

INFORMATION HANDOUT

**For Contract No. 04-235624
At 04-SCI,SM-101-52.0/52.6,0.0/0.6**

**Identified by
Project ID 0400000678**

PERMITS

U.S. Army Corp Permit, dated May 31, 2013
California Fish and Wildlife Permit, dated May 20, 2013
California Regional Water Quality Control Board Permit dated June 12, 2013
U.S. National Marine Fisheries Biological Opinion dated March 29, 2011
Cal-OSHA Tunnel Classification, dated May 9, 2013

WATER QUALITY

Water Quality Information Handout
Conceptual Storm Water Pollution Prevention Plan (added per Addendum #3, dated March, 6, 2015)

MATERIALS INFORMATION

Final Foundation Report for San Francisquito Creek Bridge Replacement, Bridge No. 35-0348 dated April 2, 2013
Structures Final Hydraulic Report for San Francisquito Creek, Bridge No. 35-0348 dated November 7, 2014



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

MAY 31 2013

Regulatory Division

SUBJECT: File Number 2011-00088S

Mr. Jeffery Jensen
Office of Biological Sciences and Permits
California Department of Transportation
P.O. Box 23660
Oakland, California 94623-0660

Dear Mr. Jensen:

This correspondence is in reference to your submittal of July 7, 2011, concerning Department of the Army (DA) authorization to replace the San Francisquito Creek Bridge located at where U.S. 101 crosses San Francisquito Creek between the cities of Palo Alto and East Palo Alto, in San Mateo and Santa Clara Counties, California (37.45276, -122.12731).

Work within U.S. Army Corps of Engineers' (Corps) jurisdiction will include replacement of the bridge over San Francisquito Creek, widening the bridge to facilitate auxiliary lanes, and widening the creek channel to increase flow capacity to 100-year flood projections. Work will require replacement of the existing bridge and frontage roads with a new bridge that is 12 feet wider and 42 feet longer than the original bridge. To accommodate increased bridge length two existing pier walls will be replaced with three pier walls. Work will also include installation of cofferdams and a temporary water diversion pipe, demolition and removal of the existing bridge, excavation for abutments and installation of pier piles, installation of falsework and construction of bridge deck and pier walls, and installation of pile walls and modification of creek banks. Work will require the permanent placement of fill within 0.02 acre (261 linear feet) and will temporarily affect 0.93 acre (664 linear feet) of San Francisquito Creek. Work will also require the temporary placement of fill within 0.02 acre of wetlands associated with San Francisquito Creek. Widening of the stream channel is expected to result in an approximate 0.36 acre increase in waters of the U.S. All work shall be completed in accordance with the plans and drawings titled "*USACE File #2011-00088S, San Francisquito Creek Bridge Replacement, February 27, 2013, Figure 1 to 6*" (enclosure 1).

Section 404 of the Clean Water Act (CWA) generally regulates the discharge of dredged or fill material below the plane of ordinary high water in non-tidal waters of the United States, below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters. Section 10 of the Rivers and Harbors Act generally regulates construction of structures and work, including excavation, dredging, and discharges of dredged or fill material, occurring below the plane of mean high water in tidal waters of the United

States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States. Navigable waters of the United States generally include all waters subject to the ebb and flow of the tide; and/or all waters presently used, or have been used in the past, or may be susceptible for future use to transport interstate or foreign commerce. A Preliminary JD has been completed for your site. Preliminary JDs are written indications that there may be waters of the U.S. on a parcel or indications of the approximate location(s) of waters of the U.S. on a parcel. Preliminary JDs are advisory in nature and may not be appealed.

Based on a review of the information in your submittal, and the current condition of the site, as verified during a field investigation on date January 7, 2013, the project qualifies for authorization under Department of the Army Nationwide Permit (NWP) 14 for Linear Transportation Projects, 77 Fed. Reg. 10,184, February 21, 2012, pursuant to Section 404 of the CWA of 1972, as amended (33 U.S.C. § 1344 *et seq.*) and Section 10 of the Rivers and Harbors Act (RHA) of 1899, as amended (33 U.S.C. § 403 *et seq.*). The project must be in compliance with the terms of the NWP, the general conditions of the Nationwide Permit Program, and the San Francisco District regional conditions cited in enclosure 2. You must also be in compliance with any special conditions specified in this letter for the NWP authorization to remain valid. Non-compliance with any term or condition could result in the revocation of the NWP authorization for your project, thereby requiring you to obtain an Individual Permit from the Corps. This NWP authorization does not obviate the need to obtain other State or local approvals required by law.

This verification will remain valid until March 18, 2017, unless the NWP authorization is modified, suspended, or revoked. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon a NWP will remain authorized provided the activity is completed within 12 months of the date of a NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 C.F.R. § 330.4(e) and 33 C.F.R. §§ 330.5 (c) or (d). This verification will remain valid if, during the time period between now and March 18, 2017, the activity complies with any subsequent modification of the NWP authorization. The Chief of Engineers will periodically review NWPs and their conditions and will decide to either modify, reissue, or revoke the permits. If a NWP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. It is incumbent upon you to remain informed of any changes to the NWPs. Changes to the NWPs would be announced by Public Notice posted on our website

(<http://www.spn.usace.army.mil/regulatory/index.html>). Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance, enclosure 3, verifying that you have complied with the terms and conditions of the permit.

This authorization will not be effective until you have obtained a Section 401 water quality certification from the San Francisco Bay Regional Water Quality Control Board (RWQCB). If the RWQCB fails to act on a valid request for certification within two months after receipt of a complete application, the Corps will presume a waiver of water quality certification has been obtained. You shall submit a copy of the certification to the Corps prior to the commencement of work

This Corps permit does not authorize you to take an endangered species, in particular the federally listed as threatened Central California Coast steelhead (*Oncorhynchus mykiss*) and the North American green sturgeon (*Acipenser medirostris*) or designated critical habitat for these species. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (e.g., an Endangered Species Act Section 10 permit, or a Biological Opinion under Endangered Species Act Section 7, with "incidental take" provisions with which you must comply). The enclosed National Marine Fisheries Service Biological Opinion (Service File Number 2010/06575, dated March 29, 2011), contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the Biological Opinion. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached Biological Opinion, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the Biological Opinion, where an "incidental take" of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The National Marine Fisheries Service is the appropriate authority to determine compliance with the terms and conditions of its Biological Opinion, and with the Endangered Species Act. The permittee must comply with all conditions of this Biological Opinion. If you are unable to comply with the terms and conditions, you must immediately notify Caltrans, the appropriate NMFS office, and the U.S. Army Corps of Engineers Regulatory office, so that Caltrans acting as the lead Federal agency for this project may consult as appropriate, prior to initiating the work, in accordance with Federal law.

In order to ensure compliance with this NWP authorization, the following special conditions shall be implemented:

1. To remain exempt from the prohibitions of Section 9 of the Endangered Species Act, the non-discretionary Terms and Conditions for incidental take of federally-listed Central California Coast steelhead (*Oncorhynchus mykiss*) and the North American green sturgeon (*Acipenser medirostris*) shall be fully implemented as stipulated in the Biological Opinion (pages 1- 42) dated March 29, 2011 (enclosure 4). Project authorization under the NWP is conditional upon compliance with the mandatory terms and conditions associated with incidental take. Failure to comply with the terms and conditions for incidental take, where a take of a federally-listed species occurs, would constitute an unauthorized take and non-compliance with the NWP authorization for your project. The NMFS is, however, the authoritative federal agency for determining compliance with the incidental take statement and for initiating appropriate enforcement actions or penalties under the Endangered Species Act.
2. Caltrans initiated consultation with the National Marine Fisheries Service (NMFS) to address project related impacts to Essential Fish Habitat. The conservation recommendations outlined in pages 1-5, in enclosure 5, shall be fully implemented as stipulated.
3. While temporary creek diversions are in place, appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable.
4. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows.
5. Temporary fills must be removed at the end of each construction season in their entirety. The area affected by temporary fills must be return to pre-construction elevations post-construction.

6. Within 1-year of initiation of temporary impact to a jurisdictional feature, you shall re-contour the temporarily impacted area and replant, any areas affected by temporary fills, above the Ordinary High Water Mark, with appropriate soil-stabilizing native species. If future de-watering would adversely affect these planting supplemental irrigation shall be provided.
7. In the event that you are unable to implement the plan described in special condition 6 within 1-year of initiation of temporary impact to a jurisdictional feature, you must purchase credits at a Corps approved mitigation bank to compensate for the temporary impact at a 3:1 ratio. If no approved bank or in-lieu fee is available, you shall propose an alternative mitigation plan to be reviewed and approved by the Corps.

You may refer any questions on this matter to Paula Gill of my Regulatory staff by telephone at 415-503-6776 or by e-mail at Paula.C.Gill@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: <http://www.spn.usace.army.mil/regulatory/>.

Sincerely,



Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copies Furnished (w/o encls):
CA RWQCB, Santa Rosa, CA
U.S. EPA, San Francisco, CA
CA SWRCB, Sacramento, CA
NMFS, Santa Rosa, Ca
CDFW, Yountville, Ca



State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director



May 20, 2013

Jeffrey G. Jensen
California Department of Transportation
111 Grand Avenue
Oakland, CA 94623

Subject: Final Lake or Streambed Alteration Agreement
Notification No. 1600-2011-0270-3
Interstate 101, San Francisquito Creek Bridge Replacement

Dear Mr. Jensen:

Enclosed is the final Streambed Alteration Agreement (“Agreement”) for the Interstate 101 San Francisquito Creek Bridge Replacement Project (“Project”). Before the Department may issue an Agreement, it must comply with the California Environmental Quality Act (“CEQA”). In this case, the Department, acting as a responsible agency, filed a notice of determination (“NOD”) on May 20, 2013, based on information contained in the Negative Declaration, the lead agency prepared for the Project.

Under CEQA, filing a NOD starts a 30-day period within which a party may challenge the filing agency’s approval of the project. You may begin your project before the 30-day period expires if you have obtained all necessary local, state, and federal permits or other authorizations. However, if you elect to do so, it will be at your own risk.

If you have any questions regarding this matter, please contact, Melissa Escaron, Staff Environmental Scientist, at (925)786-3045 or Melissa.Escaron@wildlife.ca.gov.

Sincerely,

Scott Wilson
Acting Regional Manager
Bay Delta Region

cc: Gregory Pera
California Department of Transportation

Lieutenant Joe
Lieutenant Nores
Warden Rodriguez
Melissa Escaron

CALIFORNIA DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558
(707) 944-5520
WWW.DFG.CA.GOV



STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2011-0270-R3
San Francisquito Creek

CALIFORNIA DEPARTMENT OF TRANSPORTATION
SAN FRANCISQUITO CREEK BRIDGE REPLACEMENT PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and California Department of Transportation (Permittee) or as represented Jeffrey G. Jensen.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on May 12, 2012 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement

PROJECT LOCATION

The project is located where Interstate 101 crosses the San Francisquito Creek, on the border of San Mateo and Santa Clara Counties, in the State of California;

PROJECT DESCRIPTION

Caltrans proposes to demolish the existing San Francisquito Creek Bridge and the two frontage road bridges and replace them with a new bridge (Project). The Project proposes to replace the existing 83-foot long by 232-foot wide San Francisquito Creek Bridge and two associated two-lane frontage roads. The new bridge structure will have 12 feet in additional width and 42 feet in additional length to accommodate the standard

lane requirements of Route 101 and the anticipated flow capacity of San Francisquito Creek. The proposed bridge will be 125 feet long and 244 feet wide and will carry five lanes of traffic on Route 101 in each direction. San Francisquito Creek is a tidally influenced creek that discharges water into the southern end of the San Francisco Bay. There has been a lengthy history of flooding along the banks of the creek due to limited capacity. Sediment deposition along the channel has clogged the waterway directly underneath and adjacent to the bridge. During extreme storm events, water has overtopped the bridge. The San Francisquito Creek Joint Powers Authority (SFCJPA) has proposed improvements to the creek to improve flow capacity upstream and downstream from Route 101. Caltrans, in cooperation with the SFCJPA effort, proposes to improve the hydraulic capacity of the bridge structure to accommodate a 100-year creek flow event combined with a high-tide event. It is proposed that the creek be widened and the new bridge lengthened to the southeast towards Palo Alto and Santa Clara County. The increased bridge length will require the construction of three pier walls to replace the two existing pier walls. The frontage road bridges will sit on the same pier walls as the new San Francisquito Creek Bridge. One of the four bridge cells will remain closed off with soldier pile walls on both sides until the downstream and upstream channels are widened to match the wider dimensions of the new bridge. These improvements will be completed by the SFCJPA under a separate project. The downstream SFCJPA project may be constructed concurrently or prior to the proposed Project. Once the SFCJPA flood protection projects are completed, all of the soldier pile walls will be removed, and the fourth cell will become fully operational.

A temporary soldier pile wall 25 feet long will be constructed downstream of the San Francisquito Creek Bridge adjacent to the Yeaman's Auto Body Shop parcel. The wall will be constructed on what is currently the south bank of the creek. The creek bank will then be excavated to the face of the retaining wall which ties into the third pier wall south of the new bridge. Riprap will be placed and removed post construction by the SFCJPA when the creek expansion project opens the fourth cell of the San Francisquito Creek Bridge.

Two cofferdams will be constructed upstream and downstream of the work area. The cofferdams will be constructed with sheet metal or another appropriate material and will be approximately 6 feet high. The creek will be diverted through a 30-inch diameter corrugated steel pipe that spans 460 feet between the two cofferdams. During flow events the pipe will allow flow downstream through the construction site.

An excavator will be used to excavate soil for abutments, site preparation for pile installation, and to widen the channel. Timber pads will be laid down in the dewatered work area to support construction equipment. Approximately 200 pipe piles will be permanently installed. The piles will be approximately 80-90 feet long and 16 inches in diameter. The piles will be installed by pre-drilling 40 feet through the sand layer and then the piles will be driven into the mud layer. A pile driver will be used to drive 6 to 8 piles per day. Pile driving is estimated to take 30 work days and will occur 8 hours per day during the dry season. Falsework will be constructed and the pile cap, pier walls

and bridge deck will be poured using a concrete pump truck and cement mixer. The existing bridge will be removed using mounted hydraulic jack hammer, excavator and dump trucks

The creek will be accessed via the south bank upstream and downstream of the bridge. All temporary items in the creek, including falsework, cofferdams, and the water diversion pipe will be removed at the end of each construction season. The contours of the creek will be restored, access ramps backfilled, and erosion control measures implemented to prevent erosion.

Project Schedule

The Bridge construction is expected to begin June 1, 2014, and be completed by October 15, 2016.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include:

- Riparian habitat
- Central California Coastal Steelhead habitat
- North American green sturgeon habitat
- Aquatic invertebrates
- Bird nesting
- Western pond turtles and habitat
- Emergent wetland
- Bat Roosting

The adverse effects the project could have on the fish or wildlife resources identified above include:

- Tree removal
- Temporary loss of natural bed and bank
- Temporary loss of riparian habitat
- Temporary degradation of salmonid and sturgeon habitat
- Water quality degradation
- Short-term release of contaminants
- Disruption of bat roosting

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. This Agreement and any extensions or amendments shall be onsite at all times during Project activities.
- 1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.
- 1.4 Project Site Entry. Permittee agrees that DFG personnel may, with notification of the Resident Engineer, enter the project site at any time to verify compliance with the Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below. These conditions apply to CDFW 1602 jurisdiction:

- 2.1 To minimize adverse impacts to fish and wildlife all work within the bed, bank, channel, and associated riparian habitat shall be confined to the period of June 1 to October 15. Revegetation work is not confined to this time period.
- 2.2 At least 30-days prior to commencing project activities covered by this Agreement, the Permittee shall submit to DFG, for review and approval, the qualifications for a number of biologists (Qualified Biologist) that shall oversee the implementation of the conditions in this Agreement. At a minimum, the Qualified Biologists shall have a combination of academic training and professional experience in biological sciences and related resource management activities. The Qualified Biologists shall communicate to the Resident Engineer when any activity is not in compliance with this Agreement and the Resident Engineer shall immediately stop the activity that is not in compliance with this Agreement.
- 2.3 Prior to work commencing at the bridge site, the bridge shall be surveyed for bats by a Qualified Biologist. If bats are found bats shall not be disturbed without specific notice to and consultation with the CDFW. CDFW reserves the right provide additional provisions to this Agreement designed to protect bats.

2.4 Within 48 hours prior to construction, a Qualified Biologist shall conduct a wildlife survey, at the appropriate time of day, focusing on presence of Western pond turtle (*Clemmys marmorata*). If any Western pond turtles are found, a Qualified Biologist shall relocate the animal upstream of the project site in appropriate habitat.

2.5 If Project activities will occur between February 15 and September 1, a Qualified Biologist shall conduct pre-construction surveys for nesting birds no more than one week prior to construction. Surveys shall consist of multiple days of observations. If nesting birds are found, a 50-foot radius buffer shall be established around the nest, a 300-foot- foot radius buffer in the case of raptors, e.g. hawks, owls, and eagles. The area shall be avoided. A buffer of less than 300 feet, but no less than 100 feet, may be used if a Qualified Biologist, experienced in raptor behavior, is assigned to monitor the behavior of any raptor nesting within 300 feet of Project activities. The Qualified Biologist shall have authority, through the Resident Engineer, to order the cessation of all Project activities within 300 feet of any raptor nest if the birds exhibit abnormal nesting behavior which may cause reproductive failure (nest abandonment and loss of eggs and/or young). Abnormal nesting behaviors which may cause reproductive harm include, but are not limited to: defensive flights/vocalizations directed towards Project personnel, standing up from a brooding position, and flying away from the nest. Project activities within 300 feet of the nest shall not resume until the Qualified Biologist has consulted with CDFW and both the Qualified Biologist and CDFW confirm that the bird's behavior has normalized or the young have left the nest.

2.6 The site shall be dewatered as necessary to provide an adequately dry work area. Corrugated metal pipes shall not be used the for water diversion. Pumps and siphons shall have double screens and mesh measuring 3/32 inches.

2.7 The Resident Engineer, or a designated representative, and a Qualified Biologist shall be onsite during dewatering and aquatic species relocation activities. All live steelhead and green sturgeon shall be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured fish shall be kept in cool, shaded, and aerated water that is protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. If necessary, a Qualified Biologist shall have at least two containers and segregate young-of-year salmonids from older salmonids and other potential aquatic predators in order to avoid predation effects. Captured steelhead and green sturgeon shall be relocated as soon as possible and will be give highest priority over other non-listed fish species. Water from the local collection site shall be used in live wells or other holding facilities during loading and transport. At no time shall chlorinated tap water be used. Water temperatures within any live well or other holding facility shall be kept at or below water temperature at the collection site. No non-native animals captured shall be returned to the stream or released alive. Both juvenile steelhead and green sturgeon shall be released downstream of the project area. Only a

Qualified Biologist with appropriate state and/or federal handling permits are permitted to handle state and/or federally listed species.

2.8 Permittee shall comply with all applicable state and federal laws, including the California and Federal Endangered Species Act. This Agreement does not authorize the take of any state or federally endangered listed species. Liability for any take or incidental take of such species remains the responsibility of the Permittee for the duration of the project. Any unauthorized take of listed species may result in prosecution and nullification of the Agreement.

2.9 The perimeter of the work site shall be adequately fenced using high visibility Environmentally Sensitive Area (ESA) fencing to prevent damage to adjacent riparian habitat. No construction activities, within the riparian zone, will be allowed within the habitat protected by the ESA fencing (this does not preclude activities from occurring on the bridge or deck work above the ESA area).

2.10 To the maximum extent practicable, Permittee shall leave the root masses of removed trees and shrubs in place. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations.

2.11 Permittee shall salvage, stockpile, replace, and contour all wetland soils to the maximum extent practicable.

2.12 Permittee shall conduct work defined in the above project description, and within the project area, during periods of dry weather. The project area is defined as the bed, bank, channel, and associated riparian habitat. The Permittee shall monitor forecasted precipitation. When $\frac{1}{4}$ inch or more of precipitation is forecasted to occur, the Permittee shall stop work before precipitation commences. No activity of the project may be started if its associated erosion control measures cannot be completed prior to the onset of precipitation. After any storm event, the Permittee shall inspect all sites currently under construction and all sites scheduled to begin construction within the next 72 hours for erosion and sediment problems and take corrective action as needed. Seventy-two hour weather forecasts from National Weather Service shall be consulted and work shall not start back up until runoff ceases and there is less than a 30% forecast for precipitation for the following 24-hour period.

2.13 Permittee shall utilize erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter waterways. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. Erosion control installations shall be monitored for effectiveness and shall be repaired or replaced as recommended by a Water Quality Monitor to the Resident Engineer or designated representative. As needed to prevent sediment transport, Permittee shall deploy soil stabilizer such as hydroseeding, netting, erosion control mats, mulch, fiber rolls, silt fences, check dams, and flow velocity dissipation devices. Permittee shall stabilize and equip construction site entrances and exits with

tire washing capability. Materials containing monofilament or plastic shall not be used. Erosion and sediment control measures shall be installed prior to unseasonable rain storms.

2.14 Hydroseed mixes shall not contain exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: <http://www.cal-ipc.org/ip/inventory/weedlist.php>.

2.15 Permittee shall exclude concrete from receiving waters until concrete is fully cured. If groundwater comes into contact with uncured concrete, it shall be prevented from flowing towards receiving waters.

2.16 Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the creek channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip pans. Any equipment or vehicles driven and/or operated above or adjacent to the stream must be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

2.17 Refueling of mobile construction equipment and vehicles shall not occur within 50 feet of any water body, or anywhere that spilled fuel could drain to a water body. Refueling of stationary equipment requiring breakdown and setup to move will remain in place. All equipment shall be refueled with appropriate drip pans, absorbent pads, and water quality Best Management Practices. Equipment and vehicles operating in the project area shall be checked and maintained daily to prevent leaks of fuels, lubricants, or other liquids.

2.18 Permittee shall plan appropriately to ensure all work within DFG jurisdiction be completed by October 15 of each year.

3. Compensatory Measures

- 3.1 Oak tree removal shall be mitigated at a 5:1 removal to replacement ratio at the Pacheco Creek Mitigation Area in Santa Clara County. Replacement trees shall consist of 5-gallon saplings and shall be native species adapted to the lighting, soil and hydrological conditions at the replanting site. To ensure 80% survivorship at the end of 5 years, monitoring shall be conducted annually for a period of five years. If during the annual monitoring the plantings are not projected to meet 80% survivorship, Permittee is responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practices necessary to achieve 80% survivorship.

CONTACT INFORMATION

Any communication that Permittee or DFG submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or DFG specifies by written notice to the other.

To Permittee:

California Department of Transportation
Jeffrey G. Jensen
111 Grand Ave.
(510)622-8729
Jeffrey_jensen@dot.ca.gov

To DFG:

Department of Fish and Game
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
Attn: Lake and Streambed Alteration Program – Melissa Escaron
Notification #1600-2011-0270-R3
mescaron@dfg.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute DFG's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

DFG may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before DFG suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before DFG suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused DFG to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes DFG from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects DFG's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

DFG may amend the Agreement at any time during its term if DFG determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by DFG and Permittee. To request an amendment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake

or Streambed Alteration” form and include with the completed form payment of the corresponding amendment fee identified in DFG’s current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter DFG approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to DFG a completed DFG “Request to Amend Lake or Streambed Alteration” form and include with the completed form payment of the minor amendment fee identified in DFG’s current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement’s term. To request an extension, Permittee shall submit to DFG a completed DFG “Request to Extend Lake or Streambed Alteration” form and include with the completed form payment of the extension fee identified in DFG’s current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). DFG shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

EFFECTIVE DATE

The Agreement becomes effective on the date of DFG’s signature, which shall be: 1) after Permittee’s signature; 2) after DFG complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire on December 31, 2017, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to

protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

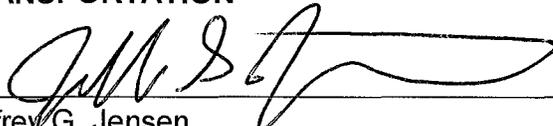
AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify DFG in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

**FOR CALIFORNIA DEPARTMENT OF
TRANSPORTATION**



Jeffrey G. Jensen
Office Chief Biological Sciences and Permits

5/14/2013

Date

FOR DEPARTMENT OF FISH AND GAME



Scott Wilson
Acting Regional Manger

May 20 2013

Date

Prepared by: Melissa Escaron
Staff Environmental Scientist

Date Sent: October 29, 2012
February 8, 2013

May 3, 2013
May 13, 2013

FOR DEPARTMENT USE ONLY

Date Received	Amount Received	Amount Due	Date Complete	Notification No.
1/29/11	\$4482.75	\$		1600-2011-0270-3



CALTRANS
DEPT OF TRANS STATE OF CALIFORNIA

DELEON Escobar
E. FLORES
W. RODRIGUEZ



STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME
NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

1. APPLICANT PROPOSING PROJECT

Fish & Game

Name	Mr. Ron Moriguchi			JUL 29 2011	
Business/Agency	CALIFORNIA DEPARTMENT OF TRANSPORTATION, DISTRICT 4			Yountville	
Street Address	111 GRAND AVENUE				
City, State, Zip	OAKLAND, CA 94612 P.O. Box 23660, Oakland, CA 94623				
Telephone	(510) 286-5073	Fax	(510) 286-4897		
Email	Ron_Moriguchi@dot.ca.gov				

2. CONTACT PERSON (Complete only if different from applicant)

Name	Mr. John Yeakel				
Street Address	111 GRAND AVENUE				
City, State, Zip	OAKLAND, CA 94612				
Telephone	(510) 286-5681	Fax			
Email	John_Yeakel@dot.ca.gov				

3. PROPERTY OWNER (Complete only if different from applicant)

Name					
Street Address					
City, State, Zip					
Telephone		Fax			
Email					

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name		San Francisquito Creek Bridge Replacement at U.S. 101, (EA 04-235610, Br. # 35-0013)			
B. Agreement Term Requested		<input checked="" type="checkbox"/> Regular (5 years or less) <input type="checkbox"/> Long-term (greater than 5 years)			
C. Project Term		D. Seasonal Work Period		E. Number of Work Days	
Beginning (year)	Ending (year)	Start Date (month/day)	End Date (month/day)		
2013	2016	06/01	10/15	1,040.00	

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A.	<input checked="" type="checkbox"/> Standard (Most construction projects, excluding the categories listed below)
B.	<input type="checkbox"/> Gravel/Sand/Rock Extraction (Attachment A) Mine I.D. Number: _____
C.	<input type="checkbox"/> Timber Harvesting (Attachment B) THP Number: _____
D.	<input type="checkbox"/> Water Diversion/Extraction/Impoundment (Attachment C) SWRCB Number: _____
E.	<input type="checkbox"/> Routine Maintenance (Attachment D)
F.	<input type="checkbox"/> DFG Fisheries Restoration Grant Program (FRGP) FRGP Contract Number: _____
G.	<input type="checkbox"/> Master
H.	<input type="checkbox"/> Master Timber Harvesting

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. **Note: The Department may not process this notification until the correct fee has been received.**

	A. Project	B. Project Cost	C. Project Fee
1	San Francisquito Creek Bridge Replacement at US Route 101	\$9,320,000.00	\$4,482.75
2			
3			
4			
5			
		D. Base Fee (if applicable)	
		E. TOTAL FEE ENCLOSED	\$4,482.75

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted to, or a Lake or Streambed Alteration Agreement previously been issued by, the Department for the project described in this notification?

Yes (Provide the information below) No

Applicant: [Signature] Notification Number: _____ Date: 7/25/11

B. Is this notification being submitted in response to an order, notice, or other directive ("order") by a court or administrative agency (including the Department)?

No Yes (Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.)

Continued on additional page(s)

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

8. PROJECT LOCATION

A. Address or description of project location.

(Include a map that marks the location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway)

The San Francisquito Bridge is located on U.S. 101 on the border between Santa Clara and San Mateo counties. San Francisquito Creek forms the border between the two counties and the city limits of Palo Alto to the south, and East Palo Alto and Menlo Park to the north. The project is located on U.S. 101 between the exits of University Ave. and Embarcadero Rd. To reach the project site by car take the Embarcadero Rd. exit, then turn east on Embarcadero Rd. and an immediate left onto East Bayshore Rd. which is a frontage road next to the U.S. 101. The San Francisquito Creek bridge is about 1/2 mile north of the E. Bayshore Rd./Embarcadero Rd. interchange. The bridge is approximately one mile away from the mouth of San Francisquito Creek and San Francisco Bay. The project site elevation is from 0 to 20 ft above sea level. Figure 1 (attached) shows the location of the project.

Continued on additional page(s)

B. River, stream, or lake affected by the project. San Francisquito Creek

C. What water body is the river, stream, or lake tributary to? San Francisco Bay

D. Is the river or stream segment affected by the project listed in the state or federal Wild and Scenic Rivers Acts? Yes No Unknown

E. County Santa Clara and San Mateo

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. 1/4 Section
Palo Alto and Mountain View	5S	3W	NA	NA

Continued on additional page(s)

K. Meridian (check one) Humboldt Mt. Diablo San Bernardino

L. Assessor's Parcel Number(s)

NA

Continued on additional page(s)

M. Coordinates (If available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes)

	Latitude: 37.452793	Longitude: -122.127853	
Latitude/Longitude	<input type="checkbox"/> Degrees/Minutes/Seconds	<input checked="" type="checkbox"/> Decimal Degrees	<input type="checkbox"/> Decimal Minutes
UTM	Easting:	Northing:	<input type="checkbox"/> Zone 10 <input type="checkbox"/> Zone 11
Datum used for Latitude/Longitude or UTM	<input type="checkbox"/> NAD 27	<input checked="" type="checkbox"/> NAD 83 or WGS 84	

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bank stabilization – rip-rap/retaining wall/gabion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat dock/pier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boat ramp	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bridge	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Channel clearing/vegetation management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Culvert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Debris basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diversion structure – weir or pump intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Filling of wetland, river, stream, or lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Geotechnical survey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Habitat enhancement – revegetation/mitigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Low water crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Road/trail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sediment removal – pond, stream, or marina	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Storm drain outfall structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temporary stream crossing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utility crossing : Horizontal Directional Drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Jack/bore	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Open trench	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.

- Include any structures (e.g., rip-rap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river, or lake.
- Specify the type and volume of materials that will be used.
- If water will be diverted or drafted, specify the purpose or use.

Enclose diagrams, drawings, plans, and/or maps that provide all of the following: site specific construction details; the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain; an overview of the entire project area (i.e., "bird's-eye view") showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

The proposed project involves demolishing the existing San Francisquito Creek Bridge and the associated frontage road bridges and replacing them with a new bridge that is 14 feet wider and 43 feet longer than the original bridges. The bridge will be constructed to satisfy the lane requirements of the 101 Auxiliary Lanes Project and the flow capacity of the creek. The proposed bridge will be lengthened by 43 feet to allow for an increase in creek flow based on 100-year flood projections and also to facilitate projects proposed by the San Francisquito Creek Joint Powers Authority (SFJPA) that will widen the creek channel to increase the flow capacity of San Francisquito Creek and reduce flooding. The added length to the bridge will require the construction of three pier walls to replace the two existing pier walls. In addition, the freeway profile on each side of the bridge will be modified to conform to the new bridge deck, and the soundwall location on the bridge will be shifted to conform to the wider roadway. One of the four bridge cells will remain closed until the SFJPA downstream improvement project is completed.

Continued on additional page(s)

B. Specify the equipment and machinery that will be used to complete the project.

Backhoes, excavators, bucket loaders, dump trucks, concrete mixers, concrete pump truck, pavers, drill rig, crane, compactors, hydraulic jackhammers, pile drivers, access ramps and temporary falsework

Continued on additional page(s)

C. Will water be present during the proposed work period (specified in box 4.D) in the stream, river, or lake (specified in box 8.B).

Yes No (*Skip to box 11*)

D. Will the proposed project require work in the wetted portion of the channel?

Yes (*Enclose a plan to divert water around work site*)

No

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

11. PROJECT IMPACTS

A. Describe impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres) and the type and volume of material (cubic yards) that will be moved, displaced, or otherwise disturbed, if applicable.

The project will have permanent and temporary impacts to San Francisquito Creek, a channelized tidally influenced perennial stream. The proposed project will permanently impact 0.024 acre of the waters of San Francisquito Creek and 0.011 acre of estuarine wetlands along the banks of the creek. Temporary impacts include approximately 0.933 acre of the waters of San Francisquito Creek and 0.011 acre of estuarine wetlands. The length, acreage and type of fill are in the attachment.

Continued on additional page(s)

B. Will the project affect any vegetation? Yes (Complete the tables below) No

Vegetation Type	Temporary Impact	Permanent Impact
See attached table in supplement	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____
	Linear feet: _____ Total area: _____	Linear feet: _____ Total area: _____

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
Tree of Heaven (<i>Ailanthus altissima</i>)	2	5-13 inches
Coast Live Oak (<i>Quercus agrifolia</i>)	1	approximately 40 inches
Lombardi Poplar	2	5-8 inches

Continued on additional page(s)

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

Yes (List each species and/or describe the habitat below) No Unknown

Project site provides potential habitat for Central California Coast steelhead, and green sturgeon.

Continued on additional page(s)

D. Identify the source(s) of information that supports a "yes" or "no" answer above in Box 11.C.

Natural Environment Study, Biological Assessment (Attachment 3), Biological Opinion (Attachment 4)

Continued on additional page(s)

E. Has a biological study been completed for the project site?

Yes (Enclose the biological study) No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

Yes (Enclose the hydrological study) No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

12. MEASURES TO PROTECT FISH, WILDLIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Construction and bridge replacement activities are planned to occur from June 1 and October 15 when creek flows are minimal, to comply with regulatory requirements, minimize potential discharge of sediment into the creek and to avoid any work in the creek when steelhead are likely to be migrating through the project area. Caltrans will employ best management practices (BMPs) to prevent sediment and other pollutants entering the creek. Where working areas encroach on the creek or instream wetlands, RWQCB-approved physical barriers adequate to prevent the flow or discharge of sediment into these systems shall be constructed and maintained between working areas and the creek or wetlands. No discharge of sediment into streams shall occur during construction of barriers.

Continued on additional page(s)

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

The construction footprint has been minimized to the greatest extent feasible in order to accomplish the work. The construction schedule has been adjusted in order to complete instream project work within two dry season construction periods, if possible. Avoidance and Minimization measures are described in the attached supplemental document.

Continued on additional page(s)

C. Describe any project mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

Compensatory mitigation may be necessary to offset permanent and temporary wetland losses. Compensation for impacts to jurisdictional waters of the U.S. may be provided through a combination of the following measures:

- Purchase of wetland creation credits from a mitigation bank approved by the USACE.
- Purchase of wetland preservation or enhancement credits from a USACE-approved mitigation bank.
- Off-site creation, restoration or enhancement of wetlands.
- On-site creation, restoration or enhancement of wetlands.
- As approved through negotiations with the USACE during the environmental permitting process.

(More information provided in supplement)

Continued on additional page(s)

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

- | | | | | | |
|----|---|-------------------------------------|---------|--------------------------|--------|
| A. | Clean Water Act Section 404 USACE Permit | <input checked="" type="checkbox"/> | Applied | <input type="checkbox"/> | Issued |
| B. | RWQCB 401 Permit (Clean Water Certification) | <input checked="" type="checkbox"/> | Applied | <input type="checkbox"/> | Issued |
| C. | | <input type="checkbox"/> | Applied | <input type="checkbox"/> | Issued |
| D. | Unknown whether <input type="checkbox"/> local, <input type="checkbox"/> state, or <input type="checkbox"/> federal permit is needed for the project. (Check each box that applies) | | | | |

Continued on additional page(s)

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or federal Endangered Species Act (ESA)?			
<input checked="" type="checkbox"/> Yes (Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each)			
<input type="checkbox"/> No (Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared)			
<input type="checkbox"/> Notice of Exemption	<input type="checkbox"/> Mitigated Negative Declaration	<input checked="" type="checkbox"/> NEPA document (type): <u>EA</u>	
<input checked="" type="checkbox"/> Initial Study	<input type="checkbox"/> Environmental Impact Report	<input type="checkbox"/> CESA document (type): _____	
<input type="checkbox"/> Negative Declaration	<input type="checkbox"/> Notice of Determination (Enclose)	<input checked="" type="checkbox"/> ESA document (type): <u>BA / BO</u>	
<input type="checkbox"/> THP/ NTMP	<input type="checkbox"/> Mitigation, Monitoring, Reporting Plan		
B. State Clearinghouse Number (if applicable)		2011042065	
C. Has a CEQA lead agency been determined?		<input checked="" type="checkbox"/> Yes (Complete boxes D, E, and F)	<input type="checkbox"/> No (Skip to box 14.G)
D. CEQA Lead Agency	Caltrans District 4		
E. Contact Person	Tom Rosevear	F. Telephone Number	(510) 286-5360
G. If the project described in this notification is part of a larger project or plan, briefly describe that larger project or plan.			
This project is one component of the larger plan of constructing an auxiliary lane in each direction of U.S. 101 between Marsh Road in Menlo Park and Embarcadero Road in Palo Alto, CA.			
<input type="checkbox"/> Continued on additional page(s)			
H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?			
<input checked="" type="checkbox"/> Yes (Enclose proof of payment)		<input type="checkbox"/> No (Briefly explain below the reason a filing fee has not been paid)	
Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.			

15. SITE INSPECTION

Check one box only.
<input checked="" type="checkbox"/> In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.
<input checked="" type="checkbox"/> I request the Department to first contact (insert name) <u>Katie Thoreson (Associate Biologist, Caltrans)</u> at (insert telephone number) <u>(510) 286-6375</u> to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

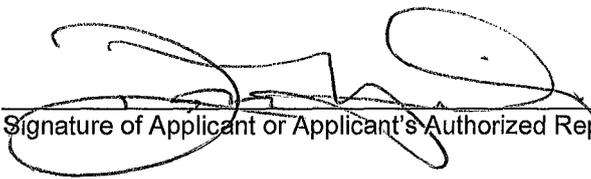
NOTIFICATION OF LAKE OR STREAMBED ALTERATION

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e., CD, DVD, etc.)?
<input checked="" type="checkbox"/> Yes (Please enclose the information via digital media with the completed notification form)
<input type="checkbox"/> No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification or suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, I and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been separately notified of that project in accordance with Fish and Game Code section 1602 or 1611.

 _____
Signature of Applicant or Applicant's Authorized Representative

7/25/11 _____
Date

RON MORIGUCHI _____
Print Name

San Francisco Bay Regional Water Quality Control Board

June 12, 2013
CIWQS Place No. 793406

Sent via electronic mail--no hard copy to follow

California Department of Transportation
Attn: Ron Moriguchi
Ron_Moriguchi@dot.ca.gov
111 Grand Ave.
Oakland, CA 94612-3717

Subject: Water Quality Certification for the U.S. 101 San Francisquito Creek Bridge Replacement Project, Cities of Palo Alto and East Palo Alto, Santa Clara and San Mateo County

Department Project No.: EA 04-23562

Dear Mr. Moriguchi:

We have reviewed and hereby issue water quality certification (Certification) to the California Department of Transportation (Department) for the U.S. 101 San Francisquito Creek Bridge Replacement Project (Project). The Department is seeking a Nationwide Permit 14 for Linear Transportation Projects from the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act (33 U.S.C. § 1344). As such, the Department has applied to the San Francisco Bay Regional Water Quality Control Board (Water Board) for a Clean Water Act Section 401 water quality certification that the Project will not violate State water quality standards.

Project: The following project description was derived from application materials received by the Water Board on February 19, 2013 and supplemental information provided by the Department via email on May 17, May 31, June 5, and June 6, 2013.

The Department proposes removal and replacement of the bridge that carries U.S. 101, East Bayshore Road, and West Bayshore Road over San Francisquito Creek (Creek). The existing bridge is structurally deteriorated and lacks hydraulic capacity, which contributes to flooding along the Creek. The replacement bridge will be wider than the existing bridge to provide standard lane and shoulder widths on U.S. 101, and longer than the existing bridge to accommodate a 100-year Creek flow event combined with a 100-year high tide event. The Project is planned in conjunction with projects by the San Francisquito Creek Joint Powers Authority (SFCJPA) to increase hydraulic capacity in the Creek downstream

and upstream of U.S. 101. The Project is expected to take three years to complete and will be staged to minimize traffic impacts.

Project elements include:

- Temporary diversion of the Creek each year between June 1 and October 15. Creek diversion will be accomplished by constructing sheet pile cofferdams and installing a 30" diversion pipe to allow water to pass through the work area.
- Installation of access ramps to allow equipment to access the Creek for construction of cofferdams and bridge demolition and construction.
- Demolition and removal of the existing bridge which consists of two pier walls and three spans.
- Installation of approximately 200 - 16 inch diameter pier piles.
- Installation of falsework and construction of a new bridge composed of three pier walls and four spans. Creek flow through the fourth span will be blocked on both sides by soldier pile walls until the downstream channel widening project by the SFCJPA is completed.
- Placement of rock slope protection along the channel bed at the base of the soldier pile wall. Rock slope protection will be removed as part of the SFCJPA project.
- Dewatering of stormwater and groundwater from the project site.

Impacts: Project implementation would permanently impact approximately 0.05 acre (286 linear feet) of San Francisquito Creek, and two coast live oak trees. Permanent impact to the Creek would result from construction of three concrete bents to support the bridge deck and additional shading caused by a larger bridge footprint. Permanent impact to oak trees would result from roadway and bridge abutment construction which would compromise the root structure of the trees.

Project implementation would temporarily impact approximately 0.02 acre of estuarine wetland, 0.93 acres (527 linear feet) of San Francisquito Creek and 0.092 acre of riparian vegetation. Temporary impacts will result from demolition and construction of the bridge and temporary diversion of the Creek.

