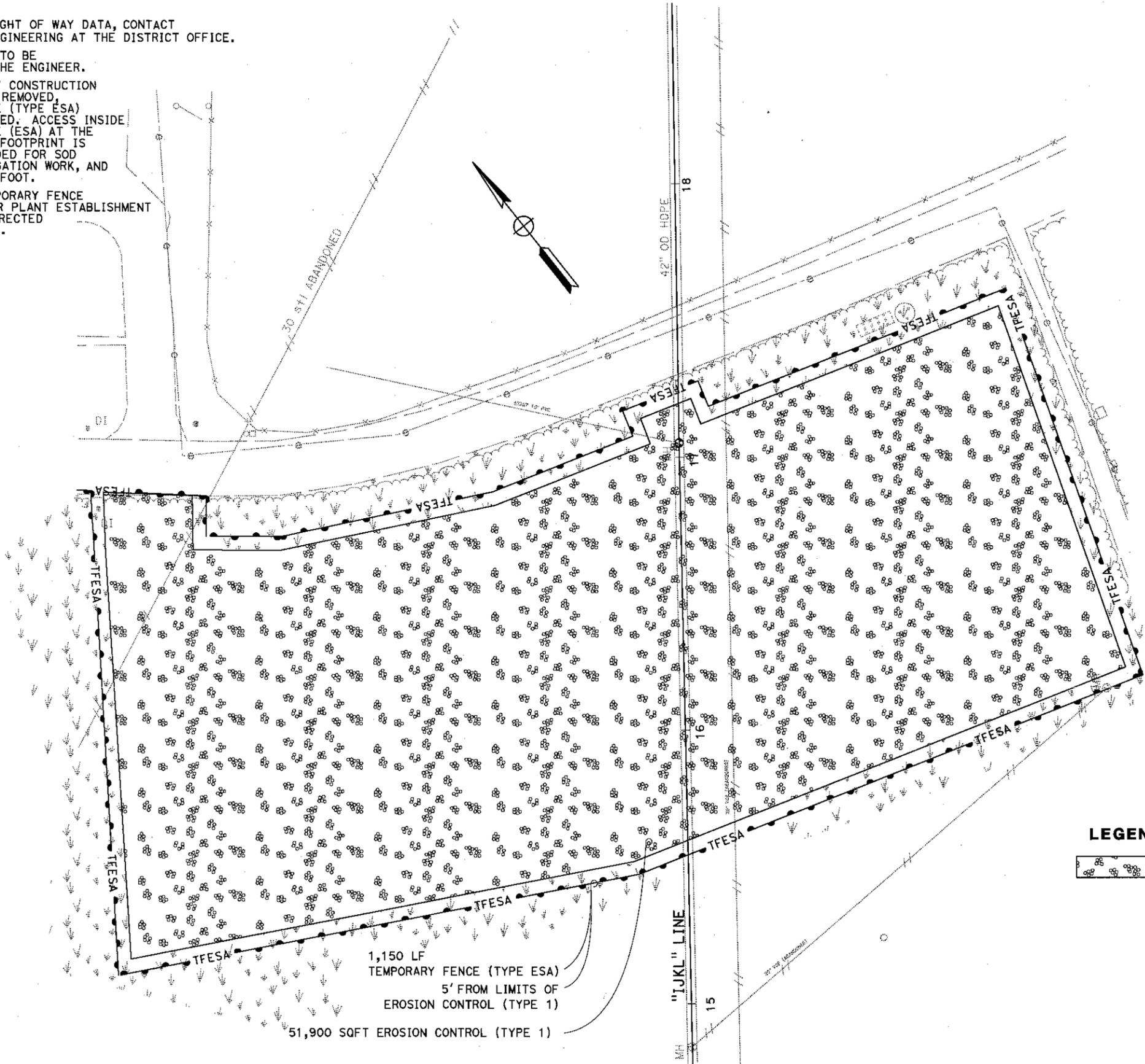
Dan Williams
 LICENSED LANDSCAPE ARCHITECT
 1-20-15
 PLANS APPROVAL DATE
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NOTE:

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- REMOVAL OF TEMPORARY FENCE (TYPE ESA) AFTER PLANT ESTABLISHMENT PERIOD OR AS DIRECTED BY THE ENGINEER.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Water Quality
 SENIOR LANDSCAPE ARCHITECT: DAVID YAM
 CHECKED BY: DAVID YAM
 CALCULATED-DESIGNED BY: ANGELA KWAN
 REVISOR: DAVID YAM
 DATE REVISOR: 9/22/14



LEGEND:
 EROSION CONTROL (TYPE 1)

1,150 LF
 TEMPORARY FENCE (TYPE ESA)
 5' FROM LIMITS OF
 EROSION CONTROL (TYPE 1)
 51,900 SQFT EROSION CONTROL (TYPE 1)

APPROVED FOR EROSION CONTROL WORK ONLY

EROSION CONTROL PLAN
 SCALE: 1" = 20' EC-1

Maint	MAINTENANCE
Max	MAXIMUM
MB	METAL BEAM
MBB	METAL BEAM BARRIER
MBGR	METAL BEAM GUARD RAILING
Med	MEDIAN
MGS	MIDWEST GUARDRAIL SYSTEM
MH	MANHOLE
Min	MINIMUM
Misc	MISCELLANEOUS
Misc I & S	MISCELLANEOUS IRON AND STEEL
Mkr	MARKER
Mod	MODIFIED, MODIFY
Mon	MONUMENT
MP	METAL PLATE
MPGR	METAL PLATE GUARD RAILING
MR	MOVEMENT RATING
MSE	MECHANICALLY STABILIZED EMBANKMENT
Mt	MOUNTAIN, MOUNT
MtI	MATERIAL
MVP	MAINTENANCE VEHICLE PULLOUT
N	NORTH
NB	NORTHBOUND
No.	NUMBER (MUST HAVE PERIOD)
Nos.	NUMBERS (MUST HAVE PERIOD)
NPS	NOMINAL PIPE SIZE
NS	NEAR SIDE
NSP	NEW STANDARD PLAN
NTS	NOT TO SCALE
Obir	OBLITERATE
OC	OVERCROSSING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OG	ORIGINAL GROUND
OGAC	OPEN GRADED ASPHALT CONCRETE
OGFC	OPEN GRADED FRICTION COURSE
OH	OVERHEAD
OHWM	ORDINARY HIGH WATER MARK
O-O	OUT TO OUT
Opp	OPPOSITE
OSD	OVERSIDE DRAIN
P	PAGE
PAP	PERFORATED ALUMINUM PIPE
PB	PULL BOX
PC	POINT OF CURVATURE, PRECAST
PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE
PCMS	PORTABLE CHANGEABLE MESSAGE SIGN
PCP	PERFORATED CONCRETE PIPE, PRESTRESSED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PEC	PERMIT TO ENTER AND CONSTRUCT
Ped	PEDESTRIAN
Ped OC	PEDESTRIAN OVERCROSSING
Ped UC	PEDESTRIAN UNDERCROSSING
Perm MtI	PERMEABLE MATERIAL

PG	PROFILE GRADE
PI	POINT OF INTERSECTION
PJP	PARTIAL JOINT PENETRATION
Pkwy	PARKWAY
PL	PLATE
P/L	PROPERTY LINE
PM	POST MILE, TIME FROM NOON TO MIDNIGHT
PN	PAVING NOTCH
POC	POINT OF HORIZONTAL CURVE
POT	POINT OF TANGENT
POVC	POINT OF VERTICAL CURVE
PP	PIPE PILE, PLASTIC PIPE, POWER POLE
PPL	PREFORMED PERMEABLE LINER
PPP	PERFORATED PLASTIC PIPE
PRC	POINT OF REVERSE CURVE
PRF	PAVEMENT REINFORCING FABRIC
PRVC	POINT OF REVERSE VERTICAL CURVE
PS&E	PLANS, SPECIFICATIONS AND ESTIMATES
PS, P/S	PRESTRESSED
PSP	PERFORATED STEEL PIPE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
Pvmt	PAVEMENT
Qty	QUANTITY
R	RADIUS
R & D	REMOVE AND DISPOSE
R & S	REMOVE AND SALVAGE
R/C	RATE OF CHANGE
RCA	REINFORCED CONCRETE ARCH
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RCPA	REINFORCED CONCRETE PIPE ARCH
Rd	ROAD
Reinf	REINFORCED, REINFORCEMENT, REINFORCING
Rel	RELOCATE
Repl	REPLACEMENT
Ret	RETAINING
Rev	REVISED, REVISION
Rdwy	ROADWAY
RHMA	RUBBERIZED HOT MIX ASPHALT
Riv	RIVER
RM	ROAD-MIXED
RP	RADIUS POINT, REFERENCE POINT
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION, REVISED STANDARD PLAN
Rt	RIGHT
Rte	ROUTE
RW	REDWOOD, RETAINING WALL
R/W	RIGHT OF WAY
Rwy	RAILWAY

P continued

S	SOUTH, SUPPLEMENT
SAE	STRUCTURE APPROACH EMBANKMENT
Salv	SALVAGE
SAPP	STRUCTURAL ALUMINUM PLATE PIPE
SB	SOUTHBOUND
SC	SAND CUSHION
SCSP	SLOTTED CORRUGATED STEEL PIPE
SD	STORM DRAIN
Sec	SECOND, SECTION
Sep	SEPARATION
SG	SUBGRADE
Shld	SHOULDER
Sht	SHEET
Sim	SIMILAR
SL	STATION LINE
SM	SELECTED MATERIAL
Spec	SPECIAL, SPECIFICATIONS
SPP	SLOTTED PLASTIC PIPE
SS	SLOPE STAKE
SSBM	STRAP AND SADDLE BRACKET METHOD
SSD	STRUCTURAL SECTION DRAIN
SSPA	STRUCTURAL STEEL PLATE ARCH
SSPP	STRUCTURAL STEEL PLATE PIPE
SSPPA	STRUCTURAL STEEL PLATE PIPE ARCH
SSRP	STEEL SPIRAL RIB PIPE
St	STREET
Sta	STATION
STBB	SINGLE THRIE BEAM BARRIER
Std	STANDARD
Str	STRUCTURE
Surf	SURFACING
SW	SIDEWALK, SOUND WALL
Swr	SEWER
Sym	SYMMETRICAL
S4S	SURFACE 4 SIDES
T	SEMI-TANGENT
Tan	TANGENT
TBB	THRIE BEAM BARRIER
Tbr	TIMBER
TC	TOP OF CURB
TCB	TRAFFIC CONTROL BOX
TCE	TEMPORARY CONSTRUCTION EASEMENT
Tel	TELEPHONE
Temp	TEMPORARY
TG	TOP OF GRADE
Tot	TOTAL
TP	TELEPHONE POLE
TPB	TREATED PERMEABLE BASE
TPM	TREATED PERMEABLE MATERIAL
Trans	TRANSITION

S

TS	TRANSVERSE, TRAFFIC SIGNAL, TUBULAR STEEL
Typ	TYPICAL
UC	UNDERCROSSING
UD	UNDERDRAIN
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UP	UNDERPASS
V	VALVE, DESIGN SPEED
Var	VARIABLE, VARIES
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
Vert	VERTICAL
Via	VIADUCT
Vol	VOLUME
W	WEST, WIDTH
WB	WESTBOUND
WH	WEEP HOLE
WM	WIRE MESH
WS	WATER SURFACE
WSP	WELDED STEEL PIPE
Wt	WEIGHT
WV	WATER VALVE
WW	WINGWALL
WWLOL	WINGWALL LAYOUT LINE
X Sec	CROSS SECTION
Xing	CROSSING
Yr	YEAR
Yrs	YEARS

T continued

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	32	38

Grace N. Tsushima
REGISTERED CIVIL ENGINEER

July 19, 2013
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 1-20-15

UNIT OF MEASUREMENT SYMBOLS:

Some of the symbols used in the project plan quantity tables and in the Bid Item List are:

TABLE A

SYMBOL USED	DEFINITIONS
ACRE	ACRE
CF	CUBIC FOOT
CY	CUBIC YARD
EA	EACH
GAL	GALLON
LB	POUND
LF	LINEAR FOOT
SOFT	SQUARE FOOT
SOYD	SQUARE YARD
STA	100 FEET
TAB	TABLET
TON	2,000 POUNDS

Some of the symbols used in the plans other than in the project plan quantity tables are:

TABLE B

SYMBOL USED	DEFINITIONS
ksi	KIPS PER SQUARE INCH
ksf	KIPS PER SQUARE FOOT
psi	POUNDS PER SQUARE INCH
psf	POUNDS PER SQUARE FOOT
lb/ft ³ , pcf	POUNDS PER CUBIC FOOT
tsf	TONS PER SQUARE FOOT
mph, MPH *	MILES PER HOUR
Ø	NOMINAL DIAMETER
oz	OUNCE
lb	POUND
kip	1,000 POUNDS
cal	CALORIE
ft	FOOT OR FEET
gal	GALLON