See Attachment for impact locations and maps.

Roadway Pollutant Impacts: Project implementation would result in approximately 0.26 acres of new and 0.44 acres of reworked impervious area. Stormwater runoff from

impervious areas may contain hydrocarbons, metals, volatile organic compounds, trash, and sediment at levels that may significantly impact waters of the State if left untreated.

Hydromodification Impacts: Added impervious areas may result in alterations to existing hydrologic regimes, resulting in erosion and/or changes of sediment transport in receiving waters (hydromodification). Because added impervious area for the project will result in a minimal increase in stormwater runoff, and the project area discharges to San Francisquito Creek, which is tidally influenced, hydromodification mitigation is not required for this Project.

Avoidance and Minimization: The Department has avoided and minimized impacts to San Francisquito Creek, wetlands, and riparian vegetation by: utilizing a closed bypass pipe to temporarily divert the Creek at the suggestion of the National Marine Fisheries Service; utilizing a timber mat and plywood (or equivalent) system to protect the Creek from demolition debris; using sediment and erosion control best management practices; and performing construction and demolition activities in the Creek between June 1 and October 15 when flows are minimal.

Mitigation: To mitigate for permanent impacts to riparian vegetation, the Department shall plant 10 oak trees at the Pacheco Creek Mitigation Area in Santa Clara County (see Certification Condition no. 2).

To mitigate for temporary impacts to San Francisquito Creek and estuarine wetlands, the Department shall remove all non-native materials used for bridge construction and temporary creek bypass, that are not part of the permanent bridge structure at the end of each construction season. The Creek shall be restored to original elevations and contours, except in the areas where it will be widened to increase hydraulic capacity. Widening of the Creek shall result in approximately 0.34 acres in increased Creek area within the project limits.

Roadway Pollutant Mitigation: As mitigation for increased pollutant loads associated with approximately 0.70 acre of added and reworked impervious area for this Project, the Department shall construct two biofiltration swales to treat stormwater runoff (see Certification Condition no. 1). The biofiltration swales shall be located in the northbound and southbound entrance loops from Embarcadero Road to U.S. 101 (see Attachment for location map and details). Bioswale 1, located in the southbound loop, shall be sized to treat approximately 0.498 acre of impervious area. Bioswale 2, located in the northbound loop, shall be sized to treat approximately 0.222 acre of impervious area.

CEQA Compliance: The Department evaluated the Project pursuant to the requirements of the California Environmental Quality Act (CEQA) in a Negative Declaration. The Department filed a Notice of Determination on March 19, 2012 that the Project would not have a significant effect on the environment (SCH No. 2011042065).

California Wetlands Portal: It has been determined through regional, state, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects. In addition, to effectively carry out the State's No Net Loss Policy for wetlands, the State needs to closely track wetland losses, gains, and mitigation/restoration project success. Therefore, we require the Department use the California Wetlands Standard Form to provide Project information related to impacts and mitigation/restoration measures (see Condition nos. 3 and 4 of this Certification). An electronic copy of the form and instructions may be downloaded at:

<http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml>

Project information concerning impacts and mitigation/restoration will be made available at the web link: <http://www.californiawetlands.net>

Certification: I hereby issue an order certifying that any discharge from the referenced Project will comply with the applicable provisions of sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003 - 0017 – DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification" which requires compliance with all conditions of this Certification. The following conditions are associated with this Certification:

1. As mitigation for increased pollutant loads associated with impervious surface added and reworked with the Project, the Department shall provide treatment of stormwater runoff from no less than 0.70 acre of impervious area using biofiltration swales. The biofiltration swales shall be installed concurrently with this Project and be consistent with the plans in the Attachment of this Certification. Any revisions to the biofiltration swale design details shall be subject to the acceptance of Water Board staff.
2. To compensate for the removal of two coast live oak trees, the Department shall:
 - a. Plant no less than 10 oak trees at Pacheco Creek Mitigation Area in Santa Clara County, CA;

- b. Only deem oak tree plantings successful after ten growing seasons, whereupon eighty percent of the planted oaks shall exhibit average or improved health and vigor from the previous two growing seasons;
 - c. Provide additional planting, maintenance and monitoring until the success criteria is satisfied if the above success criteria is not met;
 - d. Submit monitoring reports to the Water Board by January 1 for years 1, 2, 3, 5, 7, and 10. All monitoring reports shall include photo-documentation utilizing consistent photo vantage points. At the end of year 10, a comprehensive final report shall be prepared that includes summaries of the monitoring data, representative photos, and maps.
3. The Department is required to use the California Wetlands Standard Form to provide project information describing impacts and mitigation/restoration measures within 14 days from the date of this Certification. An electronic copy of the form can be downloaded at: <http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml>. The completed California Wetlands form shall be submitted electronically to habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both: 1) The Water Board, 1515 Clay St., Suite 1400, Oakland, CA 94612, to the attention of California Wetlands Portal; and 2) San Francisco Estuary Institute, 4911 Central Ave., Richmond, CA 94804, to the attention of California Wetlands Portal;
4. Mitigation and monitoring reports shall be submitted to the Water Board by January 1 of each year. Modification of this deadline is subject to the acceptance of Water Board staff. The reports may be submitted by upload to the California Wetlands Portal website at <http://www.californiawetlands.net/tracker/ba/list>. Select San Francisco Bridge Replacement Project from the Bay Area Project List and then use the "Files & Links" web-link on the mitigation site project page to upload the report. The Department shall immediately notify appropriate Water Board staff once the monitoring report has been uploaded. If the Department cannot, or chooses not to submit the report using the California Wetlands Portal, the report may be submitted directly to Water Board staff electronically, via e-mail;
5. All temporarily disturbed areas above the ordinary high water mark shall be re-vegetated using only native plant species. The Department shall not cause, through operation of heavy machinery, or any other construction activity, compaction of marshes or open waters in areas of temporary impact. Any compaction of marshes or open waters in areas of temporary impact shall require mitigation;
6. The Resident Engineer (or appropriately authorized agent) shall hold onsite water quality permit compliance meetings (similar to tailgate safety meetings) to discuss permit compliance, including instructions on violation avoidance and violation reporting procedures. The meetings shall be held at least every other week, before forecasted storm events, and when a new contractor or subcontractor arrives to begin

work at the site. The contractors, subcontractors and their employees, as well as any inspectors or monitors assigned to the Project, shall be present at the meetings. The Department shall maintain dated sign-in sheets for attendees at these meetings, and shall make them available to the Water Board on request;

7. Concrete shall be excluded from surface water for a period of 30 days after it is poured/sprayed. During that time the concrete shall be kept moist and runoff from the concrete shall not be allowed to enter State waters. Commercial sealants may be applied to the concrete surface in instances where 30 days of water exclusion is infeasible. If sealant is used, water shall be excluded from the site until the sealant is cured. If groundwater comes into contact with fresh concrete, it shall be prevented from flowing towards surface water;
8. The Project shall be constructed in conformance with the Project Description described in this Certification and certification application materials. Any change in the Project that could impact State waters may require compensatory mitigation and shall first be reported to and found acceptable by the Water Board Executive Officer;
9. If, at any time, an unauthorized discharge to surface water (including wetlands, rivers or streams) occurs, or any other water quality problem arises, the associated Project activities shall immediately cease until adequate BMPs are implemented. The Water Board shall be notified promptly within 24 hours after the unauthorized discharge or water quality problem arises;
10. The Department shall adhere to the conditions imposed by Nationwide Permit 14 for Linear Transportation Projects issued to the Department by the U.S. Army Corps of Engineers, the Streambed Alteration Agreement issued to the Department by the California Department of Fish and Wildlife, and the Biological Opinion issued by the National Marine Fisheries Service;
11. All activities and best management practices (BMPs) shall be implemented according to the submitted application materials and the findings and conditions of this Certification. BMPs for erosion, sediment, turbidity and pollutant control shall be implemented and in place at commencement of, during, and after any ground clearing activities, construction activities, or any other Project activities that could result in erosion, sediment, or other pollutant discharges to waters of the State. The BMPs shall be implemented in accordance with the Caltrans Construction Site Best Management Practice Manual (CCSBMPM) and all contractors and subcontractors shall comply with the CCSBMPM. BMPs for erosion and sediment control shall be utilized throughout all phases of construction, regardless of date, wherever sediment-laden runoff threatens to enter waters of the State. The Department shall stage erosion and sediment control materials at the work site. All BMPs shall be installed properly and in accordance with the manufacturer's specifications. If the Project

Resident Engineer elects to install alternative BMPs for use on the project, the Department shall submit a proposal to Water Board staff for review and concurrence;

12. The Department shall not use or allow the use of erosion control products that contain synthetic materials within waters of the State at any time. The Department shall request approval from Water Board staff if an exception from this requirement is needed at a specific location. In upland and riparian areas, the Department shall prioritize the use of wildlife-friendly biodegradable (not photo-degradable) erosion control products. The Department shall not use or allow the use of erosion control products that contain synthetic netting for permanent erosion control (i.e. erosion control materials to be left in place for two years or after the completion date of the Project).

If the Department finds that erosion control netting or products have entrapped or harmed wildlife, personnel shall remove the netting or product and replace it with wildlife-friendly biodegradable products;

13. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall be prohibited within waters of the State. Fueling of individual equipment types within waters of the State may be authorized if the Department first prepares a fueling plan that:
 - a. Identifies the specific piece of machinery that may require fueling within waters of the State;
 - b. Provides justification for the need to refuel within State waters. The justification shall describe why fueling outside of jurisdictional waters is infeasible; and
 - c. Includes a narrative of specific BMPs that shall be employed to prevent and capture fuel releases.

Fueling of equipment within waters of the State shall be prohibited until the above mentioned plan has been approved by Water Board staff. The fueling plan may be submitted individually, included in the project Storm Water Pollution Prevention Plan (SWPPP), or submitted as a SWPPP amendment.

14. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall not result in a discharge or a threatened discharge to any waters of the State. At no time shall the Department use any vehicle or equipment which leaks any substance that may impact water quality;
15. Except as expressly allowed in this Certification, the Department is prohibited from discharging waste to waters of the State. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or concrete washings, welding slag, oil or petroleum products, or other organic or earthen material from any construction or

associated activity of whatever nature, other than that authorized by this Certification, shall be allowed to enter into waters of the State. Except for temporary stockpiling of waste generated during demolition operations (“temporary” in this instance means generated and removed during the same working day), waste materials shall not be placed where the materials may be washed by rainfall into waters of the State;

16. The Department shall provide analysis and verification that placement of non-hazardous waste or inert materials (which may include discarded product or recycled materials) will not result in degradation of water quality, human health, or the environment. All Project-generated waste shall be handled, transported, and disposed in strict compliance with all applicable State and Federal laws and regulations. When construction is complete, any excess material or debris shall be removed from the work area and disposed of properly and in accordance with the State and Federal laws and regulations, the Department is liable and responsible for the proper disposal of waste generated by their Project;
17. All imported fill material shall be clean and free of pollutants. All fill material shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low-level contaminated solids as fill onsite shall be performed in accordance with all State and Federal policies and established guidelines; a plan for such re-use must first be submitted to Water Board staff for review and concurrence;
18. Work in flowing or standing surface waters is prohibited;
19. Caltrans shall submit, subject to the acceptance of Water Board staff, a dewatering and/or diversion plan that appropriately describes the dewatered or diverted areas and how those areas will be handled during construction. The diversion/dewatering plans shall be submitted no later than 30 days prior to conducting the proposed activity. Diversion/dewatering activities shall be prohibited until Water Board staff has accepted the dewatering/diversion plan for that specific water. Information submitted shall include the area or work to be diverted or dewatered and method of the proposed activity. All diversion or dewatering activities shall be designed to minimize the impact to waters of the State, avoid fish entrainment, and maintain natural flows upstream and downstream. All dewatering or diversion structures shall be installed in a manner that does not cause sedimentation, siltation or erosion upstream or downstream. All dewatering or diversion structures shall be removed immediately upon completion of Project activities;
20. This Certification does not allow for the take, or incidental take, of any special status species. The Department shall use the appropriate protocols, as approved by the California Department of Fish and Wildlife and the USFWS, to ensure that Project activities do not impact the Beneficial Use of the Preservation of Rare and Endangered Species, as described in the San Francisco Bay Regional Water Quality Control Plan;

21. The Department shall maintain a copy of this Certification at the Project site to be available at all times to Project personnel. It is the responsibility of the Department to assure that all personnel (employees, contractors, and subcontractors) are adequately informed and trained regarding the conditions of this Certification;
22. The Water Board may add to or modify the conditions of this Certification, as appropriate, to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act;
23. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code and Title 23 of the California Code of Regulations, Section 3867;
24. This Certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to California Code of Regulations Title 23, Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought; and
25. This Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833). The Water Board has received the full fee for this Certification.

We anticipate your cooperation in implementing these conditions. However, please be advised that any violation of water quality certification conditions is a violation of State law and subject to administrative civil liability pursuant to California Water Code, Section 13350. Failure to respond, inadequate response, late response, or failure to meet any condition of this Certification may subject you to civil liability imposed by the Water Board to a maximum of \$5,000 per day per violation or \$10 for each gallon of waste discharged in violation of this Certification.

This Certification includes requirements for information and reports. Any requirement for a report made as a condition to this action is a formal requirement pursuant to CWC section 13267, and failure or refusal to provide, or falsification of such required report is subject to civil liability as described in California Water Code, Section 13268.

Mr. Ron Moriguchi
California Department of Transportation

- 10 -

Water Quality Certification
San Francisco Bridge Replacement
CIWQS Place No. 793406
EA No. 04-23562

If you have any question, please contact Derek Beauduy at (510) 622-2348, or via e-mail to DBeauduy@waterboards.ca.gov.

Sincerely,

Bruce H. Wolfe
Executive Officer

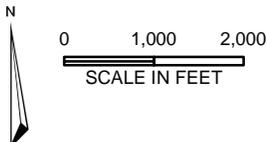
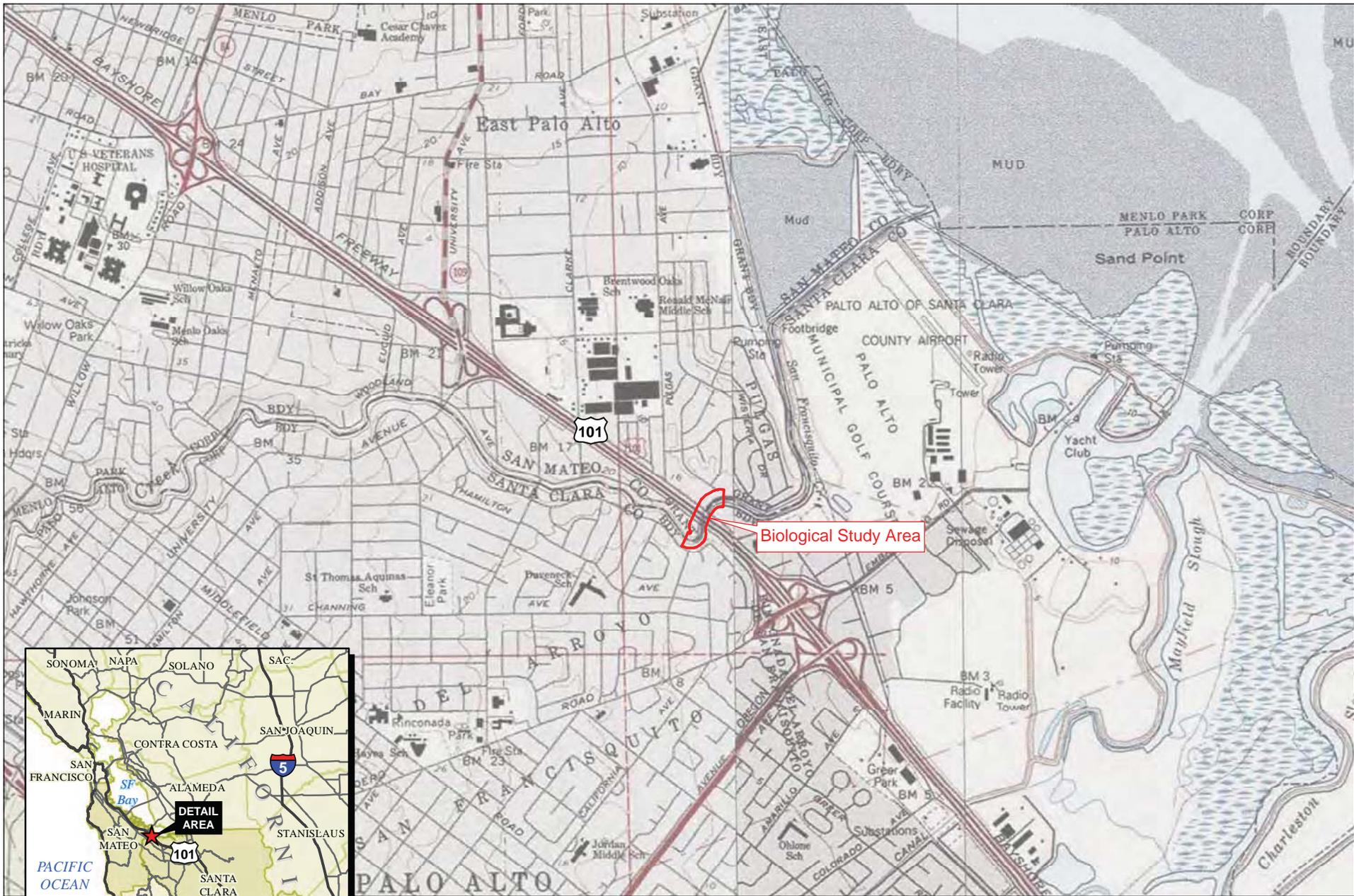
Attachment

cc (via e-mail):

Mr. Bill Orme SWRCB-DWQ	Mr. Dale Bowyer, Water Board
Mr. Cameron Johnson, USACE	Mr. Cyrus Vafai, Caltrans
Ms. Jane Hicks, Regulatory Branch, USACE	Mr. Hardeep Takhar, Caltrans
Ms. Melissa Escaron, CDFW	Mr. Jason Brush, USEPA
Ms. Paula Gill, USACE	Mr. Wilfung Martono, Caltrans
Mr. Ryan Olah, USFWS	

Attachment

Project Maps, Plans, and Details



Project Location Map

San Francisco Creek
Bridge Replacement



JUNE 2011

FIGURE 1-1

NOTE:

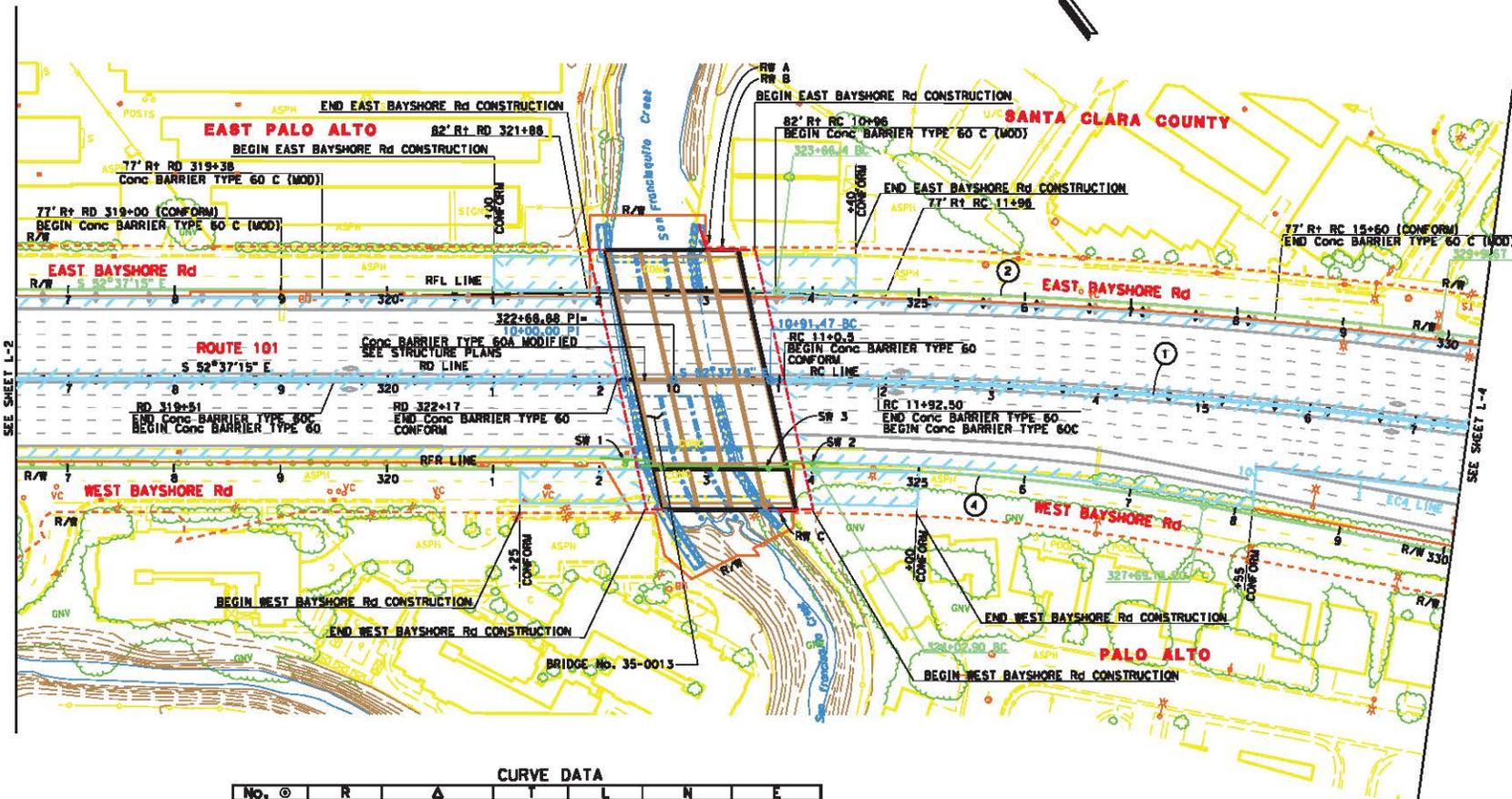
FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING DIVISION, STATE STREET OFFICE.

DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE _____

PLANS APPROVAL DATE _____

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



CURVE DATA

No.	Δ	R	T	L	N	E
1	4984'	13°41'45"	398.53'	1191.36'	1987432.90	6088213.90
2	5000'	7°10'05"	313.17'	625.53'	1987483.42	6086299.78
3	260'	42°38'42"	101.49'	193.52'	1990715.85	6090474.13
4	2000'	10°30'32"	183.93'	366.83'	1989711.54	6088008.28
5	500'	42°43'40"	195.59'	372.87'	1990269.33	6089526.04

**SAN FRANCISQUITO CREEK
BRIDGE REPLACEMENT
LAYOUT**
SCALE: 1" = 50'

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

L-3

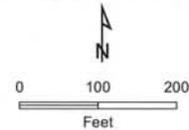
REVISOR: _____
DATE: _____
DESIGNED BY: _____
CHECKED BY: _____
FUNCTIONAL SUPERVISOR: _____
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

DATE PLOTTED → DATE 00-00-00 TIME PLOTTED → TIME



Imagery source: DigitalGlobe ImageConnect Service, 4/1/2009

- ◆ Wetland Sampling Point
-  Wetland
-  Other Waters of the U.S.
-  Biological Study Area



U.S. Army Corps of Engineers
 San Francisco District, Regulatory Division
 Preliminary Jurisdictional Determination

California Department of Transportation, District 4
 San Francisquito Creek Bridge Replacement Project, Hwy 101
 File no.: SPN-2011-00088 S Date: Mar. 23, 2011

Potentially Jurisdictional Waters of the U.S. in the Biological Study Area

San Francisquito Creek Bridge Replacement

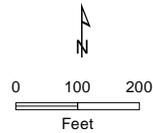
FEBRUARY 2011

FIGURE 2-2

JSM



- Biological Study Area
- Wetland
- Other Waters of the U.S.
- Permanent Impact
- Temporary Impact
- ESA Fence



Total Impacts to Waters of the U.S.

	Permanent	Temporary
Wetlands:	0	0.02 acre (181 lf)
Other Waters:	0.02 acre (286 lf)	0.93 acre (527 lf)

Impacts to Jurisdictional Waters of the U.S. in the Biological Study Area



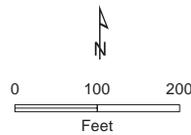
San Francisquito Creek Bridge Replacement

January 11, 2013

FIGURE 4-1



- Biological Study Area
- Riparian Vegetation
- Permanent Impact
- Temporary Impact
- ESA Fence
- Water



**Impacts to Riparian Vegetation
in the Biological Study Area**



San Francisquito Creek
Bridge Replacement

January 11, 2013

FIGURE 4-2

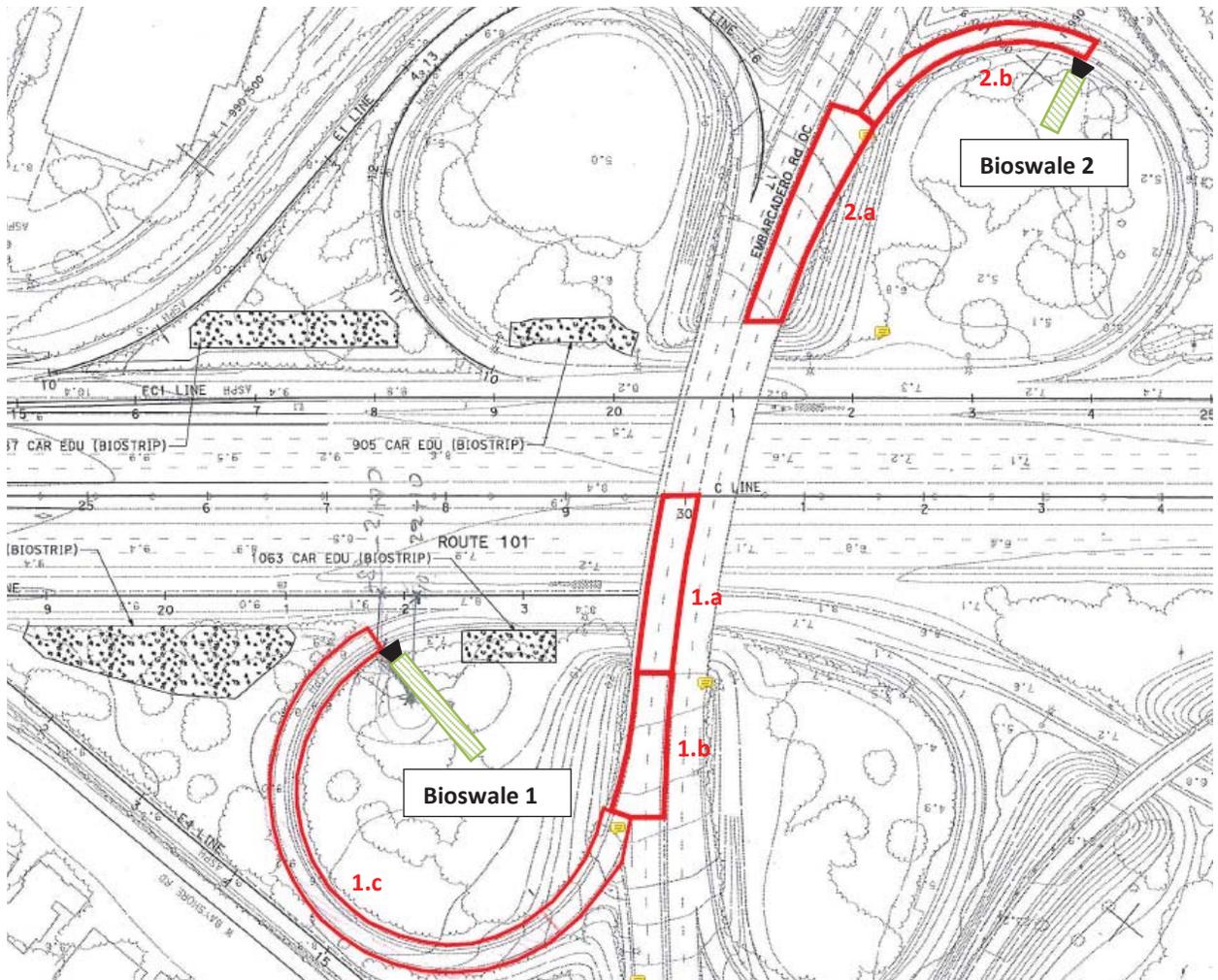
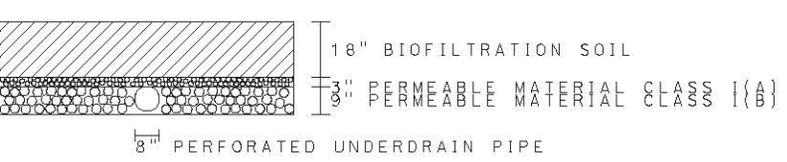
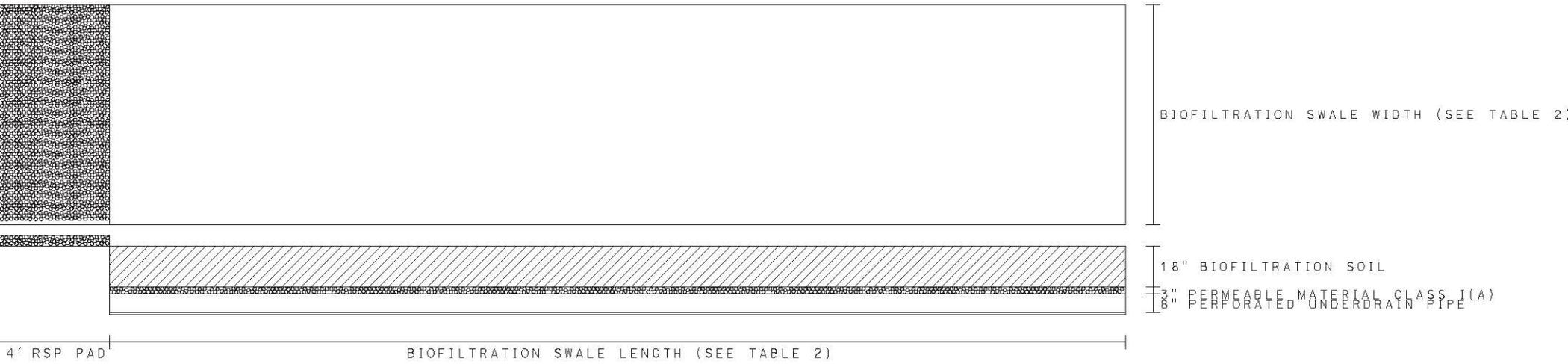


FIGURE 1 Location of Bioswales and tributary areas for each Bioswale

TABLE 2 Summary of Biowale dimensions and tributary area

No	BMP	Tributary Area		Location		Bioswale Dimensions		
				Start	End	Length	Width	Area
		SQ.FT	ACRES			FT	FT	SQ.FT
1	Bioswale 1	21,715	0.498	EC4 line, STA 22+00 60 FT RT	EC4 line, STA 22+20, 151 FT RT	109	8	872
2	Bioswale 2	9,652	0.222	EC1 line, STA 23+90, 277 FT RT	EC1 line, STA 23+50, 228 FT RT	49	8	392



BIOFILTRATION SWALE WIDTH (SEE TABLE 2)

18" BIOFILTRATION SOIL

3" PERMEABLE MATERIAL CLASS I(A)
8" PERFORATED UNDERDRAIN PIPE

4' RSP PAD

BIOFILTRATION SWALE LENGTH (SEE TABLE 2)

18" BIOFILTRATION SOIL

3" PERMEABLE MATERIAL CLASS I(B)

8" PERFORATED UNDERDRAIN PIPE



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

NATIONAL MARINE FISHERIES SERVICE

Southwest Region

501 West Ocean Boulevard, Suite 4200

Long Beach, California 90802- 4213

March 29, 2011

In response refer to:

2010/06575

Jeffrey Jensen, Chief
Office of Biological Sciences and Permits
California Department of Transportation, District 4
101 Grand Avenue
Oakland, California, 94612

Dear Mr. Jensen,

Thank you for your letter of November 18, 2010, requesting initiation of consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). Effective July 1, 2007, the Federal Highway Administration (FHWA) assigned, and the California Department of Transportation (Caltrans) has assumed all responsibilities for consultation and approval on most highway projects in California. Therefore, Caltrans is now considered the federal action agency for ESA consultations with NMFS for federally funded projects. This letter transmits NMFS biological opinion (Enclosure 1) for Caltrans proposed U.S. Highway 101 Bridge replacement project on San Francisquito Creek located at the border between San Mateo and Santa Clara counties, California. The enclosed biological opinion describes NMFS' analysis of the effect of implementing the proposed project on the threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS) and the threatened southern DPS of North American green sturgeon (*Acipenser medirostris*) and their designated critical habitats.

Based on the best available information, the enclosed biological opinion concludes the U.S. Highway 101 Bridge replacement over San Francisquito Creek may affect but is not likely to jeopardize the continued existence of CCC steelhead or the southern DPS of North American green sturgeon, and is not likely to result in the destruction or adverse modification of critical habitat for these species. An incidental take statement is included with the enclosed biological opinion. The incidental take statement includes non-discretionary terms and conditions that are expected to minimize the impacts of incidental take of listed salmonids and green sturgeon as a result of the bridge replacement activities. In addition, conservation recommendations have been included in the enclosed biological opinion.

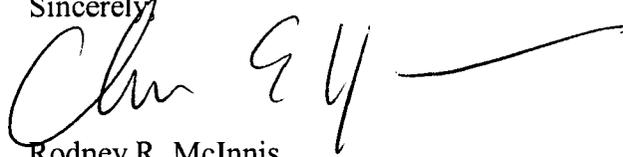
This letter also transmits NMFS' Essential Fish Habitat (EFH) conclusions pursuant to section 305(b) of the Magnuson-Stevens Fisheries Conservation and Management Act (MSFCMA) (Enclosure 2). San Francisquito Creek at the U.S. Highway 101 Bridge crossing includes areas identified as EFH for various life stages of species managed under the Pacific Groundfish,



Coastal Pelagic, and Pacific Coast Salmon Fishery Management Plans (FMPs). Based on our review, NMFS concludes that the U.S. Highway 101 Bridge replacement project has the potential to adversely affect EFH. However, the proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH. With the terms and conditions set forth in the biological opinion, NMFS has no additional EFH Conservation Recommendations to provide.

If you have any questions regarding the enclosed biological opinion, please contact Mr. Joel Casagrande at (707) 575-6016, or joel.casagrande@noaa.gov.

Sincerely,

FOR 
Rodney R. McInnis
Regional Administrator

Enclosures

cc: Chris Yates, NMFS, Long Beach
Margaret Gabil, Caltrans Office of Biological Sciences and Permits, Oakland
Suzanne DeLeon, CDFG, Yountville
Copy to file 151422-SWR-2010-SR00494

BIOLOGICAL OPINION

ACTION AGENCY: California Department of Transportation (Caltrans)

ACTION: United States (U.S.) Highway 101 San Francisquito Creek Bridge Replacement Project

CONSULTATION CONDUCTED BY: National Marine Fisheries Service, Southwest Region

TRACKING NUMBER: 2010/05741

DATE ISSUED: March 29, 2011

I. CONSULTATION HISTORY

Caltrans will be acting as the lead agency as per the agreement with the Federal Highway Administration (FHWA) in accordance with Section 6005 (a) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (PL-109-59) to assume the FHWA Secretary's responsibilities under the National Environment Policy Act of 1969 (42 USC § 4351, *et seq.*) and all or part of the FHWA Secretary's responsibilities for environmental review, consultation, or other action required under any environmental law with respect to one or more highway projects within the state.

On November 26, 2010, NMFS received Caltrans' November 18, 2010, letter requesting initiation of formal consultation pursuant to section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 *et seq.*), and the Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Fisheries Conservation and Management Act, as amended, for the replacement of the U.S. Highway 101 Bridge over San Francisquito Creek. Caltrans determined that the project, as proposed, is likely to adversely affect listed Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) Distinct Population Segment (DPS) and the southern DPS of North American green sturgeon (*Acipenser medirostris*), and may affect but will not adversely affect designated critical habitat for CCC steelhead and southern DPS green sturgeon.

On December 2, 2010, staff from NMFS, Caltrans, and URS Corporation (Caltrans contractor) conducted a site visit at the project location to discuss the general scope of the project, project timelines, and potential dewatering strategies. Caltrans had originally proposed an open diversion channel to bypass waters (tidal and freshwater) through the project site. NMFS suggested that a closed pipe diversion would not only ensure better protection to aquatic species, but would also be more efficient thereby limiting the time required to complete the project. Caltrans agreed to use a closed pipe for their diversion,

and on January 20, 2011, they provided NMFS with a general design for their closed water diversion. After receiving the updated water diversion plans on January 20, 2011, NMFS determined it had sufficient information to initiate consultation.

On February 11, 2011, Caltrans submitted updated information regarding the installation of sheet piles for bank stability. Caltrans had originally proposed to install sheet piles only at the upstream side of the bridge and for its cofferdams. However, Caltrans subsequently determined that the project will require the installation of additional sheet piles downstream of the bridge for temporary bank stability.

II. DESCRIPTION OF THE PROPOSED ACTION

Caltrans proposes to replace the U.S. Highway 101 Bridge over San Francisquito Creek on the border between San Mateo and Santa Clara Counties, at post mark (PM) SCL PM 101 52.5/SM 101 PM 0.0. The bridge consists of the U.S. Highway 101 bridge deck and the bridge decks for two frontage roads, East Bayshore Road and West Bayshore Road. These bridges were built over 50 years ago, have deteriorated, and need to be replaced. Much of the replacement work will be done by heavy construction equipment (excavators, dump trucks, etc.). The project is scheduled to last two to three years, and instream work will only occur between June 1 and October 15, unless a work window extension is granted by NMFS. Work outside of the live stream channel on the adjacent slopes, including bridge deck construction, vegetation clearing, and staging, will be conducted year round. The project is expected to start as early as 2011 and would be completed no later than 2014. There is one activity that is interrelated to this proposed action: the Route 101 Auxiliary Lanes-Embarcadero Road to Marsh Road Project (Auxiliary Lanes Project).

A. Description of Project Activities

The existing U.S. Highway 101 Bridge over San Francisquito Creek was originally built in the 1930's. In 1957, the freeway/bridge structure was widened and the East Bayshore and West Bayshore frontage roads were added. The East Bayshore and West Bayshore road bridges cross over the creek on the same pier walls (*i.e.*, bridge supports) as the U.S Highway 101 Bridge. The current U.S. Highway 101 Bridge is 232 feet long and 80 feet wide and consists of an abutment on each end with two pier walls that divide the channel beneath San Francisquito Creek into three flow "cells". The current East Bayshore Road Bridge is 80 feet long and 38 feet wide, while the West Bayshore Road Bridge is 80 feet long and approximately 35 feet wide. The creek channel beneath the bridges and downstream to San Francisco Bay has a long history of flooding due to the limited channel capacity. The portion of the bridge built in the 1930's is deteriorating and the remainder of the bridge is over 50 years old. Therefore Caltrans determined that the entire bridge should be replaced.

The bridge accommodates heavy traffic originating from the U.S. Highway 101 freeway on the west side of San Francisco Bay and the two frontage roads. The replacement of the bridge would coincide with the addition of auxiliary lanes, a component of a separate Route 101 Auxiliary Lanes-Embarcadero Road to Marsh Road Project (Auxiliary Lanes Project). The Auxiliary Lanes Project would involve widening U.S. Highway 101 between University Avenue and Embarcadero Road to accommodate the new auxiliary lanes between the on-ramps and off-ramps in both directions of the freeway. This project is proposed to be constructed concurrently with the proposed bridge replacements.

The proposed U.S. Highway 101 Bridge replacement project involves demolishing the existing U.S. Highway 101 Bridge over San Francisquito Creek, including the bridge deck and two existing pier walls, and replacing it with a new bridge that is 14 feet wider and 44 feet longer (94 feet wide and 276 feet long). The bridge will be constructed to satisfy the lane requirements of the 101 Auxiliary Lanes Project and to accommodate greater flow capacity in the creek channel. The added length to the bridge will require the addition of a new pier wall. The freeway profile on each side of the bridge will be modified to conform to the new bridge deck, and the soundwall location on the bridge (west side) will be shifted to conform to the wider roadway. The West Bayshore Road and East Bayshore Road bridge decks will also be demolished and replaced in order to provide increased flood flow conveyance. These two bridge decks will each be 44 feet wide and 126 feet long and will continue to utilize the same bridge supports as the U.S. Highway 101 Bridge.

The new U.S. Highway 101 Bridge and the creek channel beneath the bridge will be widened in order to coordinate with a separate project proposed by the San Francisquito Creek Joint Powers Authority (SFCJPA). The SFCJPA is a government agency represented by the cities of East Palo Alto, Palo Alto, and Menlo Park, as well as the Santa Clara Valley Water District (SCVWD) and the San Mateo County Flood Control District. They are proposing a major flood control project for the lower reaches of San Francisquito Creek. The new U.S. Highway 101 Bridge and the creek channel beneath the bridge will be widened to facilitate the proposed new channel widths and will allow for an increase in creek flow based on the 100-year flood projections. The SFCJPA flood control project is currently planned to begin within the next 5 years and will require further environmental review. As of March 2011, the SFCJPA was in the process of developing their environmental documents for this project.