* For use on a sign panel only

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

**ABBREVIATIONS
(SHEET 2 OF 2)**

NO SCALE

RSP A10B DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN A10B
DATED MAY 20, 2011 - PAGE 2 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A10B

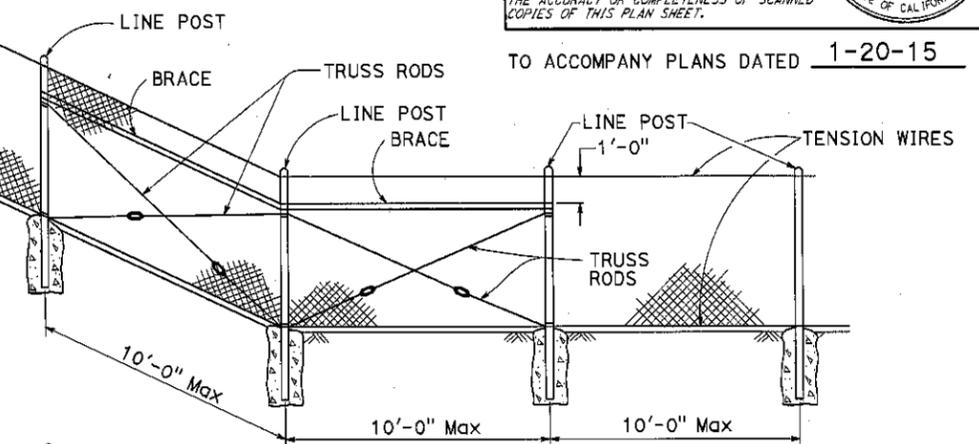
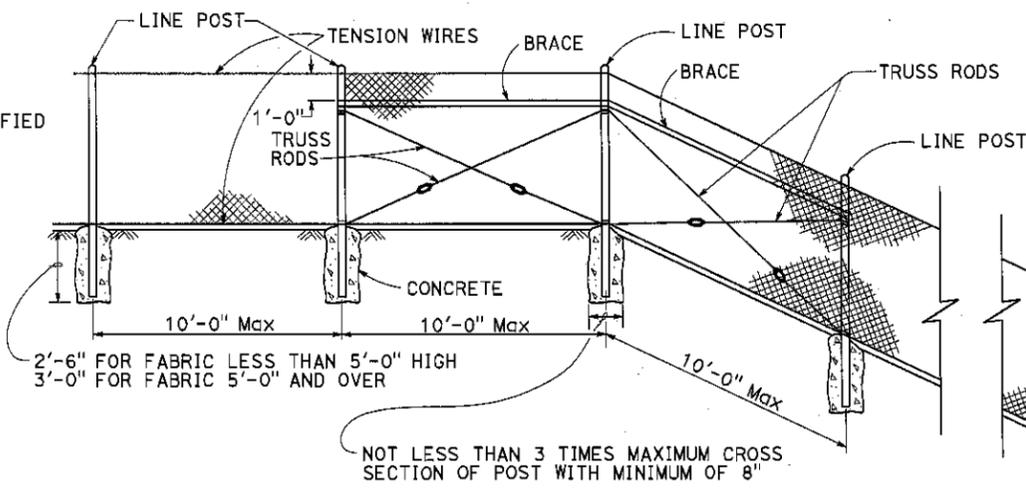
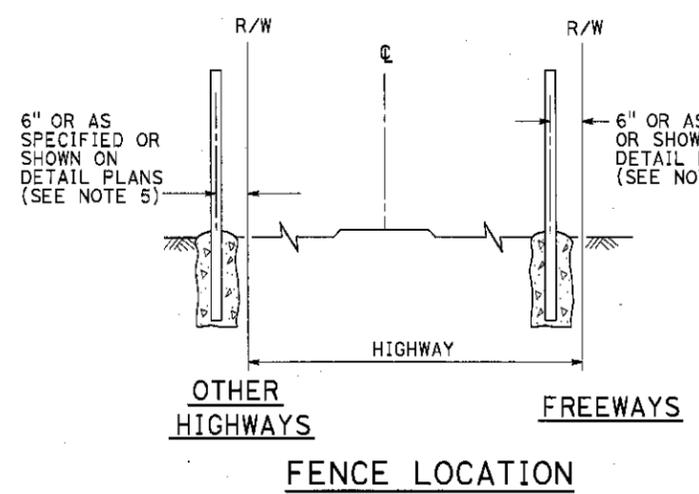
2010 REVISED STANDARD PLAN RSP A10B

Glenn DeCou
REGISTERED CIVIL ENGINEER

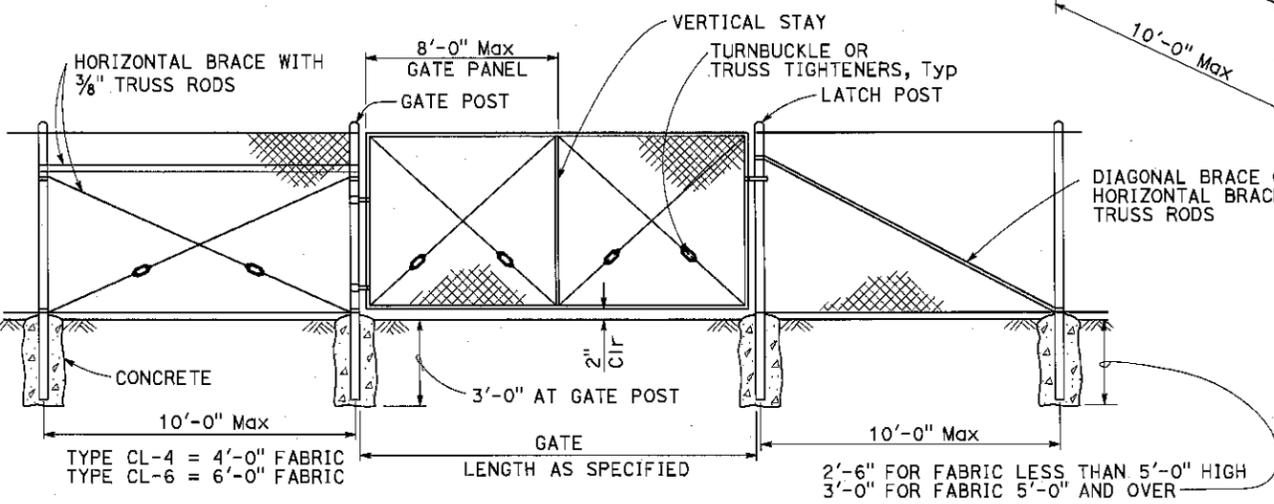
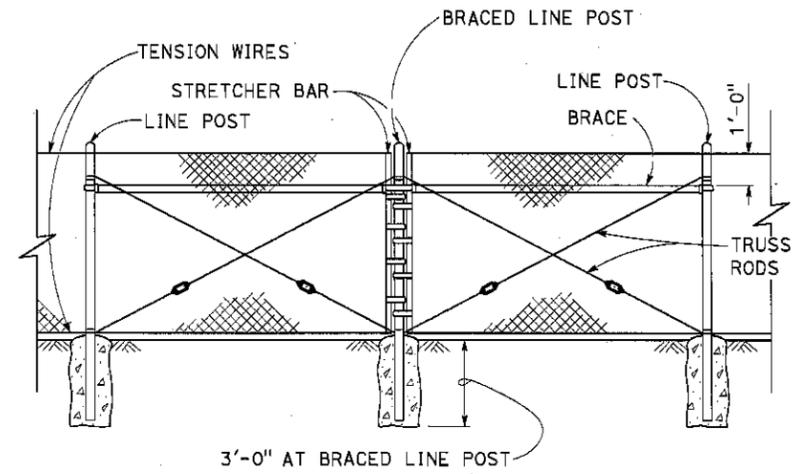
July 18, 2014
PLANS APPROVAL DATE

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REGISTERED PROFESSIONAL ENGINEER
Glenn DeCou
No. C34547
Exp. 9-30-15
CIVIL
STATE OF CALIFORNIA



CHAIN LINK FENCE ON SHARP BREAK IN GRADE



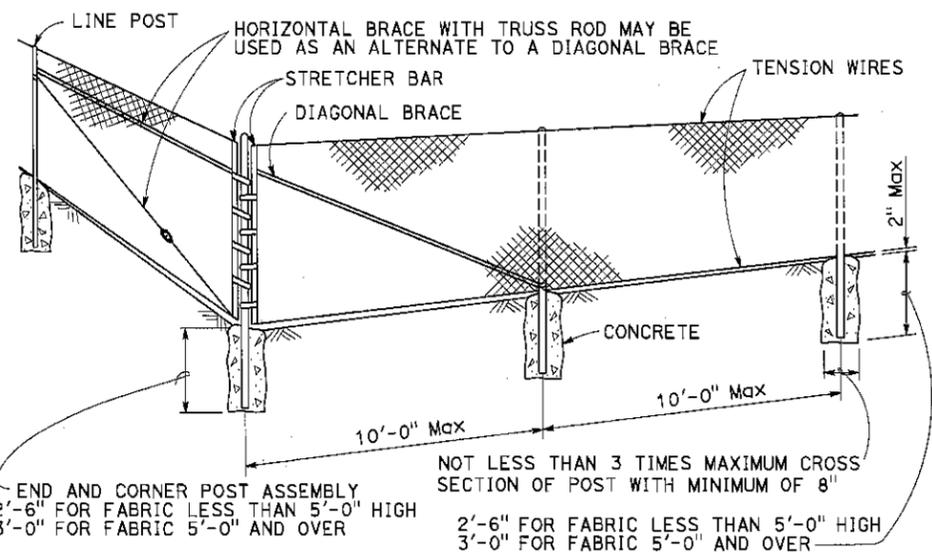
CHAIN LINK GATE INSTALLATION

GATE POST			
FENCE HEIGHT	GATE WIDTHS	ROUND OD PIPE	WEIGHT (lb/ft)
6'-0" AND LESS	UP THRU 6'-0"	2.875"	5.80
	OVER 6'-0" THRU 12'-0"	4.500"	10.80
	OVER 12'-0" THRU 18'-0"	5.563"	14.63
	OVER 18'-0" TO 24'-0" Max	6.625"	18.99
OVER 6'-0" TO 8'-0" Max	UP THRU 6'-0"	3.500"	7.58
	OVER 6'-0" THRU 12'-0"	5.563"	14.63
	OVER 12'-0" THRU 18'-0"	6.625"	18.99
	OVER 18'-0" TO 24'-0" Max	8.625"	28.58

Above post dimensions and weights are minimums. Larger sizes may be used upon approval.

BRACED LINE POST INSTALLATION

Braced line post at intervals not exceeding 1000'



CORNER POST

NOTES:

- The table below shows minimum sized posts and braces complying with the specifications. Larger or heavier post and brace sizes may be used upon approval.
- Sections shown in the tables must also comply with the strength requirements and other provisions of the Specifications.
- Other sections which comply with the strength requirements and other provisions of the Specifications may be used upon approval.
- Options exercised shall be uniform on any one project.
- Offset to be 2'-0" at monument locations, measured at right angles to R/W lines. Taper to achieve offset to be at least 20'-0" long.
- See Revised Standard Plan RSP A85B for Brace, Stretcher Bar, and Truss Tightener Details.