1. Dewatering the Project Area

The action area is located in a reach of San Francisquito Creek that is influenced by tides and therefore, both a stream flow and tidal diversion will be necessary to dewater the project area. Waters will be diverted through the project area using cofferdams and a large corrugated pipe. During low tide, a cofferdam consisting of sheet piles will be installed at the downstream end of the work area to create a temporary barrier to tidal flow. During this time, the downstream portion of the diversion pipe will be installed and will remain sealed to prevent tidal waters from entering the project area. At the upstream

end, a similar cofferdam will be installed to create a check dam for outgoing stream flow. The upstream portion of the diversion pipe will be installed and will remain sealed to keep stream flows from entering the project work area. The cofferdams will be approximately six feet (ft) tall. Once the cofferdams are constructed, the remaining portions of the diversion pipe will be installed. After the diversion pipe is fully installed, it will be opened on both ends to allow tidal and stream flow exchange through the pipe. Caltrans anticipates using a 72-inch corrugated steel pipe, which will lie on the stream bed and would be staked into place using joint restrainer assemblies. Caltrans estimates that the cofferdams will take approximately one day each to install, while the installation of the diversion pipe will require approximately three days to install. The length of dewatered channel will be approximately 450-500 ft. The diversion will begin as early as June 1 and will extend to October 15 of each year unless a time extension is granted by NMFS. At the end of each dry season, the water diversion will be completely removed. If a pump is necessary to assist with dewatering of the action area, the pump(s) will be double-screened to prevent fish entrainment. The mesh on the screens will meet NMFS and California Department of Fish and Game (CDFG) guidelines for fish screening criteria (3/32 inches). Any water pumped from the creek prior to and/or during construction of the bridge will be stored in appropriate tanks pending water quality analysis. Caltrans will submit a stream water diversion plan for review no less than 30 days prior to beginning these activities.

2. Fish Collection and Relocation

Because the project will require water diversion, fish within the project area will be collected and relocated in order to minimize their risk of being harmed or killed. The fish collection and relocation activities will be conducted by a NMFS/CDFG-approved biologist. Methods used to capture and relocate fish in the project area may include dip net and seine. Due to the high conductivity of brackish waters, electrofishing will not be used. Caltrans will submit a fish relocation plan for review no less than 30 days prior to beginning these activities.

3. Bridge Demolition and Construction

The existing U.S. Highway 101 Bridge including the pier walls and the East Bayshore Road and West Bayshore Road decks will be demolished and removed using a mounted hydraulic jack hammer, an excavator, and dump trucks. Netting or suspended debris racks will be utilized to minimize the amount of debris falling into the creek channel and onto the water diversion pipe.

Once the channel is dewatered, timber pads will be laid down in the channel to support construction equipment. Approximately 200 piles (open pile class 200 alt. W) will be permanently installed. The piles will be approximately 80-90 feet long and 16 inches in diameter. The piles will be installed by pre-drilling through the sand layer of approximately 40 feet and then driven deeper into the mud layer using a pile driver. Approximately 6-8 piles per day will be installed. Pile driving is estimated to take

approximately 30 work days to complete and will occur approximately eight hours per day during the dry season. Falsework will be constructed and the pile cap, pier walls, and bridge deck will be poured using a concrete pump truck and cement mixer.

Sheet piles will be installed with a pile driver at five locations including each of the four corners of the new bridge. These will serve as temporary wing-walls and will provide stability to the exposed creek banks. The sections where sheet piles will be installed will range in length from 24 to 32 feet and will be between 15 and 17 feet tall. Some of the existing bridge foundation and sacked concrete retaining walls will be removed prior to sheet pile installation. The addition of a third pier wall will create a fourth flow cell beneath the bridge between the new pier and the bridge abutment. The fourth cell will need to remain sealed off until the channel upstream and downstream is widened to match the wider channel dimensions beneath the bridge. This will be done with sheet piles that will be installed to serve as temporary wing walls between the new pier and the creek bank. In order to maintain structural integrity (*i.e.*, equalize pressure from water against the new pier), temporary screened openings will be made in the new pier wall. The openings will be screened to keep fish and other organisms from accessing this new cell. A rubber gasket or other device will be used to waterproof all cell, abutment, and retaining wall connections that will be exposed to creek flow. The sheet piles will be left in place until the SFCJPA flood wall project is constructed. Once the SFCJPA flood protection project is completed, all of the sheet piles will be removed and the fourth flow cell will become fully accessible. All temporary materials in the channel, including the falsework, cofferdams, and the creek diversion pipe will be removed at the end of each dry season and the end of the project.

4. Proposed Best Management Practices and Conservation Measures

Caltrans will implement best management practices (BMPs) during project construction to avoid and/or minimize potential impacts to special-status species and their designated critical habitat. Soil stabilization measures, sediment control, waste management, and materials pollution control BMPs will be implemented to prevent sediment and other pollutants from entering the channel during project construction. All practicable erosion and sediment control BMPs will be implemented to minimize the potential for impacts to water quality in San Francisquito Creek.

In addition to the BMPs described above, Caltrans has proposed general conservation measures to protect special-status species, sensitive habitats and waters of the United States. These measures include worker environmental awareness training prior to start-of-work, fencing off sensitive habitats, and the use of natural erosion control methods (straw pellets, native grass seed mix, or mulch) on all disturbed areas. Caltrans (2010) also includes species-specific conservation measures for steelhead and green sturgeon, which include conducting preconstruction surveys for ESA-listed species by a NMFS pre-approved biologist.

B. Description of the Action Area

The action area includes “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR § 402.02). For this consultation the action area includes the channel banks and bottom from approximately 200 feet upstream of the existing U.S. Highway 101 Bridge to approximately 1,000 feet downstream of the new bridge. NMFS assumes suspended sediments (*i.e.*, turbidity) generated during the installation and removal of the water diversion facilities would settle or become diluted in the tidal channel at a distance of approximately 1,000 feet downstream. Caltrans has determined that the total project footprint is 2.34 acres (101,930 square feet), which includes upland areas, jurisdictional wetlands, and other waters of the U.S. The length of the dewatered channel will extend approximately 450-500 feet. The channel within the action area has a trapezoidal form and is located in a heavily urbanized area along the U.S. Highway 101 corridor. Some sections of the creek banks have been armored with concrete.

III. ANALYTICAL FRAMEWORK

A. Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which evaluates the range-wide conditions of the CCC steelhead DPS and the southern DPS green sturgeon, the factors responsible for that condition, and the species’ likelihood of both survival and recovery; (2) the Environmental Baseline, which evaluates the condition of these listed species in the action area, the factors responsible for that condition, and the relationship of the action area to the likelihood of both survival and recovery of these listed species; (3) the Effects of the Action, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on these species in the action area; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on these species.

The jeopardy determination is made by adding the effects of the proposed Federal action and any Cumulative Effects to the Environmental Baseline and then determining if the resulting changes in species status in the action area are likely to cause an appreciable reduction in the likelihood of both the survival and recovery of these listed species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on the range-wide likelihood of both survival and recovery of these listed species and the role of the action area in the survival and recovery of these listed species. The significance of the effects of the proposed Federal action is considered in this context, taken together with cumulative effects, for purposes of making the jeopardy determination. We use a hierarchical approach that focuses first on whether or not the effects on steelhead and green sturgeon

in the action area will impact their respective populations. If the populations will be impacted, we assess whether this impact is likely to affect the ability of the populations to support the survival and recovery of the DPS.

B. Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of destruction or adverse modification of critical habitat at 50 CFR 402.02¹. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

The adverse modification analysis in this biological opinion relies on four components: (1) the Status of Critical Habitat, which evaluates the range-wide condition of critical habitat for the CCC steelhead DPS and the southern DPS of green sturgeon in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended conservation value of the critical habitat overall; (2) the Environmental Baseline, which evaluates the condition of critical habitat in the action area, the factors responsible for that condition, and the conservation value of the critical habitat in the action area; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs in the action area and how that will influence the conservation value of affected critical habitat units; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the conservation value of affected critical habitat units.

For purposes of the adverse modification determination, we add the effects of the proposed Federal action on CCC steelhead and southern DPS green sturgeon critical habitats in the action area, and any Cumulative Effects, to the Environmental Baseline and then determine if the resulting changes to the conservation value of critical habitat in the action area are likely to cause an appreciable reduction in the conservation value of critical habitat range-wide. Similar to the hierarchical approach used above, if the proposed action will negatively affect PCEs of critical habitat in the action area we then assess whether the conservation value of the action area will be reduced. If the action area is likely to have its critical habitat value reduced, we then assess whether or not this reduction will impact the value of the DPS's critical habitat designation as a whole.

C. Use of Best Available Scientific and Commercial Information

To conduct the assessment, NMFS examined an extensive amount of information from a variety of sources. Detailed background information on the biology and status of the listed species and critical habitat has been published in a number of documents including peer reviewed scientific journals, primary reference materials, and governmental and non-governmental reports. Additional information regarding the effects of the project's

¹ This regulatory definition has been invalidated by Federal Courts.

actions on the listed species in question, their anticipated response to these actions, and the environmental consequences of the actions as a whole was formulated from the aforementioned resources, the biological assessment for this project, and project meeting notes if applicable. For information that has been taken directly from published, citable documents, those citations have been referenced in the text and listed at the end of this document.

IV. STATUS OF THE SPECIES/CRITICAL HABITAT

This biological opinion analyzes the effects of the proposed action on the steelhead and green sturgeon DPS's listed below:

- CCC steelhead DPS, listed as threatened under the ESA (71 FR 834), January 5, 2006
- Southern DPS of North American green sturgeon, listed as threatened under the ESA (71 FR 17757), April 7, 2006

The action area is within the designated critical habitat listed below:

- CCC steelhead critical habitat (70 FR 52488), September 2, 2005.
- Southern DPS of North American green sturgeon critical habitat (74 FR 52300), October 9, 2009.

A. Species Description, Life History, and Status

In this opinion, NMFS assesses four population viability parameters to help us understand the status of CCC steelhead and southern DPS green sturgeon and their populations' ability to survive and recover. These population viability parameters are: abundance, population growth rate, spatial structure, and diversity (McElhany *et al.* 2000). While there is insufficient information to evaluate these population viability parameters in a thorough quantitative sense, NMFS has used existing information to determine the general condition of each population and factors responsible for the current status of each DPS or ESU.

We use these population viability parameters as surrogates for numbers, reproduction, and distribution, the criteria found within the regulatory definition of jeopardy (50 CFR 402.20). For example, the first three parameters are used as surrogates for numbers, reproduction, and distribution. We relate the fourth parameter, diversity, to all three regulatory criteria. Numbers, reproduction, and distribution are all affected when genetic or life history variability is lost or constrained resulting in reduced population resilience to environmental variation at local or landscape-level scales.

1. Steelhead

a. General Life History

Steelhead are anadromous forms of *O. mykiss*, spending some time in both freshwater and saltwater. Steelhead young usually rear in freshwater for one to three years before migrating to the ocean as smolts, but rearing periods of up to seven years have been reported. Migration to the ocean usually occurs in the spring. Steelhead may remain in the ocean for one to five years (two to three years is most common) before returning to their natal streams to spawn (Busby *et al.* 1996). The distribution of steelhead in the ocean is not well known. Coded wire tag recoveries indicate that most steelhead tend to migrate north and south along the continental shelf (Barnhart 1986).

Steelhead can be divided into two reproductive ecotypes, based upon their state of sexual maturity at the time of river entry and the duration of their spawning migration: stream maturing and ocean maturing. Stream maturing steelhead enter fresh water in a sexually immature condition and require several months to mature and spawn, whereas ocean maturing steelhead enter fresh water with well-developed gonads and spawn shortly after river entry. These two reproductive ecotypes are more commonly referred to by their season of freshwater entry (*i.e.*, summer [stream maturing] and winter [ocean maturing] steelhead). The timing of upstream migration of winter steelhead is correlated with higher flow events, such as freshets or sandbar breaches. Adult summer steelhead migrate upstream from March through September. In contrast to other species of *Oncorhynchus*, steelhead may spawn more than one season before dying (iteroparity); although one-time spawners represent the majority.

Because rearing juvenile steelhead reside in freshwater all year, adequate flow and temperature are important to the population at all times (CDFG 1997). Outmigration appears to be more closely associated with size than age. In Waddell Creek, Shapovalov and Taft (1954) found steelhead juveniles migrating downstream at all times of the year, with the largest numbers of young-of-year (YOY) and age 1+ steelhead moving downstream during spring and summer.

Survival to emergence of steelhead embryos is inversely related to the proportion of fine sediment in the spawning gravels. However, steelhead are slightly more tolerant than other salmonids, with significant reductions in survival when fine materials of less than 0.25 inches in diameter comprise 20 to 25 percent of the substrate. Fry typically emerge from the gravel two to three weeks after hatching (Barnhart 1986).

Upon emerging from the gravel, fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Older fry establish territories which they defend. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge

and as a means of avoiding predation (Meehan and Bjornn 1991). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. In winter, juvenile steelhead become less active and hide in available cover, including gravel or woody debris.

Water temperature can influence the metabolic rate, distribution, abundance, and swimming ability of rearing juvenile steelhead (Barnhart 1986, Bjornn and Reiser 1991, Myrick and Cech 2005). Optimal temperatures for steelhead growth range between 10 and 20 degrees (°) Celsius (C) (Hokanson *et al.* 1977, Wurtsbaugh and Davis 1977, Myrick and Cech 2005). Fluctuating diurnal water temperatures are also important for the survival and growth of salmonids (Busby *et al.* 1996).

Suspended sediment concentrations, or turbidity, also can influence the distribution and growth of steelhead (Bell 1973, Sigler *et al.* 1984, Newcombe and Jensen 1996). Bell (1973) found suspended sediment loads of less than 25 milligrams per liter (mg/L) were typically suitable for rearing juvenile steelhead.

b. Status of the CCC Steelhead DPS and Critical Habitat

Historically, approximately 48 populations of steelhead existed in the CCC steelhead DPS (Bjorkstedt *et al.* 2005). Many of these populations (about 36) were independent, or potentially independent, meaning they had a high likelihood of surviving for 100 years absent anthropogenic impacts (Spence *et al.* 2008). The remaining populations were dependent upon immigration from nearby CCC steelhead DPS populations to ensure their viability (McElhaney *et al.* 2000, Bjorkstedt *et al.* 2005).

While historical and present data on abundance are limited, CCC steelhead numbers are substantially reduced from historical levels. A total of 94,000 adult steelhead were estimated to spawn in the rivers of this DPS in the mid-1960's, including 50,000 fish in the Russian River – the largest population within the DPS (Busby *et al.* 1996). Near the end of the 20th Century, McEwan (2001) estimated the wild run population in the Russian River Watershed was between 1,700-7,000 fish. Abundance estimates for smaller coastal streams in the DPS indicate low but stable levels with recent estimates for several streams (Lagunitas, Waddell, Scott, San Vicente, Soquel, and Aptos creeks) of individual run sizes of 500 fish or less (62 FR 43937). For more detailed information on trends in CCC steelhead abundance, see: Busby *et al.* 1996, NMFS 1997, and NMFS 2005.

Some loss of genetic diversity has been documented and attributed to previous among-basin transfers of stock and local hatchery production in interior populations in the Russian River (Bjorkstedt *et al.* 2005). Reduced population sizes and fragmentation of habitat in San Francisco streams has likely also led to loss of genetic diversity in these populations.

CCC steelhead have experienced a serious decline in abundance and long-term population trends suggest a negative growth rate. This indicates the DPS may not be viable in the long term. DPS populations that historically provided enough steelhead immigrants to support dependent populations may no longer be able to do so, placing dependent populations at increased risk of extirpation. However, because CCC steelhead have maintained a wide distribution throughout the DPS, roughly approximating the known historical distribution, CCC steelhead likely possess a resilience that is likely to slow their decline relative to other salmonid DPSs or ESUs in worse condition. The most recent status review concludes steelhead in the CCC steelhead DPS remain "likely to become endangered in the foreseeable future" (Good *et al.* 2005), a conclusion that was consistent with a previous assessment (Busby *et al.* 1996) and supported by the most recent NMFS Technical Recovery Team work (Spence *et al.* 2008). On January 5, 2006, NMFS issued a final determination that the CCC steelhead DPS is a threatened species, as previously listed (71 FR 834). Data from the 2008/09 and 2009/2010 adult CCC steelhead returns indicate a decline in returning adults across their range compared to other recent returns (*e.g.*, 2006/2007, 2007/2008) (Jeffrey Jahn, NMFS, personal communication, November 2010).

The condition of CCC steelhead critical habitat, specifically its ability to provide for their conservation, has been degraded from conditions known to support viable salmonid populations. NMFS has determined present depressed population conditions are, in part, the result of the following human-induced factors affecting critical habitat²: logging, agricultural and mining activities, urbanization, stream channelization, dams, wetland loss, and water withdrawals, including unscreened diversions for irrigation. Impacts of concern include alteration of stream bank and channel morphology, alteration of water temperatures, loss of spawning and rearing habitat, fragmentation of habitat, loss of downstream recruitment of spawning gravels and large woody debris, degradation of water quality, removal of riparian vegetation resulting in increased stream bank erosion, increases in sedimentation in streams from upland areas, loss of shade (higher water temperatures) and loss of nutrient inputs (Busby *et al.* 1996, 70 FR 52488). Depletion and storage of natural river and stream flows have drastically altered natural hydrologic cycles in many of the streams in the DPS. Alteration of flows results in migration delays, loss of suitable habitat due to dewatering and blockage; stranding of fish from rapid flow fluctuations; entrainment of juveniles into poorly screened or unscreened diversions, and increased water temperatures harmful to salmonids. Overall, current condition of CCC steelhead critical habitat is degraded, and may not provide the conservation value necessary for the recovery of the species.

² Other factors, such as over-fishing and artificial propagation have also contributed to the current population status of these species. All these human induced factors have exacerbated the adverse effects of natural environmental variability including drought and poor ocean conditions.

2. Green Sturgeon

a. *General Life History*

Adult green sturgeon are believed to spawn every 3 to 5 years and generally exhibit fidelity to their spawning site. Green sturgeon reach sexual maturity only after several years of growth; first spawning generally occurs at 15 years of age for males, and 17 years for females. The southern DPS green sturgeon spawn in the deep turbulent sections of the upper reaches of the Sacramento River. CDFG (2002) report southern DPS green sturgeon spawning occurs above Hamilton City and possibly as far upstream as Keswick Dam. Adults typically begin their upstream spawning migrations into the San Francisco Bay by late February to early March, reach Knights Landing by April, and spawn between March and July (Heublein *et al.* 2009). Peak spawning is believed to occur between mid-April to mid-June. Green sturgeon in the Sacramento River can display two outmigration strategies. Monitoring data reveals that post-spawned green sturgeon can leave the Sacramento River prior to September 1, or remain in the river for several additional months (Heublein *et al.* 2009).

Adult female green sturgeon produce between 60,000 and 140,000 eggs, depending on body size, with a mean egg diameter of 4.3 mm (Moyle *et al.* 1992, Van Eenennaam *et al.* 2001). Eggs are likely broadcast spawned over large cobble substrate where they settle into the spaces between the cobbles, but substrate can range from clean sand to bedrock (USFWS 2002). Like salmonids, green sturgeon require cool water temperatures for egg and larval development, with optimal temperatures ranging from 11 to 18°C.

Juvenile green sturgeon spend from one to three years in freshwater before they enter the ocean (Nakamoto *et al.* 1995, Adams *et al.* 2002). Based on Klamath River age distribution work by Nakamoto *et al.* (1995), the majority of fish entering the ocean are between 200 and 600 mm in length which suggests they are 2 to 3 years of age. The low abundance of juveniles smaller than 200 mm in the Delta indicates juvenile southern DPS green sturgeon likely hold in the mainstem Sacramento River, as suggested by Kyndard *et al.* (2005). Laboratory studies, conducted by Allen and Cech, Jr. (2007), also indicated juveniles spend approximately the first six months in fresh to brackish water and then transition into salt water at about 1.5 years of age.

Both adult and juvenile green sturgeon are benthic feeders (Moyle 2002). Adult green sturgeon are believed to feed primarily upon benthic invertebrates such as clams, mysid and grass shrimp, and amphipods (Radtke 1966, Adams *et al.* 2002), and to some extent on fish. Adults captured in the Sacramento-San Joaquin Delta are known to feed on invertebrates such as shrimp, mollusks, amphipods, and additionally upon small fish (Adams *et al.* 2002). Juvenile green sturgeon in the San Francisco Bay have been shown

to feed on opossum shrimp (*Neomysis mercedie*) and amphipods (*Corophium spp.*) (Moyle 2002).

Southern DPS green sturgeon are also known to inhabit nearshore marine waters, and are commonly observed in bays and estuaries. Kelly *et al.* (2007) studied the movement of six green sturgeon (one adult and five sub-adults) in the San Francisco Estuary (tagged in San Pablo Bay) and discovered while adults and sub-adults occupied shallow water depths, there were distinct directional movements. In contrast, when the fish exhibited non-directional movements, they remained close to the bottom. The movements were not found to be related to salinity, current, or temperature and the authors surmised they are related to food resource availability.

b. Status of Southern DPS Green Sturgeon and Critical Habitat

The southern DPS green sturgeon is considered vulnerable to catastrophic events due in part to a small estimated spawning population and drastic reductions in historically accessible spawning habitat. The precise population size of southern DPS green sturgeon is unknown, but it is likely to be much smaller than the northern DPS. Population abundance information concerning the southern DPS green sturgeon is described in the NMFS status reviews (Adams *et al.* 2002, NMFS 2005). Abundance information is limited, coming mainly from three sources: 1) incidental captures in the CDFG white sturgeon monitoring program, 2) fish monitoring efforts associated with two diversion facilities on the upper Sacramento River, and 3) fish salvage operations at the water export facilities on the Sacramento-San Joaquin Delta. These data are insufficient in a variety of ways (short time series, non-target species, etc.) and do not support more than a qualitative evaluation of changes in green sturgeon abundance.

Some population abundance information comes from incidental captures of southern DPS green sturgeon from the white sturgeon monitoring program by the CDFG sturgeon tagging program (CDFG 2002). CDFG (2002) utilizes a multiple-census or Peterson mark-recapture method to estimate the legal population of white sturgeon captures in trammel nets. By comparing ratios of white sturgeon to green sturgeon captures, CDFG provides estimates of adult and sub-adult southern DPS green sturgeon abundance. Estimated abundance between 1954 and 2001 ranged from 175 fish to more than 8,000 per year and averaged 1,509 fish per year. Unfortunately, there are many biases and errors associated with these data, and CDFG does not consider these estimates reliable. Fish monitoring efforts at the Red Bluff Diversion Dam (RBDD) and Glenn-Colusa Irrigation District (GCID) on the upper Sacramento River have captured between 0 and 2,068 juvenile southern DPS green sturgeon per year (Adams *et al.* 2002).

Green sturgeon salvage numbers are recorded at California State (1968-present) and Federal (1980-present) water export facilities on the Sacramento-San Joaquin Delta. The average number of southern DPS green sturgeon taken per year at the state facility prior to 1986 was 732; from 1986 to 2001, the average per year was 47 (70 FR 17386). For the Federal facility, the average number prior to 1986 was 889; from 1986 to 2001 the

average was 32 (70 FR 17386). Additional analysis of southern DPS green sturgeon indicate a downward trend in the number of green sturgeon per acre-foot of exported water at state and Federal facilities since 1974 and 1983 respectively. Direct capture in salvage operations is a small component of the overall effect of water export facilities on southern DPS green sturgeon; entrained juvenile green sturgeon are exposed to potential high levels of predation by exotic predators, disruption in migratory behavior, and poor habitat quality. Delta water exports have increased substantially over the last ten years and it is likely that this has contributed to negative trends in the abundance of migratory fish that utilize the delta, including the southern DPS green sturgeon. Catches of sub-adult and adult southern DPS green sturgeon by the Interagency Ecological Program between 1996 and 2004 ranged from 1 to 212 green sturgeon per year (212 occurred in 2001), however, the portion of these captures consisting of southern DPS green sturgeon is unknown as the fish were primarily captured in San Pablo Bay which is known to consist of a mixture of northern and southern DPS green sturgeon.

Recent spawning population estimates using sibling based genetics by Israel (2006) indicates a maximum spawning population of 32 spawners in 2002, 64 in 2003, 44 in 2004, 92 in 2005, and 124 in 2006 above RBDD (with an average of 71). Based on the length and estimated age of post-larvae captured at RBDD (approximately two weeks of age) and GCID (downstream; approximately three weeks of age), it appears the majority of southern DPS green sturgeon are spawning above RBDD.³

The most recent status review update concluded the southern DPS green sturgeon is likely to become endangered in the foreseeable future due to the substantial loss of spawning habitat, the concentration of a single spawning population in one section of the Sacramento River, and multiple other risks to the species such as stream flow management, degraded water quality, and introduced species (NMFS 2005). Based on this information, the southern DPS green sturgeon was listed as threatened on April 7, 2006 (71 FR 17757).

Critical habitat was designated for the southern DPS of green sturgeon on October 9, 2009 (74 FR 52300) and includes coastal United States marine waters within 60 fathoms depth from, and including, Monterey Bay, California, north to Cape Flattery, Washington, including the Strait of Juan de Fuca, Washington, to its United States boundary. The project's action area (*i.e.*, tidal portion of San Francisquito Creek) is located within designated critical habitat for southern DPS green sturgeon. Primary constituent elements of designated critical habitat in the action area include adequate food resources and foraging habitat; and the estuarine water column, which includes suitable depth, sediment, and water quality.

³ There are many assumptions with this interpretation (*i.e.*, equal sampling efficiency and distribution of post-larvae across channels) and this information should be considered cautiously.

The current condition of critical habitat for the southern DPS of green sturgeon is degraded over its historical conditions. It does not provide the full extent of conservation values necessary for the recovery of the species, particularly in the upstream riverine habitat of the Sacramento River. In particular, passage and water flow PCEs have been impacted by human actions, substantially altering the historical river characteristics in which the southern DPS of green sturgeon evolved. In addition, the alterations to the Sacramento-San Joaquin River Delta may have a particularly strong impact on the survival and recruitment of juvenile green sturgeon due to their protracted rearing time in the delta and estuary. Loss of individuals during this phase of the life history of green sturgeon represents losses to multiple year classes rearing in the Delta, which can ultimately impact the potential population structure for decades to come.

B. Factors Responsible for Steelhead and Sturgeon Stock Declines

NMFS cites many reasons (primarily anthropogenic) for the decline of steelhead (Busby *et al.* 1996) and southern DPS of green sturgeon (Adams *et al.* 2002, NMFS 2005). The foremost reason for the decline in these anadromous populations is the degradation and/or destruction of freshwater and estuarine habitat. Additional factors contributing to the decline of these populations include: commercial and recreational harvest, artificial propagation, natural stochastic events, marine mammal predation, and reduced marine-derived nutrient transport.

The following section details the general factors affecting the CCC steelhead and southern green sturgeon in California. The extent to which there are species specific differences in these factors is not clear; however, the freshwater ecosystem characteristics necessary for the maintenance of self-sustaining populations of steelhead and green sturgeon are similar. Therefore, most of these factors below affect both steelhead and green sturgeon.

1. Habitat Degradation and Destruction

The best scientific information presently available demonstrates a multitude of factors, past and present, have contributed to the decline of west coast salmonids by reducing and degrading habitat by adversely affecting essential habitat features. Most of this habitat loss and degradation has resulted from anthropogenic watershed disturbances caused by urban development, agriculture, poor water quality, water resource development, dams, gravel mining, forestry (Busby *et al.* 1996, Adams *et al.* 2002, Good *et al.* 2005), and lagoon management (Smith 1990, Bond 2006).

2. Commercial and Recreational Harvest

Ocean salmon fisheries off California are managed to meet the conservation objectives for certain stocks of salmon listed in the Pacific Coast Salmon Fishery Management Plan, including any stock that is listed as threatened or endangered under the ESA. Early records did not contain quantitative data by species until the early 1950's. In addition,

the confounding effects of habitat deterioration, drought, and poor ocean conditions on salmonids make it difficult to assess the degree to which recreational and commercial harvest have contributed to the overall decline of salmonids and green sturgeon in West Coast rivers.

3. Artificial Propagation

Releasing large numbers of hatchery fish can pose a threat to wild salmon and steelhead stocks through genetic impacts, competition for food and other resources, predation of hatchery fish on wild fish, and increased fishing pressure on wild stocks as a result of hatchery production (Waples 1991).

4. Natural Stochastic Events

Natural events such as droughts, landslides, floods, and other catastrophes have adversely affected salmon and steelhead populations throughout their evolutionary history. The effects of these events are exacerbated by anthropogenic changes to watersheds such as logging, roads, and water diversions. These anthropogenic changes have limited the ability of salmon and steelhead to rebound from natural stochastic events and depressed populations to critically low levels.

5. Marine Mammal Predation

The population of some marine mammal species, such as the Harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*), have increased along the Pacific Coast (NMFS 1999). Although predation by these mammals is not believed to be a major factor in overall population decline, there may be substantial localized impacts on salmonids particularly during the migration season (Hanson 1993).

6. Reduced Marine-Derived Nutrient Transport

Marine-derived nutrients from adult salmon carcasses have been shown to be vital for the growth of juvenile salmonids and the surrounding terrestrial and riverine ecosystems (Bilby *et al.* 1996, Bilby *et al.* 1998, Gresh *et al.* 2000). Declining salmon and steelhead populations have resulted in decreased marine-derived nutrient transport to many watersheds. This has contributed to the further decline of ESA-listed salmonid populations (Gresh *et al.* 2000).

7. Ocean Conditions

Recent evidence suggests poor ocean conditions played a significant role in the low number of returning adult fall run Chinook salmon to the Sacramento River in 2007 and 2008 (Lindley *et al.* 2009). The decline in ocean conditions likely affected ocean survival of all west coast salmonid populations (Good *et al.* 2005, Spence *et al.* 2008).

C. Global Climate Change

The acceptance of global climate change as a scientifically valid and anthropogenically driven phenomenon has been well established by the United Nations Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change, and others (Davies *et al.* 2001, Oreskes 2004, UNFCCC 2006). The most relevant trend in climate change is the warming of the atmosphere from increased greenhouse gas emissions. This warming is inseparably linked to the oceans, the biosphere, and the world's water cycle. Changes in the distribution and abundance of a wide array of biota confirm a warming trend is in progress, and that it has great potential to affect species' survival (Davies *et al.* 2001). In general, as the magnitude of climate fluctuations increases, the population extinction rate also increases (Good *et al.* 2005). Global warming is likely to manifest itself differently in different regions.

Modeling of climate change impacts in California suggests average summer air temperatures are expected to increase (Lindley *et al.* 2007). Heat waves are expected to occur more often, and heat wave temperatures are likely to be higher (Hayhoe *et al.* 2004). Total precipitation in California may decline; critically dry years may increase (Lindley *et al.* 2007, Schneider 2007). The Sierra Nevada snow pack is likely to decrease by as much as 70 to 90 percent by the end of this century under the highest emission scenarios modeled (Luers *et al.* 2006). Wildfires are expected to increase in frequency and magnitude, by as much as 55 percent under the medium emissions scenarios modeled (Luers *et al.* 2006). Vegetative cover may also change, with decreases in evergreen conifer forest and increases in grasslands and mixed evergreen forests. The likely change in amount of rainfall in Northern and Central Coastal streams under various warming scenarios is less certain, although as noted above, total rainfall across the state is expected to decline. For the California North Coast, some models show large increases (75 to 200 percent) while other models show decreases of 15 to 30 percent (Hayhoe *et al.* 2004). Many of these changes are likely to further degrade salmonid habitat by, for example, reducing stream flows during the summer and raising summer water temperatures. Estuaries may also experience changes detrimental to green sturgeon. Estuarine productivity is likely to change based on changes in freshwater flows, nutrient cycling, and sediment amounts (Scavia *et al.* 2002). The projections described above are for the mid to late 21st Century. In shorter time frames natural climate conditions are more likely to predominate (Cox and Stephenson 2007, Smith *et al.* 2007).

V. ENVIRONMENTAL BASELINE

The environmental baseline is the current status of species and critical habitat in the action area based on analysis of the effects of past and ongoing human and natural factors. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone

formal or early section 7 consultation, and the impacts of State or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The proposed project is located where U.S. Highway 101 crosses San Francisquito Creek at the border of southern San Mateo and northern Santa Clara counties. This reach of San Francisquito Creek is located in a heavily urbanized, low gradient area, historically occupied by extensive tidal marshes at the edge of San Francisco Bay. The project location is approximately one mile upstream of the current mouth of the creek at San Francisco Bay and does experience daily tidal fluctuations.

San Francisquito Creek Watershed drains approximately 47.5-square-miles on the eastern side of the Santa Cruz Mountains. Major tributaries include Bear Creek, Corte Madera Creek, and Los Trancos Creek, which converge to form San Francisquito Creek. The project area has a Mediterranean climate, typical of the California's central coast, with cool, wet winters and a long, mild dry season. Rainfall in the winter averages approximately 35 inches per year, falling mainly between the months of October and March. Portions of the upper San Francisquito Creek watershed are perennial and support spawning and rearing habitat for CCC steelhead. Sections of the mainstem of San Francisquito Creek dry by late spring or early summer in most years (Launer and Spain 1998, Metzger 2002, Jones and Stokes 2006).

A. Status of Critical Habitat within the Action Area

The lower reaches of San Francisquito Creek are heavily channelized and some areas of the stream banks are armored with concrete to prevent erosion (Figures 1 and 2). In the action area, San Francisquito Creek is tidally influenced. The channel bottom is fairly uniform throughout this section and is only completely flooded during high tides. Within the action area, bank vegetation is limited and is dominated by non-native, ruderal species including ice plant, poison hemlock, and various species of annual grasses. Channel substrate is predominantly sand upstream of the bridge and silt and clay



Figure 1. San Francisquito Creek immediately downstream of the U.S. Highway 101 Bridge, looking downstream on April 7, 2008 (Photo: Caltrans 2010)



Figure 2. San Francisquito Creek upstream of the U.S. Highway 101 Bridge looking downstream on June 8, 2010 (Photo: Caltrans 2010)

downstream, and therefore this reach does not support spawning habitat for either CCC steelhead or southern DPS green sturgeon. Freshwater flow through the action area during the dry season is either non-existent or consists largely of urban runoff.

For CCC steelhead, this reach of San Francisquito Creek only serves as migratory habitat for adults during winter and spring, and smolts during the smolt out-migration period in spring. NMFS believes that the PCEs for migration within the action area are good due to the lack of migration impediments (Caltrans 2010); however the overall PCEs for migration in the watershed are degraded due to multiple barriers upstream in the watershed (Smith and Harden 2001, Cleugh and McKnight 2002, Spence *et al.* 2008). Overall, the PCEs for steelhead rearing throughout the mainstem of San Francisquito Creek are degraded due to channelization, limited pool development and overwintering habitat, and impacted water quality conditions (Jones and Stokes 2006). Meanwhile, the PCEs for spawning in the watershed have also been degraded due to sedimentation (Jones and Stokes 2006).

For southern DPS green sturgeon, the action area could potentially provide suitable rearing habitat in the tidal portions of the channel. NMFS believes the overall PCE for rearing of green sturgeon are degraded due to the poor overall condition of the habitat, including a lack of emergent marsh, limited depth and cover, and reduced channel complexity. Adult southern DPS green sturgeon are only known to spawn in deep, turbulent pools in the upper Sacramento River below Keswick Dam and therefore spawning would not occur in the San Francisquito Creek watershed.

B. Status of Listed Species in the Action Area

1. CCC Steelhead:

The San Francisquito Creek steelhead population has been classified as potentially independent (Bjorkstedt *et al.* 2005, Spence *et al.* 2008). Juvenile and adult abundance data for this watershed are very limited. Overall, the watershed's population status, trends, and viability were found to be insufficient (Spence *et al.* 2008).

Based on more recent observations, adult steelhead continue to use San Francisquito Creek and its tributaries (Launer and Spain 1998, Leidy *et al.* 2005). Most steelhead presence data are based on observations from local residents/biologists and pertain primarily to the upper watershed. Launer and Spain (1998) conducted observations of fish and amphibian communities in San Francisquito Creek through the Stanford University property during the summer of 1997. Based on their observations, they estimated a few thousand juvenile steelhead inhabited that segment of the creek, which represents a small fraction of the total available rearing habitat available to steelhead in the watershed. In the summer of 2004, juvenile steelhead were captured and relocated at two sites on the upper mainstem of San Francisquito Creek. Juvenile steelhead densities

at the two sites were approximately 17 and 12 fish per 100 feet respectively (Alley and Associates 2004).

Steelhead use of the action area would be primarily as migratory habitat for adults and smolts migrating in and out of the watershed. As noted earlier, reaches upstream of the U.S. Highway 101 Bridges go dry in most years and therefore summer rearing habitat is not available at this location (Launer and Spain 1998, Metzger 2002, Leidy et al. 2005). In the action area, NMFS expects juvenile and smolt steelhead presence during the summers will be limited to very few individuals, if any, due to the lack of connection with upstream rearing areas in most years, the timing of project implementation (*i.e.*, at the end of the smolt out-migration season), and the poor quality of rearing habitat described above.

2. Southern DPS Green Sturgeon:

There are no known records of green sturgeon utilizing San Francisquito Creek or its watershed for spawning or rearing (David Woodbury, NMFS, personal communication, December 21, 2010). Juvenile green sturgeon have occasionally been captured by CDFG during trawl surveys in southern San Francisco Bay (David Woodbury, NMFS, personal communication, December 21, 2010). While no surveys for green sturgeon have been conducted in the action area, tidal sloughs are used as foraging habitat by green sturgeon, and green sturgeon have been observed nearby in southern San Francisco Bay. Therefore, NMFS assumes they are present in the action area when tidal conditions permit. Based on the poor condition of habitat in the action area for green sturgeon (*i.e.*, shallow waters, poor cover, and limited foraging habitat) NMFS expects very few green sturgeon juveniles will be present.

C. Factors Affecting Species Environment within San Francisquito Creek and the Action Area

Jones and Stokes (2006) conducted a limiting factors analysis for steelhead in the San Francisquito Creek. Based on their conclusion, multiple factors are impacting the survival and abundance of steelhead in San Francisquito Creek. They identified poor overwintering habitat (*i.e.*, a lack of deep, complex pools) as the primary limiting factor for juvenile survival. Although the availability of summer rearing habitat was not found to be a limiting factor, they noted that summer rearing habitat was degraded due to a lack of deep pools, low abundance of large woody debris, limited coarse substrate accumulations caused by channelization, urban development, and stream flow regulation. Steelhead outmigration success is limited by seasonal drying which may be further impacted by fish passage impediments in San Francisquito Creek. In dry to average years, low spring outmigration flows severely limits passage for out-migrating smolts (Dr. Jerry Smith, SJSU, personal communication, December 6, 2010). Multiple dams in the upper watershed have blocked approximately 33 percent of the historic spawning habitat in the San Francisquito Creek watershed (Spence *et al.* 2008).

Within the action area, a lack of persistent summer stream flow, suitable cover, and poor substrate conditions likely precludes juvenile steelhead from utilizing this reach successfully for summer rearing. Use of the action area by juvenile green sturgeon during summer would be limited to periods of high tide when the channel is fully inundated. Even during high tide, foraging habitat is limited to the channel bottom and cover from predators is scarce in this heavily channelized reach.

D. Previous Section 7 Consultations and Section 10 permits in the Action Area

NMFS has conducted one previous section 7 consultation within the action area. This project was for the construction of a storm water pumping station located immediately downstream of the U.S. Highway 101 Bridge (shown in Figure 3) and was found to not likely adversely affect CCC steelhead or designated critical habitat.

Section 10(a)(1)(A) research and enhancement permits and research under exemptions granted in section 4(d) of the ESA could potentially occur in the San Francisquito Creek Watershed. Currently, four active section 10(a)(1)(A) research and enhancement permits have been issued that authorize research on CCC steelhead in the San Francisquito Creek Watershed. As of 2010, no take of CCC steelhead has occurred in the San Francisquito Creek Watershed related to these permits.

VI. EFFECTS OF THE PROPOSED ACTION

The purpose of this section is to identify the direct and indirect effects of the proposed action, and any interrelated or interdependent activities, on threatened CCC steelhead and southern DPS green sturgeon and their designated critical habitat. Data to quantitatively determine the precise effects of the proposed action on these species and their critical habitat are limited or not available; the assessment of effects therefore focuses mostly on qualitative identification. This approach was based on knowledge and review of the ecological literature concerning the effects of loss and alteration of habitat elements important to salmonids and green sturgeon, including the primary constituent elements of critical habitat. This information was used to gauge the likely effects of the proposed project via an exposure and response framework that focuses on what stressors (physical, chemical, or biotic), directly or indirectly caused by the proposed action, that steelhead and green sturgeon and their critical habitat are likely to be exposed to. Next, we evaluate the likely response of steelhead and green sturgeon and their critical habitat to these stressors in terms of changes to survival, growth and reproduction, and changes to the ability of PCEs to support the value of critical habitat.

A. Fish Relocation Activities

Based on the poor habitat quality and lack of perennial stream flow in the lower creek channel, NMFS assumes the presence of both juvenile steelhead and green sturgeon will be rare in the action area during the proposed construction period (June 1-October 15).

However, due to inter-annual variation in stream flow patterns and smolt out-migration timing/duration, a small number of juvenile and/or smolt steelhead (less than 20 individuals each year) may be encountered during the initial dewatering in early June. Similarly, juvenile green sturgeon may be encountered while foraging in the tidal portions of the creek. NMFS anticipates only a small number of juvenile green sturgeon (less than 20 individuals each year), if any, to be present in the project area during the proposed action.