FENCE HEIGHT	TYPICAL MEMBER DIMENSIONS (See Notes)									
	LINE POSTS				END, LATCH AND CORNER POSTS		BRACES			
	ROUND OD PIPE	WEIGHT (lb/ft)	ROLL FORMED		ROUND OD PIPE	WEIGHT (lb/ft)	ROUND OD PIPE	WEIGHT (lb/ft)	ROLL FORMED	
			SECTION	WEIGHT (lb/ft)					SECTION	WEIGHT (lb/ft)
6'-0" AND LESS	1.900"	2.72	1.875" x 1.625"	1.85	2.375"	3.65	1.66"	2.27	1.625" x 1.25"	1.35
OVER 6'-0" TO 8'-0" Max	2.375"	3.65	2.25" x 1.70"	2.78	2.875"	5.80	1.66"	2.27	1.625" x 1.25"	1.35

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CHAIN LINK FENCE
NO SCALE

RSP A85 DATED JULY 18, 2014 SUPERSEDES STANDARD PLAN A85
DATED MAY 20, 2011 - PAGE 112 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A85

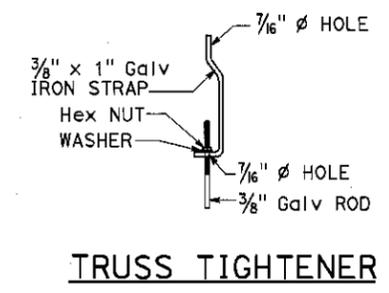
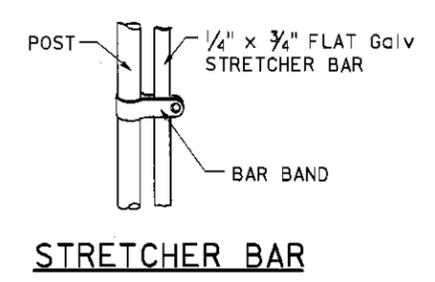
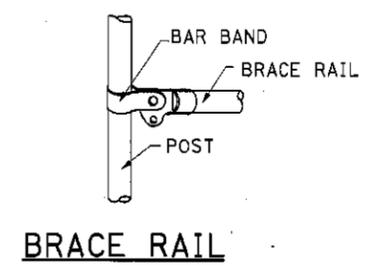
2010 REVISED STANDARD PLAN RSP A85

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	34	38

Glenn DeCou
 REGISTERED CIVIL ENGINEER
 No. C34547
 Exp. 9-30-13
 CIVIL
 STATE OF CALIFORNIA

October 19, 2012
 PLANS APPROVAL DATE

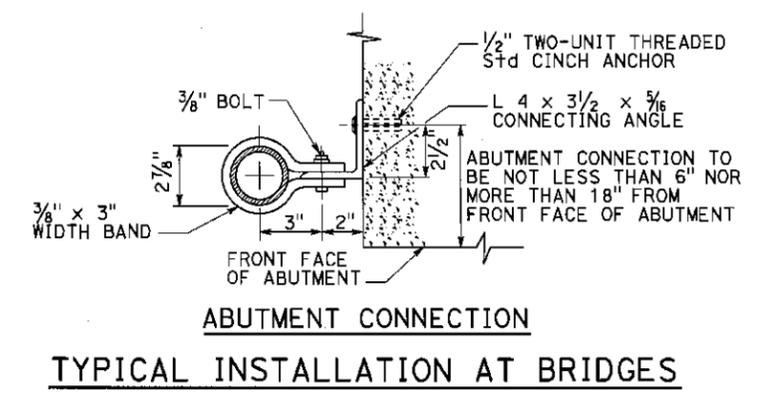
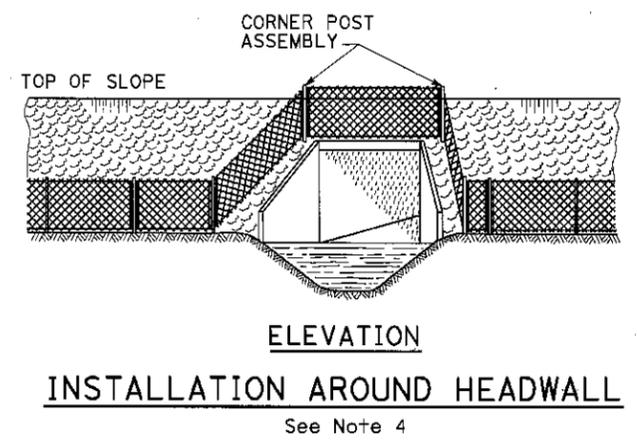
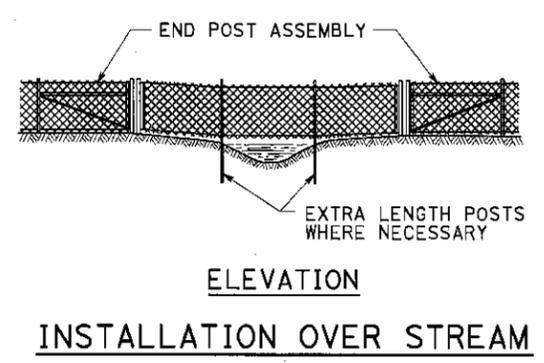
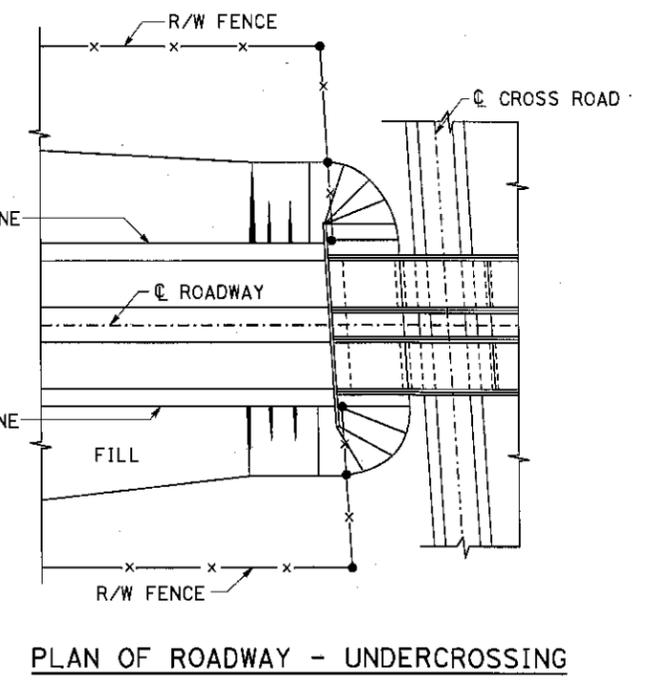
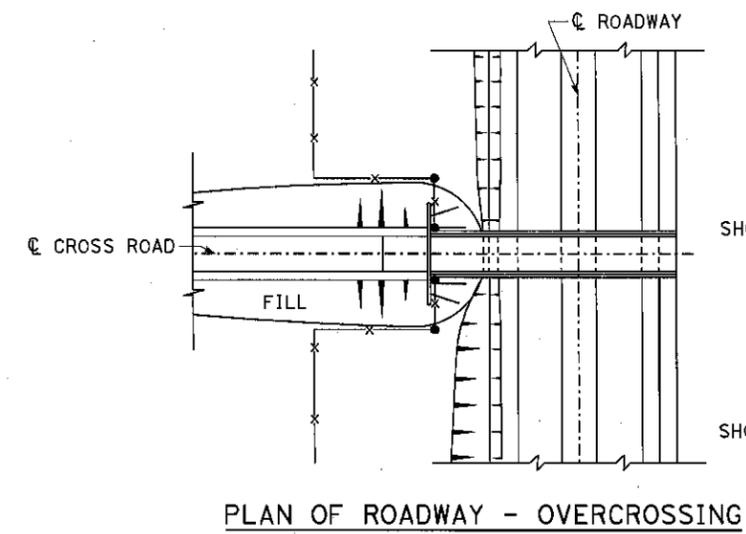
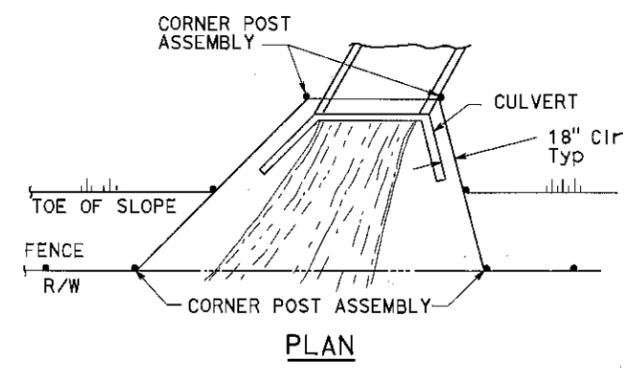
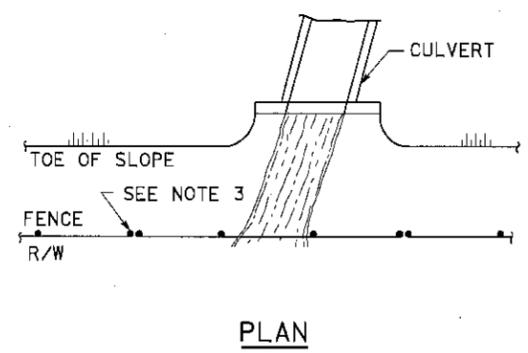
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NOTES:

1. All material for abutment connection to be galvanized.
2. The chain link fabric shall be replaced by barbed wire strands at 12" maximum centers between the double posts.
3. When the width of the culvert makes it necessary to anchor a post to the top of the culvert, a cast iron shoe or other device approved by the Engineer shall be used.
4. Fencing over stream and around headwall may also use Barbed Wire or Wire Mesh fencing with either wood post or steel post installation.
5. See Standard Plan A85 for Chain Link fence dimensions. See Standard Plan A86 for Barbed Wire and Wire Mesh fence dimensions and for wood post and steel post installation.

TO ACCOMPANY PLANS DATED 1-20-15



STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
CHAIN LINK FENCE DETAILS
 NO SCALE

RSP A85B DATED OCTOBER 19, 2012 SUPERSEDES STANDARD PLAN A85B DATED MAY 20, 2011 - PAGE 114 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP A85B

2010 REVISED STANDARD PLAN RSP A85B

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	35	38

Gregory A. Balzer
LICENSED LANDSCAPE ARCHITECT

July 19, 2013
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS
OR AGENTS SHALL NOT BE RESPONSIBLE FOR
THE ACCURACY OR COMPLETENESS OF SCANNED
COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 1-20-15

A

AB AGGREGATE BASE
 ABS ACRYLONITRILE-BUTADIENE-STYRENE
 AC ASPHALT CONCRETE
 ACC ARMOR-CLAD CONDUCTORS
 Adj ADJACENT/ADJUSTABLE
 AIC AUXILIARY IRRIGATION CONTROLLER
 Alt ALTERNATIVE
 AMEND AMENDMENT
 ARV AIR RELEASE VALVE
 AUTO AUTOMATIC
 AUX AUXILIARY
 AVB ATMOSPHERIC VACUUM BREAKER

B

B&B BALLED AND BURLAPPED
 B/B BRASS/BRONZE
 B/B/PL BRASS/BRONZE/PLASTIC
 B/PL BRASS/PLASTIC
 BFM BONDED FIBER MATRIX
 Bit Ctd BITUMINOUS COATED
 BP BOOSTER PUMP
 BPA BACKFLOW PREVENTER ASSEMBLY
 BPE BACKFLOW PREVENTER ENCLOSURE
 BV BALL VALVE

C

C CONDUIT
 CAP CORRUGATED ALUMINUM PIPE
 CARV COMBINATION AIR RELEASE VALVE
 CB COUPLING BAND
 CCA CAM COUPLER ASSEMBLY
 CEC CONTROLLER ENCLOSURE CABINET
 CHDPE CORRUGATED HIGH DENSITY POLYETHYLENE
 CL CHAIN LINK
 CNC CONTROL AND NEUTRAL CONDUCTORS
 Conc CONCRETE
 CP COPPER PIPE
 CS COMPOST SOCK
 CSP CORRUGATED STEEL PIPE
 CST CENTER STRIP
 CV CHECK VALVE

D

Dia DIAMETER
 DIP DUCTILE IRON PIPE
 DIT DRIP IRRIGATION TUBING
 DG DECOMPOSED GRANITE
 DN DIAMETER NOMINAL
 DVA DRIP VALVE ASSEMBLY

E

EC EROSION CONTROL
 ECTC EROSION CONTROL TECHNOLOGY COUNCIL
 Elect ELECTRIC/ELECTRICAL
 Elev ELEVATION
 ELL ELBOW
 ENCL ENCLOSURE
 EP EDGE OF PAVEMENT
 ES EDGE OF SHOULDER
 EST END STRIP
 ESTB ESTABLISHMENT
 ETW EDGE OF TRAVELED WAY

F

F FULL CIRCLE
 F/P FULL/PART CIRCLE
 FCV FLOW CONTROL VALVE
 FERT FERTILIZER
 FG FINISHED GRADE
 FH FLEXIBLE HOSE
 FIPT FEMALE IRON PIPE THREAD
 FIS FERTILIZER INJECTOR SYSTEM
 FL FLOW LINE
 FR FIBER ROLL
 FS FLOW SENSOR
 FSC FLOW SENSOR CABLE
 FV FLUSH VALVE

G

Galv GALVANIZED
 GARV GARDEN VALVE
 GARVA GARDEN VALVE ASSEMBLY
 GM GRAVEL MULCH
 GPH GALLONS PER HOUR
 GPM GALLONS PER MINUTE
 GSP GALVANIZED STEEL PIPE
 GV GATE VALVE

H

H HALF CIRCLE
 HDPE HIGH DENSITY POLYETHYLENE
 HP HORSEPOWER/HINGE POINT
 HPL HIGH PRESSURE LINE
 Hwy HIGHWAY

I

IC IRRIGATION CONTROLLER
 ICC IRRIGATION CONTROLLER(S)
 IN CONTROLLER ENCLOSURE CABINET
 ID INSIDE DIAMETER
 IFS IRRIGATION FILTRATION SYSTEM
 IPS IRON PIPE SIZE
 IPT IRON PIPE THREAD
 Irr IRRIGATION

L

L LENGTH

M

Max MAXIMUM
 MBGR METAL BEAM GUARD RAILING
 MCV MANUAL CONTROL VALVE
 MIC MASTER IRRIGATION CONTROLLER
 Min MINIMUM
 MIPT MALE IRON PIPE THREAD
 Misc MISCELLANEOUS
 M+I MATERIAL
 MVP MAINTENANCE VEHICLE PULLOUT

N

NCN NO COMMON NAME
 NL NOZZLE LINE
 No. NUMBER
 NPT NATIONAL PIPE THREAD

O

O/C ON CENTER
 OD OUTSIDE DIAMETER
 OL OVERLAP

P

P PART CIRCLE
 PB PULL BOX
 PCC PORTLAND CEMENT CONCRETE
 PE POLYETHYLENE
 Pkt PACKET
 PL PLASTIC
 PLS PURE LIVE SEED
 PLT PLANT/PLANTING
 PLT ESTB PLANT ESTABLISHMENT
 PM POST MILE
 PR PRESSURE RATED
 PRLV PRESSURE RELIEF VALVE
 PRV PRESSURE REGULATING VALVE
 PVC POLYVINYL CHLORIDE
 Pvmnt PAVEMENT

Q

Q QUARTER CIRCLE
 QCV QUICK COUPLING VALVE

NOTE:
 For additional abbreviations,
 see Standard Plans A10A and A10B.

R

R RADIUS
 RCP REINFORCED CONCRETE PIPE
 RCV REMOTE CONTROL VALVE
 RCVM REMOTE CONTROL VALVE (MASTER)
 RCVMF REMOTE CONTROL VALVE (MASTER) W/FLOW
 SENSOR
 RCVP REMOTE CONTROL VALVE W/PRESSURE
 REGULATOR
 RCW RECYCLED WATER
 RECP ROLLED EROSION CONTROL PRODUCT
 REQ REQUIRED
 RICS REMOTE IRRIGATION CONTROL SYSTEM
 R/W RIGHT OF WAY

S

S SLIP
 SCH SCHEDULE
 SF STATE-FURNISHED
 Shld SHOULDER
 Sq SQUARE
 SST SIDE STRIP
 Sta STATION
 Std STANDARD
 SW SIDEWALK/SOUND WALL

T

T THIRD CIRCLE/THREAD
 TLS TRUCK LOADING STANDPIPE
 TQ THREE QUARTER CIRCLE
 TRM TURF REINFORCEMENT MAT
 TT TWO-THIRDS CIRCLE
 TWSA TREE WELL SPRINKLER ASSEMBLY
 Typ TYPICAL

U

UG UNDERGROUND

W

W WIDTH
 W/ WITH
 WM WATER METER
 WS WYE STRAINER
 WSA WYE STRAINER ASSEMBLY
 WSP WELDED STEEL PIPE
 WWM WELDED WIRE MESH

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**LANDSCAPE AND
 EROSION CONTROL ABBREVIATIONS**
 NO SCALE

RSP H1 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H1
 DATED MAY 20, 2011 - PAGE 218 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H1

2010 REVISED STANDARD PLAN RSP H1

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	36	38

Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT

November 15, 2013
 PLANS APPROVAL DATE

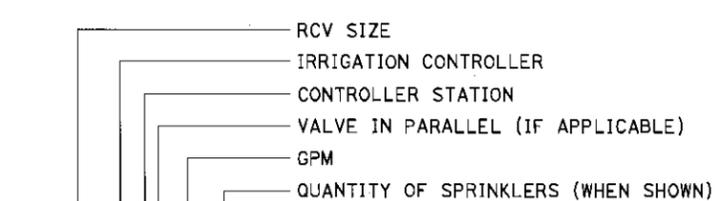
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 1-20-15

2010 REVISED STANDARD PLAN RSP H2

EXISTING	NEW	ITEM DESCRIPTION
		WATER METER (WM)
		BACKFLOW PREVENTER ASSEMBLY (BPA)
		BACKFLOW PREVENTER ENCLOSURE (BPE)
		BOOSTER PUMP (BP)
		TRUCK LOADING STANDPIPE (TLS)
		FLOW SENSOR (FS)
		MASTER IRRIGATION CONTROLLER (MIC)
		AUXILIARY IRRIGATION CONTROLLER (AIC)
		IRRIGATION CONTROLLER (IC)
		IRRIGATION CONTROLLER (IC) (BATTERY)
		IRRIGATION CONTROLLER (IC) (SOLAR)
		IRRIGATION CONTROLLER (IC) (TWO WIRE)
		IRRIGATION CONTROLLER(S) IN CONTROLLER ENCLOSURE CABINET (ICC)
		ARMOR-CLAD CONDUCTORS (ACC)
		CONTROL AND NEUTRAL CONDUCTORS (CNC)
		IRRIGATION CONDUIT
		EXTEND IRRIGATION CONDUIT
		DUCTILE IRON PIPE (SUPPLY LINE) (MAIN) (DIP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (MAIN) (GSP)
		GALVANIZED STEEL PIPE (SUPPLY LINE) (LATERAL) (GSP)
		PLASTIC PIPE (SUPPLY LINE) (MAIN)
		PLASTIC PIPE (SUPPLY LINE) (LATERAL)
		COPPER PIPE (SUPPLY LINE)
		DRIP IRRIGATION TUBING
		REMOTE CONTROL VALVE (RCV)
		REMOTE CONTROL VALVE (MASTER) (RCVM)
		REMOTE CONTROL VALVE (MASTER) W/FLOW METER (RCVMF)
		REMOTE CONTROL VALVE W/PRESSURE REGULATOR (RCVP)
		EXISTING MANUAL CONTROL VALVE (MCV)
		DRIP VALVE ASSEMBLY (DVA)
		WYE STRAINER ASSEMBLY (WSA)

EXISTING	NEW	ITEM DESCRIPTION
		GATE VALVE (GV)
		BALL VALVE (BV)
		QUICK COUPLING VALVE (QCV)
		CAM COUPLER ASSEMBLY (CCA)
		GARDEN VALVE ASSEMBLY (GARVA)
		PRESSURE REGULATING VALVE (PRV)
		PRESSURE RELIEF VALVE (PRLV)
		FLOW CONTROL VALVE (FCV)
		COMBINATION AIR RELEASE VALVE (CARV)
		CHECK VALVE (CV)
		FLUSH VALVE (FV)
		EXISTING NOZZLE LINE W/TURNING UNION
		EXISTING IRRIGATION SYSTEM
		EXISTING IRRIGATION SYSTEM TO BE REMOVED
		CHAIN LINK GATE
		QUICK COUPLING VALVE W/SPRINKLER PROTECTOR
		SPRINKLER W/SPRINKLER PROTECTOR
		CONNECT TO EXISTING SYSTEM
		CAP
		CAP EXISTING
		FIBER ROLL
		COMPOST SOCK



* 2 1/2" - A-2b-40-60

VALVE CODE

* VALVE CODES FOR EXISTING VALVES ARE SHOWN IN A DASHED ENCLOSURE.

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
LANDSCAPE AND EROSION CONTROL SYMBOLS
 NO SCALE

RSP H2 DATED NOVEMBER 15, 2013 SUPERSEDES RSP H2 DATED JULY 19, 2013 AND STANDARD PLAN H2 DATED MAY 20, 2011 - PAGE 219 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H2

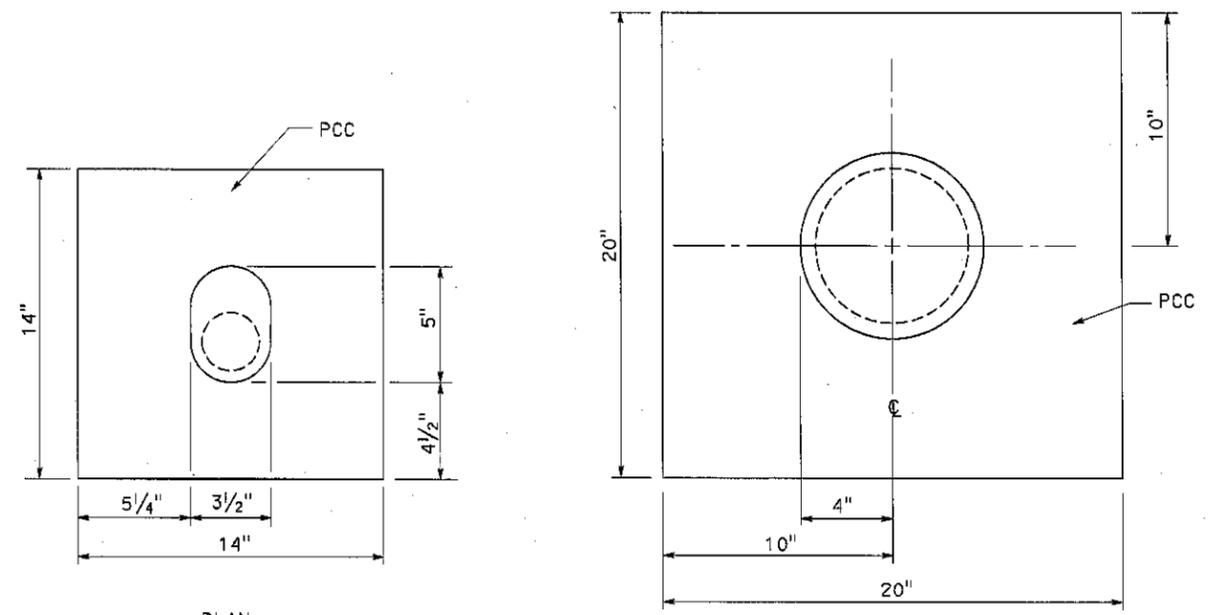
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SF	101	9.0	37	38

Suzanne A. Balzer
LICENSED LANDSCAPE ARCHITECT

July 19, 2013
PLANS APPROVAL DATE

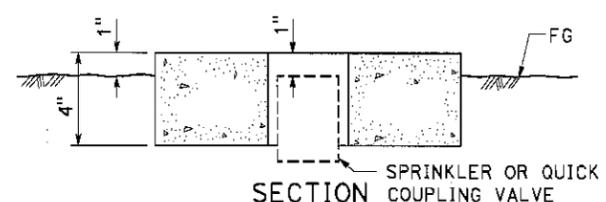
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