Once the diversion facilities are in place, steelhead and green sturgeon will be able to move through the work area in the diversion pipe only. Before and during dewatering of the work area, the applicant will capture and relocate fish within the work area in order to avoid direct mortality and minimize the possible stranding of fish. Steelhead and green sturgeon in the project area will be captured by seine and or dip net, and then transported and released to a suitable location downstream of the dewatered channel. Electrofishing will not be used to capture fish due to potentially high salinity/conductivity levels in the tidal channel.

Fish capture and relocation activities pose a risk of injury or mortality to fish species. Fish collecting gear, whether passive (Hubert 1996) or active (Hayes *et al.* 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following both the CDFG and NMFS guidelines, direct effects to and mortality of steelhead and green sturgeon during capture will be minimized. Data from years of similar salmonid relocation activities indicate that average mortality rate is below one percent (Jeffrey Jahn, NMFS, personal communication, February 2011). Based on this information, NMFS will use 2 percent as the maximum amount of mortality likely from fish relocation for the project, or no more than one fish of both species.

Ideally sites selected for relocating fish should have ample habitat. However, because of the degraded habitat conditions in San Francisquito Creek, relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may also face increased competition for available resources such as food and habitat. Some of the fish released at the relocation sites may choose not to remain in these areas and may move either upstream or downstream to areas that have more habitat and a lower density of fish. Because relocated fish will have the opportunity to quickly relocate into adjacent areas, thereby minimizing competition and crowding stress, NMFS does not believe relocation activities will reduce the fitness of individual fish.

B. Dewatering

The project will require channel dewatered during two to three consecutive dry seasons. A vast majority, if not all, of the water present during the summer months would be tidal waters. Waters will be diverted through the construction area in a large metal pipe. The

total length of the dewatered channel will be approximately 450-500 feet. Once the diversion pipe and cofferdams are installed and operating, water and fish will be allowed to move through the pipe during construction.

Stream flow diversions could harm individual rearing steelhead or green sturgeon by concentrating them in residual wetted areas before they are relocated (Cushman 1985). Juvenile steelhead and green sturgeon that avoid capture in the project site prior to dewatering will likely die during dewatering activities due to desiccation or thermal stress. Due to the rarity of steelhead and green sturgeon presence at the site, the lack of hiding cover and the capture and relocation efforts, NMFS expects that no steelhead or green sturgeon will be stranded during the dewatering process. Also, during the dewatering process, the biologist on site will make every effort to collect and relocate any fish that avoided capture prior to the beginning of the dewatering process.

Another manner by which juvenile steelhead and green sturgeon may be harmed or killed during dewatering activities is to be entrained into pumps or discharge lines if these methods are used. To eliminate this risk, the applicant will screen all pumps according to NMFS criteria, to ensure juvenile steelhead and green sturgeon will not be harmed by the pumps during dewatering events.

Juvenile steelhead and green sturgeon rearing downstream of the action area may be inadvertently affected by the loss of benthic aquatic macroinvertebrate production within the dewatered area (Cushman 1985). However, effects to aquatic macroinvertebrates resulting from dewatering will be temporary because construction activities will be relatively short-lived, drift from upstream will continue through the pipe, and rapid recolonization (about two to three months) of disturbed areas by macroinvertebrates is expected following construction (Cushman 1985, Thomas 1985, Harvey 1986). Also, once the proposed project is completed, there will be an increase in the amount of exposed channel bottom that will be colonized by additional invertebrates, thereby increasing overall invertebrate production within the action area. Based on the foregoing, the loss of aquatic macroinvertebrates as a result of dewatering activities and bank disturbances is not expected to adversely affect juvenile steelhead or green sturgeon downstream of the project area.

C. Turbidity

In-stream and near-stream construction activities may cause temporary increases in turbidity (reviewed in Furniss *et al.* 1991, Reeves *et al.* 1991, and Spence *et al.* 1996). NMFS anticipates only short-term increases in turbidity will occur during proposed activities (*e.g.*, construction and removal of cofferdams and the initial re-wetting of the channel following the removal of the diversion). High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelly 1961, Bjornn *et al.* 1977, Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). High turbidity concentrations can reduce dissolved oxygen in the water column, result in reduced

respiratory functions, reduce tolerance to diseases, and can also cause fish mortality (Sigler *et al.* 1984, Berg and Northcote 1985, Gregory and Northcote 1993, Waters 1995). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles (Alexander and Hansen 1986).

Much of the research discussed in the previous paragraph focused on turbidity levels higher than those expected to occur during implementation of the proposed activities. Monitoring of newly replaced culverts within Humboldt County indicated temporary increases in turbidity following winter storm events in which the measured turbidity was generally less than the turbidity threshold commonly cited as beginning to cause minor behavioral changes (Henley *et al.* 2000), and always less than turbidity levels necessary to injure or kill salmonids. Impacts associated with degraded water quality will likely be limited to behavioral effects, such as temporarily vacating preferred habitat or temporarily reduced feeding efficiency. These temporary changes in behavior, may reduce growth rates, but are not likely to reduce the survival chances of individual juveniles. Caltrans has included BMPs to reduce the likelihood of sediments from entering the streams. NMFS assumes these actions will be effective at reducing sedimentation rates. The effects of the turbidity may extend to approximately 1,000 feet downstream of the construction area, but beyond that point, NMFS assumes that most suspended material will have settled or will have been diluted by tidal waters. Therefore, any short-term impacts associated with turbidity during implementation of this project are expected to be insignificant.

D. Toxic Chemicals

Equipment refueling, fluid leakage, equipment maintenance, and road surfacing activities near the stream channel pose some risk of contamination of aquatic habitat and subsequent injury or death to listed salmonids. The applicant and its contractors propose to maintain any and all fuel storage and refueling site in an upland location well away from the stream channel; that vehicles and construction equipment be in good working condition, showing no signs of fuel or oil leaks, and that any and all servicing of equipment be conducted in an upland location. For instream construction activities, NMFS does not anticipate any localized or appreciable water quality degradation from toxic chemicals or adverse effects to steelhead or green sturgeon associated with the proposed project, as the stream will be dewatered, giving the applicant and its contractors ample opportunity to attend to any spill prior to toxic chemicals reaching the waters of San Francisquito Creek. NMFS anticipates proposed BMPs and responses by the applicant and its contractors to any accidental spill of toxic materials should be sufficient to restrict the effects to the immediate area and not enter the waterway.

E. Pile Installation

Available information indicates fish may be injured or killed when exposed to elevated underwater sound pressure waves generated from driving steel piles with impact hammers. Pathologies associated with very high sound levels are collectively known as barotraumas. These include hemorrhage and rupture of internal organs, including the swim bladder and kidneys in fish. Death can be instantaneous, occur within minutes after exposure, or occur several days later. High sound pressure levels can also result in hearing damage to fish (Hastings *et al.* 1995, 1996). Additional detrimental effects on fish from loud sounds include stress, increasing risk of mortality by reducing predator avoidance capability, and interfering with communication necessary for navigation and reproduction. Pile driving may result in “agitation” of salmonids and green sturgeon indicated by a change in swimming behavior detected by Shin (1995) with salmonids. Salmonids and green sturgeon may exhibit a startle response to the first few strikes of a pile.

Caltrans proposes to permanently install approximately 200 steel-cased piles and multiple sheet piles using a pile driver. Because the project site will be dewatered, no pile or sheet installation will occur in surface waters. Any surface waters will be diverted through the construction area in a rigid steel pipe, which will also accommodate daily tidal fluctuations. A pile driver will be used to install the steel-cased piles (partial install) and sheet piles. Approximately six to eight steel-cased piles will be installed per day. Pile driving is estimated to take approximately 30 work days and will occur approximately eight hours per day during the dry season (June 1-October 15) when CCC steelhead and southern DPS green sturgeon are anticipated to be rare in the action area. Impacts to either of these species would only occur if they happened to move through the diversion pipe during pile installation. Sound energy originating from the ground as a result of pile driving activities will be dominated by low frequencies, which do not propagate efficiently through water, and therefore would have less of an effect on fish within the diversion pipe.

NMFS considers the possibility of adverse effects to listed CCC steelhead and southern DPS of North American green sturgeon and their designated critical habitat during pile installation to be minimal, if any, because: (1) this work will be conducted during the dry season when both species are likely rare in the action area; (2) habitat conditions present at the site are poor, which further reduces the likelihood of either species being present; and (3) the channel in the action area will be dewatered with a diversion pipe, which would allow any fish present in or near the construction area to move away from the action; and (4) once pile driving is completed, underwater sound pressure waves will return to normal levels in the action area.

F. Habitat Loss

Approximately 0.72 acres (31,227 square feet) of designated critical habitat for both CCC steelhead and the southern DPS green sturgeon in San Francisquito Creek will be temporarily impacted due to the dewatering of the channel and the placement of cofferdams. This area consists primarily of open water, tidal channel habitat. The channel bottom is fairly uniform throughout this section and is only completely flooded during high tides. NMFS anticipates the temporary impacts associated with dewatering this area will not result in permanent adverse impacts to critical habitat or the species it supports because (1) fish will be relocated prior to dewatering; (2) the area to be dewatered represents a very small fraction of the total amount of tidal habitat available to the species; (3) water and fish will be allowed to pass through the diversion pipe while the; and (4) Caltrans will employ various BMPs and minimization measures to ensure impacts to the channel and the species will be avoided or minimized.

Temporary disturbances to upland habitats will also occur, however these areas are dominated by low-growing, non-native species, which currently provide little shade or cover within the creek. Therefore, NMFS assumes the disturbances to these upland areas will be insignificant with respect to effects on habitat for steelhead or green sturgeon.

Approximately 0.024 acres (1,061 square feet) of designated critical habitat for both CCC steelhead and the southern DPS green sturgeon in San Francisquito Creek will be permanently lost due to the project activities (*i.e.*, pier construction). This loss of habitat would occur in the open water areas of the lower river channel. Regardless of the poor habitat conditions at the site, the contribution of this small part of the action area as habitat space for migration (steelhead and green sturgeon) and as foraging habitat (green sturgeon) is insignificant and its loss is unlikely to diminish the value of critical habitat in the action area for steelhead and green sturgeon. In addition, the channel will be widened under the bridge, and eventually will provide additional habitat space for both species and channel bottom foraging habitat for green sturgeon as described below.

G. Interrelated and Interdependent Actions

The replacement of the U.S. Highway 101 Bridge over San Francisquito Creek would also include the addition of auxiliary lanes as a component of the U.S. Highway 101 Auxiliary Lanes-Embarcadero Road to Marsh Road Project. As a separate project, Caltrans will construct auxiliary lanes in both directions by widening U.S. Highway 101 between the Embarcadero Road interchange in the City of Palo Alto to the Marsh Road interchange in the City of Menlo Park (Caltrans 2008). The new U.S. Highway 101 Bridge will be constructed to satisfy the lane requirements of the U.S. Highway 101 Auxiliary Lanes-Embarcadero Road to Marsh Road Project.

Caltrans will combine the Auxiliary Lanes Project with the U.S. Highway 101 Bridge replacement project during construction in order to minimize conflicts between the two projects due to their proximity, and the need to share lanes on U.S. Highway 101 during

construction to allow traffic to move through the work zone. Caltrans determined the Auxiliary Lanes Project would have no effect on the environment including biological species or hydrology (Caltrans 2008). After reviewing the proposed Auxiliary Lanes Project (Caltrans 2008), NMFS agrees that the project is not likely to affect ESA-listed species or their designated critical habitat because the project activities will only occur in upland areas, far enough away from San Francisquito Creek to prevent sediments or other disturbances from entering salmonid or green sturgeon waters.

H. Beneficial Effects

The proposed lengthening of the three parallel bridges will result in a wider creek channel, which will allow for more natural high flow conditions and an increase in channel bottom habitat. Currently, the steep banks support predominantly non-native species that provide little shade or cover. However, tidal slough channels are known to be utilized by juvenile green sturgeon as foraging habitat. Therefore, the increase in exposed channel bottom habitat resulting from the widening of the bridge will result in an increase in the amount of this habitat type available for juvenile green sturgeon.

VII. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Caltrans and NMFS are not aware of any future State or private activities that are reasonably certain to affect species and habitats within the action area. During the time frame of the proposed project, two to three years, natural environmental fluctuations are likely to obscure any impacts from climate change (Cox and Stephenson 2007, Smith *et al.* 2007). Therefore, NMFS does not expect cumulative impacts from climate change in the action area will be observable during the proposed project.

VIII. INTEGRATION AND SYNTHESIS

After reviewing the information available, NMFS anticipates only a small number of juvenile and/or smolt CCC steelhead and juvenile southern DPS green sturgeon (less than 20 individuals of either species) may be affected by the project, and no more than one individual of either species will perish. This is due to the low expected abundance of fish and the relocation efforts prior to dewatering and construction and the low injury and mortality rates expected from fish collection methods. Based on the time of year that the project will be implemented, the creek's hydrograph (*i.e.*, the channel typically goes intermittent by end of spring), and recent juvenile abundance estimates in portions of the upper watershed, NMFS believes that the number of juvenile steelhead potentially

affected by the proposed project would likely be very small and would represent a small fraction of the total number of juveniles in the entire San Francisquito Creek watershed. NMFS anticipates only a few, if any, steelhead smolts are likely to be encountered because the project will start at the end of the smolt out-migration period, and therefore a majority of the smolts would have already migrated downstream of the action area to the Bay. Although estimates of smolt abundance do not exist for the San Francisquito Creek Watershed, based on the available juvenile abundance data described above, NMFS does not expect the potential loss of one smolt to impact future adult returns/abundance in the San Francisquito Creek Watershed or jeopardize the continued existence of the DPS.

Similarly, NMFS anticipates the number of juvenile southern DPS green sturgeon affected by the proposed activities to be very small, if any. Due to their higher fecundity (60,000-140,000 eggs), large numbers of juvenile green sturgeon can be produced in one spawning event. Therefore the loss of up to one juvenile southern DPS green sturgeon as a result of the proposed activities is not likely to impact the future abundance of the species in the area or the continued existence of the DPS.

NMFS anticipates short-term increases in turbidity will occur during dewatering activities. These impacts will be temporary, and NMFS anticipates proposed BMPs will control sediment and other pollutants sufficiently to avoid significant adverse effects to listed fish species. No permanent adverse changes in stream flow are anticipated. Therefore, NMFS believes the effects of turbidity increases and flow conditions from the project activities will not have any long-term impacts to the PCEs of CCC steelhead or southern DPS green sturgeon habitat. The value of critical habitat in the action area for species conservation is not likely to be appreciably reduced by the activities proposed in this project.

IX. CONCLUSION

After reviewing the best available scientific and commercial information, the current status of the species and critical habitat, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is NMFS' biological opinion the replacement of the U.S. Highway 101 Bridge over San Francisquito Creek, is not likely to jeopardize the continued existence of threatened CCC steelhead and threatened southern DPS green sturgeon

After reviewing the best available scientific and commercial information, the current status of the critical habitat, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is NMFS' biological opinion the replacement of the U.S. Highway 101 Bridge over San Francisquito Creek, is not likely to destroy or adversely modify designated critical habitat for threatened CCC steelhead and threatened southern DPS green sturgeon.

X. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NMFS as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement. Caltrans will adhere to the Term and Conditions detailed in this section of the biological opinion and other BMPs discussed in the biological assessment for the entirety of the project.

The measures described below are nondiscretionary, and must be undertaken by Caltrans, for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this incidental take statement. If Caltrans (1) fails to assume and implement the terms and conditions or (2) fails to require their designee(s) to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement (50 CFR §402.14(i)(3)).

A. Amount or Extent of Take

As described above in the accompanying biological opinion, the number of threatened CCC steelhead and threatened southern DPS green sturgeon that may be incidentally taken by capture and relocation during project activities is expected to be small (less than 20 individuals of either species per year, for a total of 60 individuals over three years) relative to the number of each species present throughout the San Francisquito Creek Watershed (steelhead) and southern San Francisco Bay (green sturgeon). NMFS anticipates no more than two percent annually of the juvenile CCC steelhead and/or southern green sturgeon present in the area to be dewatered will be killed during relocation and dewatering efforts (no more than 1 fish per species).

The anticipated take will have been exceeded if more than 20 juvenile and/or smolt steelhead and/or 20 juvenile green sturgeon are captured or if more than 1 fish of either species is killed during relocation efforts.

B. Effect of the Take

In the accompanying opinion, NMFS determined this level of anticipated take is not likely to result in jeopardy to either species.

C. Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize and monitor the impacts of the anticipated incidental take of CCC steelhead and southern DPS of North American green sturgeon:

1. Undertake measures to ensure harm and mortality to CCC steelhead and southern DPS green sturgeon resulting from fish relocation and dewatering activities is low.
2. Undertake measures to maintain water quality at pre-construction levels to avoid or minimize harm to CCC steelhead and southern DPS green sturgeon.
3. Prepare and submit a report to document the effects of construction and relocation activities and performance.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, Caltrans, its permittee, and their designees must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

The following terms and conditions implement Reasonable and Prudent Measure 1, to minimize harm or mortality to listed steelhead and green sturgeon from fish relocation and dewatering activities.

1. Caltrans shall provide a list of all BMP's and the Terms and Conditions of this biological opinion to their contractors and ensure they are followed for the length of the project.
2. Caltrans shall provide NMFS with a Fish Relocation Plan for review 30 days prior to the start of dewatering and fish relocation activities and shall outline all confirmed fish relocation methods, including the location and a description of the habitat where steelhead and green sturgeon are to be relocated. The plan shall be submitted to NMFS' North Central Coast Office (see address below).
3. The project biologist shall notify NMFS biologist Joel Casagrande at (707) 575-6016 or Joel.Casagrande@noaa.gov one week prior to relocation activities in order to provide an opportunity for NMFS staff to observe the activities.

4. The biologist will note the number of each species observed in the affected area, the number of fish relocated, and the date and time of collection and relocation. If any dead or fatally wounded fish are observed, they will be collected and placed in an appropriately sized whirl-pack or zip-lock bag, labeled with the date and time of collection, fork length, and location of capture, and frozen as soon as possible.
5. All live steelhead and green sturgeon shall be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured fish shall be kept in cool, shaded, and aerated water that is protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. If necessary, the biologist shall have at least two containers and segregate young-of-year salmonids from older salmonids and other potential aquatic predators in order to avoid predation affects. Captured steelhead and green sturgeon shall be relocated as soon as possible and will be given highest priority over other non-listed fish species. Both juvenile steelhead and green sturgeon will be released downstream of the project area.

The following terms and conditions implement Reasonable and Prudent Measure 2, undertake measures to maintain water quality at pre-construction levels to avoid or minimize harm to CCC steelhead and southern DPS green sturgeon.

6. Caltrans shall monitor in-channel activities and performance of sediment control or detention devices for the purpose of identifying and reconciling any condition that could result in take of listed salmonids.
7. Caltrans shall provide NMFS with a copy of the project's site specific Storm Water Pollution Prevention Plan (SWPPP) or applicable plan(s), which specifies BMPs to control mobilization of sediment from the project. If BMPs must be modified, or when additional BMPs are implemented, the SWPPP will be updated to reflect needed changes. Documents shall be submitted to NMFS North Central Coast Office (see address below).
8. Construction work shall not create conditions that mobilize sediment or concentrate over-land flow from construction areas into the creek, or other channels leading directly to the creek.

The following terms and conditions implement Reasonable and Prudent Measure 3, prepare and submit a report to document the effects of construction and relocation activities and performance.

9. Caltrans shall provide NMFS with a summary report by January 15 of each year following the completion of fish relocation and monitoring activities. The report shall include the methods used during the fish relocation and monitoring efforts, location, number and species captured, number of mortalities by species, and other

pertinent information related to the monitoring and fish relocation activities. Reports shall be submitted to NMFS North Central Coast Office (see address below).

10. Caltrans or its contractor shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to access the work area during the construction period for the purpose of observing monitoring activities, evaluating fish and stream conditions, monitoring performance of Caltrans BMPs, monitoring water quality, collecting fish samples, or perform other monitoring/studies. NMFS will notify the Caltrans Resident Engineer 48 hours prior to planning a site visit and will contact Caltrans personnel prior to entering the construction site.
11. All reports or plans required for the above terms and conditions shall be sent to:

NMFS North Central Coast Office
Central Coast Branch Supervisor, Protected Resources Division
Southwest Region
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

XI. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, or to develop information.

1. NMFS recommends Federal Highway Administration (FHWA) and Caltrans consult with NMFS to develop a long range planning approach that seeks to minimize and avoid the impacts of road-related projects on listed salmonids and green sturgeon.
2. Caltrans should identify and prioritize any maintenance and construction projects which, if implemented, can improve ESA-listed salmonid migration or in-stream environmental conditions.

XII. REINITIATION NOTICE

This concludes formal consultation for the proposed replacement of U.S. Highway 101 Bridge over San Francisquito Creek along the San Mateo County and Santa Clara County boundary. As provided in 50 CFR §402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an

extent not previously considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

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74 FR 52300. October 9, 2009. Endangered and Threatened Wildlife and Plants: Final Rulemaking To Designate Critical Habitat for the Threatened Southern Distinct Population Segment of North American Green Sturgeon. National Marine Fisheries Service, National Oceanic and Atmospheric Administration, United States Department of Commerce. Federal Register, Volume 74 Pages 52300-52351

XIV. PERSONAL COMMUNICATION CITED

Jeffrey Jahn, NMFS, personal communication, November 2010 and February 2011.

David Woodbury, NMFS, personal communication, December 21, 2010

Dr. Jerry Smith, SJSU, personal communication, December 7, 2010

United States (U.S.) Highway 101 San Francisquito Creek Bridge Replacement Project
Santa Clara and San Mateo Counties, California

**MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT
ACT ESSENTIAL FISH HABITAT CONSULTATION**

Statutory and Regulatory Information

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996, establishes a national program to manage and conserve the fisheries of the United States through the development of federal Fishery Management Plans (FMPs), and federal regulation of domestic fisheries under those FMPs, within the 200-mile U.S. Exclusive Economic Zone (“EEZ”). 16 U.S.C. §1801 *et seq.* To ensure habitat considerations receive increased attention for the conservation and management of fishery resources, the amended MSA required each existing, and any new, FMP to “describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 1855(b)(1)(A) of this title, minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat.” 16 U.S.C. §1853(a)(7). Essential Fish Habitat (EFH) is defined in the MSA as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity” 16 U.S.C. §1802(10). The components of this definition are interpreted at 50 C.F.R. §600.10 as follows: “Waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species’ contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species’ full life cycle.

Pursuant to the MSA, each federal agency is mandated to consult with NMFS (as delegated by the Secretary of Commerce) with respect to any action authorized, funded, or undertaken, or proposed to be, by such agency that may adversely affect any EFH under this Act. 16 U.S.C. §1855(b)(2). The MSA further mandates that where NMFS receives information from a Fishery Management Council or federal or state agency or determines from other sources that an action authorized, funded, or undertaken, or proposed to be, by any federal or state agency would adversely affect any EFH identified under this Act, NMFS has an obligation to recommend to such agency measures that can be taken by such agency to conserve EFH. 16 U.S.C. §1855(4)(A). The term “adverse effect” is interpreted at 50 C.F.R. §600.810(a) as any impact that reduces quality and/or quantity of EFH and may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce

quantity and/or quality of EFH. In addition, adverse effects to EFH may result from actions occurring within EFH or outside EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

If NMFS determines that an action would adversely affect EFH and subsequently recommends measures to conserve such habitat, the MSA proscribes that the Federal action agency that receives the conservation recommendation must provide a detailed response in writing to NMFS within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NMFS EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations. 16 U.S.C. §1855(b)(4)(B).

Background and Consultation History

On November 18, 2010, NMFS received the California Department of Transportation's letter requesting initiation of formal consultation under Section 7 of the Endangered Species Act for replacement, widening, and lengthening of the U.S. 101 bridge over San Francisquito Creek and widening of the channel between Santa Clara and San Mateo Counties, California. The Caltrans letter did not initiate consultation under MSA; however NMFS has determined that the proposed actions do occur in areas identified as EFH for various life stages of fish species managed with the following Fishery Management Plans (FMP) under the MSA: Pacific Groundfish FMP, Coastal Pelagics FMP, and the Pacific Salmon FMP.

Proposed Action

The proposed action is described in detail in the preceding biological opinion (BO). The current U.S. Highway 101 Bridge will be replaced with a bridge 44 feet longer and 14 feet wider to accommodate channel widening and auxiliary lanes. The East Bayshore bridge (80 feet long and 38 feet wide) and West Bayshore bridge (80 feet long and approximately 35 feet wide) run adjacent to U.S Highway 101 Bridge and cross over the creek on the same pier walls (*i.e.*, bridge supports) and will also be replaced with longer, wider bridges, 126 feet long by 44 feet wide each. The creek channel beneath the bridge will be widened to coordinate with a separate major flood control project proposed by the San Francisquito Creek Joint Powers Authority (SFCJPA) to accommodate an increase in creek flow based on the 100-year flood projections.

An in-channel work window of June 1 through October 15 will be observed over 2 or 3 years of bridge demolition and construction. During this time, approximately 450-500 feet of San Francisquito Creek will be dewatered using sheet-pile cofferdams with a large corrugated pipe for diversion of stream flow and tidal water and for fish passage. The bridge replacement involves demolishing the existing U.S. Highway 101 Bridge over San Francisquito Creek, including the bridge deck and two existing pier walls, installation of

200 16- inch diameter piles; installation of sheet piles at five locations for temporary wing-walls and creek bank stabilization; replacement of two pier walls that support the bridge and divide the channel beneath San Francisquito Creek into three flow “cells”. Due to the widening of the channel and the lengthening of the bridge, a third pier wall will be built to create a 4th flow cell, to remain isolated from full stream flow until the SFCJPA flood control project widens the channel upstream and downstream. In order to equalize pressure from water against the new pier wall, temporary screened openings will be made in the new pier wall. The openings will be screened with 3/32 inch mesh to keep fish and other organisms from accessing this new cell, preventing entrainment.

BMPs and conservation measures include the following:

- Water pumped from the creek prior to and/or during construction of the bridge will be stored in tanks pending water quality analysis.
- Soil stabilization measures, sediment control, waste management, and pollution control BMPs will be implemented to prevent sediment and other pollutants from entering the channel during project construction to minimize the potential for impacts to water quality in San Francisquito Creek.
- Netting or suspended debris racks will be used during demolition to minimize the amount of debris falling into the creek channel and onto the water diversion pipe.
- Temporary materials in the channel, including the falsework, cofferdams, and the creek diversion pipe will be removed at the end of each dry season and the end of the project.
- Once the SFCJPA flood protection project is completed, all of the sheet piles will be removed and the fourth flow cell will become fully accessible.

The BMPs and conservation measures described here and in the consultation initiation package as parts of the proposed action are effective to reduce or avoid adverse effects to EFH. The NMFS regards these conservation measures as integral components of the proposed action and expects that all proposed activities will be completed consistent with those measures. We have completed our effects analysis accordingly. Any deviation from these conservation measures will be beyond the scope of this consultation and may require supplemental consultation to determine what effect the modified action is likely to have on EFH.

Action Area

For purposes of this EFH consultation, the action area occurs within the channel of San Francisquito Creek in a heavily urbanized area between University Avenue and Embarcadero Road, along the U.S. Highway 101 corridor. The length of the dewatered channel will extend approximately 450-500 feet in the area of the existing U.S. Highway

101 Bridge. San Francisquito Creek is designated EFH for federally-managed Coho within Pacific Salmon FMP as Coho salmon have been identified as historically occurring in San Francisquito Creek (Leidy 2005). The project site is within the tidally influenced portion of San Francisquito Creek thus EFH for the Coastal Pelagic and Pacific Groundfish FMPs may also be affected.

Effects of the Action

Based on information provided in the Biological Assessment and developed during consultation, NMFS concludes that the proposed action would adversely affect EFH for various federally managed species within the Pacific Groundfish FMP, Coastal Pelagics FMP, and the Pacific Salmon FMP. The proposed bridge replacement and expansion could adversely affect EFH, including estuary HAPC due to: (1) temporary turbidity/siltation effects, (2) temporary elevated levels of underwater sound, (3) temporary and permanent loss of subtidal habitat, and (4) permanent increase of shaded areas.

In-water construction activities are expected to temporarily increase turbidity within the creek channel during construction and removal of cofferdams and the initial re-wetting of the channel. Fish may suffer reduced feeding ability (Benfield and Minello 1996) and be prone to fish gill injury (Nightingale and C.A. Simenstad 2001) if exposed to excessive high levels of turbidity. Caltrans has included BMPs for sediment control to minimize impacts to water quality in San Francisquito Creek and fish are expected to move out of areas of high suspended sediment.

As described in the BO, fish can be injured or killed when exposed to elevated underwater sound pressure waves generated from pile driving. However, pile driving proposed for the project will occur in dewatered areas of the construction site and levels of sound in adjacent waters are not expected to exceed NMFS' single strike or cumulative threshold for fish injury. However, low frequency sound transmitted through the ground to adjacent waters and into the diversion pipe over 30 work days may cause fish to leave the area temporarily.

Approximately 0.72 acres of open-water estuarine EFH in San Francisquito Creek will be repeatedly disturbed and temporarily inaccessible to fish while the channel is dewatered for bridge demolition and construction. During this time, fish will be able to move through the work area in the diversion pipe only. The fine grain sediment that is characteristic of the creek bed in the project area is considered good foraging habitat for fish, providing a substrate for infaunal and bottom-dwelling organisms, such as polychaete worms, crustaceans, and other EFH prey types (NMFS 2007). Thus, forage resources for fish that feed on the benthos may be reduced during the 2 to 3 years of construction. However, this temporary loss and significant disturbance of benthic habitat occurs over a relatively small area and may be offset long-term by the increased open-water area from channel widening.

Installation of the new bridge will result in the permanent fill of 0.024 acres of EFH in San Francisquito Creek due to construction of pier walls and abutments for the new bridge. Only a fraction of this (from lengthened pier walls and one additional pier wall) will be an increase to the permanent structures already in place from the existing bridge and is not considered a significant increase.

Bridge expansions will result in approximately 1300 square feet of additional shaded area. Shading is known to decrease primary productivity, alter predator-prey interactions, change invertebrate assemblages, and reduce the density of benthic invertebrates (Helfman 1981; Glasby 1999; Struck, Craft et al. 2004; Stutes, Cebrian et al. 2006); all of which lead to an overall reduction in the quality of EFH. Effects of shading are expected to be minor given that there is only a small net increase in shaded area and additional shading occurs in an urbanized section of creek where overwater structures already exist. In addition, the proposed channel widening included in the project will increase open water habitat and is expected to offset impacts associated with the increase in shading.

EFH Conclusion

As described in the above effects analysis, NMFS has determined that the proposed project would adversely affect EFH for various federally-managed species within the Pacific Groundfish, Coastal Pelagic, and Pacific Salmonid FMPs. As described above, the adverse effects are expected to be temporary and may be offset by channel widening. Furthermore, the proposed action contains adequate measures to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH. With the terms and conditions set forth in the preceding BO, NMFS has no additional EFH Conservation Recommendations to provide. This concludes EFH consultation for the proposed replacement, widening, and lengthening of the U.S. 101 bridge over San Francisquito Creek and widening of the channel between Santa Clara and San Mateo Counties, California.

Supplemental Consultation

Pursuant to 50 CFR 600.920(1), Caltrans must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH Conclusion.

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DEPARTMENT OF INDUSTRIAL RELATIONS
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT
2424 Arden Way, Suite 125
Sacramento, California 95825
doshM&Tsac@dir.ca.gov



Telephone (916) 574-2540
FAX (916) 574-2542

May 9, 2013

Calif. Dept. of Transportation
P O Box 23660
Oakland, CA 94623-0660

Attention: Duat Nguyen, Branch Chief, Project Development Peninsula

Subject: Underground Classification No. C100-081-13T and C101-081-13T
Classification: Potentially Gassy With Special Conditions
Project: San Francisco Creek Bridge Replacement

The information provided to this office relative to the above project has been reviewed. On the basis of this analysis, Underground Classifications of "Potentially Gassy With Special Conditions" have been assigned to the tunnels identified on your submittal. Please retain the original Classifications for your records and deliver a true and correct copy of each Classification to the tunnel contractor for posting at the job site.

When the contractor who will be performing the work is selected, please advise them to notify this office to schedule the mandated Pre-Job Conference with the Division prior to commencing any activity associated with boring of the tunnel(s). A Pre-Job Request Form is enclosed.

Should you have another bore under construction that is not required to have an Underground Classification (i.e.: less than 30 inches in diameter), please contact the Mining and Tunneling Unit prior to any employee entry of such a space.

If you have any questions on this subject, please contact this office at your earliest convenience.

Sincerely,

Douglas Patterson
Senior Engineer

enc: Classifications
Pre-Job Request Form

cc: R.Brockman



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C100-081-13T

CALIF. DEPT. OF TRANSPORTATION

of

P O BOX 23660; OAKLAND, CA 94623-0660

at

SAN FRANCISQUITO CREEK BRIDGE REPLACEMENT

has been classified as

*** POTENTIALLY GASSY WITH SPECIAL CONDITIONS ***

as required by the California Labor Code § 7955.

The Division shall be notified if sufficient quantities of flammable gas or vapors have been encountered underground. Classifications are based on the California Labor Code Part 9, Tunnel Safety Orders and Mine Safety Orders.

SPECIAL CONDITIONS

1. A Certified Gas Tester shall perform pre-entry and continuous monitoring of the underground environment to measure Oxygen and detect explosive, flammable, and toxic gasses whenever an employee is working in the underground environment.
2. Mechanical ventilation shall provide for continuous exhaust of fumes and air at any time an employee is working in the underground environment. The primary ventilation fans must be located outside of the underground environment and shall be reversible by a single switch near the fan location.
3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

Airborne lead deposited in surface soils.

Eleven 30-inch-diameter, 43-foot-deep drilled shafts alongside the north shoulder of Highway 101 located approximately 2,000 feet north of the Embarcadero Road overcrossing of Highway 101, in Palo Alto, San Mateo County.

This classification shall be conspicuously posted at the place of employment.



Douglas Patterson, Senior Engineer

May 9, 2013



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C101-081-13T

CALIF. DEPT. OF TRANSPORTATION

of _____ P O BOX 23660; OAKLAND, CA 94623-0660
at _____ SAN FRANCISQUITO CREEK BRIDGE REPLACEMENT
has been classified as _____ ***** POTENTIALLY GASSY WITH SPECIAL CONDITIONS *****

as required by the California Labor Code § 7955.

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3. The Division shall be notified immediately if any **Flammable Gas** or **Petroleum Vapor** exceeds 5% of the Lower Explosive Limit.
4. All utilities that may be in conflict with the project shall be identified and physically located (potholed) prior to the start of project operations.

Airborne lead deposited in surface soils.

Five 30-inch-diameter, 44-foot-deep drilled shafts alongside the south shoulder of Highway 101 located approximately 2,000 feet north of the Embarcadero Road overcrossing of Highway 101, in Palo Alto, San Mateo County.

This classification shall be conspicuously posted at the place of employment.



Douglas Patterson, Senior Engineer

May 9, 2013

PRE-JOB REQUEST

ATTACH COPY OF CLASSIFICATION AND DIESEL PERMIT

Company Name: _____

Phone _____ FAX: _____

DATE FAXED: _____

PLEASE NOTE: THE BORING CONTRACTOR SHOULD SCHEDULE THE PREJOB AS FAR IN ADVANCE AS POSSIBLE - AT LEAST 3-4 DAYS IN ADVANCE. THE DIVISION REQUIRES THE JOB TO BE SET UP WHEN THE FIELD ENGINEER ARRIVES FOR THE PREJOB. THIS MEANS THAT THE BORE PIT HAS BEEN DUG AND PROPERLY GUARDED, THE CRANE IS IN PLACE AND READY TO LIFT, THE BORING MACHINE IS IN THE PIT AND READY TO GO, AND THE CREW IS READY TO BEGIN BORING THE TUNNEL. IF THERE IS A DELAY IN SETTING UP THE JOB, THE BORING CONTRACTOR SHOULD CONTACT THE DIVISION IMMEDIATELY.

PRE-JOB REQUEST DATE & TIME: _____

ON-SITE SUPERVISOR & CELL NO.: _____

CLASSIFICATION #: _____ DIESEL PERMIT #: _____

BORE DIAMETER AND LENGTH: _____ (Diameter) _____ (Length)

IS BORE ENTRY ANTICIPATED? YES NO
(Circle One)

You MUST contact the Division if entry is planned, REGARDLESS of the bore diameter.

MANNER OF EXCAVATION: _____

JOB-SITE LOCATION AND DIRECTIONS: _____

GENERAL CONTRACTOR: _____

SUBMITTED BY: _____

REVIEWED BY: _____ DATE: _____

Mining & Tunneling Unit, District 1
2424 Arden Way, Suite 125
Sacramento, California 95825-2400
(916) 574-2540; FAX: (916) 574-2542

Mining & Tunneling Unit, District 2
6150 Van Nuys Blvd., Suite 310
Van Nuys, California 91401-3333
(818) 901-5420; FAX: (818) 901-5579

Mining & Tunneling Unit, District 3
464 West Fourth Street, Suite 354
San Bernardino, California 92401-1442
(909) 383-6782; FAX: (909) 388-7132

**WATER QUALITY INFORMATION HANDOUT
CONTRACT NO. 235624**

**San Francisquito Creek Bridge Replacement
Santa Clara County Highway 101
04-SCL-101-PM 0.0/0.0**

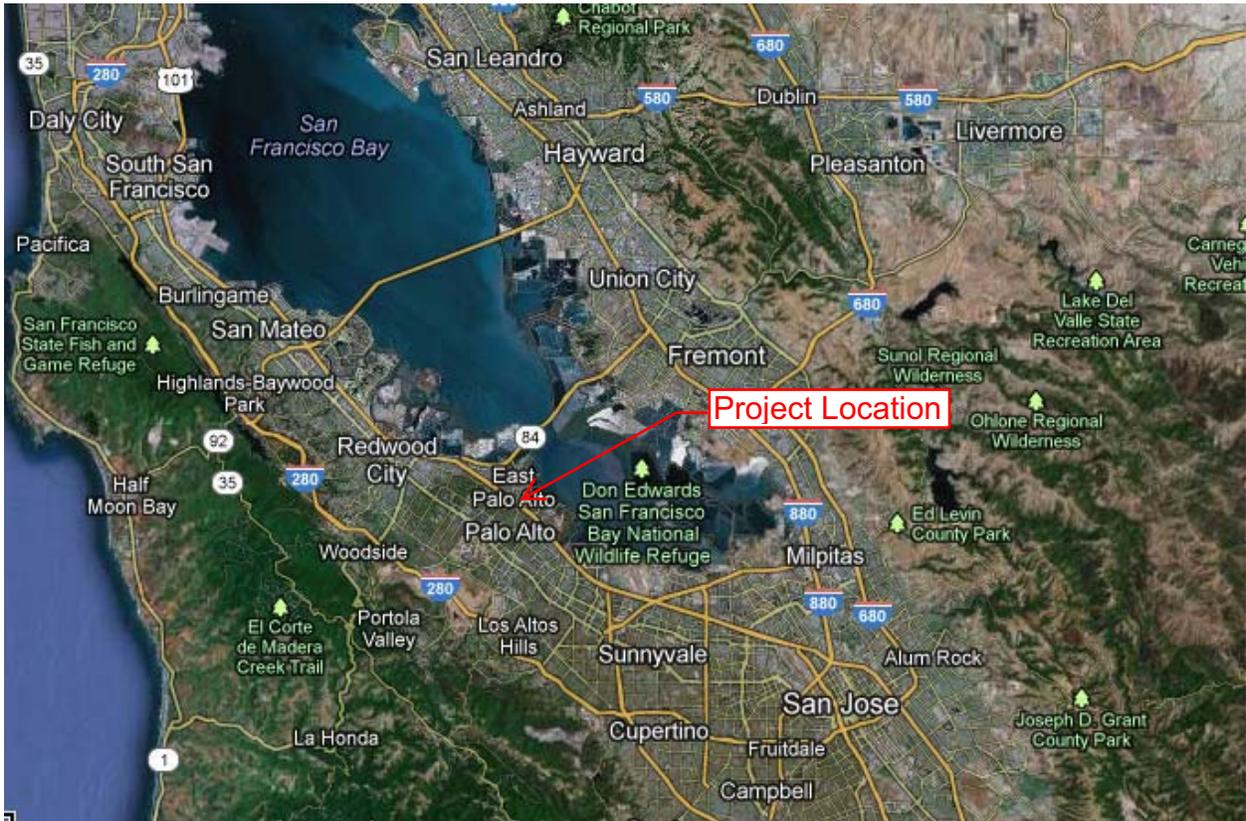
California Department of Transportation
District 4, 111 Grand Avenue
Oakland, CA 94612

Storm Water Information

Disclaimer

A "Disclaimer" is required specifying that the information provided in the Storm Water Information Handout is just a guideline and is to be used for information purposes only and should not be considered a sole source document to adhere to the requirements of the new National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), Number CAS000002, adopted on September 2, 2009. The contractor is required to provide water quality monitoring, sampling and implement best management practices (BMPs) based on standard industry operations, field conditions and conditions encountered based on the contractor's means and methods. The information in this handout is not to be construed in any way as a waiver of the provisions in the CGP. Bidders and contractors are cautioned to make independent investigations and examinations as they deem necessary to satisfy the conditions encountered in performance of work, with respect to the following: sampling and monitoring locations, distribution of watershed areas for sizing of BMPs, and selection of BMPs in order to conform to the requirement of the contract documents and the CGP.

Project Vicinity



Risk Assessment

	A	B	C
1	Sediment Risk Factor Worksheet		Entry
2	A) R Factor		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	R Factor Value		89.07
6	B) K Factor (weighted average, by area, for all site soils)		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	K Factor Value		0.32
10	C) LS Factor (weighted average, by area, for all slopes)		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	LS Factor Value		0.36
14			
15	Watershed Erosion Estimate (=R_xK_xLS) in tons/acre		10.260864
16	Site Sediment Risk Factor		Low
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet

Entry

A. Watershed Characteristics

yes/no

A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?:

http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

OR

A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan)

http://www.waterboards.ca.gov/waterboards_map.shtml

yes

[Region 1 Basin Plan](#)

[Region 2 Basin Plan](#)

[Region 3 Basin Plan](#)

[Region 4 Basin Plan](#)

[Region 5 Basin Plan](#)

[Region 6 Basin Plan](#)

[Region 7 Basin Plan](#)

[Region 8 Basin Plan](#)

[Region 9 Basin Plan](#)

Combined Risk Level Matrix

		<u>Sediment Risk</u>		
		Low	Medium	High
<u>Receiving Water Risk</u>	Low	Level 1	Level 2	
	High	Level 2		Level 3

Project Sediment Risk: **Low**

Project RW Risk: **High**

Project Combined Risk: **Level 2**



Water: Stormwater

You are here: [Water](#) » [Pollution Prevention & Control](#) » [Permitting \(NPDES\)](#) » [Stormwater](#) » LEW Results

LEW Results

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Start Date:	05/20/2015
End Date:	11/28/2017
Latitude:	37.4528
Longitude:	-122.1278

Erosivity Index Calculator Results

AN EROSIIVITY INDEX VALUE OF **89.07** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **05/20/2015 - 11/28/2017**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do NOT qualify for a waiver from NPDES permitting requirements.**

[Start Over](#)

Last updated on Monday, July 28, 2014

Receiving Water Risk (High)

San Francisquito Creek is a 303(d) listed waterbody impaired by sediment. It is a waterbody with three designated beneficial uses of COLD/SPAWN/MIGRATORY. Therefore, the receiving water body is High.

San Francisquito Creek
 Water body type: River & Stream
 Assessed area: 12.00 miles
 Integrated Report category: 5
 Assessed water body in the San Francisco Bay Region.
[Zoom to](#)

Pollutant assessments

Pollutants	Listing Decision	Report Link	Potential Sources	Schedule	Comments
pH	(d) list (TMDL required list)	4305	Source Unknown		
Sedimentation/Siltation	List on 303(d) list (TMDL required list)	6457	Nonpoint Source	Est. TMDL completion: 2013	Impairment to steelhead habitat.
Trash	List on 303(d) list (TMDL required list)	7655	Illegal dumping, Urban Runoff/Storm Sewers	Est. TMDL completion: 2021	

COUNTY	AGR	MUN	FRSH	GWR	IND	PROC	COMM	SHELL	COLD	EST	MAR	MIGR	RARE	SPWN	WARM	WILD	REC-1	REC-2	NAV
Waterbody																			
San Francisco Bay South					E		E	E		E		E	E	E		E	E	E	E
<i>ALAMEDA & SANTA CLARA COUNTIES</i>																			
Newark Slough										E			E			E	E	E	
Plummer Creek (Zone 5 Line F-1)										E			E			E	E	E	
Mowry Slough										E			E			E	E	E	
Coyote Slough										E			E			E	E	E	
Mud Slough										E			E			E	E	E	
Laguna Creek (Arroyo la Laguna, or Zone 6 Line E)															E	E	E	E	
Mission Creek (Zone 6 Line L)															E	E	E	E	
Lake Elizabeth									E					E	E	E	E*	E	
Sabrecat Creek (Zone 6 Line K)															E	E	E	E	
Canada del Aliso (Zone 6 Line J)															E	E	E	E	
Agua Caliente Creek (Alameda) (Zone 6 Line F)															E	E	E	E	
Agua Fria Creek (Zone 6 Line D)															E	E	E	E	
Stivers Lagoon (Fremont Lagoon)				E											E	E	E	E	
Mallard (Artesian) Slough										E			E		E	E	E	E	
Scott Creek (Zone 6 Line A)															E	E	E	E	
Toroges Creek (Zone 6 Line C)														E	E	E	E	E	
<i>SAN MATEO AND SANTA CLARA COUNTIES</i>																			
San Francisquito Creek									<u>F</u>			<u>F</u>		<u>E</u>	E	E	E	E	

Rainfall Data

Rainfall Intensity can be obtained by the following link:

<http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif>

Refer to chapters 800, Highway Drainage Design of Highway Design Manual for information on runoff coefficient and shed map. The weighted runoff coefficient of 0.55 is recommended for the project area.

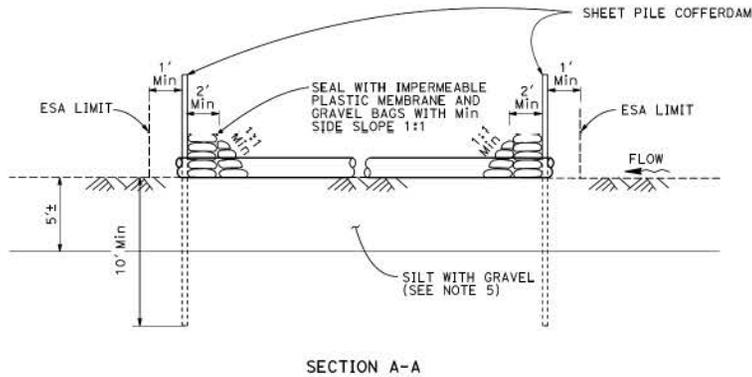
Conceptual Sampling Locations

(The actual sampling locations should be determined by Contractor on the field based on field conditions, construction activities, and construction phases)

WATER QUALITY SAMPLING

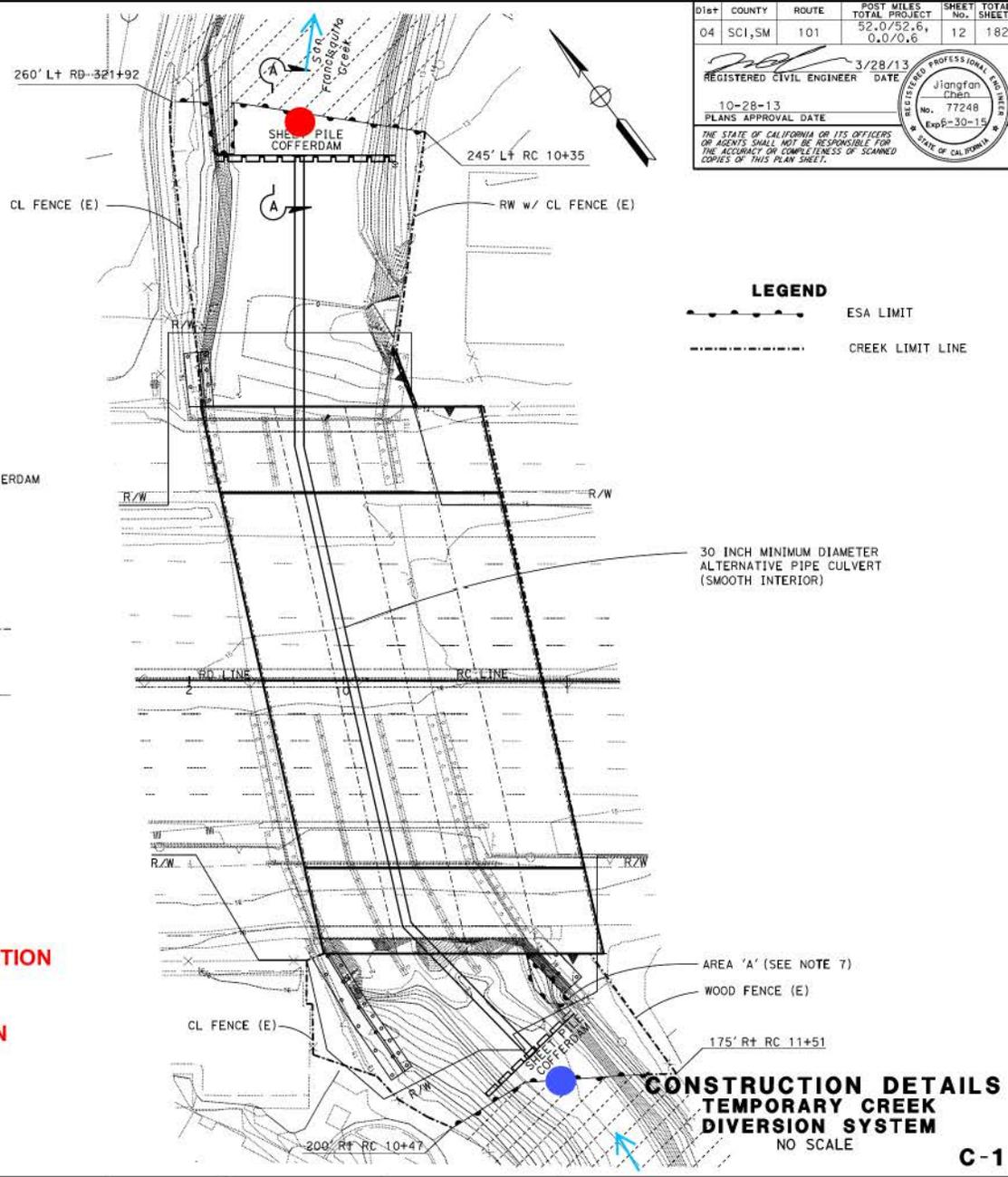
NOTES

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- MAXIMUM CREEK BASE FLOW 30 CFS.
- HIGHEST OBSERVED 5 YEAR TIDE Elev 6.75 NGVD29.
- MAXIMUM SOIL BEARING CAPACITY IS 0.25 TON/SQFT.
- SEE STRUCTURE PLANS FOR LOG OF TEST BORINGS.
- COFFERDAM AND PIPE LOCATIONS ARE APPROXIMATE AND MAY VARY WITH STAGE CONSTRUCTION.
- IF A PORTION OF AREA 'A' MUST BE DISTURBED TO FACILITATE CONSTRUCTION, EXCAVATE THE AREA THAT WILL BE DISTRIBUTED TO A DEPTH OF 1' AND STOCKPILE THE EXCAVATED MATERIAL. AFTER CONSTRUCTION RETURN THE STOCKPILED MATERIAL TO ITS ORIGINAL LOCATION AND ELEVATION IN THE CREEK.
- Cofferdams must be at least 1 foot above the highest observed tide in the past 5 years.



SECTION A-A

- WATER QUALITY BACKGROUND SAMPLING LOCATION
- WATER QUALITY CONTROL SAMPLING LOCATION



Dist	COUNTY	ROUTE	POST MILES	TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI,SM	101	52.0/52.6	0.0/0.6	12	182

REGISTERED CIVIL ENGINEER	DATE	PROFESSIONAL SEAL
<i>Jiangfan Chen</i>	3/28/13	Jiangfan Chen
		No. 77248
		Exp-R-30-15

PLANS APPROVAL DATE: 10-28-13

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

	ESA LIMIT
	CREEK LIMIT LINE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 DESIGN
 FUNCTIONAL SUPERVISOR: KAMRAN NAKHJURI
 CALCULATED BY: JENNIFER CHEN
 DESIGNED BY: NORMAN GONSALVES
 CHECKED BY:
 REVISIONS: JC 3/28/13
 DATE REVISED:

LAST REVISION DATE PLOTTED => 01-NOV-2013
 03-29-13 TIME PLOTTED => 11:03

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 DESIGN

BORDER LAST REVISED 7/2/2010

USERNAME => s109858
 DGN FILE => 0400000678e001.dgn

RELATIVE BORDER SCALE
 IS IN INCHES

UNIT 0722

PROJECT NUMBER & PHASE

04000006781

- NOTES:**
- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
 - RHMA-G SHALL BE PLACED BEFORE PLACING FINAL PAVEMENT DELINEATION.

STORM WATER SAMPLING

Storm Water Sampling Locations ●

LEGEND

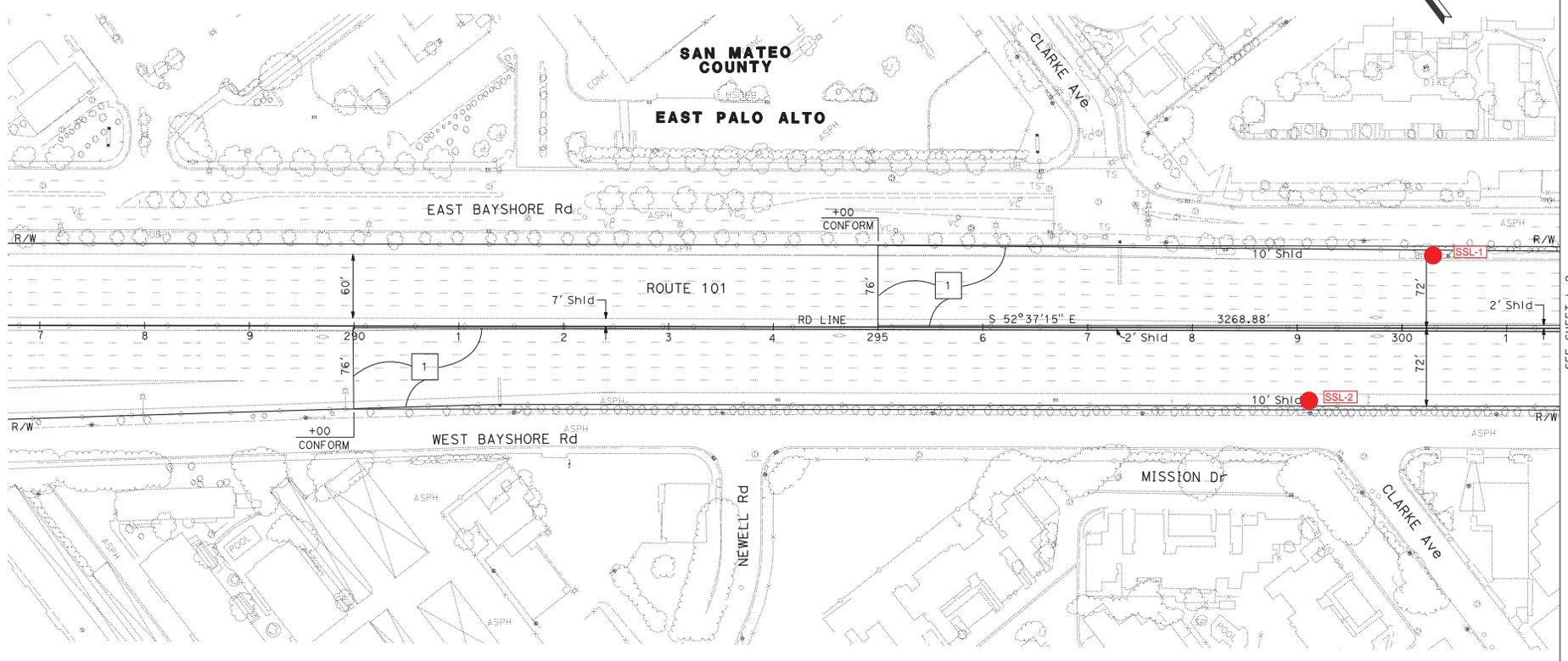
- TEMPORARY CONSTRUCTION EASEMENT
- ROADWAY EXCAVATION
- ESA
- CURVE DATA NUMBER
- STRUCTURE SECTION NUMBER

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SCI, SM	101	52.0/52.6, 0.0/0.6	6	182

	3/28/13
REGISTERED CIVIL ENGINEER	DATE
10-28-13	
PLANS APPROVAL DATE	

G. B. Modesto	REGISTERED PROFESSIONAL ENGINEER
No. 50338	
Exp. 30-15	
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.



LAYOUT
 SCALE: 1" = 50'

L-1

LAST REVISION DATE PLOTTED => 01-NOV-2013
 03-22-13 TIME PLOTTED => 11:03

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR
DUAT NGUYEN

CALCULATED BY
DESIGNED BY

CHECKED BY

GERSY MODESTO
STUART GOODSON

REVISOR
DATE

SG
3/28/13

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

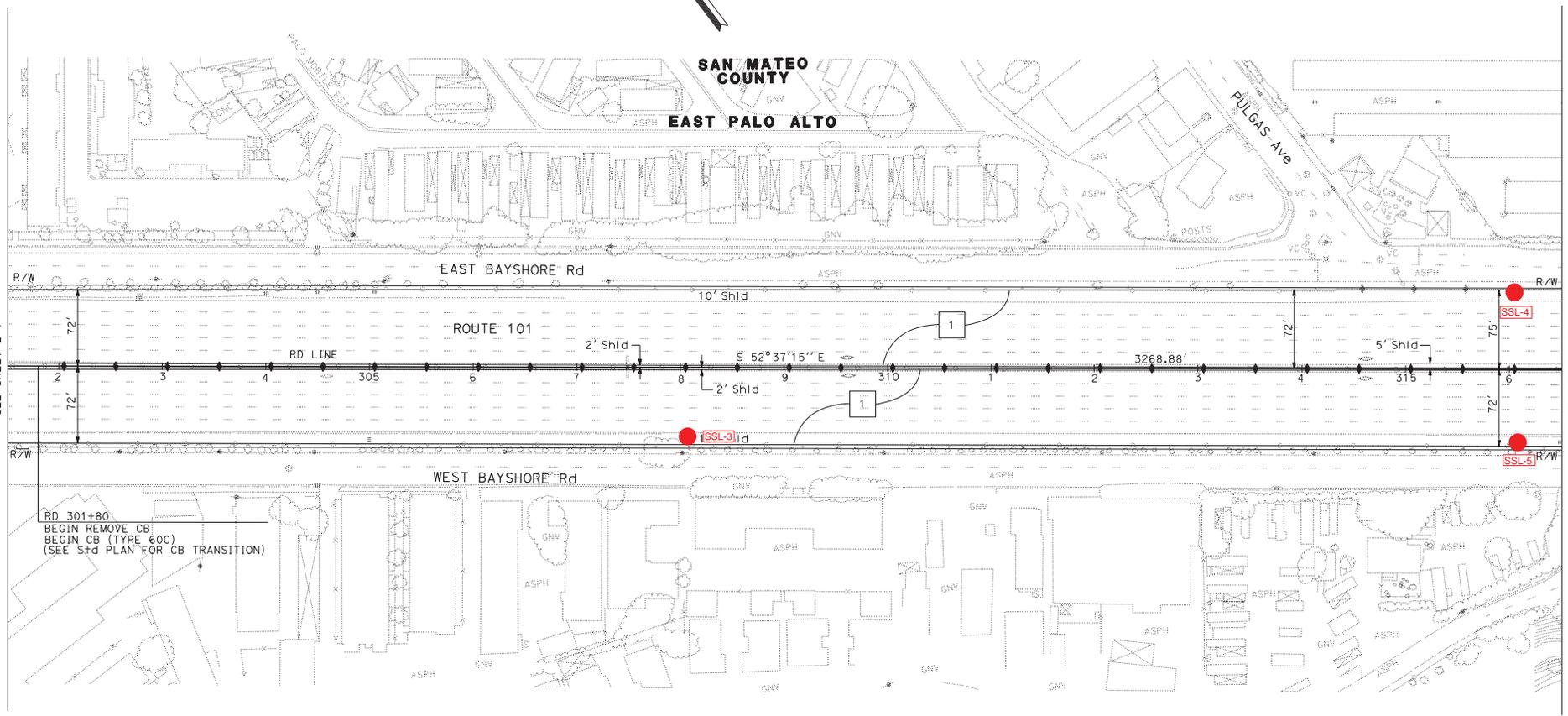


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI,SM	101	52.0/52.6, 0.0/0.6	7	182

REGISTERED CIVIL ENGINEER	DATE
<i>G.B. Modesto</i>	3/28/13
PLANS APPROVAL DATE	
10-28-13	

REGISTERED PROFESSIONAL ENGINEER
<i>G.B. Modesto</i>
No. 50338
Exp. 30-15
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.



SEE SHEET L-1

SEE SHEET L-3

LAYOUT
 SCALE: 1" = 50'

L-2

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

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

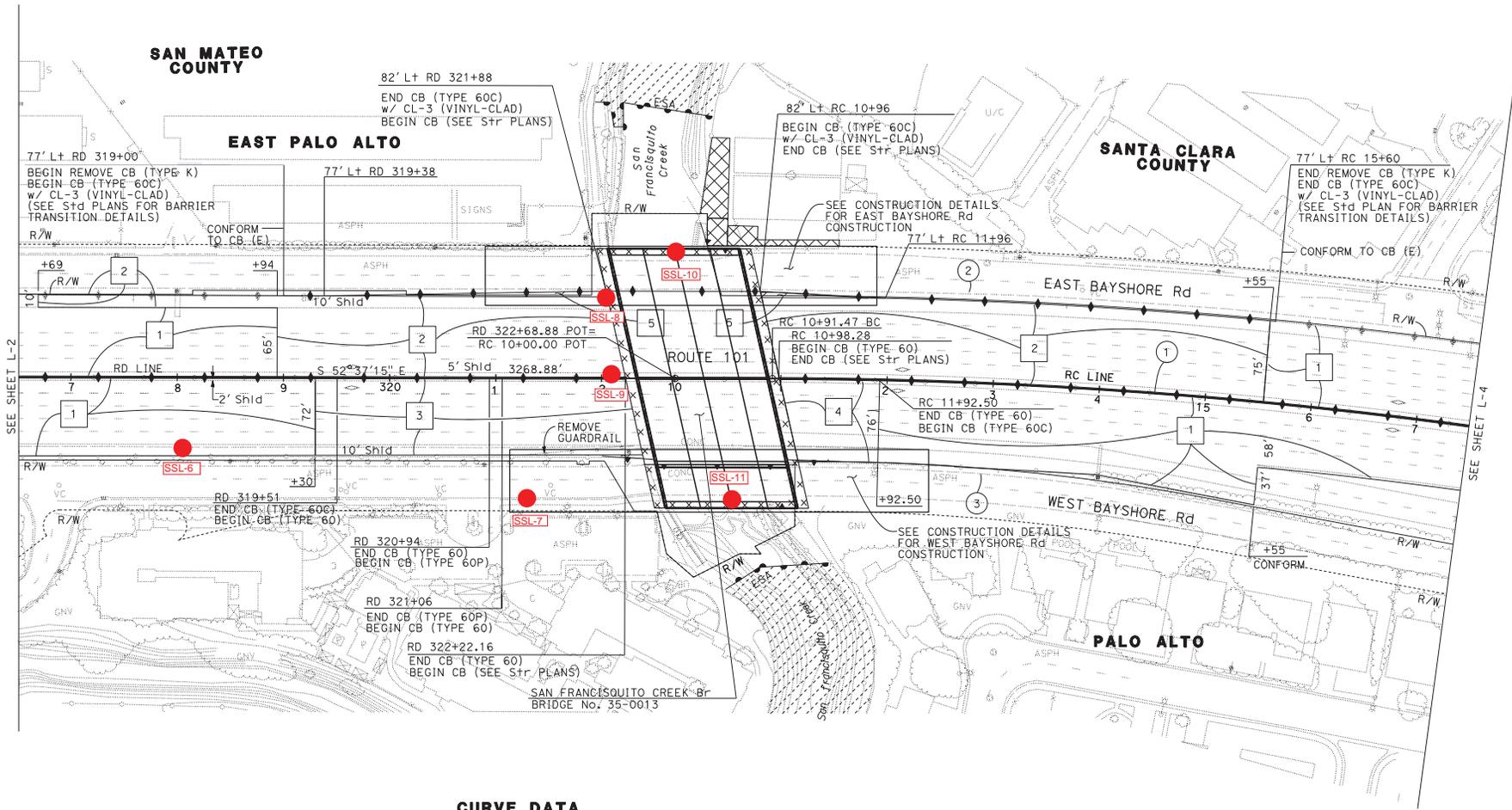
DIST	COUNTY	ROUTE	POST MILES	SHEET	TOTAL
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REGISTERED CIVIL ENGINEER DATE 3/28/13

10-28-13 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
G.B. Modesto
No. 50338
Exp-30-15
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.



CURVE DATA

No. @	R	Δ	T	L	N-COORDINATE	E-COORDINATE
1	4984'	13°41'45"	598.53'	1191.36'	1987432.90	6086213.90
2	5000'	07°10'05"	313.17'	625.53'	1987483.42	6086259.78
3	2000'	10°30'32"	183.93'	366.83'	1989711.54	6088008.28

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

LAYOUT
SCALE: 1" = 50'

L-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 DESIGN
 FUNCTIONAL SUPERVISOR
 DUAT NGUYEN
 CALCULATED BY
 DESIGNED BY
 CHECKED BY
 GERSY MODESTO
 STUART GOODSON
 REVISED BY
 DATE REVISED
 SG
 3/28/13

LAST REVISION DATE PLOTTED => 01-NOV-2013
 03-22-13 TIME PLOTTED => 11:03

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
CDOT
DESIGN

FUNCTIONAL SUPERVISOR
 DUAT NGUYEN

CALCULATED BY
 CHECKED BY

DESIGNED BY
 GERSY MODESTO

REVISOR
 STUART GOODSON

SG
 3/28/13

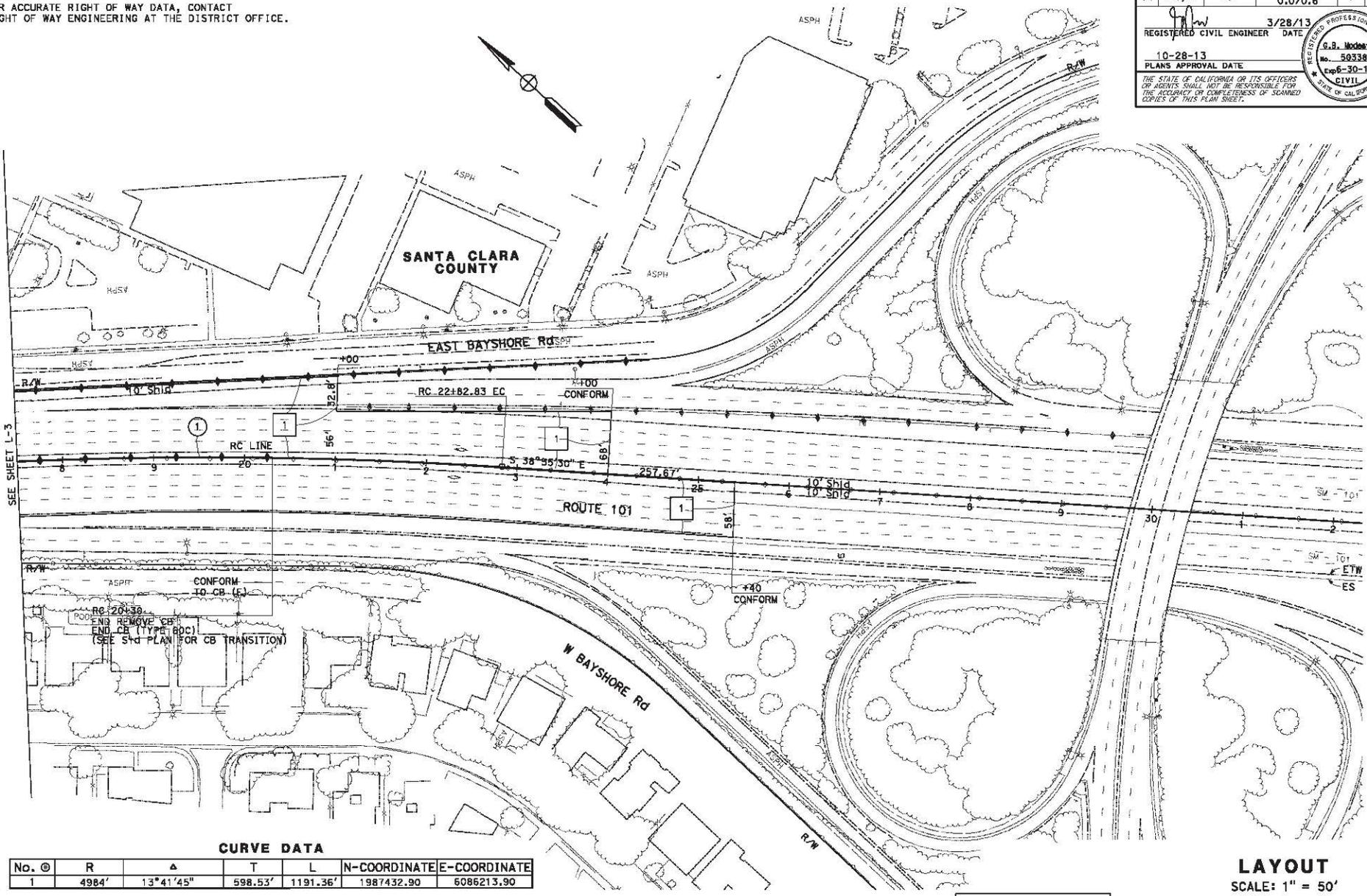
NOTE:
 FOR ACCURATE RIGHT OF WAY DATA, CONTACT
 RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SC, SM	101	52.0/52.6; 0.0/0.6	9	182

REGISTERED CIVIL ENGINEER DATE
 3/28/13
 10-28-13
 PLANS APPROVAL DATE

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

REGISTERED PROFESSIONAL ENGINEER
 G. S. MODESTO
 No. 50338
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA



CURVE DATA

No. @	R	Δ	T	L	N-COORDINATE	E-COORDINATE
1	4984'	13°41'45"	598.53'	1191.36'	1987432.90	6086213.90

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

LAYOUT
 SCALE: 1" = 50'

L-4



Information on Creek Summer Flow

Hydraulic Information

The maximum base flow of 30 cfs is used to size the temporary creek diversion pipe. The flow was based on the 5 year historic daily discharge records (USGS Water Resources) between months of June 1 to October 15 when in-water works are allowed to perform.

The highest daily discharge for the last 5 years is 139 cfs which happened on Oct 13 2009, and it is also the second highest daily discharge for the last 50 years. The second highest daily discharge for the last 5 years is 22 cfs which happened on Oct 14, 2009. The base flow of 30 cfs was used.

A 30-inch plastic pipe (smooth interior) with pipe slope $S=0.005$ is sufficient to handle this flow. The highest daily discharge of 139 cfs for the last 50 years could be handled by the proposed 30-inch plastic pipe under inlet control with pressure flow 75 cfs at 9-foot headwater with storage capacity of the existing channel.

Fish Passage

The fishes concerned in the project area include steelhead, green sturgeon, and salmonids. As a discussion of the fish passage with the Biologist, we were advised that fish passage will need to be considered during a storm event to allow juvenile salmonids trapped in upstream pools to travel through the project area to downstream. The size of the diversion pipe has to be at least two times of the length of a juvenile salmonid which is about 5 inches. With minimum 30 inch diversion pipe, it is sufficient to provide the passage to the juvenile salmonids.

Email correspondence with the Hydraulics Engineer

From: [Dixon Lau](#)
To: [Jiangfan Chen](#); [Stuart Goodson](#)
cc: [Norman Gonsalves](#); [Joseph Peterson](#); [PoTin Leung](#); [Duat Dinh Nguyen](#)
Subject: Re: 235621_San Francisquito Creek Bridge Replacement Project -Diversion NSSP and Plan
Date: 02/20/2013 09:46 AM
Attachments: [04-235621_13-12 Temp Creek Diversion 2-5-13.doc](#)
[Temporary Diversion Plan 2-5-13.pdf](#)
[Temporary Diversion Plan 2-5-13.dgn](#)

Good Morning Jiangfan & Stuart,

District Hydarulics performed another study/analysis on 50 years (ie from Feb 1962 to Feb 2013) historic daily discharge records generated by USGS Water Resources. Based on the construction windows between the months of June 1 to October 15, only one outstanding/max daily discharge of 569 cfs happened in 1962 Oct 13. And the second highest daily discharge of 139 cfs happened in 2009 Oct 13 which could be handled by our proposed 30-inch temporary diversion drainage system with storage capacity of the existing channel.

The probability for the most outstanding event = $1/50 \times 360 \times 100\%$
=0.006 %.

In conclusion the effect of the daily discharge on drainage of San Francisquito Creek was considered and very unlikely the significant adverse drainage condition is expected.

If you have any questions regarding this study please reach me @ 510-1286-4854.

Best Regards,
Dixon Lau
Hydraulics

▼ [Jiangfan Chen/D04/Caltrans/CAGov](#)