TO ACCOMPANY PLANS DATED 1-20-15

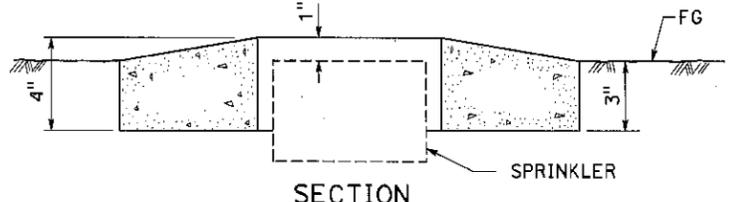


PLAN

PLAN



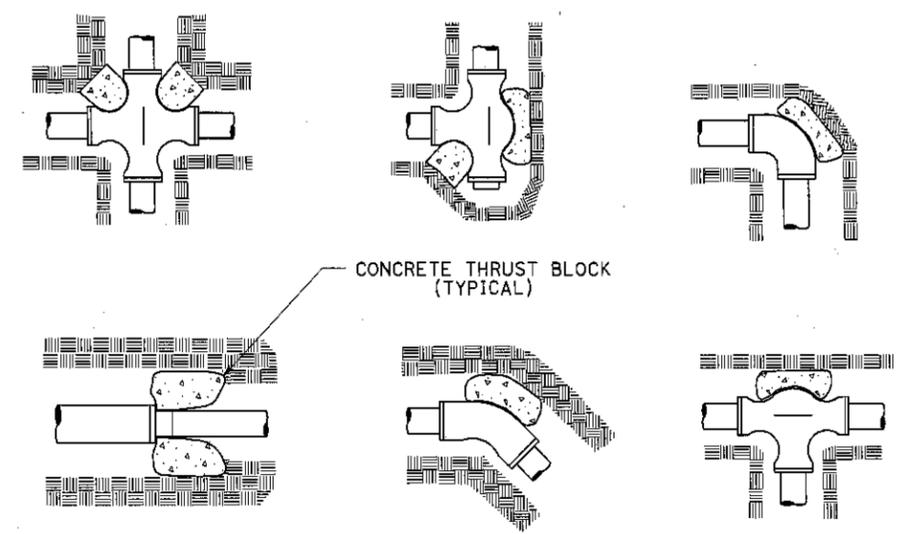
SECTION



SECTION

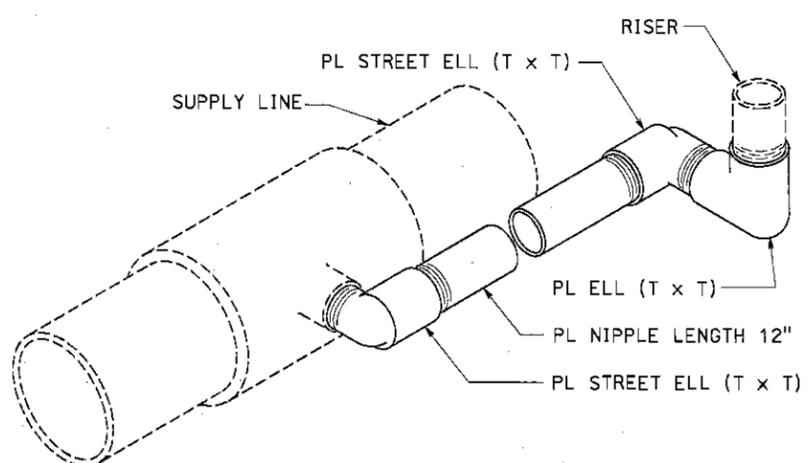
SPRINKLER PROTECTOR TYPE I

SPRINKLER PROTECTOR TYPE II



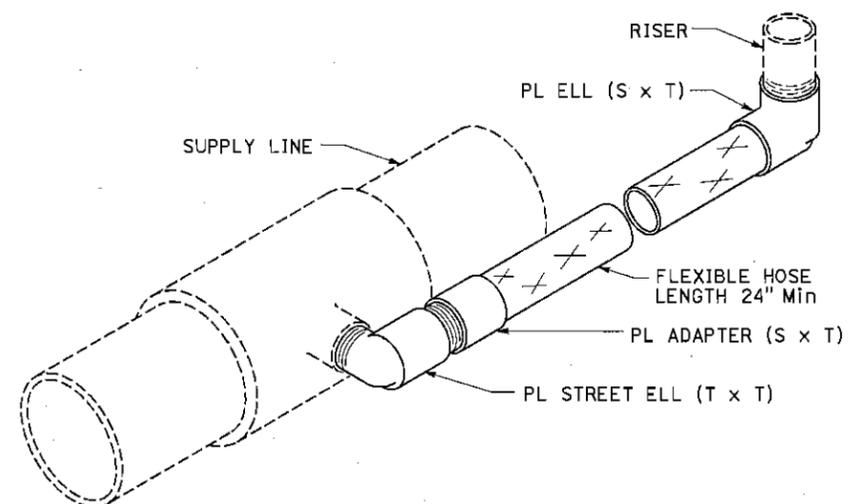
CONCRETE THRUST BLOCK (TYPICAL)

TYPICAL THRUST BLOCKS



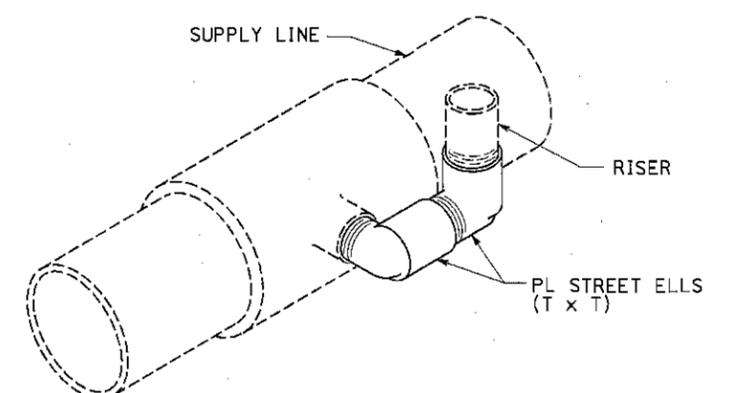
ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE I



ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE II



ISOMETRIC

POP-UP SPRINKLER ASSEMBLY TYPE III

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
LANDSCAPE DETAILS

NO SCALE

RSP H6 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H6 DATED MAY 20, 2011 - PAGE 223 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H6

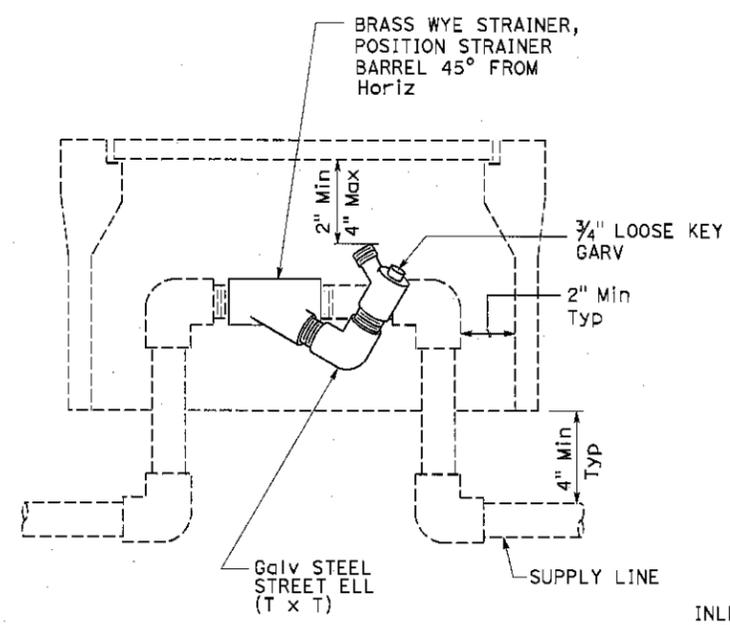
2010 REVISED STANDARD PLAN RSP H6

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	38	38

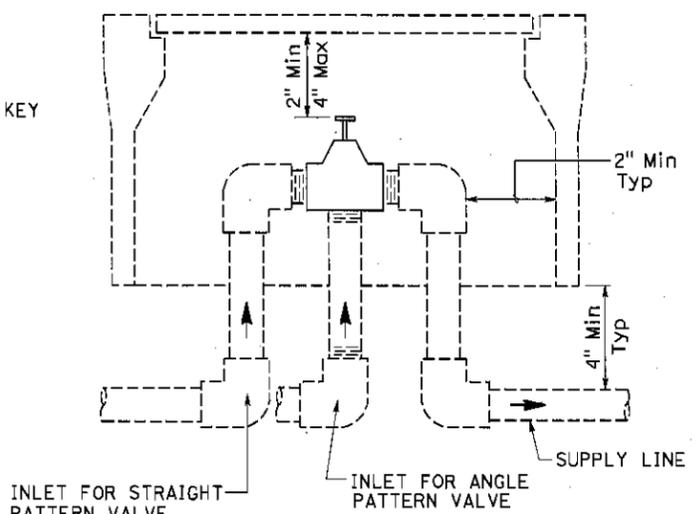
Gregory A. Balzer
 LICENSED LANDSCAPE ARCHITECT
 July 19, 2013
 PLANS APPROVAL DATE
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



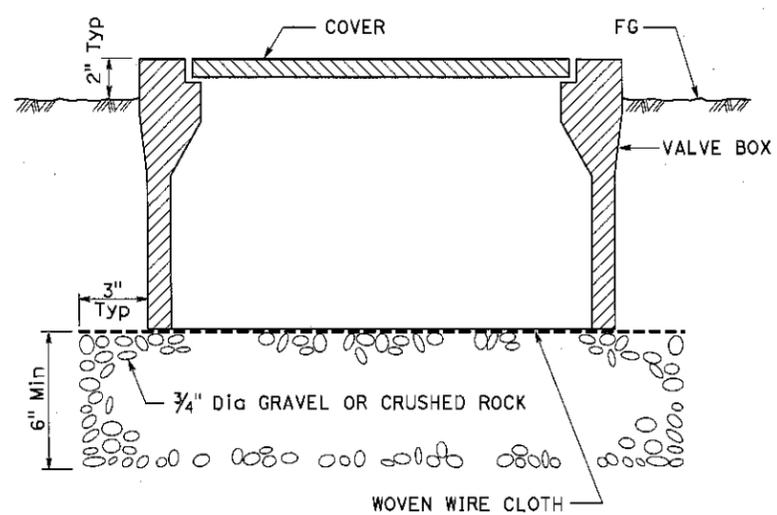
TO ACCOMPANY PLANS DATED 1-20-15



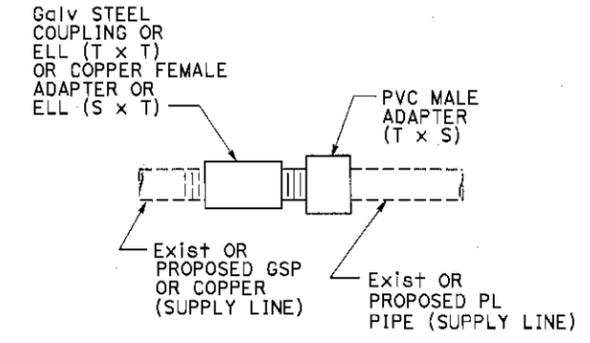
**ELEVATION
WYE STRAINER ASSEMBLY**



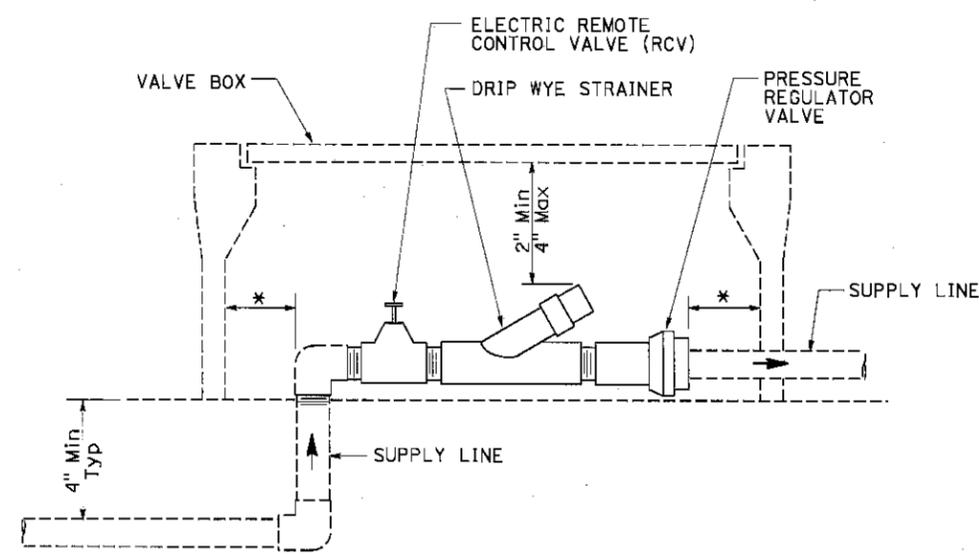
**ELEVATION
VALVE**



**SECTION
VALVE BOX**



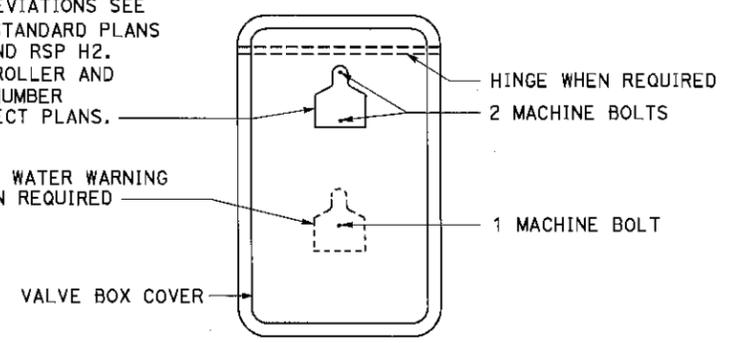
**GALVANIZED OR COPPER PIPE
CONNECTION TO PLASTIC PIPE**



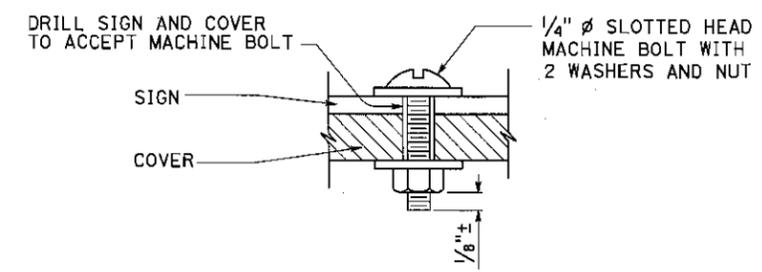
**ELEVATION
DRIP VALVE ASSEMBLY**

IDENTIFICATION LABEL:
FOR ABBREVIATIONS SEE
REVISED STANDARD PLANS
RSP H1 AND RSP H2.
FOR CONTROLLER AND
STATION NUMBER
SEE PROJECT PLANS.