Last 5 Year Flow Data

```

# ----- WARNING -----
# The data you have obtained from this automated U.S. Geological Survey database
# have not received Director's approval and as such are provisional and subject to
# revision. The data are released on the condition that neither the USGS nor the
# United States Government may be held liable for any damages resulting from its use.
# Additional info: http://waterdata.usgs.gov/nwis/help/?provisional
#
# File-format description: http://waterdata.usgs.gov/nwis/?tab_delimited_format_info
# Automated-retrieval info: http://waterdata.usgs.gov/nwis/?automated_retrieval_info
#
# Contact: gs-w_support_nwisweb@usgs.gov
# retrieved: 2013-05-29 19:19:47 EDT (vaww01)
#
# Data for the following 1 site(s) are contained in this file
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# -----
#
# Data provided for site 11164500
# DD parameter statistic Description
# 01 00060 00003 Discharge, cubic feet per second (Mean)
#
# Data-value qualification codes included in this output:
# A Approved for publication -- Processing and review completed.
# P Provisional data subject to revision.
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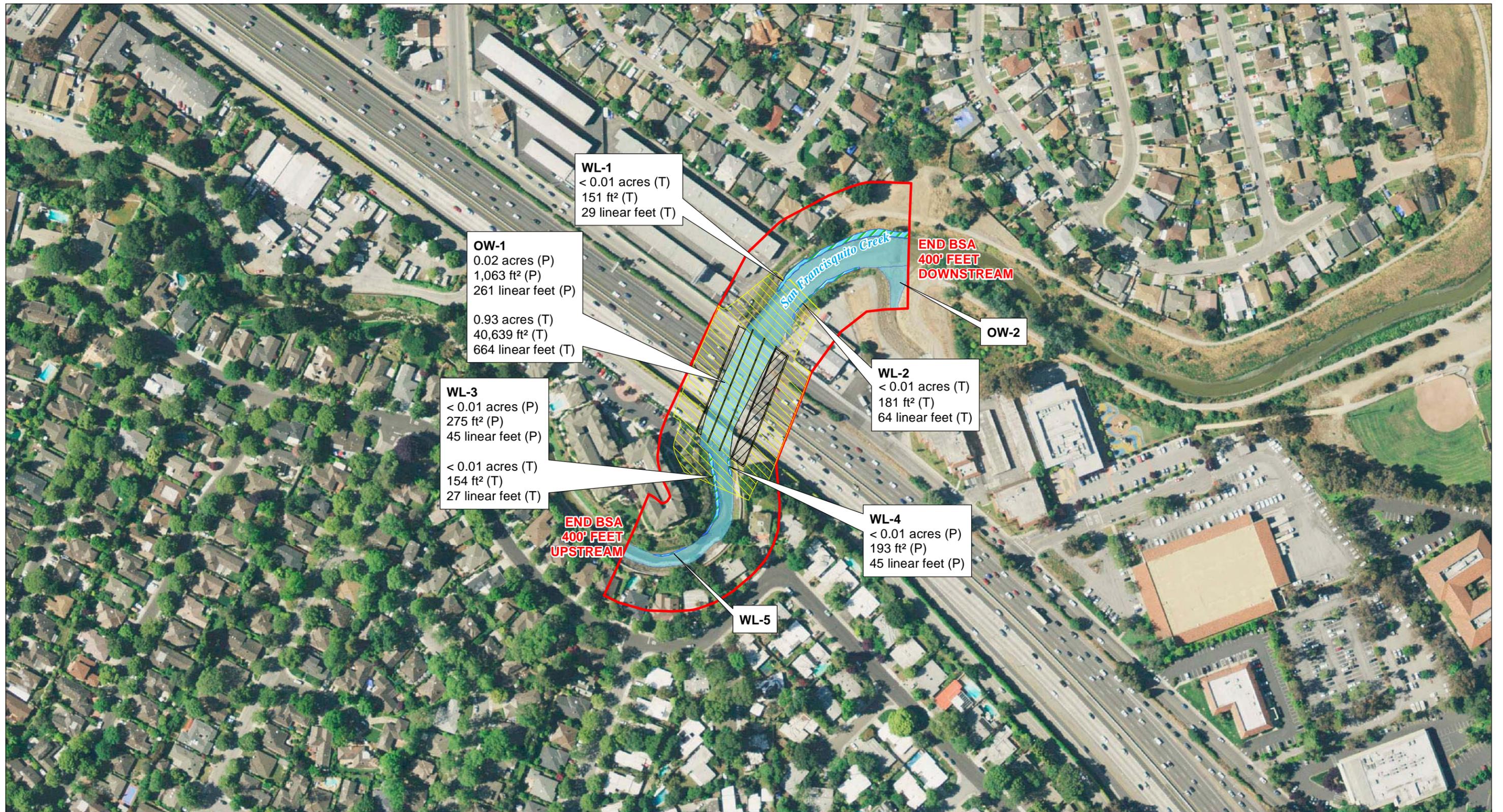
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USGS	11164500	2013-03-22	4.7	P
USGS	11164500	2013-03-23	4.3	P
USGS	11164500	2013-03-24	4.1	P
USGS	11164500	2013-03-25	4.0	P
USGS	11164500	2013-03-26	4.1	P
USGS	11164500	2013-03-27	4.0	P
USGS	11164500	2013-03-28	4.2	P
USGS	11164500	2013-03-29	4.5	P
USGS	11164500	2013-03-30	4.0	P
USGS	11164500	2013-03-31	4.5	P
USGS	11164500	2013-04-01	5.5	P
USGS	11164500	2013-04-02	4.9	P
USGS	11164500	2013-04-03	4.2	P
USGS	11164500	2013-04-04	8.3	P
USGS	11164500	2013-04-05	7.3	P
USGS	11164500	2013-04-06	5.3	P
USGS	11164500	2013-04-07	4.7	P
USGS	11164500	2013-04-08	5.0	P
USGS	11164500	2013-04-09	4.4	P
USGS	11164500	2013-04-10	3.6	P
USGS	11164500	2013-04-11	3.2	P
USGS	11164500	2013-04-12	3.1	P
USGS	11164500	2013-04-13	3.0	P
USGS	11164500	2013-04-14	2.8	P
USGS	11164500	2013-04-15	2.6	P
USGS	11164500	2013-04-16	2.4	P
USGS	11164500	2013-04-17	2.2	P
USGS	11164500	2013-04-18	2.1	P
USGS	11164500	2013-04-19	2.0	P
USGS	11164500	2013-04-20	1.8	P
USGS	11164500	2013-04-21	1.8	P
USGS	11164500	2013-04-22	1.6	P
USGS	11164500	2013-04-23	1.5	P
USGS	11164500	2013-04-24	1.5	P
USGS	11164500	2013-04-25	1.6	P
USGS	11164500	2013-04-26	1.5	P
USGS	11164500	2013-04-27	1.4	P
USGS	11164500	2013-04-28	1.4	P
USGS	11164500	2013-04-29	1.3	P
USGS	11164500	2013-04-30	1.2	P
USGS	11164500	2013-05-01	1.1	P
USGS	11164500	2013-05-02	0.94	P
USGS	11164500	2013-05-03	0.89	P
USGS	11164500	2013-05-04	0.90	P

USGS	11164500	2013-05-05	1.0	P
USGS	11164500	2013-05-06	1.2	P
USGS	11164500	2013-05-07	0.98	P
USGS	11164500	2013-05-08	0.98	P
USGS	11164500	2013-05-09	0.97	P
USGS	11164500	2013-05-10	0.93	P
USGS	11164500	2013-05-11	0.89	P
USGS	11164500	2013-05-12	0.89	P
USGS	11164500	2013-05-13	0.84	P
USGS	11164500	2013-05-14	0.81	P
USGS	11164500	2013-05-15	0.75	P
USGS	11164500	2013-05-16	0.74	P
USGS	11164500	2013-05-17	0.75	P
USGS	11164500	2013-05-18	0.74	P
USGS	11164500	2013-05-19	0.67	P
USGS	11164500	2013-05-20	0.63	P
USGS	11164500	2013-05-21	0.57	P
USGS	11164500	2013-05-22	0.53	P
USGS	11164500	2013-05-23	0.56	P
USGS	11164500	2013-05-24	0.55	P
USGS	11164500	2013-05-25	0.53	P
USGS	11164500	2013-05-26	0.53	P
USGS	11164500	2013-05-27	0.53	P
USGS	11164500	2013-05-28	0.56	P

401 Impact Map



WL-1
 < 0.01 acres (T)
 151 ft² (T)
 29 linear feet (T)

OW-1
 0.02 acres (P)
 1,063 ft² (P)
 261 linear feet (P)

0.93 acres (T)
 40,639 ft² (T)
 664 linear feet (T)

WL-3
 < 0.01 acres (P)
 275 ft² (P)
 45 linear feet (P)

< 0.01 acres (T)
 154 ft² (T)
 27 linear feet (T)

WL-2
 < 0.01 acres (T)
 181 ft² (T)
 64 linear feet (T)

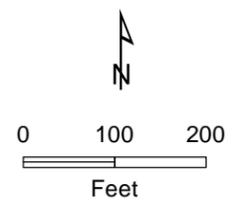
WL-4
 < 0.01 acres (P)
 193 ft² (P)
 45 linear feet (P)

WL-5

**END BSA
 400 FEET
 DOWNSTREAM**

**END BSA
 400 FEET
 UPSTREAM**

- Biological Study Area
- Wetland
- Other Waters of the U.S.
- Permanent Impact
- Temporary Impact



**Impacts to Jurisdictional Waters
 of the U.S. in the Biological Study Area**



San Francisquito Creek
 Bridge Replacement

JULY 2011

FIGURE 3

Permits

CALIFORNIA DEPARTMENT OF FISH AND GAME

BAY DELTA REGION
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558
(707) 944-5520
WWW.DFG.CA.GOV



STREAMBED ALTERATION AGREEMENT

NOTIFICATION NO. 1600-2011-0270-R3
San Francisquito Creek

CALIFORNIA DEPARTMENT OF TRANSPORTATION
SAN FRANCISQUITO CREEK BRIDGE REPLACEMENT PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and California Department of Transportation (Permittee) or as represented Jeffrey G. Jensen.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on May 12, 2012 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement

PROJECT LOCATION

The project is located where Interstate 101 crosses the San Francisquito Creek, on the border of San Mateo and Santa Clara Counties, in the State of California;

PROJECT DESCRIPTION

Caltrans proposes to demolish the existing San Francisquito Creek Bridge and the two frontage road bridges and replace them with a new bridge (Project). The Project proposes to replace the existing 83-foot long by 232-foot wide San Francisquito Creek Bridge and two associated two-lane frontage roads. The new bridge structure will have 12 feet in additional width and 42 feet in additional length to accommodate the standard

lane requirements of Route 101 and the anticipated flow capacity of San Francisquito Creek. The proposed bridge will be 125 feet long and 244 feet wide and will carry five lanes of traffic on Route 101 in each direction. San Francisquito Creek is a tidally influenced creek that discharges water into the southern end of the San Francisco Bay. There has been a lengthy history of flooding along the banks of the creek due to limited capacity. Sediment deposition along the channel has clogged the waterway directly underneath and adjacent to the bridge. During extreme storm events, water has overtopped the bridge. The San Francisquito Creek Joint Powers Authority (SFCJPA) has proposed improvements to the creek to improve flow capacity upstream and downstream from Route 101. Caltrans, in cooperation with the SFCJPA effort, proposes to improve the hydraulic capacity of the bridge structure to accommodate a 100-year creek flow event combined with a high-tide event. It is proposed that the creek be widened and the new bridge lengthened to the southeast towards Palo Alto and Santa Clara County. The increased bridge length will require the construction of three pier walls to replace the two existing pier walls. The frontage road bridges will sit on the same pier walls as the new San Francisquito Creek Bridge. One of the four bridge cells will remain closed off with soldier piles walls on both sides until the downstream and upstream channels are widened to match the wider dimensions of the new bridge. These improvements will be completed by the SFCJPA under a separate project. The downstream SFCJPA project may be constructed concurrently or prior to the proposed Project. Once the SFCJPA flood protection projects are completed, all of the soldier pile walls will be removed, and the fourth cell will become fully operational.

A temporary soldier pile wall 25 feet long will be constructed downstream of the San Francisquito Creek Bridge adjacent to the Yeaman's Auto Body Shop parcel. The wall will be constructed on what is currently the south bank of the creek. The creek bank will then be excavated to the face of the retaining wall which ties into the third pier wall south of the new bridge. Riprap will be placed and removed post construction by the SFCJPA when the creek expansion project opens the fourth cell of the San Francisquito Creek Bridge.

Two cofferdams will be constructed upstream and downstream of the work area. The cofferdams will be constructed with sheet metal or another appropriate material and will be approximately 6 feet high. The creek will be diverted through a 30-inch diameter corrugated steel pipe that spans 460 feet between the two cofferdams. During flow events the pipe will allow flow downstream through the construction site.

An excavator will be used to excavate soil for abutments, site preparation for pile installation, and to widen the channel. Timber pads will be laid down in the dewatered work area to support construction equipment. Approximately 200 pipe piles will be permanently installed. The piles will be approximately 80-90 feet long and 16 inches in diameter. The piles will be installed by pre-drilling 40 feet through the sand layer and then the piles will be driven into the mud layer. A pile driver will be used to drive 6 to 8 piles per day. Pile driving is estimated to take 30 work days and will occur 8 hours per day during the dry season. Falsework will be constructed and the pile cap, pier walls

and bridge deck will be poured using a concrete pump truck and cement mixer. The existing bridge will be removed using mounted hydraulic jack hammer, excavator and dump trucks

The creek will be accessed via the south bank upstream and downstream of the bridge. All temporary items in the creek, including falsework, cofferdams, and the water diversion pipe will be removed at the end of each construction season. The contours of the creek will be restored, access ramps backfilled, and erosion control measures implemented to prevent erosion.

Project Schedule

The Bridge construction is expected to begin June 1, 2014, and be completed by October 15, 2016.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include:

- Riparian habitat
- Central California Coastal Steelhead habitat
- North American green sturgeon habitat
- Aquatic invertebrates
- Bird nesting
- Western pond turtles and habitat
- Emergent wetland
- Bat Roosting

The adverse effects the project could have on the fish or wildlife resources identified above include:

- Tree removal
- Temporary loss of natural bed and bank
- Temporary loss of riparian habitat
- Temporary degradation of salmonid and sturgeon habitat
- Water quality degradation
- Short-term release of contaminants
- Disruption of bat roosting

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. This Agreement and any extensions or amendments shall be onsite at all times during Project activities.
- 1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.
- 1.4 Project Site Entry. Permittee agrees that DFG personnel may, with notification of the Resident Engineer, enter the project site at any time to verify compliance with the Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below. These conditions apply to CDFW 1602 jurisdiction:

- 2.1 To minimize adverse impacts to fish and wildlife all work within the bed, bank, channel, and associated riparian habitat shall be confined to the period of June 1 to October 15. Revegetation work is not confined to this time period.
- 2.2 At least 30-days prior to commencing project activities covered by this Agreement, the Permittee shall submit to DFG, for review and approval, the qualifications for a number of biologists (Qualified Biologist) that shall oversee the implementation of the conditions in this Agreement. At a minimum, the Qualified Biologists shall have a combination of academic training and professional experience in biological sciences and related resource management activities. The Qualified Biologists shall communicate to the Resident Engineer when any activity is not in compliance with this Agreement and the Resident Engineer shall immediately stop the activity that is not in compliance with this Agreement.
- 2.3 Prior to work commencing at the bridge site, the bridge shall be surveyed for bats by a Qualified Biologist. If bats are found bats shall not be disturbed without specific notice to and consultation with the CDFW. CDFW reserves the right provide additional provisions to this Agreement designed to protect bats.

2.4 Within 48 hours prior to construction, a Qualified Biologist shall conduct a wildlife survey, at the appropriate time of day, focusing on presence of Western pond turtle (*Clemmys marmorata*). If any Western pond turtles are found, a Qualified Biologist shall relocate the animal upstream of the project site in appropriate habitat.

2.5 If Project activities will occur between February 15 and September 1, a Qualified Biologist shall conduct pre-construction surveys for nesting birds no more than one week prior to construction. Surveys shall consist of multiple days of observations. If nesting birds are found, a 50-foot radius buffer shall be established around the nest, a 300-foot- foot radius buffer in the case of raptors, e.g. hawks, owls, and eagles. The area shall be avoided. A buffer of less than 300 feet, but no less than 100 feet, may be used if a Qualified Biologist, experienced in raptor behavior, is assigned to monitor the behavior of any raptor nesting within 300 feet of Project activities. The Qualified Biologist shall have authority, through the Resident Engineer, to order the cessation of all Project activities within 300 feet of any raptor nest if the birds exhibit abnormal nesting behavior which may cause reproductive failure (nest abandonment and loss of eggs and/or young). Abnormal nesting behaviors which may cause reproductive harm include, but are not limited to: defensive flights/vocalizations directed towards Project personnel, standing up from a brooding position, and flying away from the nest. Project activities within 300 feet of the nest shall not resume until the Qualified Biologist has consulted with CDFW and both the Qualified Biologist and CDFW confirm that the bird's behavior has normalized or the young have left the nest.

2.6 The site shall be dewatered as necessary to provide an adequately dry work area. Corrugated metal pipes shall not be used for the water diversion. Pumps and siphons shall have double screens and mesh measuring 3/32 inches.

2.7 The Resident Engineer, or a designated representative, and a Qualified Biologist shall be onsite during dewatering and aquatic species relocation activities. All live steelhead and green sturgeon shall be handled with extreme care and kept in water to the maximum extent possible during relocation activities. All captured fish shall be kept in cool, shaded, and aerated water that is protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. If necessary, a Qualified Biologist shall have at least two containers and segregate young-of-year salmonids from older salmonids and other potential aquatic predators in order to avoid predation effects. Captured steelhead and green sturgeon shall be relocated as soon as possible and will be given highest priority over other non-listed fish species. Water from the local collection site shall be used in live wells or other holding facilities during loading and transport. At no time shall chlorinated tap water be used. Water temperatures within any live well or other holding facility shall be kept at or below water temperature at the collection site. No non-native animals captured shall be returned to the stream or released alive. Both juvenile steelhead and green sturgeon shall be released downstream of the project area. Only a

Qualified Biologist with appropriate state and/or federal handling permits are permitted to handle state and/or federally listed species.

2.8 Permittee shall comply with all applicable state and federal laws, including the California and Federal Endangered Species Act. This Agreement does not authorize the take of any state or federally endangered listed species. Liability for any take or incidental take of such species remains the responsibility of the Permittee for the duration of the project. Any unauthorized take of listed species may result in prosecution and nullification of the Agreement.

2.9 The perimeter of the work site shall be adequately fenced using high visibility Environmentally Sensitive Area (ESA) fencing to prevent damage to adjacent riparian habitat. No construction activities, within the riparian zone, will be allowed within the habitat protected by the ESA fencing (this does not preclude activities from occurring on the bridge or deck work above the ESA area).

2.10 To the maximum extent practicable, Permittee shall leave the root masses of removed trees and shrubs in place. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations.

2.11 Permittee shall salvage, stockpile, replace, and contour all wetland soils to the maximum extent practicable.

2.12 Permittee shall conduct work defined in the above project description, and within the project area, during periods of dry weather. The project area is defined as the bed, bank, channel, and associated riparian habitat. The Permittee shall monitor forecasted precipitation. When $\frac{1}{4}$ inch or more of precipitation is forecasted to occur, the Permittee shall stop work before precipitation commences. No activity of the project may be started if its associated erosion control measures cannot be completed prior to the onset of precipitation. After any storm event, the Permittee shall inspect all sites currently under construction and all sites scheduled to begin construction within the next 72 hours for erosion and sediment problems and take corrective action as needed. Seventy-two hour weather forecasts from National Weather Service shall be consulted and work shall not start back up until runoff ceases and there is less than a 30% forecast for precipitation for the following 24-hour period.

2.13 Permittee shall utilize erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter waterways. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. Erosion control installations shall be monitored for effectiveness and shall be repaired or replaced as recommended by a Water Quality Monitor to the Resident Engineer or designated representative. As needed to prevent sediment transport, Permittee shall deploy soil stabilizer such as hydroseeding, netting, erosion control mats, mulch, fiber rolls, silt fences, check dams, and flow velocity dissipation devices. Permittee shall stabilize and equip construction site entrances and exits with

tire washing capability. Materials containing monofilament or plastic shall not be used. Erosion and sediment control measures shall be installed prior to unseasonable rain storms.

2.14 Hydroseed mixes shall not contain exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: <http://www.cal-ipc.org/ip/inventory/weedlist.php>.

2.15 Concrete shall be excluded from receiving waters for a period of 30-days after it is poured/sprayed. During that time the concrete shall be kept moist and runoff from the concrete shall not be allowed to enter any receiving waters. Commercial sealants may be applied to the concrete surface where difficulty in excluding flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is cured. If groundwater comes into contact with fresh concrete, it shall be prevented from flowing towards receiving waters.

2.16 Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the creek channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip pans. Any equipment or vehicles driven and/or operated above or adjacent to the stream must be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

2.17 Refueling of mobile construction equipment and vehicles shall not occur within 50 feet of any water body, or anywhere that spilled fuel could drain to a water body. Refueling of stationary equipment requiring breakdown and setup to move will remain in place. All equipment shall be refueled with appropriate drip pans, absorbent pads, and water quality Best Management Practices. Equipment and vehicles operating in the project area shall be checked and maintained daily to prevent leaks of fuels, lubricants, or other liquids.

2.18 Permittee shall plan appropriately to ensure all work within DFG jurisdiction be completed by October 15 of each year.

3. Compensatory Measures

- 3.1 Oak tree removal shall be mitigated at a 5:1 removal to replacement ratio at the Pacheco Creek Mitigation Area in Santa Clara County. Replacement trees shall consist of 5-gallon saplings and shall be native species adapted to the lighting, soil and hydrological conditions at the replanting site. To ensure 80% survivorship at the end of 5 years, monitoring shall be conducted annually for a period of five years. If during the annual monitoring the plantings are not projected to meet 80% survivorship, Permittee is responsible for

replacement planting, additional watering, weeding, invasive exotic eradication, or any other practices necessary to achieve 80% survivorship.

CONTACT INFORMATION

Any communication that Permittee or DFG submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or DFG specifies by written notice to the other.

To Permittee:

California Department of Transportation
Jeffrey G. Jensen
111 Grand Ave.
(510)622-8729
Jeffrey_jensen@dot.ca.gov

To DFG:

Department of Fish and Game
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
Attn: Lake and Streambed Alteration Program – Melissa Escaron
Notification #1600-2011-0270-R3
mescaron@dfg.ca.gov

LIABILITY

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute DFG's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

SUSPENSION AND REVOCATION

DFG may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before DFG suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before DFG suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused DFG to issue the notice.

ENFORCEMENT

Nothing in the Agreement precludes DFG from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects DFG's enforcement authority or that of its enforcement personnel.

OTHER LEGAL OBLIGATIONS

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

AMENDMENT

DFG may amend the Agreement at any time during its term if DFG determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by DFG and Permittee. To request an amendment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

TRANSFER AND ASSIGNMENT

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter DFG approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

EXTENSIONS

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to DFG a completed DFG "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). DFG shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)). .

EFFECTIVE DATE

The Agreement becomes effective on the date of DFG's signature, which shall be: 1) after Permittee's signature; 2) after DFG complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html.

TERM

This Agreement shall expire on December 31, 2017, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

AUTHORIZATION

This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify DFG in accordance with FGC section 1602.

CONCURRENCE

The undersigned accepts and agrees to comply with all provisions contained herein.

FOR CALIFORNIA DEPARTMENT OF TRANSPORTATION

Jeffrey G. Jensen
Office Chief Biological Sciences and Permits

Date

FOR DEPARTMENT OF FISH AND GAME

Scott Wilson
Acting Regional Manger

Date

San Francisco Bay Regional Water Quality Control Board

June 12, 2013
CIWQS Place No. 793406

Sent via electronic mail--no hard copy to follow

California Department of Transportation
Attn: Ron Moriguchi
Ron_Moriguchi@dot.ca.gov
111 Grand Ave.
Oakland, CA 94612-3717

Subject: Water Quality Certification for the U.S. 101 San Francisquito Creek Bridge Replacement Project, Cities of Palo Alto and East Palo Alto, Santa Clara and San Mateo County

Department Project No.: EA 04-23562

Dear Mr. Moriguchi:

We have reviewed and hereby issue water quality certification (Certification) to the California Department of Transportation (Department) for the U.S. 101 San Francisquito Creek Bridge Replacement Project (Project). The Department is seeking a Nationwide Permit 14 for Linear Transportation Projects from the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act (33 U.S.C. § 1344). As such, the Department has applied to the San Francisco Bay Regional Water Quality Control Board (Water Board) for a Clean Water Act Section 401 water quality certification that the Project will not violate State water quality standards.

Project: The following project description was derived from application materials received by the Water Board on February 19, 2013 and supplemental information provided by the Department via email on May 17, May 31, June 5, and June 6, 2013.

The Department proposes removal and replacement of the bridge that carries U.S. 101, East Bayshore Road, and West Bayshore Road over San Francisquito Creek (Creek). The existing bridge is structurally deteriorated and lacks hydraulic capacity, which contributes to flooding along the Creek. The replacement bridge will be wider than the existing bridge to provide standard lane and shoulder widths on U.S. 101, and longer than the existing bridge to accommodate a 100-year Creek flow event combined with a 100-year high tide event. The Project is planned in conjunction with projects by the San Francisquito Creek Joint Powers Authority (SFCJPA) to increase hydraulic capacity in the Creek downstream

and upstream of U.S. 101. The Project is expected to take three years to complete and will be staged to minimize traffic impacts.

Project elements include:

- Temporary diversion of the Creek each year between June 1 and October 15. Creek diversion will be accomplished by constructing sheet pile cofferdams and installing a 30" diversion pipe to allow water to pass through the work area.
- Installation of access ramps to allow equipment to access the Creek for construction of cofferdams and bridge demolition and construction.
- Demolition and removal of the existing bridge which consists of two pier walls and three spans.
- Installation of approximately 200 - 16 inch diameter pier piles.
- Installation of falsework and construction of a new bridge composed of three pier walls and four spans. Creek flow through the fourth span will be blocked on both sides by soldier pile walls until the downstream channel widening project by the SFCJPA is completed.
- Placement of rock slope protection along the channel bed at the base of the soldier pile wall. Rock slope protection will be removed as part of the SFCJPA project.
- Dewatering of stormwater and groundwater from the project site.

Impacts: Project implementation would permanently impact approximately 0.05 acre (286 linear feet) of San Francisquito Creek, and two coast live oak trees. Permanent impact to the Creek would result from construction of three concrete bents to support the bridge deck and additional shading caused by a larger bridge footprint. Permanent impact to oak trees would result from roadway and bridge abutment construction which would compromise the root structure of the trees.

Project implementation would temporarily impact approximately 0.02 acre of estuarine wetland, 0.93 acres (527 linear feet) of San Francisquito Creek and 0.092 acre of riparian vegetation. Temporary impacts will result from demolition and construction of the bridge and temporary diversion of the Creek.

See Attachment for impact locations and maps.

Roadway Pollutant Impacts: Project implementation would result in approximately 0.26 acres of new and 0.44 acres of reworked impervious area. Stormwater runoff from

impervious areas may contain hydrocarbons, metals, volatile organic compounds, trash, and sediment at levels that may significantly impact waters of the State if left untreated.

Hydromodification Impacts: Added impervious areas may result in alterations to existing hydrologic regimes, resulting in erosion and/or changes of sediment transport in receiving waters (hydromodification). Because added impervious area for the project will result in a minimal increase in stormwater runoff, and the project area discharges to San Francisquito Creek, which is tidally influenced, hydromodification mitigation is not required for this Project.

Avoidance and Minimization: The Department has avoided and minimized impacts to San Francisquito Creek, wetlands, and riparian vegetation by: utilizing a closed bypass pipe to temporarily divert the Creek at the suggestion of the National Marine Fisheries Service; utilizing a timber mat and plywood (or equivalent) system to protect the Creek from demolition debris; using sediment and erosion control best management practices; and performing construction and demolition activities in the Creek between June 1 and October 15 when flows are minimal.

Mitigation: To mitigate for permanent impacts to riparian vegetation, the Department shall plant 10 oak trees at the Pacheco Creek Mitigation Area in Santa Clara County (see Certification Condition no. 2).

To mitigate for temporary impacts to San Francisquito Creek and estuarine wetlands, the Department shall remove all non-native materials used for bridge construction and temporary creek bypass, that are not part of the permanent bridge structure at the end of each construction season. The Creek shall be restored to original elevations and contours, except in the areas where it will be widened to increase hydraulic capacity. Widening of the Creek shall result in approximately 0.34 acres in increased Creek area within the project limits.

Roadway Pollutant Mitigation: As mitigation for increased pollutant loads associated with approximately 0.70 acre of added and reworked impervious area for this Project, the Department shall construct two biofiltration swales to treat stormwater runoff (see Certification Condition no. 1). The biofiltration swales shall be located in the northbound and southbound entrance loops from Embarcadero Road to U.S. 101 (see Attachment for location map and details). Bioswale 1, located in the southbound loop, shall be sized to treat approximately 0.498 acre of impervious area. Bioswale 2, located in the northbound loop, shall be sized to treat approximately 0.222 acre of impervious area.

CEQA Compliance: The Department evaluated the Project pursuant to the requirements of the California Environmental Quality Act (CEQA) in a Negative Declaration. The Department filed a Notice of Determination on March 19, 2012 that the Project would not have a significant effect on the environment (SCH No. 2011042065).

California Wetlands Portal: It has been determined through regional, state, and national studies that tracking of mitigation/restoration projects must be improved to better assess the performance of these projects. In addition, to effectively carry out the State's No Net Loss Policy for wetlands, the State needs to closely track wetland losses, gains, and mitigation/restoration project success. Therefore, we require the Department use the California Wetlands Standard Form to provide Project information related to impacts and mitigation/restoration measures (see Condition nos. 3 and 4 of this Certification). An electronic copy of the form and instructions may be downloaded at:

<http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml>

Project information concerning impacts and mitigation/restoration will be made available at the web link: <http://www.californiawetlands.net>

Certification: I hereby issue an order certifying that any discharge from the referenced Project will comply with the applicable provisions of sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) of the Clean Water Act, and with other applicable requirements of State law. This discharge is also regulated under State Water Resources Control Board Order No. 2003 - 0017 – DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification" which requires compliance with all conditions of this Certification. The following conditions are associated with this Certification:

1. As mitigation for increased pollutant loads associated with impervious surface added and reworked with the Project, the Department shall provide treatment of stormwater runoff from no less than 0.70 acre of impervious area using biofiltration swales. The biofiltration swales shall be installed concurrently with this Project and be consistent with the plans in the Attachment of this Certification. Any revisions to the biofiltration swale design details shall be subject to the acceptance of Water Board staff.
2. To compensate for the removal of two coast live oak trees, the Department shall:
 - a. Plant no less than 10 oak trees at Pacheco Creek Mitigation Area in Santa Clara County, CA;

- b. Only deem oak tree plantings successful after ten growing seasons, whereupon eighty percent of the planted oaks shall exhibit average or improved health and vigor from the previous two growing seasons;
 - c. Provide additional planting, maintenance and monitoring until the success criteria is satisfied if the above success criteria is not met;
 - d. Submit monitoring reports to the Water Board by January 1 for years 1, 2, 3, 5, 7, and 10. All monitoring reports shall include photo-documentation utilizing consistent photo vantage points. At the end of year 10, a comprehensive final report shall be prepared that includes summaries of the monitoring data, representative photos, and maps.
3. The Department is required to use the California Wetlands Standard Form to provide project information describing impacts and mitigation/restoration measures within 14 days from the date of this Certification. An electronic copy of the form can be downloaded at: <http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml>. The completed California Wetlands form shall be submitted electronically to habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both: 1) The Water Board, 1515 Clay St., Suite 1400, Oakland, CA 94612, to the attention of California Wetlands Portal; and 2) San Francisco Estuary Institute, 4911 Central Ave., Richmond, CA 94804, to the attention of California Wetlands Portal;
4. Mitigation and monitoring reports shall be submitted to the Water Board by January 1 of each year. Modification of this deadline is subject to the acceptance of Water Board staff. The reports may be submitted by upload to the California Wetlands Portal website at <http://www.californiawetlands.net/tracker/ba/list>. Select San Francisco Bridge Replacement Project from the Bay Area Project List and then use the "Files & Links" web-link on the mitigation site project page to upload the report. The Department shall immediately notify appropriate Water Board staff once the monitoring report has been uploaded. If the Department cannot, or chooses not to submit the report using the California Wetlands Portal, the report may be submitted directly to Water Board staff electronically, via e-mail;
5. All temporarily disturbed areas above the ordinary high water mark shall be re-vegetated using only native plant species. The Department shall not cause, through operation of heavy machinery, or any other construction activity, compaction of marshes or open waters in areas of temporary impact. Any compaction of marshes or open waters in areas of temporary impact shall require mitigation;
6. The Resident Engineer (or appropriately authorized agent) shall hold onsite water quality permit compliance meetings (similar to tailgate safety meetings) to discuss permit compliance, including instructions on violation avoidance and violation reporting procedures. The meetings shall be held at least every other week, before forecasted storm events, and when a new contractor or subcontractor arrives to begin

work at the site. The contractors, subcontractors and their employees, as well as any inspectors or monitors assigned to the Project, shall be present at the meetings. The Department shall maintain dated sign-in sheets for attendees at these meetings, and shall make them available to the Water Board on request;

7. Concrete shall be excluded from surface water for a period of 30 days after it is poured/sprayed. During that time the concrete shall be kept moist and runoff from the concrete shall not be allowed to enter State waters. Commercial sealants may be applied to the concrete surface in instances where 30 days of water exclusion is infeasible. If sealant is used, water shall be excluded from the site until the sealant is cured. If groundwater comes into contact with fresh concrete, it shall be prevented from flowing towards surface water;
8. The Project shall be constructed in conformance with the Project Description described in this Certification and certification application materials. Any change in the Project that could impact State waters may require compensatory mitigation and shall first be reported to and found acceptable by the Water Board Executive Officer;
9. If, at any time, an unauthorized discharge to surface water (including wetlands, rivers or streams) occurs, or any other water quality problem arises, the associated Project activities shall immediately cease until adequate BMPs are implemented. The Water Board shall be notified promptly within 24 hours after the unauthorized discharge or water quality problem arises;
10. The Department shall adhere to the conditions imposed by Nationwide Permit 14 for Linear Transportation Projects issued to the Department by the U.S. Army Corps of Engineers, the Streambed Alteration Agreement issued to the Department by the California Department of Fish and Wildlife, and the Biological Opinion issued by the National Marine Fisheries Service;
11. All activities and best management practices (BMPs) shall be implemented according to the submitted application materials and the findings and conditions of this Certification. BMPs for erosion, sediment, turbidity and pollutant control shall be implemented and in place at commencement of, during, and after any ground clearing activities, construction activities, or any other Project activities that could result in erosion, sediment, or other pollutant discharges to waters of the State. The BMPs shall be implemented in accordance with the Caltrans Construction Site Best Management Practice Manual (CCSBMPM) and all contractors and subcontractors shall comply with the CCSBMPM. BMPs for erosion and sediment control shall be utilized throughout all phases of construction, regardless of date, wherever sediment-laden runoff threatens to enter waters of the State. The Department shall stage erosion and sediment control materials at the work site. All BMPs shall be installed properly and in accordance with the manufacturer's specifications. If the Project

Resident Engineer elects to install alternative BMPs for use on the project, the Department shall submit a proposal to Water Board staff for review and concurrence;

12. The Department shall not use or allow the use of erosion control products that contain synthetic materials within waters of the State at any time. The Department shall request approval from Water Board staff if an exception from this requirement is needed at a specific location. In upland and riparian areas, the Department shall prioritize the use of wildlife-friendly biodegradable (not photo-degradable) erosion control products. The Department shall not use or allow the use of erosion control products that contain synthetic netting for permanent erosion control (i.e. erosion control materials to be left in place for two years or after the completion date of the Project).

If the Department finds that erosion control netting or products have entrapped or harmed wildlife, personnel shall remove the netting or product and replace it with wildlife-friendly biodegradable products;

13. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall be prohibited within waters of the State. Fueling of individual equipment types within waters of the State may be authorized if the Department first prepares a fueling plan that:
 - a. Identifies the specific piece of machinery that may require fueling within waters of the State;
 - b. Provides justification for the need to refuel within State waters. The justification shall describe why fueling outside of jurisdictional waters is infeasible; and
 - c. Includes a narrative of specific BMPs that shall be employed to prevent and capture fuel releases.

Fueling of equipment within waters of the State shall be prohibited until the above mentioned plan has been approved by Water Board staff. The fueling plan may be submitted individually, included in the project Storm Water Pollution Prevention Plan (SWPPP), or submitted as a SWPPP amendment.

14. Fueling, lubrication, maintenance, storage and staging of vehicles and equipment shall not result in a discharge or a threatened discharge to any waters of the State. At no time shall the Department use any vehicle or equipment which leaks any substance that may impact water quality;
15. Except as expressly allowed in this Certification, the Department is prohibited from discharging waste to waters of the State. No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or concrete washings, welding slag, oil or petroleum products, or other organic or earthen material from any construction or

associated activity of whatever nature, other than that authorized by this Certification, shall be allowed to enter into waters of the State. Except for temporary stockpiling of waste generated during demolition operations (“temporary” in this instance means generated and removed during the same working day), waste materials shall not be placed where the materials may be washed by rainfall into waters of the State;

16. The Department shall provide analysis and verification that placement of non-hazardous waste or inert materials (which may include discarded product or recycled materials) will not result in degradation of water quality, human health, or the environment. All Project-generated waste shall be handled, transported, and disposed in strict compliance with all applicable State and Federal laws and regulations. When construction is complete, any excess material or debris shall be removed from the work area and disposed of properly and in accordance with the State and Federal laws and regulations, the Department is liable and responsible for the proper disposal of waste generated by their Project;
17. All imported fill material shall be clean and free of pollutants. All fill material shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low-level contaminated solids as fill onsite shall be performed in accordance with all State and Federal policies and established guidelines; a plan for such re-use must first be submitted to Water Board staff for review and concurrence;
18. Work in flowing or standing surface waters is prohibited;
19. Caltrans shall submit, subject to the acceptance of Water Board staff, a dewatering and/or diversion plan that appropriately describes the dewatered or diverted areas and how those areas will be handled during construction. The diversion/dewatering plans shall be submitted no later than 30 days prior to conducting the proposed activity. Diversion/dewatering activities shall be prohibited until Water Board staff has accepted the dewatering/diversion plan for that specific water. Information submitted shall include the area or work to be diverted or dewatered and method of the proposed activity. All diversion or dewatering activities shall be designed to minimize the impact to waters of the State, avoid fish entrainment, and maintain natural flows upstream and downstream. All dewatering or diversion structures shall be installed in a manner that does not cause sedimentation, siltation or erosion upstream or downstream. All dewatering or diversion structures shall be removed immediately upon completion of Project activities;
20. This Certification does not allow for the take, or incidental take, of any special status species. The Department shall use the appropriate protocols, as approved by the California Department of Fish and Wildlife and the USFWS, to ensure that Project activities do not impact the Beneficial Use of the Preservation of Rare and Endangered Species, as described in the San Francisco Bay Regional Water Quality Control Plan;

21. The Department shall maintain a copy of this Certification at the Project site to be available at all times to Project personnel. It is the responsibility of the Department to assure that all personnel (employees, contractors, and subcontractors) are adequately informed and trained regarding the conditions of this Certification;
22. The Water Board may add to or modify the conditions of this Certification, as appropriate, to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act;
23. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to Section 13330 of the California Water Code and Title 23 of the California Code of Regulations, Section 3867;
24. This Certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to California Code of Regulations Title 23, Subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought; and
25. This Certification is conditioned upon total payment of the full fee required in State regulations (23 CCR Section 3833). The Water Board has received the full fee for this Certification.

We anticipate your cooperation in implementing these conditions. However, please be advised that any violation of water quality certification conditions is a violation of State law and subject to administrative civil liability pursuant to California Water Code, Section 13350. Failure to respond, inadequate response, late response, or failure to meet any condition of this Certification may subject you to civil liability imposed by the Water Board to a maximum of \$5,000 per day per violation or \$10 for each gallon of waste discharged in violation of this Certification.

This Certification includes requirements for information and reports. Any requirement for a report made as a condition to this action is a formal requirement pursuant to CWC section 13267, and failure or refusal to provide, or falsification of such required report is subject to civil liability as described in California Water Code, Section 13268.

Mr. Ron Moriguchi
California Department of Transportation

- 10 -

Water Quality Certification
San Francisco Bridge Replacement
CIWQS Place No. 793406
EA No. 04-23562

If you have any question, please contact Derek Beauduy at (510) 622-2348, or via e-mail to DBeauduy@waterboards.ca.gov.

Sincerely,

Bruce H. Wolfe
Executive Officer

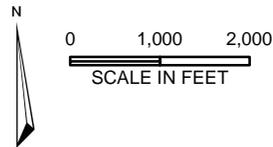
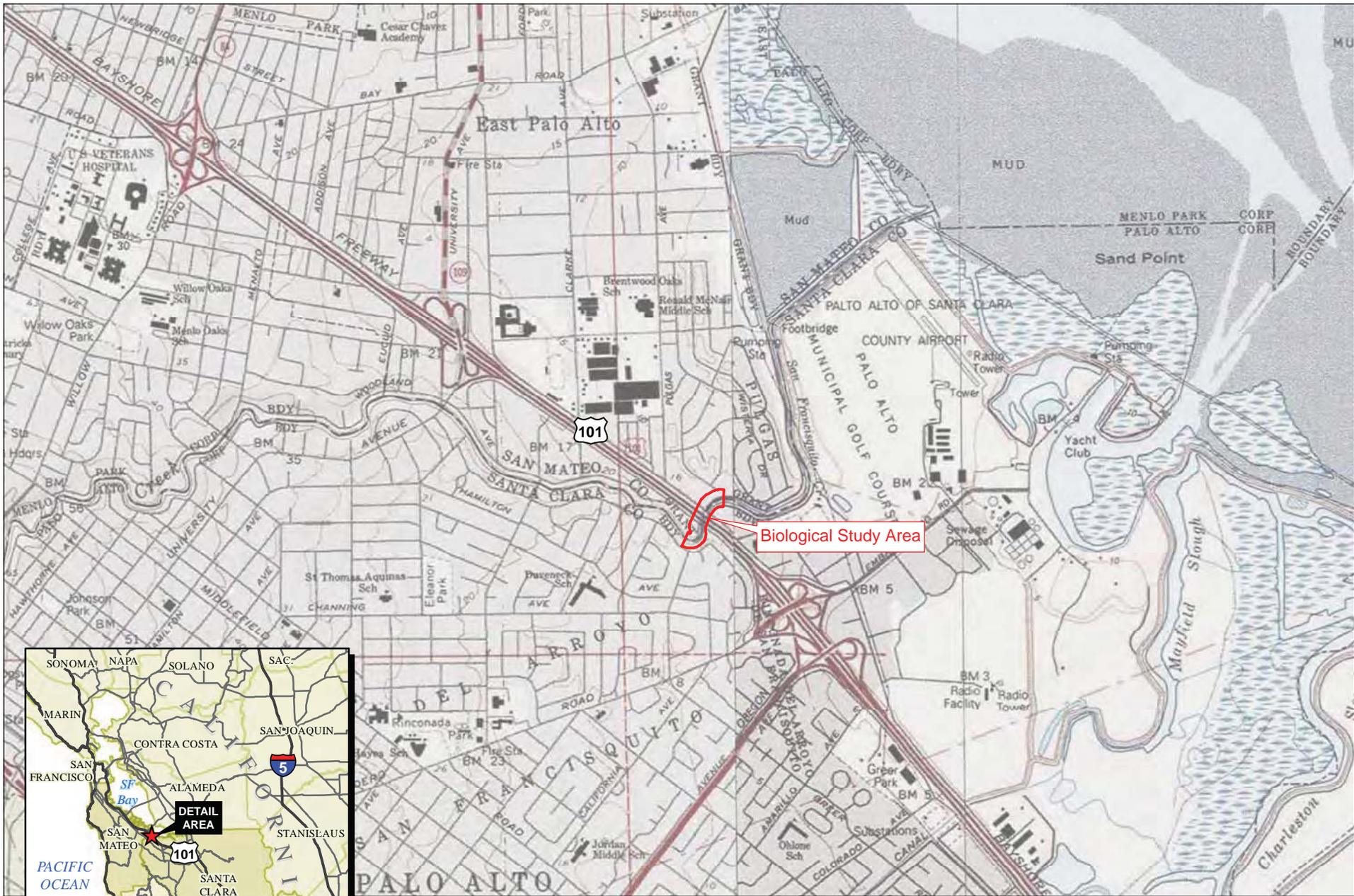
Attachment

cc (via e-mail):

Mr. Bill Orme SWRCB-DWQ	Mr. Dale Bowyer, Water Board
Mr. Cameron Johnson, USACE	Mr. Cyrus Vafai, Caltrans
Ms. Jane Hicks, Regulatory Branch, USACE	Mr. Hardeep Takhar, Caltrans
Ms. Melissa Escaron, CDFW	Mr. Jason Brush, USEPA
Ms. Paula Gill, USACE	Mr. Wilfung Martono, Caltrans
Mr. Ryan Olah, USFWS	

Attachment

Project Maps, Plans, and Details



Project Location Map

San Francisco Creek
Bridge Replacement



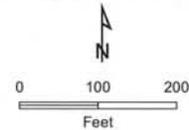
JUNE 2011

FIGURE 1-1



Imagery source: DigitalGlobe ImageConnect Service, 4/1/2009

- ◆ Wetland Sampling Point
- Wetland
- Other Waters of the U.S.
- Biological Study Area



U.S. Army Corps of Engineers
 San Francisco District, Regulatory Division
 Preliminary Jurisdictional Determination

California Department of Transportation, District 4
 San Francisquito Creek Bridge Replacement Project, Hwy 101
 File no.: SPN-2011-00088 S Date: Mar. 23, 2011

Potentially Jurisdictional Waters of the U.S. in the Biological Study Area

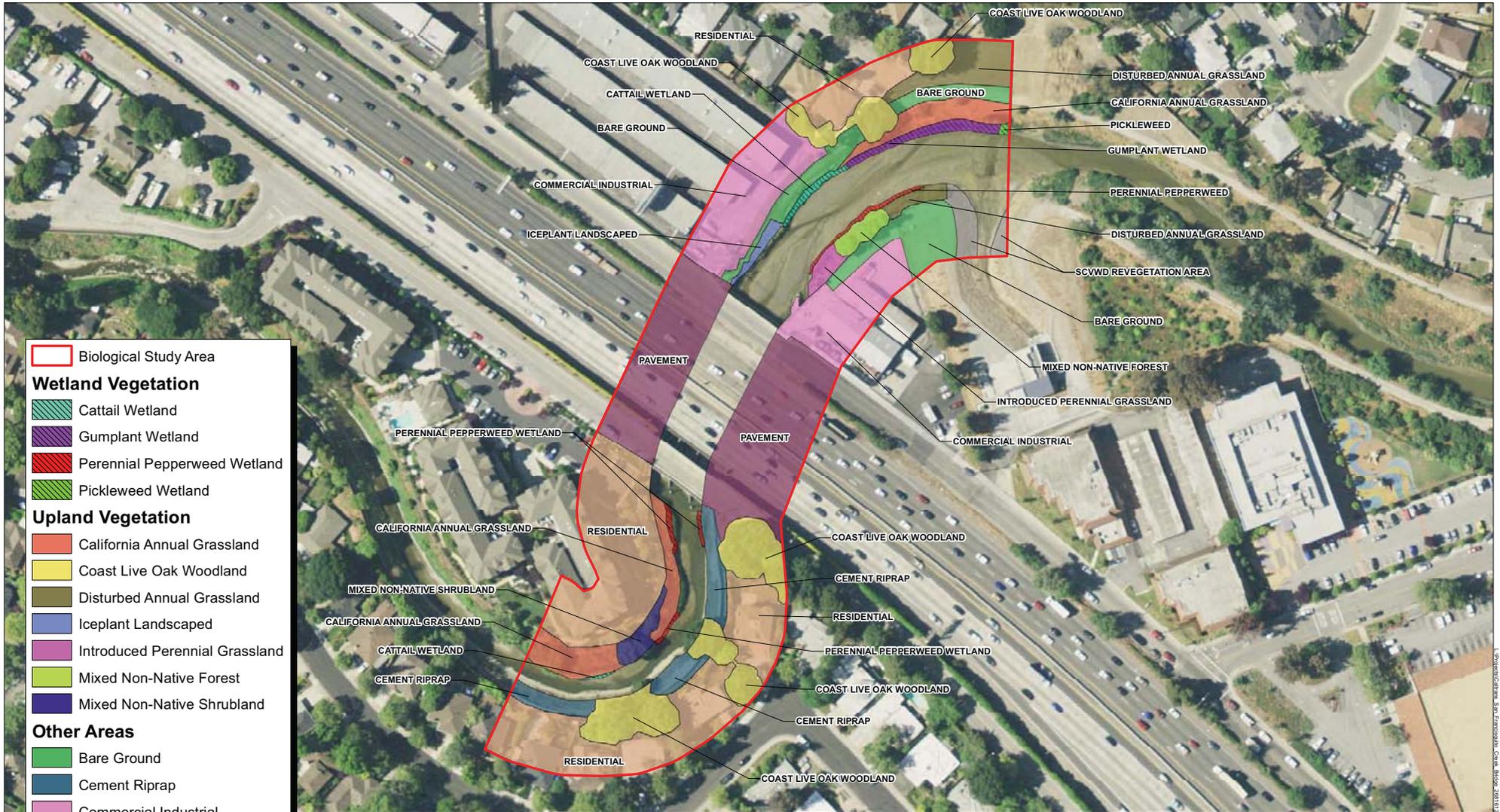


San Francisquito Creek
 Bridge Replacement

FEBRUARY 2011

FIGURE 2-2

JSM



Biological Study Area

Wetland Vegetation

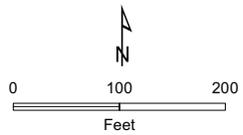
- Cattail Wetland
- Gumplant Wetland
- Perennial Pepperweed Wetland
- Pickleweed Wetland

Upland Vegetation

- California Annual Grassland
- Coast Live Oak Woodland
- Disturbed Annual Grassland
- Iceplant Landscaped
- Introduced Perennial Grassland
- Mixed Non-Native Forest
- Mixed Non-Native Shrubland

Other Areas

- Bare Ground
- Cement Riprap
- Commercial Industrial
- Pavement
- Residential
- SCVWD Revegetation Area



Wetland and Upland Vegetation and Other Areas in the Biological Study Area



San Francisquito Creek
Bridge Replacement

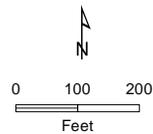
DECEMBER 2010

FIGURE 2-3

Photo: © 2010 San Francisco Estuary Institute. Aerial Photo: © 2010 San Francisco Estuary Institute. Aerial Photo: © 2010 San Francisco Estuary Institute.



- Biological Study Area
- Wetland
- Permanent Impact
- Other Waters of the U.S.
- Temporary Impact
- ESA Fence



Total Impacts to Waters of the U.S.

	Permanent	Temporary
Wetlands:	0	0.02 acre (181 lf)
Other Waters:	0.02 acre (286 lf)	0.93 acre (527 lf)

Impacts to Jurisdictional Waters of the U.S. in the Biological Study Area



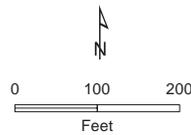
San Francisquito Creek Bridge Replacement

January 11, 2013

FIGURE 4-1



- Biological Study Area
- Riparian Vegetation
- Permanent Impact
- Water
- Temporary Impact
- ESA Fence



**Impacts to Riparian Vegetation
in the Biological Study Area**



San Francisquito Creek
Bridge Replacement

January 11, 2013

FIGURE 4-2

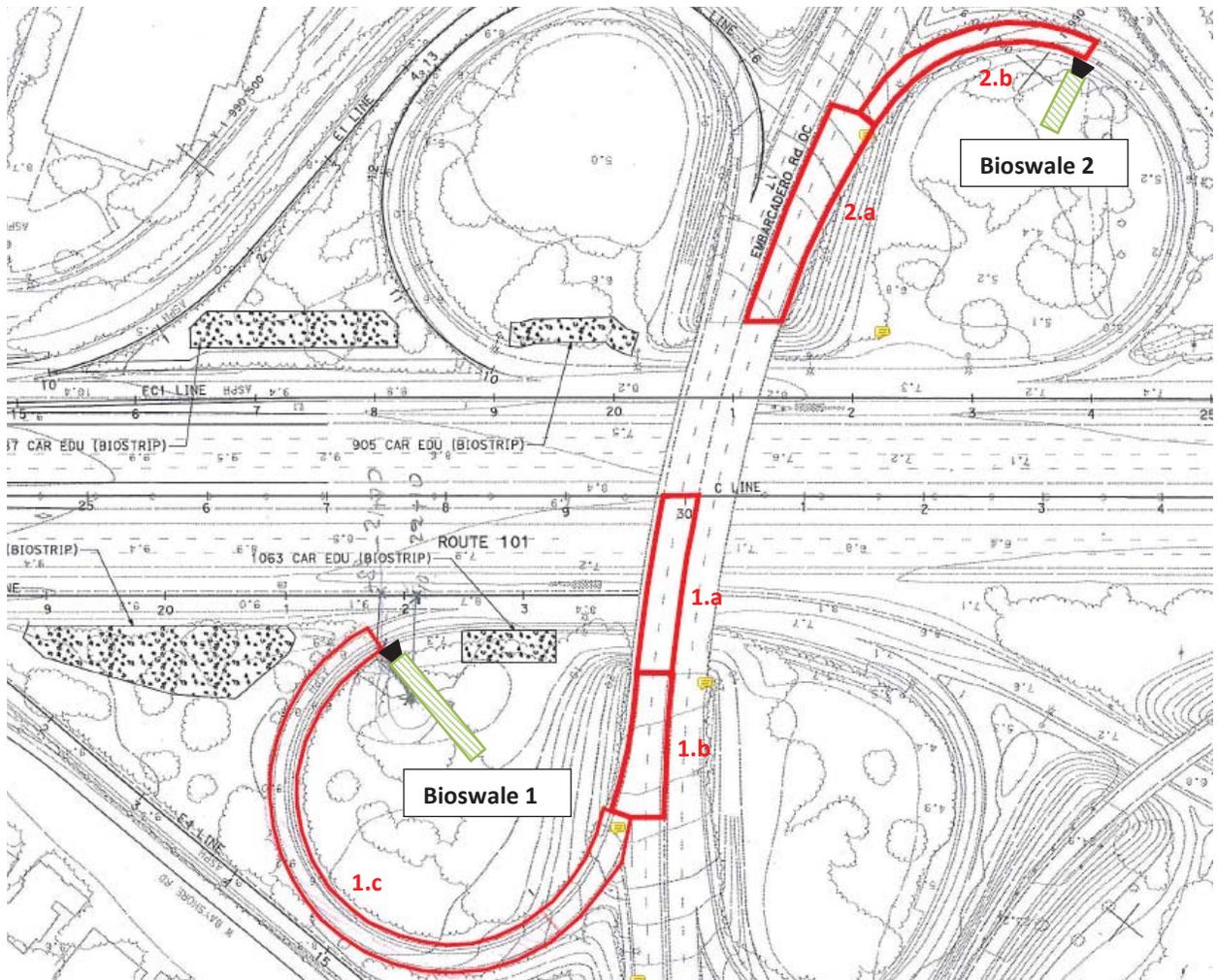
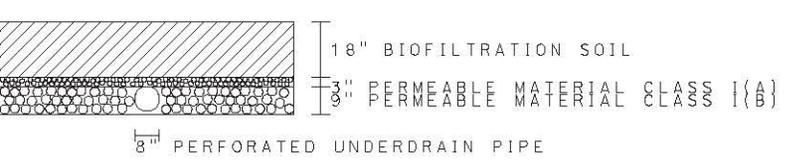
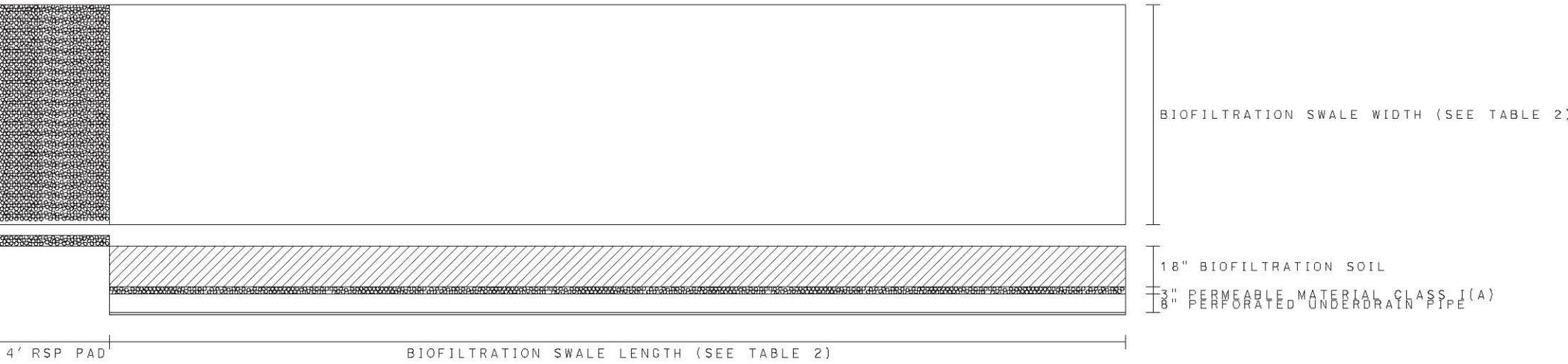


FIGURE 1 Location of Bioswales and tributary areas for each Bioswale

TABLE 2 Summary of Biowale dimensions and tributary area

No	BMP	Tributary Area		Location		Bioswale Dimensions		
				Start	End	Length	Width	Area
		SQ.FT	ACRES			FT	FT	SQ.FT
1	Bioswale 1	21,715	0.498	EC4 line, STA 22+00 60 FT RT	EC4 line, STA 22+20, 151 FT RT	109	8	872
2	Bioswale 2	9,652	0.222	EC1 line, STA 23+90, 277 FT RT	EC1 line, STA 23+50, 228 FT RT	49	8	392



BIOFILTRATION SWALE WIDTH (SEE TABLE 2)

18" BIOFILTRATION SOIL

3" PERMEABLE MATERIAL CLASS I(A)
8" PERFORATED UNDERDRAIN PIPE

4' RSP PAD

BIOFILTRATION SWALE LENGTH (SEE TABLE 2)

18" BIOFILTRATION SOIL

3" PERMEABLE MATERIAL CLASS I(B)

8" PERFORATED UNDERDRAIN PIPE



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

Regulatory Division

MAR - 4 2013

SUBJECT: File Number 2011-00088S

Mr. Jeffery Jensen
Office of Biological Sciences and Permits
California Department of Transportation
P.O. Box 23660
Oakland, California 94623-0660

Dear Mr. Jensen:

This correspondence is in reference to your submittal of July 7, 2011, concerning Department of the Army (DA) authorization to replace the San Francisquito Creek Bridge located at where U.S. 101 crosses San Francisquito Creek between the cities of Palo Alto and East Palo Alto, in San Mateo and Santa Clara Counties, California (37.45276, -122.12731).

Work within U.S. Army Corps of Engineers' (Corps) jurisdiction will include replacement of the bridge over San Francisquito Creek, widening the bridge to facilitate auxiliary lanes, and widening the creek channel to increase flow capacity to 100-year flood projections. Work will require replacement of the existing bridge and frontage roads with a new bridge that is 12 feet wider and 42 feet longer than the original bridge. To accommodate increased bridge length two existing pier walls will be replaced with three pier walls. Work will also include installation of cofferdams and a temporary water diversion pipe, demolition and removal of the existing bridge, excavation for abutments and installation of pier piles, installation of falsework and construction of bridge deck and pier walls, and installation of pile walls and modification of creek banks. Work will require the permanent placement of fill within 0.02 acre (261 linear feet) and will temporarily affect 0.93 acre (664 linear feet) of San Francisquito Creek. Work will also require the temporary placement of fill within 0.02 acre of wetlands associated with San Francisquito Creek. Widening of the stream channel is expected to result in an approximate 0.36 acre increase in waters of the U.S. All work shall be completed in accordance with the plans and drawings titled "*USACE File #2011-00088S, San Francisquito Creek Bridge Replacement, February 27, 2013, Figure 1 to 6*" (enclosure 1).

Section 404 of the Clean Water Act (CWA) generally regulates the discharge of dredged or fill material below the plane of ordinary high water in non-tidal waters of the United States, below the high tide line in tidal waters of the United States, and within the lateral extent of wetlands adjacent to these waters. Section 10 of the Rivers and Harbors Act generally regulates construction of structures and work, including excavation, dredging, and discharges of dredged or fill material, occurring below the plane of mean high water in tidal waters of the United

States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States. Navigable waters of the United States generally include all waters subject to the ebb and flow of the tide; and/or all waters presently used, or have been used in the past, or may be susceptible for future use to transport interstate or foreign commerce. A Preliminary JD has been completed for your site. Preliminary JDs are written indications that there may be waters of the U.S. on a parcel or indications of the approximate location(s) of waters of the U.S. on a parcel. Preliminary JDs are advisory in nature and may not be appealed.

Based on a review of the information in your submittal, and the current condition of the site, as verified during a field investigation on date January 7, 2013, the project qualifies for authorization under Department of the Army Nationwide Permit (NWP) 14 for Linear Transportation Projects, 77 Fed. Reg. 10,184, February 21, 2012, pursuant to Section 404 of the CWA of 1972, as amended (33 U.S.C. § 1344 *et seq.*) and Section 10 of the Rivers and Harbors Act (RHA) of 1899, as amended (33 U.S.C. § 403 *et seq.*). The project must be in compliance with the terms of the NWP, the general conditions of the Nationwide Permit Program, and the San Francisco District regional conditions cited in enclosure 2. You must also be in compliance with any special conditions specified in this letter for the NWP authorization to remain valid. Non-compliance with any term or condition could result in the revocation of the NWP authorization for your project, thereby requiring you to obtain an Individual Permit from the Corps. This NWP authorization does not obviate the need to obtain other State or local approvals required by law.

This verification will remain valid until March 18, 2017, unless the NWP authorization is modified, suspended, or revoked. Activities which have commenced (i.e., are under construction) or are under contract to commence in reliance upon a NWP will remain authorized provided the activity is completed within 12 months of the date of a NWP's expiration, modification, or revocation, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 C.F.R. § 330.4(e) and 33 C.F.R. §§ 330.5 (c) or (d). This verification will remain valid if, during the time period between now and March 18, 2017, the activity complies with any subsequent modification of the NWP authorization. The Chief of Engineers will periodically review NWPs and their conditions and will decide to either modify, reissue, or revoke the permits. If a NWP is not modified or reissued within five years of its effective date, it automatically expires and becomes null and void. It is incumbent upon you to remain informed of any changes to the NWPs. Changes to the NWPs would be announced by Public Notice posted on our website.

(<http://www.spn.usace.army.mil/regulatory/index.html>). Upon completion of the project and all associated mitigation requirements, you shall sign and return the Certification of Compliance, enclosure 3, verifying that you have complied with the terms and conditions of the permit.

This authorization will not be effective until you have obtained a Section 401 water quality certification from the San Francisco Bay Regional Water Quality Control Board (RWQCB). If the RWQCB fails to act on a valid request for certification within two months after receipt of a complete application, the Corps will presume a waiver of water quality certification has been obtained. You shall submit a copy of the certification to the Corps prior to the commencement of work

This Corps permit does not authorize you to take an endangered species, in particular the federally listed as threatened Central California Coast steelhead (*Oncorhynchus mykiss*) and the North American green sturgeon (*Acipenser medirostris*) or designated critical habitat for these species. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (e.g., an Endangered Species Act Section 10 permit, or a Biological Opinion under Endangered Species Act Section 7, with "incidental take" provisions with which you must comply). The enclosed National Marine Fisheries Service Biological Opinion (Service File Number 2010/06575, dated March 29, 2011), contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the Biological Opinion. Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached Biological Opinion, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the Biological Opinion, where an "incidental take" of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The National Marine Fisheries Service is the appropriate authority to determine compliance with the terms and conditions of its Biological Opinion, and with the Endangered Species Act. The permittee must comply with all conditions of this Biological Opinion. If you are unable to comply with the terms and conditions, you must immediately notify Caltrans, the appropriate NMFS office, and the U.S. Army Corps of Engineers Regulatory office, so that Caltrans acting as the lead Federal agency for this project may consult as appropriate, prior to initiating the work, in accordance with Federal law.

In order to ensure compliance with this NWP authorization, the following special conditions shall be implemented:

1. To remain exempt from the prohibitions of Section 9 of the Endangered Species Act, the non-discretionary Terms and Conditions for incidental take of federally-listed Central California Coast steelhead (*Oncorhynchus mykiss*) and the North American green sturgeon (*Acipenser medirostris*) shall be fully implemented as stipulated in the Biological Opinion (pages 1- 42) dated March 29, 2011 (enclosure 4). Project authorization under the NWP is conditional upon compliance with the mandatory terms and conditions associated with incidental take. Failure to comply with the terms and conditions for incidental take, where a take of a federally-listed species occurs, would constitute an unauthorized take and non-compliance with the NWP authorization for your project. The NMFS is, however, the authoritative federal agency for determining compliance with the incidental take statement and for initiating appropriate enforcement actions or penalties under the Endangered Species Act.
2. Caltrans initiated consultation with the National Marine Fisheries Service (NMFS) to address project related impacts to Essential Fish Habitat. The conservation recommendations outlined in pages 1-5, in enclosure 5, shall be fully implemented as stipulated.
3. While temporary creek diversions are in place, appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable.
4. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows.
5. Temporary fills must be removed at the end of each construction season in their entirety. The affected area must be return to pre-construction elevations post-construction.

6. Within 1-year of initiation of temporary impact to a jurisdictional feature, you shall re-contour the temporarily impacted area and replant with appropriate soil-stabilizing native species.
7. In the event that you are unable to implement the plan described in special condition 4 within 1-year of initiation of temporary impact to a jurisdictional feature, you must purchase credits at a Corps approved mitigation bank to compensate for the temporary impact at a 3:1 ratio. If no approved bank or in-lieu fee is available, you shall propose an alternative mitigation plan to be reviewed and approved by the Corps.

You may refer any questions on this matter to Paula Gill of my Regulatory staff by telephone at 415-503-6776 or by e-mail at Paula.C.Gill@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: <http://www.spn.usace.army.mil/regulatory/>.

Sincerely,



Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copies Furnished (w/o encls):

CA RWQCB, Santa Rosa, CA
U.S. EPA, San Francisco, CA
CA SWRCB, Sacramento, CA
NMFS, Santa Rosa, Ca
CDFW, Yountville, Ca

NON-STORMWATER INFORMATION

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- C. SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD (RWQCB) GENERAL WASTE DISCHARGE REQUIREMENTS, ORDER NO. R2-2012-0012
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- F. INFORMATION ON DISPOSING GROUNDWATER TO CITY OF PALO ALTO SANITARY SEWER SYSTEM DURING THE TIME OF CSWPPP

1. Project Description

The project proposes to demolish the existing San Francisquito Creek Bridge and the two frontage road bridges and replace them with a new bridge (Project). The Project proposes to replace the existing 83-foot long by 232-foot wide San Francisquito Creek Bridge and two associated two-lane frontage roads. The new bridge structure will have 12 feet in additional width and 42 feet in additional length to accommodate the standard lane requirements of Route 101 and the anticipated flow capacity of San Francisquito Creek.

2. Construction Activities Requiring Dewatering

Abutment 1

Excavation required for 64 piles of class 200 Alternative "W" steel pipe pile with 16 inch diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -75.5 ft.

Pier 2

Excavation required for 35 piles of class 200 Alternative "W" steel pipe pile with 16 inch diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -83.5 ft.

Pier 3

Excavation required for 35 piles of class 200 Alternative "W" steel pipe pile with 16 inch diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -83.5 ft.

Pier 4

Excavation required for 33 piles of class 200 Alternative "W" steel pipe pile with 16 inch diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -83.5 ft.

Abutment 5

Excavation required for 64 piles of class 200 Alternative "W" steel pipe pile with 16 inch diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -81.0 ft.

Soundwall SW2

Excavation required for 6 piles of class 200 Alternative "Y" precast pile with 1.25 ft diameter. The piles tip elevation is -21.0 ft.

Retaining Wall "A"

Excavation required for 6 soldier piles (H Piles) steel grade piles W14 x 233 with 2.5 ft diameter. The pile tip elevation will be at -28.0 ft.

Retaining Wall "B"

Excavation required for 5 soldier piles (H Piles) steel grade piles W14 x 233 with 2.5 ft diameter. The pile tip elevation will be at -28.0 ft.

Retaining Wall "C"

Excavation required for 5 soldier piles (H Piles) steel grade piles W14 x 233 with 2.5 ft diameter. The pile tip elevation will be at -28.0 ft.

Overhead sign

The sign will be located far away (about 1200 feet) from the bridge on the median.

Excavation required for one CIDH pile Type V with 5 ft diameter and embedded length of 30 ft.

3. Treatment System Components

Treatment systems must be designed to remove turbidity-producing suspended solids, metals, and petroleum hydrocarbon constituents found in the groundwater.

Primary and secondary treatment may be required, or the design of the treatment system may require combined use of the various treatment components in series to achieve effective treatment. Ensure that the treatment system components are steam cleaned to remove any residual contaminants. Treatment system components may include:

1. Desilting basins
2. Weir tanks
3. Settling tanks
4. Sediment traps

5. Gravity bag filters
6. Sand media filters
7. Pressurized bag filters
8. Cartridge filters
9. In-line chemical coagulants and/or flocculants
10. Activated clay filters
11. Activated carbon filters
12. A combination of these systems to provide primary and secondary treatment

4. Disposal of Treated Groundwater

Use discharged treated water or uncontaminated ground or surface water for dust control in active work areas when possible, or discharge the water to an inactive area where the grade prevents sheet flow and the soil will allow percolation. The discharge point in the inactive area must include a velocity dissipater. The discharge volume must not exceed the area's capacity for percolation.

Do not discharge into a body of water where erosion, scour, or sedimentary deposits could occur that impact natural bedding or aquatic life. Monitor the water at the discharge point using water quality measurements and visual observation in conformance with the regulatory permit and the special provisions.

Storm water must be diverted away from excavations that would require dewatering.

5. Inspection, Monitoring, and Reporting

If treated groundwater is discharged to the storm drain system, perform compliance monitoring in conformance with the Monitoring and Reporting Program (MRP) included in Attachment E of the Order No. R2-2012-0012. If a batch discharge permit is obtained from a POTW, comply with the provisions contained in the batch discharge permit including all monitoring and reporting requirements.

During periods when the dewatering and non-storm water discharge operations occur, document the results in a Daily Inspection Report (DIR). The DIR form must include the discharge volume records and water quality monitoring records. In developing the DIR, refer to the Department's Dewatering Guide. The DIR form must be approved by the Engineer before use. The DIR must be provided weekly or as directed to the Engineer.

All information and recorded data collected or submitted as part of the DIR must be certified as true and accurate and signed by those who gather the information.

During each day of discharge, perform daily inspection of the effluent at the discharge site and include, in the DIR, observations of:

1. Date and Time.
2. Weather conditions,
3. Wind direction and velocity,
4. The presence or absence of water fowl or aquatic wildlife,
5. The color and clarity of the effluent discharge, and
6. Erosion or ponding downstream of the discharge site.

The DIR must include photographs of the discharge point and areas downstream of the discharge location. These photographs must be labeled with the time, date, and location.

A flow meter that has been approved by the Engineer for exclusive use in dewatering during construction must be used to measure all excavation discharges. All calibrations must be done in conformance with the manufacturer's instructions in the presence of the Engineer.

Record the flow-meter totalizer readings and compute average daily volumes for every day that dewatering is conducted.

ATTACHMENT A

ESTIMATED GROUNDWATER SEEPAGE RATES IN THE PROJECT AREA

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. HARDEEP TAKHAR
District Office Chief
Office of Water Quality

Date: April 24, 2013

Attention: J. Chen

File: 04- SCL- SM- 101 PM 0.0
04 – 235621
San Francisquito Creek Bridge
(Seepage Rate)

From: RIFAAT NASHED 
Engineering Geologist
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

CHRIS RISDEN 
Acting Chief, Branch B
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject : Seepage Rate (Flow Rate) Estimate at San Francisquito Creek Bridge Location

This memo is in response to your request to provide the groundwater depth and seepage rate for 11 construction elements: Abutment 1, Pier 2, 3 and 4, Abutment 5, Soundwall SW1, Soundwall SW2, Retaining Wall A, Retaining Wall B, Retaining Wall C, and Overhead sign located in the project site. It is our understanding that this information will be used in estimating dewatering quantities.

It should be noted that in our estimate in all the locations of construction elements, we considered the maximum depth of excavation under the groundwater elevation. The groundwater measured in borehole R-10-001 is at depth of 13 ft below the ground surface (1.5 ft elevation) and the groundwater measured in borehole R-10-002 is at depth of 14 ft below the ground surface (1.1 ft elevation).

Abutment 1

For this location, our estimates are limited to the excavation required for 64 piles of Class 200 Alternative “W” steel pipe pile with 16 inch (1.33 ft) diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -75.5 ft.

Based on the LOTB of boring R-10-001 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: lean clay with sand and silt (CL), poorly graded sand with silt and gravel (SP-SM), poorly graded gravel (GP), silty sand (CL-ML), and lean clay (CL).

MR. HARDEEP TAKHAR

Attn: J.Chen

April 24, 2013

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By using a Coefficient of Permeability, K, value of 0.0027 ft /day for lean clay, 0.14 ft /day for poorly graded sand with silt, 13.7 ft /day for poorly graded gravel, 0.14 ft /day for silty sand and 0.00027 ft /day for silty clay the seepage rate for this location is approximately 15.5 gallon/day/ft².

Pier 2

For this location, our estimates are limited to the excavation required for 35 piles of Class 200 Alternative "W" steel pipe pile with 16 inch (1.33 ft) diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -83.5 ft.

Based on the LOTB of boring R-10-001 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: lean clay with sand and silt (CL), poorly graded sand with silt and gravel (SP-SM), poorly graded gravel (GP), silty sand (CL-ML), and lean clay (CL)

By using a Coefficient of Permeability, K, value of 0.0027 ft /day for lean clay, 0.14 ft /day for poorly graded sand with silt, 13.7 ft /day for poorly graded gravel, 0.14 ft /day for silty sand and 0.00027 ft /day for silty clay the seepage rate for this location is approximately 15.5gallon/day/ft².

Pier 3

For this location, our estimates are limited to the excavation required for 35 piles of Class 200 Alternative "W" steel pipe pile with 16 inch (1.33 ft) diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -83.5 ft.

Based on the LOTB of boring R-10-002 and R-10-003 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: silty sand (SM), lean clay (CL) and fat clay (CH), poorly graded sand with silt and gravel (SP-SM), silt with sand (ML).

By using a Coefficient of Permeability, K, value of 0.0027 ft /day for lean clay, 1.4 ft /day for poorly graded sand with silt and gravel, 13.7 ft /day, 0.14 ft /day for silty sand and 0.00027 ft /day for Lean clay and fat clay, the seepage rate for this location is approximately 5.5 gallon/day/ft².

MR. HARDEEP TAKHAR

Attn: J.Chen

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Pier 4

For this location, our estimates are limited to the excavation required for 33 piles of Class 200 Alternative "W" steel pipe pile with 16 inch (1.33 ft) diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -83.5 ft.

Based on the LOTB of boring R-10-002 and R-10-003 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: silty sand (SM), lean clay (CL) and fat clay (CH), poorly graded sand with silt and gravel (SP-SM), Silt with sand (ML).

By using a Coefficient of Permeability, K, value of 0.0027 ft /day for lean clay, 1.4 ft /day for poorly graded sand with silt and gravel, 13.7 ft /day, 0.14 ft /day for silty sand and 0.00027 ft /day for lean clay and fat clay, the seepage rate for this location is approximately 6.0 gallon/day/ft².

Abutment 5

For this location, our estimates are limited to the excavation required for 64 piles of Class 200 Alternative "W" steel pipe pile with 16 inch (1.33 ft) diameter and pre-drill hole at least 2/3 ft larger than the pile size to elevation -21 from the original ground surface. The piles tip elevation is -81.0 ft.

Based on the LOTB of boring R-10-002 and R-10-003 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: Silty Sand (SM), lean clay (CL) and Fat Clay (CH), Poorly graded sand with silt and gravel (SP-SM), Silt with sand (ML).

By using a Coefficient of Permeability, K, value of 0.0027 ft /day for lean clay, 1.4 ft /day for poorly graded sand with silt and gravel, 13.7 ft /day, 0.14 ft /day for silty sand and 0.00027 ft /day for Lean clay and fat clay, the seepage rate for this location is approximately 11.0 gallon/day/ft².

Soundwall SW1

For this location, our estimates are limited to the excavation required for 7 piles of Class 200 Alternative "Y" precast pile with 1.25 ft diameter. The pile tip elevation will be at -17.0 ft.

MR. HARDEEP TAKHAR

Attn: J.Chen

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Based on the LOTB of boring R-10-003 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: silt with sand (ML), fat clay (CH), silty sand with gravel (SM).

By using a Coefficient of Permeability, K, value of 0.14 ft /day for silty sand, 0.000027 ft /day for fat clay, 1.4 ft /day for poorly graded sand with silt and gravel, the seepage rate for this location is approximately 3.0 gallon/day/ft².

Soundwall SW2

For this location, our estimates are limited to the excavation required for 6 piles of Class 200 Alternative "Y" precast pile with 1.25 ft diameter. The pile tip elevation will be at -21.0 ft.

Based on the LOTB of boring R-10-003 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: silt with sand (ML), fat clay (CH), silty sand with gravel (SM) and silty gravel (GM).

By using a Coefficient of Permeability, K, value of 0.14 ft /day for silty sand, 0.000027 ft /day for fat clay, 1.4 ft /day for poorly graded sand with silt and gravel, 2.7 ft/day for silty gravel, the seepage rate for this location is approximately 3.0 gallon/day/ft².

Retaining Wall "A"

For this location, our estimates are limited to the excavation required for 6 Solider piles (H-Piles) steel grade piles W14 x 233 with 2.5 ft diameter. The pile tip elevation will be at -28.0 ft.

Based on the LOTB of boring R-10-002 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: silty sand (SM), lean clay with sand (CL), poorly graded sand with silt and gravel (SP-SM).

By using a Coefficient of Permeability, K, value of 0.14 ft /day for silty sand, 0.0027 ft /day for lean clay, and 0.14 ft /day for poorly graded sand with silt and gravel, the seepage rate for this location is approximately 0.5 gallon/day/ft².

Retaining Wall "B"

For this location, our estimates are limited to the excavation required for 5 Solider piles (H-Piles) steel grade piles W14 x 233 with 2.5 ft diameter. The pile tip elevation will be at -28.0 ft.

MR. HARDEEP TAKHAR

Attn: J.Chen

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Based on the LOTB of boring R-10-003 drilled in August 2010, the soil layers at and below the groundwater level and extend to the bottom of the excavation are described as: silty sand (SM), lean clay with sand (CL), poorly graded sand with silt and gravel (SP-SM).

By using a Coefficient of Permeability, K, value of 0.14 ft /day for silty sand, 0.0027 ft /day for lean clay, and 0.14 ft /day for Poorly graded sand with silt and gravel, the seepage rate for this location is approximately 0.5 gallon/day/ft².

Retaining Wall "C"

For this location, our estimates are limited to the excavation required for 5 Solider piles (H-Piles) steel grade piles W14 x 233 with 2.5 ft diameter. The pile tip elevation will be at -28.0 ft.

Based on the LOTB of boring R-10-003 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: silt with sand (ML), fat clay (CH), silty sand with gravel (SM) and silty gravel (GM), and lean clay (CL).

By using a Coefficient of Permeability, K, value of 0.14 ft /day for silty sand, 0.000027 ft /day for Fat clay, 1.4 ft /day for poorly graded sand with silt and gravel, 2.7 ft/day for silty gravel, and 0.0027 ft/day, the seepage rate for this location is approximately 1.5 gallon/day/ft².

Overhead sign

The sign will be located far away (about 1200 feet) from the bridge on the median. Our estimates are limited to the excavation required for one CIDH pile Type V with 5 ft diameter and embedded length of 30 ft.

Based on the LOTB of boring R-10-001 drilled in August 2010, the soil layers at and below the groundwater level and extending to the bottom of the excavation are described as: poorly graded sand with silt and gravel (SP-SM), and lean clay with sand (CL)

By using a Coefficient of Permeability, K, value of 0.0027 ft /day for lean clay with sand, 0.14 ft /day for poorly graded sand with silt and gravel the seepage rate for this location is approximately 0.5gallon/day/ft².

According to "The Federal Highway Report NO. FHWA-TS-80-224, Page 48-49" the Coefficient of Permeability, K, (ft/day) for all soils encountered in the Francisquito Creek Bridge area are as follows:

MR. HARDEEP TAKHAR

Attn: J.Chen

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Unified Soil Classification	Coefficient of Permeability K (ft./day)
Poorly graded gravel (GW)	13.7 to 27,400
Gravel with silt (GM)	$2.7^{-4} \times 27$
Silt (ML)	2.7×10^{-5} to 0.14
Poorly graded sand (SP)	0.14 to 1.4
Silty sand (SM)	2.7×10^{-4} to 1.4
Clayey Sand (SC)	2.7×10^{-5} to 0.14
Lean clay (CL)	2.7×10^{-5} to 2.7×10^{-3}
Fat clay (CH)	2.7×10^{-7} to 2.7×10^{-5}

Our estimate of the average seepage rate (flow rate) for the entire project area is approximately 1.0 gallons /day/ ft². The seepage rate (flow rate) estimates provided in this memo are for cost estimate purposes only. The contractor expected to perform his own calculations to estimate flow rate for his purposes.