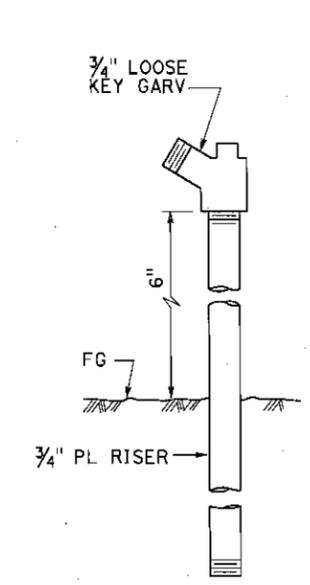
RECYCLED WATER WARNING
SIGN WHEN REQUIRED



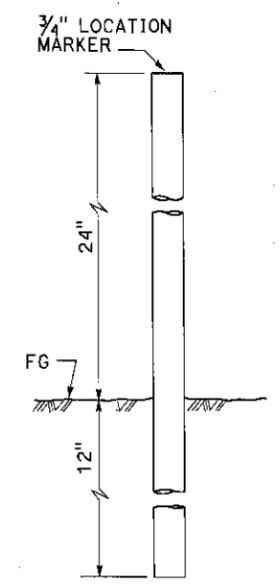
PLAN



**SECTION
VALVE BOX IDENTIFICATION**



**ELEVATION
GARDEN VALVE ASSEMBLY**



**ELEVATION
LOCATION MARKER**

GARDEN VALVE ASSEMBLY

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

LANDSCAPE DETAILS

NO SCALE

RSP H7 DATED JULY 19, 2013 SUPERSEDES STANDARD PLAN H7
DATED MAY 20, 2011 - PAGE 224 OF THE STANDARD PLANS BOOK DATED 2010.

REVISED STANDARD PLAN RSP H7

2010 REVISED STANDARD PLAN RSP H7

Attachment B¹

Temporary Trestle Drawing

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 DESIGN
 FUNCTIONAL SUPERVISOR: ARLISSA PANG
 CHECKED BY: SUSANA ONATE
 DESIGNED BY: PETER AGUILERA
 REVISIONS:
 PA/50: 12/04/14
 PA/50: 12/08/14
 PA: 01/17/15

NOTES:

1. LAND ACCESS AND STAGE 1 AND STAGE 2 CONSTRUCTION ACTIVITIES NOT ALLOWED AFTER JULY 31ST.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE GROUNDWATER LEVEL DURING CONSTRUCTION. GROUNDWATER AND BAYWATER WILL BE PRESENT AND WILL FLUCTUATE WITH SEASONAL AND TIDAL CONDITIONS.
3. LIMIT OF MARINE DREDGING SHOWN IS APPROXIMATE AND MAY BE ADJUSTED TO SUIT SITE CONDITIONS WITH APPROVAL BY THE ENGINEER.
4. DURING STAGE 2, WORK IS LIMITED TO THE LIMITS SHOWN. BEFORE JUNE 1ST NO WORK IS ALLOWED WITHIN INTERTIDAL OR BAY WATER.
5. ANY Temp SHORING PLAN MUST BE AUTHORIZED BY THE ENGINEER BEFORE STARTING WORK AND MUST NOT EXTEND BEYOND STAGE 1 LIMITS (MHHW).
6. THE Temp TRESTLE MUST NOT EXTEND BEYOND STAGE 2 LIMITS, MUST BE REMOVED, AND BEACH RESTORED BY JULY 31.
7. LIMITS OF Temp TURBIDITY CONTROL CURTAIN MUST NOT EXTEND BEYOND ELEVATION -6.0'.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SF	101	9.0	13	37

REGISTERED CIVIL ENGINEER DATE: _____
 Peter Aguilera No. 55287 Exp. 12-31-16
 PLANS APPROVAL DATE: _____
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STAGE 1
 WORK WINDOW
 MAY 15 TO JULY 31

STAGE 2
 WORK WINDOW
 JUNE 1 TO JULY 31

STAGE 3
 WORK WINDOW
 JUNE 1 TO OCTOBER 31

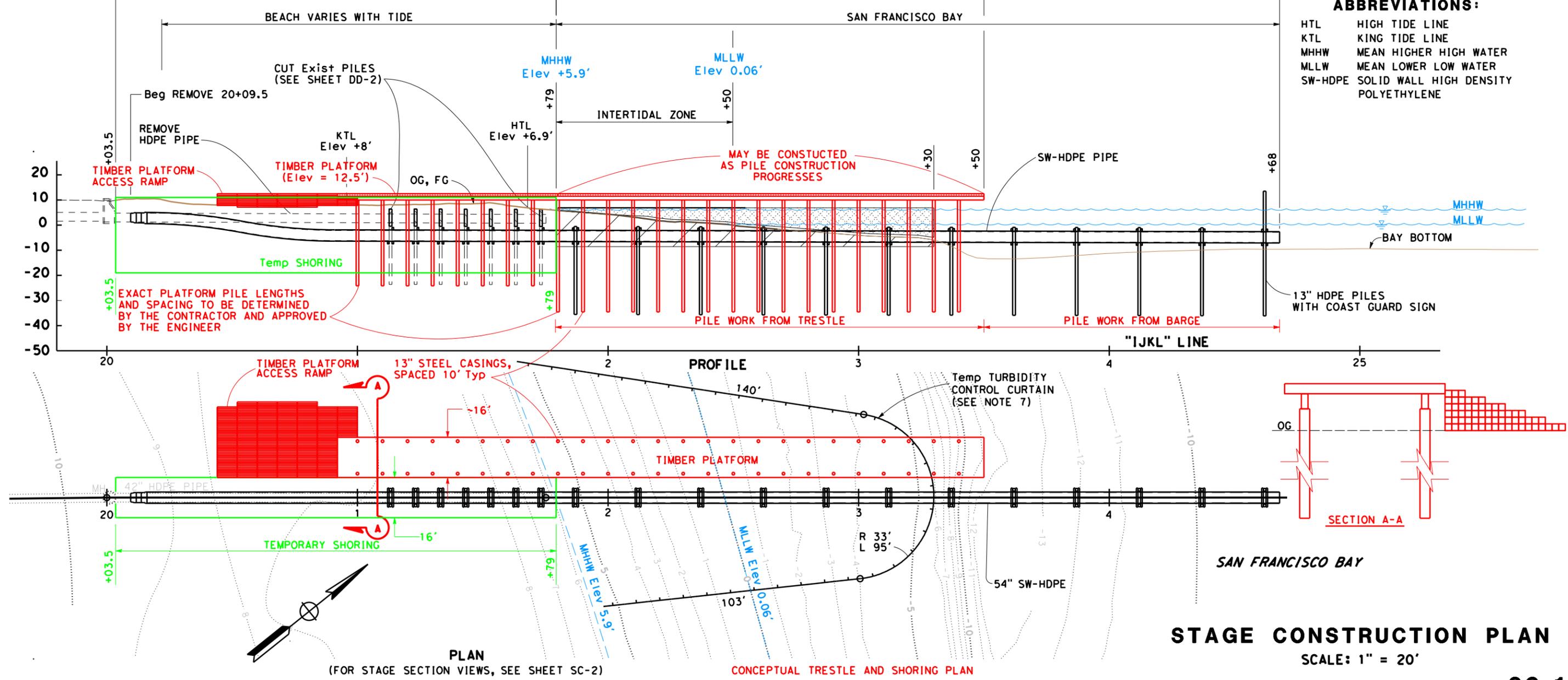
1. INSTALL TFESA, Temp FENCE (TYPE CL-6), Temp DIVERSION SYSTEM (WPC-2), INSTALL Temp TIMBER CONSTRUCTION MATS.
 2. INSTALL Temp SHORING AND Temp TIMBER TRESTLE
 3. EXCAVATE AND REMOVE CULVERT
 4. CUT AND MODIFY Exist PILES
 5. INSTALL 54" SW-HDPE PIPE AND BACKFILL WITH Exc M+1 TO OG
 6. REMOVE Temp SHORING
 7. REMOVE TF (ESA), Temp Fence (TYPE CL-6), AND Temp TIMBER CONSTRUCTION MATS.
1. INSTALL Temp TURBIDITY CONTROL CURTAIN
 2. DREDGE AND DISPOSE OF MARINE DREDGING M+1
 3. INSTALL AIR BUBBLE SYSTEM IF REQUIRED DUE TO TIDE ELEVATION)
 4. DRIVE 13" HDPE PILING
 5. REMOVE AIR BUBBLE SYSTEM
 6. INSTALL 54" SW-HDPE PIPE
 7. REMOVE Temp TRESTLE AT BEACH AND WITHIN THE INTERTIDAL ZONE.
1. INSTALL AIR BUBBLE SYSTEM
 2. DRIVE 13" HDPE PILES
 3. REMOVE AIR BUBBLE SYSTEM
 4. INSTALL 54" SW-HDPE PIPE

LEGEND:

- MARINE DREDGING
- CUT Exist HDPE PILE
- Temp TURBIDITY CONTROL CURTAIN

ABBREVIATIONS:

- HTL HIGH TIDE LINE
- KTL KING TIDE LINE
- MHHW MEAN HIGHER HIGH WATER
- MLLW MEAN LOWER LOW WATER
- SW-HDPE SOLID WALL HIGH DENSITY POLYETHYLENE



STAGE CONSTRUCTION PLAN
 SCALE: 1" = 20'

SC-1

Attachment C

**Avoidance and Mitigation Measures /
Water Pollution Control Plan
Drawings**

AVOIDANCE AND MINIMIZATION MEASURES:

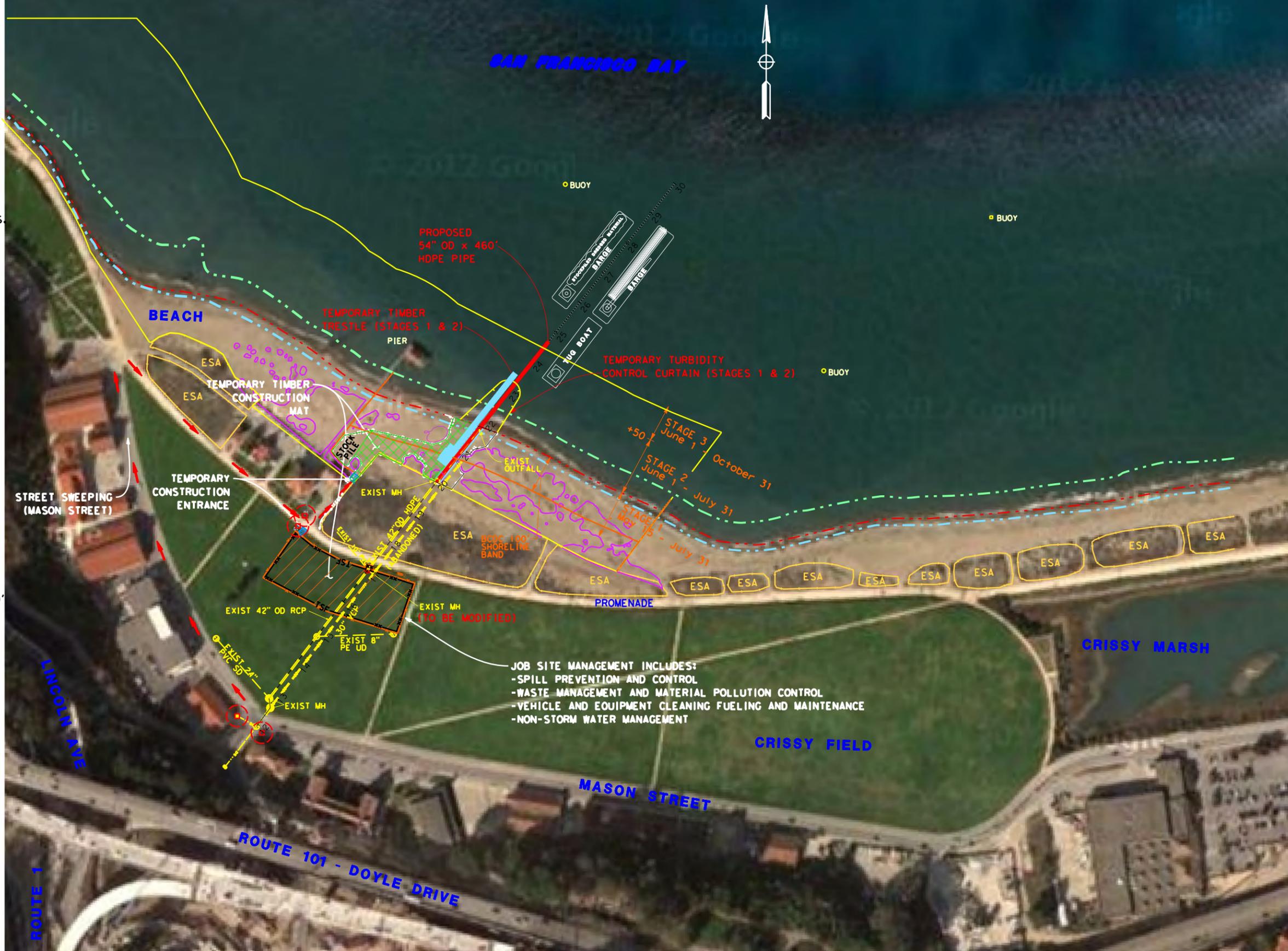
1. THE PROJECT SITE CONTAINS THREE DISTINCT HABITATS: ONSHORE, INTERTIDAL, AND THE OFF-SHORE (MARINE HABITAT).
2. ESA FENCING SHALL BE INSTALLED TO DELINEATE THE CONSTRUCTION AREA AND PROTECT THE HABITATS.
3. PRE-CONSTRUCTION SURVEYS AND MONITORING IS REQUIRED BY A QUALIFIED BIOLOGIST.
4. A SPILL PREVENTION PLAN MUST BE IMPLEMENTED ON SITE AT ALL TIMES.
5. NO FUELING, CLEANING, OR MAINTENANCE OF VEHICLES OR EQUIPMENT WITHIN ANY AREAS WHERE AN ACCIDENTAL DISCHARGE TO WATERS OF THE STATE MAY OCCUR; CONSTRUCTION MATERIALS AND HEAVY EQUIPMENT MUST BE STORED OUTSIDE OF STATE WATERS.
6. STAGING WILL BE CONDUCTED IN DESIGNATED AREAS. STAGING WILL OCCUR AT CRISSY FIELD AND OFF-SHORE ONBOARD BARGES. MATERIAL TO BE REUSED WILL BE STOCKPILED ON THE BEACH.
7. JOB SITE MANAGEMENT AND CONSTRUCTION SITE BMPs INCLUDING STREET SWEEPING, SPILL PREVENTION AND CONTROL MUST BE IMPLEMENTED AS APPROPRIATE.
8. THE PERIMETER OF THE INTERTIDAL & OFF-SHORE WORK AREAS IN STAGES 1 & 2 WILL BE ENCLOSED WITH A SEDIMENT CONTROL MEASURE SUCH AS A TEMPORARY TURBIDITY CONTROL CURTAIN.
9. TEMPORARY SHORING - SHEET PILES WILL BE INSTALLED ON-SHORE IN A MANNER THAT PROVIDES SHORING SUPPORT FOR THE EXCAVATION WORK AREAS ON THE BEACH AND UP TO MHHW. MARINE DREDGE MATERIAL FROM MHHW TO BAY SHALL BE TRANSPORTED TO A BENEFICIAL USE SITE.

LEGEND:

- ➔ ACCESS PATH
- ENVIRONMENTALLY SENSITIVE AREA
- MEAN LOWER LOW WATER (MLLW) ELEV = 0.06'
- MEAN HIGHER HIGH WATER (MHHW) ELEV = 5.9'
- HIGH TIDE LINE (HTL) FOR MAY 1- OCT 31 2015 ELEV = 6.9'
- Temp CHAIN LINK FENCE (6' HIGH, L = 1625')
- ESA FENCE (EXISTING)
- WILDLIFE PROTECTION AREA (WPA)
- ESA FENCE (BEACH L = 1500'), (CRISSY FIELD L = 1150'), (BEACH ENTRANCE L = 150')
- ▭ STAGING AREA (1.2ac) WITH TEMPORARY TIMBER CONSTRUCTION MAT
- EXISTING FOREDUNES
- BCDC 100' SHORELINE BAND JURISDICTION
- TURBIDITY CURTAIN (PROPOSED, L = 340')
- ▭ TEMPORARY CONSTRUCTION ENTRANCE
- ▭ TEMPORARY TIMBER CONSTRUCTION MAT
- ⊙ TEMPORARY DRAINAGE INLET PROTECTION
- ▭ TEMPORARY TIMBER TRESTLE

ABBREVIATIONS:

OD OUTSIDE DIAMETER



SAN FRANCISCO BAY

BEACH

CRISSY MARSH

CRISSY FIELD

MASON STREET

ROUTE 101 - DOYLE DRIVE

ROUTE 1
LINCOLN AVE

PROPOSED
54" OD x 460'
HDPE PIPE

TEMPORARY TIMBER
TRESTLE (STAGES 1 & 2)
PIER

TEMPORARY TURBIDITY
CONTROL CURTAIN (STAGES 1 & 2)

TEMPORARY
CONSTRUCTION
ENTRANCE

STREET SWEEPING
(MASON STREET)

EXIST 42" OD RCP

EXIST MH
(TO BE MODIFIED)

PROMENADE

JOB SITE MANAGEMENT INCLUDES:
-SPILL PREVENTION AND CONTROL
-WASTE MANAGEMENT AND MATERIAL POLLUTION CONTROL
-VEHICLE AND EQUIPMENT CLEANING FUELING AND MAINTENANCE
-NON-STORM WATER MANAGEMENT

STAGE 3
June 1 - October 31

STAGE 2
June 1 - July 31

STAGE 1
May 15 - July 31

EXIST OUTFALL

ESA

BCDC 100'
SHORELINE
BAND

EXIST 8" PE UD

EXIST MH

PREPARED BY => CALTRANS
DATE UPDATED => 01/21/2015

**IJKL OUTFALL REPLACEMENT PROJECT
STATE ROUTE 101 AT CRISSY FIELD**

**WATER POLLUTION CONTROL PLAN
CALTRANS EA 1637N1
IJKL OUTFALL OVERVIEW
(CONCEPTUAL) SHEET 1 OF 4**



STAGE 1 (MAY 15 - JULY 31)

1. INSTALL Temp ESA FENCING, Temp FENCE (CL-6), Temp DIVERSION SYSTEM, INSTALL Temp TRESTLE
2. INSTALL TEMPORARY SHORING UP TO MHHW
3. INSTALL TEMPORARY TRESTLE
4. INSTALL TEMPORARY TURBIDITY CONTROL CURTAIN DURING STAGE 2, WILL BE PRESENT DURING STAGE 1.
5. EXCAVATE AND REMOVE EXISTING PIPE (166')
6. CUT AND MODIFY Exist (14) PILES 18" ABOVE PROPOSED PIPE
7. INSTALL 54" HDPE PIPE
8. BACKFILL WITH EXCAVATED MATERIAL UP TO MHHW
9. REMOVE TEMPORARY SHORING, UNNEEDED TFESA AND TEMPORARY CHAIN LINK FENCES ON THE BEACH
10. RESTORE BEACH

ABBREVIATIONS:

OD OUTSIDE DIAMETER

CALTRANS EA 1637N1
 DATE UPDATED => 01/21/2015
 NOT TO SCALE

**MODIFY DOYLE DRIVE DRAINAGE OUTFALL IJKL
 STATE ROUTE 101 AT CRISSY FIELD
 STAGE 1 OF 3**

**WATER POLLUTION CONTROL PLAN
 (BEACH)
 IJKL OUTFALL
 (CONCEPTUAL) SHEET 2 OF 4**

STAGE 2 (JUNE 1 - JULY 31)

1. EXCAVATE AND DISPOSE OF MARINE ACCESS DREDGE
2. INSTALL Temp AIR BUBBLE SYSTEM
3. DRIVE 13" HDPE PILES (14 EACH)
4. REMOVE Temp AIR BUBBLE SYSTEM
4. INSTALL 54" HDPE PIPE
5. REMOVE TEMPORARY TURBIDITY CONTROL CURTAIN
6. REMOVE Temp TIMBER MAT, Temp TRESTLE, Temp FENCES ON BEACH

BY JULY 31

ABBREVIATIONS:

OD OUTSIDE DIAMETER

54" SW-HDPE PIPE
(INSTALL 171' OF 460')

Temp AIR BUBBLE SYSTEM (14 TOTAL)

TEMPORARY TIMBER TRESTLE (STAGES 1 & 2)

BEACH

ESA

TEMPORARY TIMBER ESA CONSTRUCTION MAT (ON BEACH UNTIL JULY 1)

TEMPORARY CONSTRUCTION ENTRANCE

CRISSY FIELD

STAGING AREA W/ Temp TIMBER CONSTRUCTION MAT

EXIST 42" OD RCP

EXIST MH (TO BE MODIFIED)

EXIST MH

ESA

BCDC 100' SHORELINE BAND

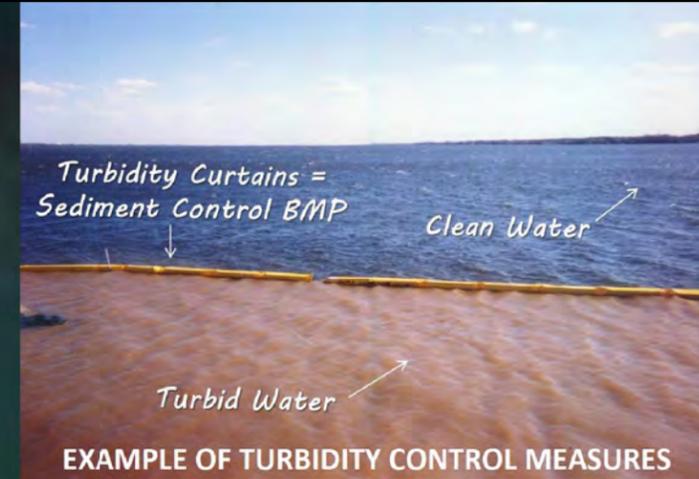
PROMENADE

BUOY

STOCKPILED DREDGED MATERIAL BARGE

BARGE

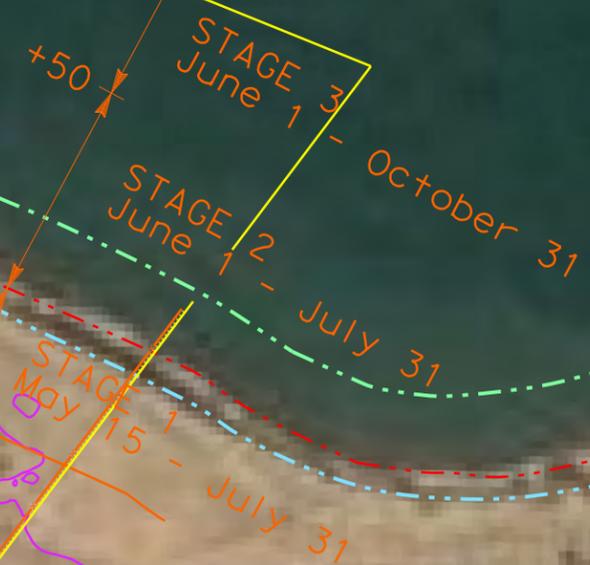
TUG BOAT



TURBIDITY CONTROL MEASURES SUCH AS A TURBIDITY CURTAIN WILL BE APPLIED AROUND THE PERIMETER OF THE WORK ZONE. TURBIDITY WATER QUALITY MONITORING WILL ALSO BE PROVIDED.

TEMPORARY TURBIDITY CONTROL CURTAIN FOR (STAGES 1 & 2)
L = 340'

BUOY



SAN FRANCISCO BAY

**MODIFY DOYLE DRIVE DRAINAGE OUTFALL IJKL
STATE ROUTE 101 AT CRISSY FIELD
STAGE 2 OF 3**

**WATER POLLUTION CONTROL PLAN
(INTERTIDAL/OFFSHORE)
IJKL OUTFALL
(CONCEPTUAL) SHEET 3 OF 4**



STAGE 3 (JUNE 1 - OCTOBER 31)

1. INSTALL TEMPORARY AIR BUBBLE SYSTEM
2. DRIVE 13" HDPE PILES
3. REMOVE TEMPORARY AIR BUBBLE SYSTEM
4. INSTALL 54" HDPE PIPE

ABBREVIATIONS:

OD OUTSIDE DIAMETER



○ BUOY

○ BUOY

TEMPORARY AIR BUBBLE SYSTEM (10 TOTAL)

54" SW-HDPE PIPE (INSTALL 118' OF 460')

Construction Allowed June 1 - October 31

Construction Allowed June 1 - July 31

Construction Allowed May 15 - July 31

**MODIFY DOYLE DRIVE DRAINAGE OUTFALL IJKL
STATE ROUTE 101 AT CRISSY FIELD
STAGE 3 OF 3**

**WATER POLLUTION CONTROL PLAN
(OFFSHORE)
IJKL OUTFALL
(CONCEPTUAL) SHEET 4 OF 4**

CALTRANS EA 1637N1
DATE UPDATED => 01/21/2015
NOT TO SCALE

Attachment D

NHPA



Letter of NHPA Section 106 Compliance Completion

H4217 (GOGA-CRMM)

1/22/15

Memorandum

To: Andrea Lucas

From: General Superintendent

Subject: NHPA Clearance: Replace and Extend Stormwater Outfall IJKL, Crissy Field (PEPC 46130)

The Cultural Assessment Team has reviewed the proposed project/action and completed its certification for compliance with the National Historic Preservation Act through our Park Programmatic Agreement. We have determined that there will be No Adverse Effect on historical, cultural, or archeological resources, provided you meet all stipulations identified below.

The subject proposed project/action(s), therefore, is/are now cleared for all NHPA compliance requirements as presented. Project plans and specifications are approved and construction and/or project implementation can commence once you have met any NEPA requirements identified through Project Review, as well as all stipulations identified below.

For the proposed project actions to be within compliance requirements during construction and/or project implementation, the following cultural resource stipulations must be adhered to:

- Caltrans will provide for archeological monitoring during all ground disturbing activities.
- Caltrans will not impact the historic buried Crissy airfield when accessing the site or when removing existing airfield sod.
- Caltrans will replace all impacted sod covering the historic airfield at the completion of the project.

For complete compliance information see PEPC Project 46130.

If you have any questions, please contact CRM Specialist (Curator) Bob Holloway at 415-561-4976.

for 
Frank Dean

Attachment



ASSESSMENT OF ACTIONS HAVING AN EFFECT ON HISTORIC PROPERTIES

A. DESCRIPTION OF UNDERTAKING

1. **Park:** Golden Gate National Recreation Area

2. **Project Description:**

Project Name: Replace and Extend Stormwater Outfall IJKL, Crissy Field

Prepared by: Bob Holloway **Date Prepared:** 01/22/2015 **Telephone:** 415-561-4976

PEPC Project Number: 46130

Locations:

Describe project:

Project Phase Information (June 2014) Phase 1: Survey and data collection [Completed June 2013] PEPC 47393 Phase 2: Originally was whole pipe replacement but turned into a 26 foot replacement on Crissy Field near Stillwell Hall. [Completed October 2013] PEPC 48698 Original Phase 2 is now Phase 3: This PEPC - and is reduced in scope: Replace segment of pipe across beach and extend 300 feet into Bay but not across Crissy Field and Promenade. Staging on Crissy Field. [Time of construction: April 2015 - October 2015]

This project has gone through various revisions since it was originally proposed in 2012. The description below is the most recent proposal, dated June 2014.

As part of the Doyle Drive project, Caltrans is proposing modifications to Outfall IJKL located on the western part of Crissy Beach, in Area A of the Presidio. The modifications proposed would ensure the Doyle Drive Project does not exacerbate the flooding that currently occurs along Mason Street due to sand clogging the pipeline. The existing pipeline is 42-inches in diameter and is located approximately 12-feet up-gradient of the normal shoreline. The outfall does not adequately convey stormwater that accumulates along Mason Street; a main thoroughfare located south of the outfall location, and is therefore regularly blocked by sand. As a result, flooding often occurs on Mason Street during rain events. Maintaining the ability to discharge from the pipeline requires the Presidio Trust Utility Department to regularly, and especially prior to major storm events, clear accumulated sand from the outfall using a backhoe to remove sand from the end of the outfall pipe and cut a channel along the beach to the Bay. These maintenance requirements are time consuming, costly, can be dangerous in storm conditions, and typically result in a channel that is unstable and unsafe. In addition, the shoreline in the vicinity of Outfall IJKL has accreted almost 180 feet since 1997, and is expected to continue to accrete for some time.

Caltrans proposes to: • Replace 170 ft of the existing 42-inch HDPE pipe from the existing manhole on the beach. • Extend the outfall by approximately 296 ft to a point beyond the projected 50-year beach accretion for a total pipeline length of 466 ft. • Modify top section of the existing 24" manhole in Crissy Field just south of the promenade with a larger 36" manhole to facilitate future maintenance. This will greatly minimize future maintenance staff to access the manhole on the beach in order to maintain the pipe.

The new outfall was designed by marine experts (Phillip Williams and Moffat and Nichol Engineers), beyond a 50 year accretion point and to account for 50 year 22-inch sea level rise.

The project would be constructed in three stages: • STAGE 1 - BEACH (177 ft) o May 15 – July 1 • STAGE 2 – INTERTIDAL (71 ft), offshore (100 ft) o June 1 – July 31 • STAGE 3 – OFFSHORE (118 ft) o August 1 – October 31

Anticipated schedule: o Complete Design October 2014 o Advertise January 2015 o Award Late February 2015 o Begin Construction April (?)/May 2015 o End Construction August 31 (early), October 31 (late)

Area of potential effects (as defined in 36 CFR 800.16[d])

Historic Crissy Airfield and Crissy Field Cultural Landscape and Archeological Sites within the Presidio of San Francisco NHL District

3. Has the area of potential effects been surveyed to identify historic properties?

No
 Yes

Source or reference: Presidio of San Francisco NR and NHL Nomination Forms, CLR, and Crissy Field NR Draft Nomination Form

4. Potentially Affected Resource(s):

Archeological Resources Notes: Potential Shipwreck of San Carlos de la Phillipina (1797) and PPIE dump site (Woodward and Clyde1998)

Cultural Landscapes Notes: Historic Crissy Airfield and the Presidio of San Francisco NHL District Landscape at Crissy Field

5. The proposed action will: (check as many as apply)

Destroy, remove, or alter features/elements from a historic structure
 Replace historic features/elements in kind
 Add non-historic features/elements to a historic structure
 Alter or remove features/elements of a historic setting or environment (inc. terrain)
 Add non-historic features/elements (inc. visual, audible, or atmospheric) to a historic setting or cultural landscape
 Disturb, destroy, or make archeological resources inaccessible
 Disturb, destroy, or make ethnographic resources inaccessible
 Potentially affect presently unidentified cultural resources
 Begin or contribute to deterioration of historic features, terrain, setting, landscape elements, or archeological or ethnographic resources
 Involve a real property transaction (exchange, sale, or lease of land or structures)
 Other (please specify): _____

6. Supporting Study Data:

(Attach if feasible; if action is in a plan, EA or EIS, give name and project or page number.)

Presidio of San Francisco NR and NHL Nomination Forms, CLR, and Crissy Field NR Draft Nomination Form

B. REVIEWS BY CULTURAL RESOURCE SPECIALISTS

The park 106 coordinator requested review by the park's cultural resource specialist/advisors as indicated by check-off boxes or as follows:

[X] 106 Advisor

Name: Bob Holloway

Date: 01/22/2015

Comments: Project was reviewed but not certified at 5x/Project Review on 6/11/14 due the number of still unresolved NEPA-related issues. Those NEPA issues, including a few NHPA stipulations, as outlined in the 6/11/14 5x/PR Meeting Summary were subsequently resolved and placed as conditions in the Special Use Permit (SUP) developed to provide for CalTran's use of NPS land. NHPA certification was subsequently reviewed and approved by Steve Haller as a No Adverse Effect Admin Review with stipulations.

Check if project does not involve ground disturbance []

Assessment of Effect: No Potential to Cause Effect No Historic Properties

Affected No Adverse Effect Adverse Effect Streamlined Review

Recommendations for conditions or stipulations: 1) Caltrans will provide for archeological monitoring during all ground disturbing activities. 2) Caltrans will not impact the historic buried Crissy airfield when accessing the site or when removing existing airfield sod. 3) Caltrans will replace all impacted sod covering the historic airfield at the completion of the project.

Doc Method: Streamlined Review (PA)

Streamlined Activity:

9. Maintenance or Replacement of Non-Historic Utility Lines, Transmission Lines, and Fences

[X] Historian

Name: Stephen Haller

Date: 01/22/2015

Comments: Reviewed as Admin Review



Check if project does not involve ground disturbance []

Assessment of Effect: No Potential to Cause Effect No Historic Properties

Affected No Adverse Effect Adverse Effect Streamlined Review

Recommendations for conditions or stipulations: 1) Caltrans will provide for archeological monitoring during all ground disturbing activities. 2) Caltrans will not impact the historic buried Crissy airfield when accessing the site or when removing existing airfield sod. 3) Caltrans will replace all impacted sod covering the historic airfield at the completion of the project.

Doc Method: Streamlined Review (PA)

Streamlined Activity:

9. Maintenance or Replacement of Non-Historic Utility Lines, Transmission Lines, and Fences

No Reviews From: Curator, Archeologist, Historical Architect, Other Advisor, Anthropologist, Historical Landscape Architect

C. PARK SECTION 106 COORDINATOR'S REVIEW AND RECOMMENDATIONS

1. Assessment of Effect:

- No Potential to Cause Effects
- No Historic Properties Affected
- No Adverse Effect
- Adverse Effect

2. Documentation Method:

A. STANDARD 36 CFR PART 800 CONSULTATION
Further consultation under 36 CFR Part 800 is needed.

B. STREAMLINED REVIEW UNDER THE 2008 SERVICEWIDE PROGRAMMATIC AGREEMENT (PA)

The above action meets all conditions for a streamlined review under section III of the 2008 Servicewide PA for Section 106 compliance.

APPLICABLE STREAMLINED REVIEW Criteria
(Specify 1-16 of the list of streamlined review criteria.)

- 9. Maintenance or Replacement of Non-Historic Utility Lines, Transmission Lines, and Fences.

Explanation:

C. PLAN-RELATED UNDERTAKING

Consultation and review of the proposed undertaking were completed in the context of a plan review process, in accordance with the 2008 Servicewide PA and 36 CFR Part 800.
Specify plan/EA/EIS:

D. UNDERTAKING RELATED TO ANOTHER AGREEMENT

The proposed undertaking is covered for Section 106 purposes under another document such as a statewide agreement established in accord with 36 CFR 800.7 or counterpart regulations.

E. COMBINED NEPA/NHPA Document

Documentation is required for the preparation of an EA/FONSI or an EIS/ROD has been developed and used so as also to meet the requirements of 36 CFR 800.3 through 800.6

G. Memo to SHPO/THPO

[] H. Memo to ACHP

SHPO/THPO Notes:

3. Additional Consulting Parties Information:

Additional Consulting Parties: No

4. Stipulations and Conditions:

Following are listed any stipulations or conditions necessary to ensure that the assessment of effect above is consistent with 36 CFR Part 800 criteria of effect or to avoid or reduce potential adverse effects. Project was reviewed but not certified at 5x/Project Review on 6/11/14 due the number of still unresolved NEPA-related issues. Those NEPA issues, including a few NHPA stipulations, as outlined in the 6/11/14 5x/PR Meeting Summary were subsequently resolved and placed as conditions in the Special Use Permit (SUP) developed to provide for CalTran's use of NPS land. NHPA certification was subsequently received and approved by Steve Haller as a No Adverse Effect Admin Review with the following stipulations. 1) Caltrans will provide for archeological monitoring during all ground disturbing activities. 2) Caltrans will not impact the historic buried Crissy airfield when accessing the site or when removing existing airfield sod. 3) Caltrans will replace all impacted sod covering the historic airfield at the completion of the project.

5. Mitigations/Treatment Measures:

Measures to prevent or minimize loss or impairment of historic/prehistoric properties:
(Remember that setting, location, and use may be relevant.)

- Assessment of Effect - Caltrans will provide for archeological monitoring during all ground disturbing activities.
- Assessment of Effect - Caltrans will not impact the historic buried Crissy airfield when accessing the site or when removing existing airfield sod.
- Assessment of Effect - Caltrans will replace all impacted sod covering the historic airfield at the completion of the project.

D. RECOMMENDED BY PARK SECTION 106 COORDINATOR:

Compliance Specialist:

NHPA Specialist

Bob Holloway CRM Specialist (Curator) Date: 1/22/15

E. SUPERINTENDENT'S APPROVAL

The proposed work conforms to the NPS *Management Policies* and *Cultural Resource Management Guideline*, and I have reviewed and approve the recommendations, stipulations, or conditions noted in Section C of this form.

FOR
Superintendent:  Date: 22 Jan 2015