If you have any questions or need additional information, please call Rifaat Nashed at (510) 622-1773 or Chris Ridsen, Acting Branch Chief at (510) 266-8757.

c: TPokrywka, CRidsen, Daily File

RNashed/mm

**SAN FRANCISQUITO CREEK BRIDGE
SEEPAGE RATE FOR THE WHOLE BOREHOLE**

STRUCTURE ELEMENT	SOIL	Length (ft)/ Bed thickness	Perimeter (ft)	No of Piles/Holes	A (ft ²)	K (ft/day)	H (ft)	H ₀ (ft)	dH (ft)	d S (ft)	i	q total (ft ³ /day)	q total (Gallon/day)	q total (Gallon/day/ft ²)				
Abutment 1	SP-SM	5.00	6.28	64	2009.6	0.14	1.5	-75.50	77.00	292.6	0.26315789	4122.2	30762.7	15.3				
	SP-SM	7.00	4.18	64	1872.64	0.14	1.5	-75.50	77.00	292.6	0.26315789							
	CL	41.50	4.18	64	11102.08	0.0027	1.5	-75.50	77.00	292.6	0.26315789							
	GP	4.00	4.18	64	1070.08	13.7	1.5	-75.50	77.00	292.6	0.26315789							
	SM	11.50	4.18	64	3076.48	0.14	1.5	-75.50	77.00	292.6	0.26315789							
	CL-ML	1.00	4.18	64	267.52	0.00027	1.5	-75.50	77.00	292.6	0.26315789							
Pier 2	SP-SM	5.00	6.28	35	1099	0.14	1.5	-83.50	85.00	323	0.26315789	2270.6	16944.4	15.4				
	SP-SM	10.00	4.18	35	1463	0.14	1.5	-83.50	85.00	323	0.26315789							
	CL	41.50	4.18	35	6071.45	0.0027	1.5	-83.50	85.00	323	0.26315789							
	GP	4.00	4.18	35	585.2	13.7	1.5	-83.50	85.00	323	0.26315789							
	SM	11.50	4.18	35	1682.45	0.14	1.5	-83.50	85.00	323	0.26315789							
	CL-ML	6.00	4.18	35	877.8	0.00027	1.5	-83.50	85.00	323	0.26315789							
Pier 3	SM	6.00	6.28	35	1318.8	0.14	1.1	-83.50	84.60	321.48	0.26315789	958.9	7156.1	5.4				
	CL +CH	1.00	6.28	35	219.8	0.00027	1.1	-83.50	84.60	321.48	0.26315789							
	CL +CH	12.00	4.18	35	1755.6	0.00027	1.1	-83.50	84.60	321.48	0.26315789							
	SM	5.00	4.18	35	731.5	0.14	1.1	-83.50	84.60	321.48	0.26315789							
	SP-S Mw/ GM	9.00	4.18	35	1316.7	1.4	1.1	-83.50	84.60	321.48	0.26315789							
	SP	6.00	4.18	35	877.8	1.4	1.1	-83.50	84.60	321.48	0.26315789							
	ML	13.50	4.18	35	1975.05	0.14	1.1	-83.50	84.60	321.48	0.26315789							
	CL	19.00	4.18	35	2779.7	0.0027	1.1	-83.50	84.60	321.48	0.26315789							
Pier 4	SM	6.00	6.28	33	1243.44	0.14	1.1	-83.50	84.60	321.48	0.26315789	952.5	7107.9	5.7				
	CL -CH	1.00	6.28	33	207.24	0.00027	1.1	-83.50	84.60	321.48	0.26315789							
	CL -CH	12	6.28	33	2486.88	0.00027	1.1	-83.50	84.60	321.48	0.26315789							
	SM	14.50	4.18	33	2000.13	0.14	1.1	-83.50	84.60	321.48	0.26315789							
	SP-SM w/ GM	9.00	4.18	33	1241.46	1.4	1.1	-83.50	84.60	321.48	0.26315789							
	SP	6.00	4.18	33	827.64	1.4	1.1	-83.50	84.60	321.48	0.26315789							
	ML	13.50	4.18	33	1862.19	0.14	1.1	-83.50	84.60	321.48	0.26315789							
	CL	19.00	4.18	33	2620.86	0.0027	1.1	-83.50	84.60	321.48	0.26315789							
	Abutment 5	SM	6.00	6.28	33	1243.44	0.14	1.1	-81.00	82.10	311.98				0.26315789	1804.0	13463.0	10.8
CL-CH		1.00	6.28	64	401.92	0.00027	1.1	-81.00	82.10	311.98	0.26315789							
CL-CH		12.00	4.18	64	3210.24	0.00027	1.1	-81.00	82.10	311.98	0.26315789							
SM		14.50	4.18	64	3879.04	0.14	1.1	-81.00	82.10	311.98	0.26315789							
SP-SM w/GM		9.00	4.18	64	2407.68	1.4	1.1	-81.00	82.10	311.98	0.26315789							
SP		6.00	4.18	64	1605.12	1.4	1.1	-81.00	82.10	311.98	0.26315789							
ML		13.50	4.18	64	3611.52	0.14	1.1	-81.00	82.10	311.98	0.26315789							
CL		19.00	4.18	64	5082.88	0.0027	1.1	-81.00	82.10	311.98	0.26315789							
SW1		ML	7.00	3.93	7	192.57	0.14	1.1	-17	18.10	68.78	0.26315789	68.9	514.3	2.7			
		CH	5.00	3.93	7	137.55	0.000027	1.1	-17	18.10	68.78	0.26315789						
	SM w/gravel	6.10	3.93	7	167.811	1.4	1.1	-17	18.10	68.78	0.26315789							
SW2	ML	7.00	3.93	6	165.06	0.14	1.1	-21	22.10	83.98	0.26315789	56.2	419.1	2.5				
	CH	5.00	3.93	6	117.9	0.000027	1.1	-21	22.10	83.98	0.26315789							
	SM	7.50	3.93	6	176.85	0.14	1.1	-21	22.10	83.98	0.26315789							
	GM	2.60	3.93	6	61.308	2.7	1.1	-21	22.10	83.98	0.26315789							
Ret. Wall A	SM	14.50	7.85	6	682.95	0.14	1.1	-28	29.10	110.58	0.26315789	40.9	305.4	0.4				
	CL	4.50	7.85	6	211.95	0.0027	1.1	-28	29.10	110.58	0.26315789							
	SP-SM	9.00	7.85	6	423.9	0.14	1.1	-28	29.10	110.58	0.26315789							
Ret. Wall B	SM	14.50	7.85	5	569.125	0.14	1.1	-28	29.10	110.58	0.26315789	34.1	254.5	0.4				
	CL	4.50	7.85	5	176.625	0.0027	1.1	-28	29.10	110.58	0.26315789							
	SP-SM	9.00	7.85	5	353.25	0.14	1.1	-28	29.10	110.58	0.26315789							
Ret. Wall C	ML	13.00	7.85	5	510.25	0.14	1.1	-28	29.10	110.58	0.26315789	99.4	742.1	1.5				
	CH	2.50	7.85	5	98.125	0.000027	1.1	-28	29.10	110.58	0.26315789							
	SM	7.50	7.85	5	294.375	0.14	1.1	-28	29.10	110.58	0.26315789							
	GM	2.50	7.85	5	98.125	2.7	1.1	-28	29.10	110.58	0.26315789							
	CL	2.50	7.85	5	98.125	0.0027	1.1	-28	29.10	110.58	0.26315789							
Ovrhead Sign	SP-SMw/GM	7.00	10.7	1	74.9	0.14	1.5	-15.5	17.00	64.6	0.26315789	2.8	21.2	0.3				
	CL	10.00	10.7	1	107	0.0027	1.5	-15.5	17.00	64.6	0.26315789							
Total					80801.679							10410.6	77690.8	1.0				

q = KIA

Notes
 Length = bed thickness
 Perimeter = is the circumference of the pile (hole) = 2 Pi r/or width of hole - trench
 A = The cylinder surface area = 2 Pi r x Length
 k = Soil permeability (from Hwy Subdrainage Design Report No. FHWA - TS-80-224- Page 48-49)
 H = ground water elevation
 H0 = the pile tip (bottom of the hole) elevation
 dH = water head
 ds = gradient distance Li = 3.8x(H - H0).....Ref. FHWA-Ts-80-224 Page 66
 i* = dH/ds
 q total = (gallon/day/ft2) = q total (gallon/day)/ total surface area

ATTACHMENT B

DEWATERING LOCATION PLAN

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

REVISIONS: DATE PLOTTED => #DATE
 00-00-00 TIME PLOTTED => #TIME

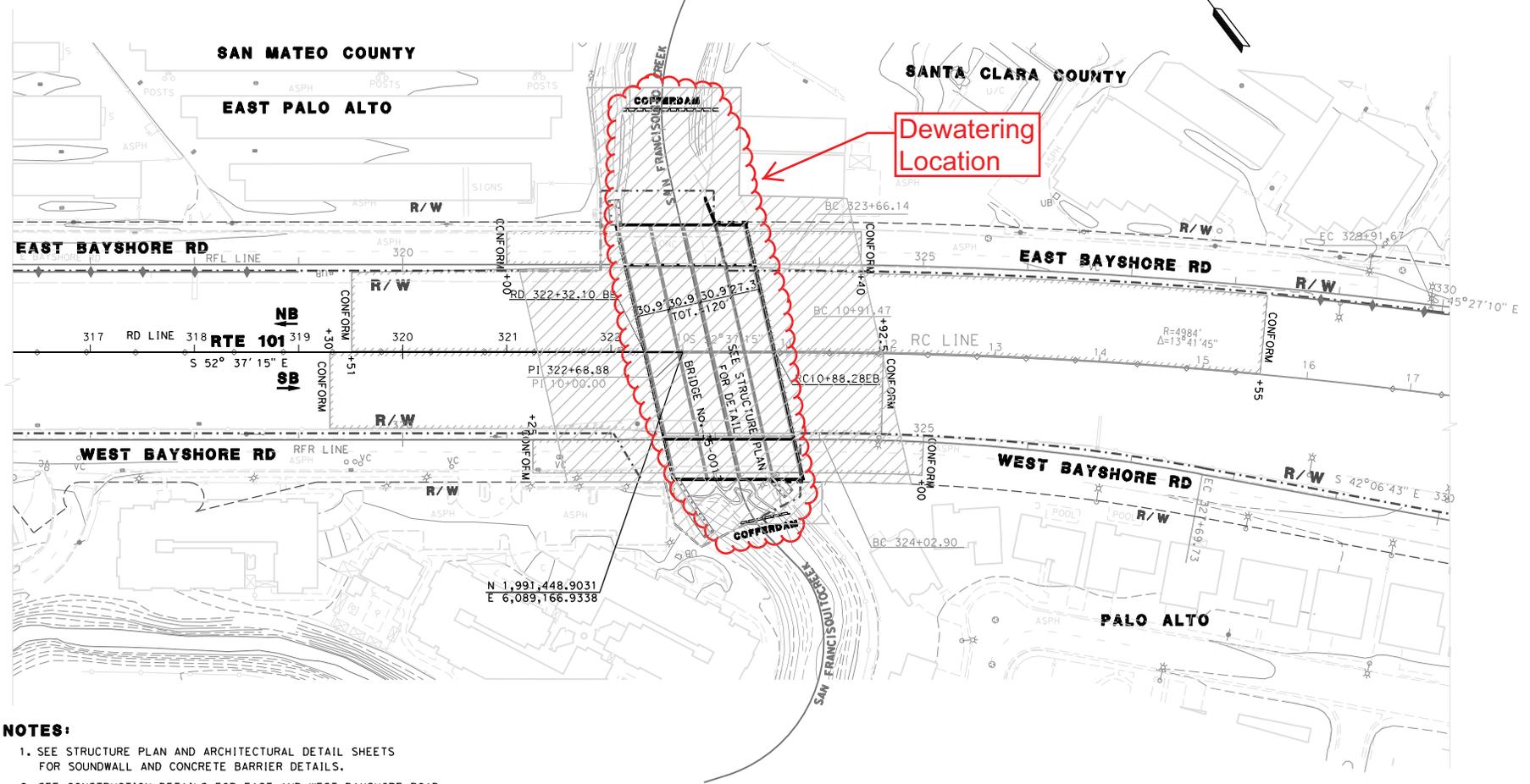
FUNCTIONAL SUPERVISOR

DESIGNED BY
 CHECKED BY

REVISOR
 DATE REVISION
 REVISION
 DATE REVISION

LEGEND:

-  AC OVERLAY
-  SHEET PILE
-  CONCRETE BARRIER



NOTES:

1. SEE STRUCTURE PLAN AND ARCHITECTURAL DETAIL SHEETS FOR SOUNDWALL AND CONCRETE BARRIER DETAILS.
2. SEE CONSTRUCTION DETAILS FOR EAST AND WEST BAYSHORE ROAD.
3. SEE STRUCTURE PLAN FOR BRIDGE DETAILS.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER DATE _____

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.

PROFESSIONAL SEAL: CIVIL ENGINEER, STATE OF CALIFORNIA



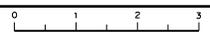
**SAN FRANCISQUITO CREEK
 BRIDGE REPLACEMENT
 LAYOUT (REVISION 5)**
 SCALE: 1" = 50'

L-1

BORDER LAST REVISED 7/2/2010

USERNAME => #USER
 DON FILE => #REQUEST

RELATIVE BORDER SCALE
 15 IN INCHES



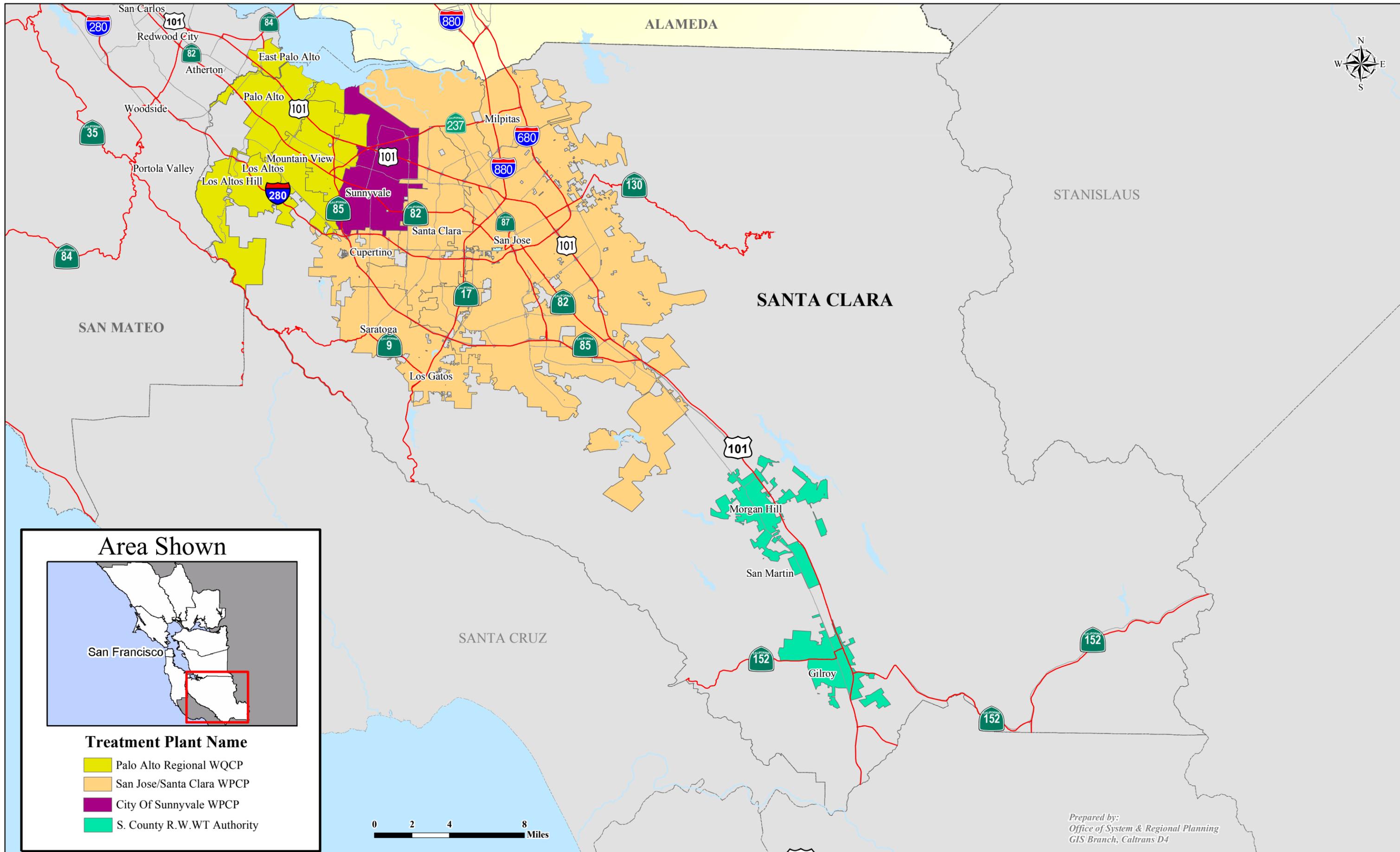
UNIT 0000

PROJECT NUMBER & PHASE

0000000001

ATTACHMENT C
PUBLICLY-OWNER TREATMENT WORKS (POTW) FACILITY INFORMATION

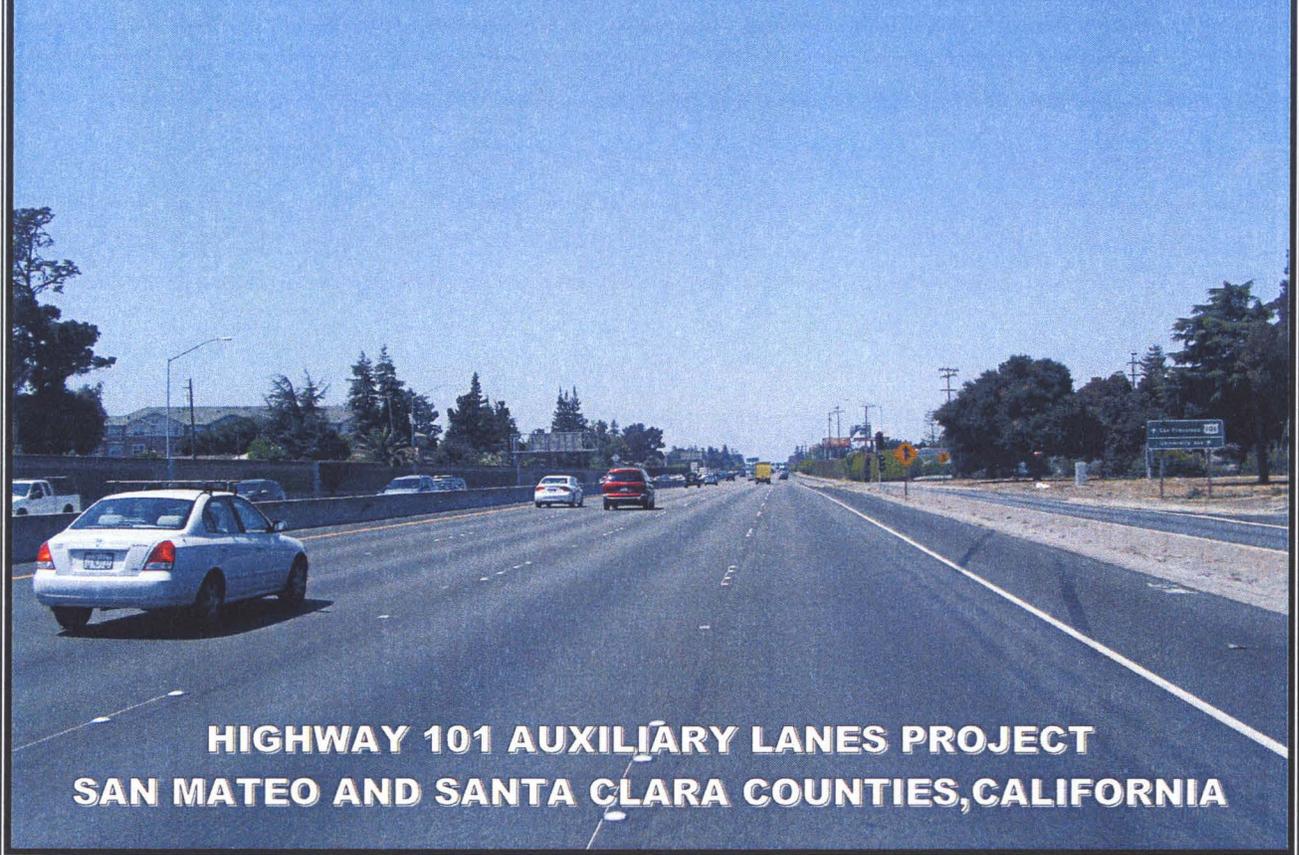
Santa Clara County - POTW Service Areas



	City Discharger	Treatment Plant Name	WDR Discharger Name	Discharger Contact Name	Contact Phone No.	Contact Email	Mail Address	Ct Contact for Groundwater & De-Watering Discharges	Service Area of the POTW
67	City of Palo Alto Regional WQCP	City of Palo Alto Regional WQCP	City of Palo Alto Regional WQCP	Phil Bobel	650-329-2285	phil_bobel@city.palo-alto.ca.us	2501 Embarcadero Way, Palo Alto, 94303	Best Contact: Javad Ghaffari @ 650-329-2285 Need Exceptional Discharge Permit (\$750), then \$3.40 per 1,000 gals, testing. Has limited capacity, discouraged during winter. See: cleanbay@cityofpaloalto.org	Service Area is : Los Altos, Los Altos Hills, Mt. View, Palo Alto, Stanford & East Palo Alto Sanitation District
68			City of Palo Alto	Bill Gray	650-496-6932(phone); 650-496-6924	bill_gray@city.palo-alto.ca.us	Bill Gray, Manager-Water, Gas, Wastewater Utilities Operations, City of Palo Alto, 3201 East Bayshore Blvd., Palo Alto, CA 94303	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
69			Los Altos Hills	Mintze Cheng	650-941-7222(phone); 650-941-3160(fax)	mcheng@losaltos hills.ca.gov	Mintze Cheng, Director of Public Works, Town of Los Altos Hills, 26379 Fremont Road, Los Altos Hills, CA 94022	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
70			City of Los Altos	Jim Porter	650-948-1491(phone); 650-941-7419(fax)	jim_porter@ci.lo s-altos.ca.us	Jim Porter, Director of Public Works, City of Los Altos, 1 N. San Antonio Road, Los Altos, CA 94022	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
71			East Palo Alto SD	Karen Maxey	650-325-9021	kmaxeyp@epas d.com	Karen Maxey, Acting General Manager, East Palo Alto Sanitary District, P.O. Box 51686, Palo Alto, CA 94303	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
72			City of Mountain View	David Serge	650-903-6239	dave_serge@ci.mtvview.ca.us	Dave Serge, Utility Manager, 231 North Whisman Road, P.O. Box 7540, Mountain View, CA 94039-7540	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
73			Stanford University	Marty Laporte	650-725-7864 (phone); 650-723-3191(fax)	marty@bonair.stanford.edu	Marty Laporte, Manager of Water Resources and Environmental Quality Stanford Utilities Department, 327 Bonair Siding, Stanford University, Stanford, CA 94305-7270	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
74			Foothill College	David Paulsen	650-949-6122 (phone); 650-948-5194 (fax)	paulsend@adm in.fhda.edu	David Paulsen, Coordinator, Foothill College, 12345 Altos Hills, CA 94022	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
75			Veterans Administration Hospital	Debasis Malakar	650-493-5000, ext. 64786(phone); 650-849-0117	debasis.malakar@med.va.gov	Debasis Malakar, Industrial Hygienist, VA Palo Alto Health Care System, 3801 Miranda Ave. Palo Alto, CA 94304	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
76			NASA Ames Research Center	Dana Bolles	650-604-3145(phone); 650-604-6508(fax)	dbolles@mail.a rc.nasa.gov	Dana Bolles, Environmental Engineer, NASA Ames Research Center, D0H:218-1, Moffett Field, CA 94035-1000	Same as City of Palo Alto Regional WQCP - see line # A-67	Part of Palo Alto Regional WQCP - see line # A - 67
77	San Jose/Santa Clara WPCP	San Jose/Santa Clara WPCP	San Jose/Santa Clara WPCP	Ron Garner	408-945-5316	ron.garner@ci.sj.ca.us	Ron Garner, Deputy Director, 700 Los Esteros Rd., San Jose, CA 95134	Best contact is permit writer Joe Denk 408-945-5482 and see website: www.ci.san-jose.ca.us/esd/eeforms.htm	San Jose, Santa Clara, Milpitas, Campbell, Cupertino, Los Gatos, Saratoga, Monte Sereno. Plant phone is 408-945-5300
78			City of San Jose	Jim Helmer Joe Garcia	408-277-4945 or 408 277-2554	jim_helmer@ci.sj.ca.us hoegarcia@ci.sj.ca.us	Jim Helmer, Director Dept. of Transportation, 4 North Second St. Ste. 1000, San Jose, CA 95113	Same as San Jose/Santa Clara WPCP - see Line # A-77	They send their WW to SanJose/Santa Clara WPCP for treatment See Line # A 77
79			City of Milpitas	Steve Smith	408-586-2640	ssmith@ci.milp itas.ca.gov	Steve Smith, Acting Director of Public Works, 455 E. Calaveras, Milpitas, CA 95035	Same as San Jose/Santa Clara WPCP - see Line # A -77	They send their WW to SanJose/Santa Clara WPCP for treatment See Line # A 77
80			Cupertino Sanitary District	David Ross	408-253-7071	dross@cu.mthomas.com	David Ross, District Manager, Cupertino San. District, 20065 Stevens Creek Blvd., Cupertino, CA 95014	Same as San Jose/Santa Clara WPCP - see Line # A -77	They send their WW to SanJose/Santa Clara WPCP for treatment See Line # A 77
81			West Valley SD	Bob Reid	408-378-2407	rreid@wvdsd.ca.us	Robert Reid, District Manager, West Valley Sanitation District, 100 E. Sunnyoaks Ave., Campbell, CA 95008	Same as San Jose/Santa Clara WPCP - see Line # A -77	They send their WW to SanJose/Santa Clara WPCP for treatment See Line # A 77
82			City of Santa Clara	Robin Saunders	408-615-2011	rsaunders@ci.s antaclara.ca.us	Robin Saunders, Director of Water & Sewer Utilities, 1500 Warburton Ave., Santa Clara, CA 95050	Same as San Jose/Santa Clara WPCP - see Line # A -77	They send their WW to SanJose/Santa Clara WPCP for treatment See Line # A 77
83			Burbank Sanitary District	Ken Kuebler	408-286-4401	bsburbank@aol.com	Ken Kuebler, Board Secretary, Burbank Sanitary District, 97 Boston Ave., San Jose, CA 95128	Same as San Jose/Santa Clara WPCP - see Line # A - 77	They send their WW to SanJose/Santa Clara WPCP for treatment See Line # A 77
84			Sunol Sanitary District	Steve Oster	408-456-2049 or 530-886-8225	steve2002@sta rband.net	Steve Oster, Sunol Sanitary District, 253 Lincoln Ave., San Jose, CA 95126	Same as San Jose/Santa Clara WPCP - see Line #A- 77	They send their WW to SanJose/Santa Clara WPCP for treatment See Line # A 77
85			County Sanitation District #2-3	Sid Nash	408-453-5373	snash@cu.mthomas.com	Sid Nash, Mark Thomas Co., 90 Archer St., San Jose, CA 95112	Same as San Jose/Santa Clara WPCP - see Line # A -77	They send their WW to SanJose/Santa Clara WPCP for treatment See Line # A 77
86	City of Sunnyvale WPCP	City of Sunnyvale WPCP	City of Sunnyvale WPCP	Jim Craig	408-730-7558	jrcraig@ci.sunn yvale.ca.us	Jim Craig, Field Services Superintendent, Dept. of Public Works, City of Sunnyvale P.O. Box 3707, Sunnyvale, CA 94088 3707	Best contact is "pre-treatment coordinator" Robert Gallo @ 408-730-7737 - would depend on the source of the water, some permit exemptions for groundwater, need estimates of quantities, etc. [Knowledgeable: Christy McCumby 408-730-7274]	Serves the City of Sunnyvale and a very small part of Cupertino.

ATTACHMENT D
SITE INVESTIGATION REPORT

**REVISED
PRELIMINARY SITE INVESTIGATION REPORT**



**HIGHWAY 101 AUXILIARY LANES PROJECT
SAN MATEO AND SANTA CLARA COUNTIES, CALIFORNIA**

PREPARED FOR:
CALTRANS DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING
111 GRAND AVENUE, MS8C
OAKLAND, CA 94612



PREPARED BY:
GEOCON CONSULTANTS, INC.
6671 BRISA STREET
LIVERMORE, CALIFORNIA



GEOCON PROJECT NO. E8435-06-36
CALTRANS EA 04-235611

DECEMBER 2009
(Revised August 2011)

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- A. City of Menlo Park Encroachment Permit and San Mateo County Drilling Permit
- B. Laboratory Reports and Chain-of-custody Documentation -CD
- C. Lead Regression and Metals Statistics

REPORT LIMITATIONS

This report has been prepared exclusively for the State of California Department of Transportation (Caltrans) District 4. The information contained herein is only valid as of the date of the report and will require an update to reflect additional information obtained.

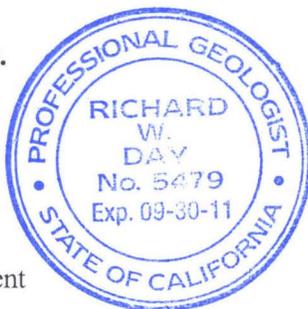
This report is not a comprehensive site characterization and should not be construed as such. The findings as presented in this report are predicated on the results of the limited sampling and laboratory testing performed. In addition, the information obtained is not intended to address potential impacts related to sources other than those specified herein. Therefore, the report should be deemed conclusive with respect to only the information obtained. We make no warranty, express or implied, with respect to the content of this report or any subsequent reports, correspondence or consultation. Geocon strived to perform the services summarized herein in accordance with the local standard of care in the geographic region at the time the services were rendered.

The contents of this report reflect the views of the author who is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the State of California or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

GEOCON CONSULTANTS, INC.



Richard Day, CEG, CHG
Senior Geologist, Vice President



CALIFORNIA DEPARTMENT OF TRANSPORTATION – DISTRICT 4
OFFICE OF ENVIRONMENTAL ENGINEERING

Reviewed By:

Recommended By:

Approved By:

Ana Uribe
Task Order Manager

Chris Wilson, PE
District Branch Chief

Allen Baradar, PE, REA
District Office Chief

TABLE OF CONTENTS, CONT

PROJECT TEAM

Contact	Affiliation	Responsibility
Chris Wilson, PE 510.286.5647 510.286.5642 fax chris_wilson@dot.ca.gov	Caltrans – District 4 Environmental Engineering 111 Grand Avenue, 14 th Floor Oakland, California 94612	District Branch Chief
Ana Uribe. 510.286.4914 510.286.5728 fax ana_uribe@dot.ca.gov	Caltrans – District 4 Environmental Engineering 111 Grand Avenue, 14th Floor Oakland, California 94612	Task Order Manager
Richard Day, CEG, CHG John Love, PG Lauren Vigliotti 925.371.5900 925.371.5915 fax livermore@geoconinc.com	Geocon Consultants, Inc. 6671 Brisa Street Livermore, CA 94550 (<i>Caltrans Contractor</i>)	Project Management Sample Collection Field QA/QC Investigation Report
Mr. John McAssey 925.521.1490 925.521.1494 fax jmcassey@vironex.com	Vironex 5292 Pacheco Boulevard Pacheco, CA 94553 (<i>Geocon Subcontractor</i>)	Drilling Contractor
Mr. Robert Cruz 831.461.1467 813.461.1470 fax cruzbro@att.net	Cruz Brothers Locators 3004 Bean Creek Road Scotts Creek, CA 95067 (<i>Geocon Subcontractor</i>)	Utility Locator
Ms. Terri Rodgers 408.436.1127 408.436.1675 fax trodgers@www.dmtraffic.com	D & M Traffic Services, Inc. 845 Reed street Santa Clara, CA 95050 (<i>Geocon Subcontractor</i>)	Traffic Control Contractor
Doug Krause, CIH 530.758.6397 530.758.6506 fax dskrause@pacbell.net	Krause & Associates 216 F. Street, Suite 162 Davis, CA 95616 (<i>Geocon Subcontractor</i>)	Health and Safety
Diane Galvan 562.989.4045 562.989.4040 fax diane@atlglobal.com	Advanced Technology Laboratories 1510 E. 33 rd Street Signal Hill, CA 90807 (<i>Geocon Subcontractor</i>)	Sample Analysis

REVISED PRELIMINARY SITE INVESTIGATION REPORT

EXECUTIVE SUMMARY

We prepared this Revised Preliminary Site Investigation Report for the United States Highway 101 (US 101) Auxiliary Lane Addition project under California Department of Transportation (Caltrans) Contract No. 04A2912 and Task Order (TO) 36, EA 04-235611. The project location is depicted on the Vicinity Map, Figure 1, and the Site Plan, Figure 2.

The purpose of the investigation was to evaluate the concentrations of metals, including aerially deposited lead (ADL), in soil and total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) in soil and groundwater at the Site. The information obtained from this investigation will be used by Caltrans to determine soil disposal costs and to identify health and safety concerns during proposed construction activities.

The field investigation was performed on August 10-13, 18, 24, 25, and 31, 2009, by Geocon staff John Love, Professional Geologist (PG), and Chris Merritt, PG. The following field activities were performed during the sampling efforts:

- Advanced a total of 136 soil borings at the Site to a maximum depth of 18 feet using direct-push drilling and hand-auger techniques. One-hundred-twenty-three borings were advanced to a depth of 2.5 feet, nine borings were advanced to a depth of 6 feet, and four borings were advanced to a depth of 18 feet.
- Collected a total of 438 soil samples. Selected soil samples were analyzed for total and soluble lead, California Assessment Manual (CAM) 17 metals, TPH and/or VOCs.
- Collected four grab-groundwater samples for analysis of TPH and VOCs.
- Transported samples to Advanced Technology Laboratories (ATL) for analysis under standard chain-of-custody (COC) documentation.

Laboratory analytical results are presented on Tables 2 through 5. Reproductions of the laboratory reports and chain-of-custody documentation are provided as Appendix A.

Predicted Soluble (Waste Extraction Test; WET) Lead Results

The lead data for the Site were treated as 16 separate sample populations for statistical evaluation. The waste classifications for each of the sample populations are provided in Tables 6a through 6p, and are summarized as follows:

Soil excavated to a depth of **2.0 feet** would be classified as California hazardous and will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous:

- a) US 101 Northbound (NB) - Borings B-1 to B-67
- b) US 101 NB excluding Willow Road Overcrossing (OC) and University Avenue OC - Borings B-1 to B-25, B-32 to B-42, and B-53 to B-67
- c) US 101 NB excluding Willow Road OC - Borings B-1 to B-25 and B-32 to B-67
- e) US 101 NB excluding University Avenue OC - Borings B-1 to B-42 and B-53 to B-67
- f) US 101 NB at University Avenue OC - Borings B-43 to B-52
- g) US 101 Southbound (SB) - Borings B-68 to B-137
- h) US 101 SB excluding Willow Road OC and University Avenue OC - Borings B-68 to B-97, B-102 to B-111, and B-122 to B-137
- i) US 101 SB excluding Willow Road OC - Borings B-68 to B-97 and B-102-B-137
- k) US 101 SB excluding University Avenue OC - Borings B-68 to B-111 and B-122 to B-137
- m) US 101 NB from Marsh Road to University Avenue – Borings B-1 to B-48
- n) US 101 NB from University Avenue to Embarcadero Road – Borings B-49 to B-67
- p) US 101 SB from University Avenue to Embarcadero Road – Borings B-117 to B-137

Soil excavated to a depth of **1.0 foot** would be classified as California hazardous and will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 1.0 foot) would be classified as non-hazardous:

- d) US 101 NB at Willow Road OC - Borings B-26 to B-31
- l) US 101 SB at University Avenue OC - Borings B-113 to B-121

Soil excavated to a depth of **2.5 feet** would be classified as California hazardous and will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.5 feet) would be classified as non-hazardous:

- j) US 101 SB at Willow Road OC - Borings B-98- to B-101
- o) US 101 SB from Marsh Road to University Avenue – Borings B-68 to B-116

CAM 17 Metals

The 95% UCL values for arsenic and vanadium in the soil samples collected at the Site are greater than their respective residential land use ESLs and are less than the commercial/industrial land use ESLs. The SFRWQCB *November 2007 Update to Environmental Screening Levels (ESLs) Technical Document* states that ambient background concentrations of arsenic typically exceed risk-based

screening levels. In such instances, it may be more appropriate to compare site data to regionally specific established background levels.

The calculated 95% UCLs for antimony, cadmium, chromium, mercury and zinc are less than their respective ESLs. The 95% UCLs for these metals are all less than their respective published background mean concentrations, with the exception of antimony, which is within the published background range.

Offsite reuse or disposal of excavated soil may be restricted based on metals content.

Organics

Soil

TPHg and VOCs were not detected above the laboratory reporting limits. The reported TPHd and TPHmo concentrations were below their respective ESLs.

Grab-Groundwater

Organic compounds were not detected above their respective laboratory reporting limits in the grab-groundwater samples, with the exception of 4-isopropyltoluene, which does not have a published ESL value.

Worker Protection

Per Caltrans' requirements, the contractor(s) should prepare a project-specific health and safety plan to prevent or minimize worker exposure to impacted soil and groundwater. The plan should include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of soil and groundwater.

1.0 INTRODUCTION

This Revised Preliminary Site Investigation Report for the United States Highway 101 (US 101) Auxiliary Lane Addition project was prepared by Geocon Consultants, Inc. under California Department of Transportation (Caltrans) Contract No. 04A2912 and Task Order (TO) 36, EA 04-235611.

Asbestos-containing materials (ACMs) surveys of the Ringwood pedestrian overcrossing (POC), the Hetch Hetchy Aqueduct Bridge, and the Francisquito Creek Bridge were also conducted under TO 36. The results of the ACM surveys are presented under separate cover in the *Asbestos and Lead-Containing Paint Survey Report*, dated December 2009.

1.1 Project Description and Proposed Improvements

The project area consists of US 101 from the intersection with Embarcadero Road in the City of Palo Alto to Marsh Road (the Site) in the City of Menlo Park, California. The Site extends between Post Miles (PM) 52.2 in Palo Alto, Santa Clara County, to PM 3.6 in Menlo Park, San Mateo County. Caltrans is proposing to add approximately four miles of auxiliary lane in both directions of US 101. The site location is depicted on the Vicinity Map, Figure 1.

1.2 General Objectives

The purpose of the investigation was to evaluate the concentrations of metals, including aerially deposited lead (ADL), in soil and total petroleum hydrocarbons (TPH) and volatile organic compounds (VOCs) in soil and groundwater at the Site. The information obtained from this investigation will be used by Caltrans to determine soil disposal costs and to identify health and safety concerns during proposed construction activities.

2.0 BACKGROUND

2.1 Hazardous Waste Determination Criteria

Regulatory criteria to classify a waste as California hazardous for handling and disposal purposes are contained in the CCR, Title 22, Division 4.5, Chapter 11, Article 3, §66261.24. Criteria to classify a waste as Resource, Conservation, and Recovery Act (RCRA) hazardous are contained in Chapter 40 of the Code of Federal Regulations (40 CFR), Section 261.

For waste containing metals, the waste is classified as California hazardous when: 1) the total metal content exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the soluble metal content exceeds the respective Soluble Threshold Limit Concentration (STLC) based on the standard

Waste Extraction Test (WET). A waste has the potential of exceeding the STLC when the waste's total metal content is greater than or equal to ten times the respective STLC value since the WET uses a 1:10 dilution ratio. Hence, when a total metal is detected at a concentration greater than or equal to ten times the respective STLC, and assuming that 100 percent of the total metals are soluble, soluble metal analysis is required. A material is classified as RCRA hazardous, or Federal hazardous, when the soluble metal content exceeds the Federal regulatory level based on the Toxicity Characteristic Leaching Procedure (TCLP).

The above regulatory criteria are based on chemical concentrations. Wastes may also be classified as hazardous based on other criteria such as ignitability and corrosivity; however, for the purposes of this investigation, toxicity (i.e., lead concentrations) is the primary factor considered for waste classification since waste generated during the construction activities would not likely warrant testing for ignitability or other criteria. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

2.2 Environmental Screening Levels

The San Francisco Bay Regional Water Quality Control Board (SFRWQCB) has prepared a technical report entitled *Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater, Interim Final* (May 2008), which presents Environmental Screening Levels (ESLs) for soil, groundwater, soil gas, and surface water, to assist in evaluating sites impacted by releases of hazardous chemicals. The ESLs are conservative values for more than 100 commonly detected contaminants, which may be used to compare with environmental data collected at a site. ESLs are strictly risk assessment tools and “not regulatory clean up standards.” The presence of a chemical at concentrations in excess of an ESL does not necessarily indicate that adverse impacts to human health or the environment are occurring; this simply indicates that a potential for adverse risk may exist and that additional evaluation is or “may be” warranted (SFRWQCB, 2008).

The most conservative ESL tables were used for this characterization: Table A – Shallow Soil (≤ 3 meters below ground surface; bgs) – Groundwater is a Current or Potential Source of Drinking Water and Table K-2 – Direct Exposure Soil Screening Levels for Commercial / Industrial Worker Exposure Scenario. The respective ESLs are listed at the end of Tables 3 and 4 for comparative purposes.

3.0 SCOPE OF SERVICES

The scope of services requested by Caltrans under TO-36, EA 04-235611 included the following:

3.1 Pre-field Activities

- Prepared a *Workplan* dated June 25, 2009, that describes the requested scope of services and quality assurance/quality control (QA/QC) sampling and laboratory procedures.
- Prepared a site-specific health and safety plan to provide guidelines on the use of personal protective equipment and the health and safety procedures implemented during the field activities.
- Prepared a traffic control plan and obtained an encroachment permit from the City of Menlo Park Department of Public Works (a copy of the encroachment permit is provided in Appendix A).
- Obtained soil boring permit from the San Mateo County Health Services Division (a copy of the soil boring permit is provided in Appendix A).
- Retained the services of Caltrans-approved, California-licensed laboratories to perform the sample analyses.
- Retained the services of Caltrans-approved, utility location surveyor.
- Notified Underground Service Alert (USA) at least 48 hours prior to fieldwork involving drilling or direct-push sampling activities.
- Arranged traffic control on surface streets with D & M Traffic Services and along US 101 with Caltrans.

3.2 Field Activities

The field investigation was performed on August 10-13, 18, 24, 25, and 31, 2009, by Geocon staff John Love, Professional Geologist (PG), and Chris Merritt, PG. The following field activities were performed during the sampling efforts:

- Advanced a total of 136 soil borings at the Site to a maximum depth of 18 feet using direct-push drilling and hand-auger techniques. One-hundred-twenty-three borings were advanced to a depth of 2.5 feet, nine borings were advanced to a depth of 6 feet, and four borings were advanced to a depth of 18 feet.
- Collected a total of 438 soil samples. Selected soil samples were analyzed for total and soluble lead, California Assessment Manual (CAM) 17 metals, TPH and/or VOCs.
- Collected four grab-groundwater samples for analysis of TPH and VOCs.
- Transported samples to Advanced Technology Laboratories (ATL) for analysis under standard chain-of-custody (COC) documentation.

4.0 INVESTIGATIVE METHODS

4.1 Sampling Procedures

Soil samples were collected from 136 boring locations identified by the Caltrans TO Manager. Boring locations are shown on the Site Plans, Figure 2a-h, and were surveyed using Differential Global Positioning System (DGPS) equipment. Boring coordinates are presented on Table 1.

Soil samples were collected from the borings as follows:

- B-1 through B-111 and B-113 through B-137 (except for those borings listed below) at depth intervals of 0 to 0.5 foot, 1.0 to 1.5 feet, and 2.0 to 2.5 feet.
- B-7, B-60, B-73 through B-78 and B-131 at depth intervals of 0 to 0.5 foot, 1.0 to 1.5 feet, 2.0 to 2.5 feet, 4.0 to 4.5 feet and 6.0 to 6.5 feet.
- B17, B-19, B-84 and B-87 at depth intervals of 0 to 0.5 foot, 1.0 to 1.5 feet, 2.0 to 2.5 feet, 6.0 to 6.5 feet, 12 to 12.5 feet and 18 to 18.5 feet.

In addition, grab-groundwater samples were collected from borings B-17, B-19, B-75 and B-84.

Soil and groundwater samples were collected using a Geoprobe direct-push sample rig or a hand auger if access was limited. Soil samples collected using the Geoprobe direct-push rig were obtained by hydraulically advancing a three- to five-foot-long stainless steel core-barrel sampler lined with an acetate sample tube into undisturbed soil. Soil samples were collected for laboratory analysis by cutting an approximately 6-inch-long section of the acetate tube from the target sample depth, capping the ends with Teflon tape and plastic end caps, and then placing the sample tube in a chest cooled with ice for storage and delivery to the analytical laboratory. Soil samples collected using a hand-auger were placed in 8-ounce glass jars with threaded Teflon-lined plastic lids prior to being stored in a chest cooled with ice.

Grab-groundwater samples were collected by placing temporary PVC well casings into the open boreholes and then pumping groundwater through the well casing using ¼-inch-diameter disposable polyethylene tubing fitted with a check valve. Groundwater was discharged at ground surface into the appropriate sample containers where it was then placed in a chest cooled with ice for transport to the analytical laboratory.

Sample containers were labeled and transported to a Caltrans-approved, certified environmental laboratory using standard COC documentation. Shallow soil borings (≤ 6 feet) were back-filled to surface with soil cuttings; borings advanced to groundwater were backfilled with neat cement grout.

Geocon and their subcontractors conducted QA/QC procedures during the field activities. These procedures included washing the sampling equipment with a Liqui-Nox® solution followed by a double rinse with deionized water. Decontamination water was disposed to the ground surface within Caltrans right-of-way in a manner not to create runoff, away from drain inlets or potential water bodies.

4.2 Laboratory Analyses

Laboratory analyses were performed by ATL under a standard seven-day turn-around-time. A CD containing the laboratory reports and COC documentation are presented as Appendix B.

Soil samples were analyzed as follows:

- Two-hundred-twenty-six samples for CAM 17 metals according to Title 22 CCR, Environmental Protection Agency (EPA) Test Methods 6010 ICAP and 7471A.
- Two-hundred-twelve samples for total lead using EPA Method 6010 ICAP.
- Per Caltrans request, 124 samples were further analyzed for WET lead using EPA Method 7420 and 45 samples were analyzed for TCLP lead using EPA Method 1445.
- Nine samples, which were collected from the 10 to 10.5-foot depth interval, for TPH as gasoline (TPHg), TPH as diesel (TPHd), and TPH as motor oil (TPHmo) using EPA Test Method 8015M.
- Nine samples for VOCs, including benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Test Method 8260B.
- Seventy-six soil samples for pH using EPA Method 9045.

The four grab-groundwater samples were analyzed for the following:

- TPHg, TPHd, and TPHmo using EPA Test Method 8015M.
- VOCs, including BTEX, using EPA Test Method 8260B.

4.3 Laboratory QA/QC

QA/QC procedures were performed for each method of analysis with specificity for each analyte listed in the test method's QA/QC. The laboratory QA/QC procedures included the following:

- One method blank for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One sample analyzed in duplicate for every ten samples, batch of samples or type of matrix, whichever was more frequent.
- One spiked sample for every ten samples, batch of samples or type of matrix; whichever was more frequent, with spike made at ten times the detection limit or at the analyte level.

Prior to submitting the samples to the laboratories, the COC documentation was reviewed for accuracy and completeness (Appendix B).

5.0 INVESTIGATIVE RESULTS

5.1 Subsurface Conditions

Near surface soils (0 to 2 feet) encountered along the US 101 corridor between Embarcadero Road in Palo Alto and Marsh Road in Menlo Park consisted primarily of dry to slightly moist intermixed sand, silt, and gravel with some clay being observed throughout the area. Soils deeper than two feet typically consisted of dark brown silty and sandy clay.

Groundwater was measured in borings B-17, B-19, and B-84 drilled near the Ringwood POC at depths ranging from 12.5 to 13.5 feet.

5.2 Laboratory Analytical Results

A summary of the analytical results for soil and grab-groundwater samples collected at the Site are presented in Tables 2 through 5. A CD containing the laboratory reports and chain-of-custody documentation are presented as Appendix B.

5.2.1 Soil

- The following CAM 17 metals were not detected above their respective laboratory reporting limits: beryllium, silver, and thallium.
- Remaining CAM 17 metals, with the exception of lead, were reported in the samples at concentrations less than ten times their respective STLCs.
- Total lead was reported at concentrations ranging from of 1.5 mg/kg to 5,300 mg/kg, with 30 samples equal to or exceeding the TTLC of 1,000 mg/kg.
- WET lead was reported as <0.25 mg/l in 2 of the 124 sampled analyzed. It was reported at concentrations ranging from 0.39 mg/l to 71 mg/l in the other 122 samples.
- TCLP lead was reported as <0.25 mg/l in 7 of the 45 samples analyzed. It was reported at concentrations ranging from 0.30 mg/l to 71 mg/l in the other 38 samples.
- TPHg was not detected above the laboratory reporting limit of 1.0 mg/kg in the samples.
- TPHd was reported at concentrations ranging from <1.0 to 5.8 mg/kg.
- TPHmo was reported in the samples at concentrations ranging from <1.0 to 13 mg/kg.
- VOCs, including BTEX, were not detected above their respective laboratory reporting limits.
- Soil pH values ranged from 7.0 to 8.7.

5.2.2 Grab-Groundwater

- TPHg, TPHd and TPHmo were not detected above their respective laboratory reporting limits.
- VOCs were not detected in the samples, with the exception of 4-isopropyltoluene at a concentration of 0.82 micrograms per liter ($\mu\text{g/l}$) in sample B-75.

5.3 Laboratory QA/QC

We reviewed the QA/QC results provided with the laboratory analytical reports. The data indicate non-detect results for the method blanks.

Matrix spike and/or matrix spike duplicates (MS/MSDs) were outside recovery criteria for several samples. The relative percent differences (RPDs) of the duplicate samples for several of the analyses were outside criteria. The RPDs for several of the MSDs for the analyses were outside criteria. Additionally, the surrogate recoveries were diluted out of two samples. However, the Case Narratives in the laboratory reports state that each analytical batch was validated by the laboratory control sample (LCS). The data showed acceptable recoveries and RPDs for the remainder of the duplicates and matrix spikes. Dilution was necessary for several analyses due to sample matrix.

Based on this limited data review, no additional qualifications of the soil data are necessary, and the data are of sufficient quality for the purposes of this report.

5.4 Statistical Evaluation for Lead Detected in Soil Samples

The lead data for the Site were treated as 16 separate sample populations for statistical evaluation, which consisted of the following:

- a) US 101 Northbound (NB) - Borings B-1 to B-67
- b) US 101 NB excluding Willow Road Overcrossing (OC) and University Avenue OC - Borings B-1 to B-25, B-32 to B-42, and B-53 to B-67
- c) US 101 NB excluding Willow Road OC - Borings B-1 to B-25 and B-32 to B-67
- d) US 101 NB at Willow Road OC - Borings B-26 to B-31
- e) US 101 NB excluding University Avenue OC - Borings B-1 to B-42 and B-53 to B-67
- f) US 101 NB at University Avenue OC - Borings B-43 to B-52
- g) US 101 Southbound (SB) - Borings B-68 to B-137
- h) US 101 SB excluding Willow Road OC and University Avenue OC - Borings B-68 to B-97, B-102 to B-111, and B-122 to B-137
- i) US 101 SB excluding Willow Road OC - Borings B-68 to B-97 and B-102-B-137

- j) US 101 SB at Willow Road OC - Borings B-98- to B-101
- k) US 101 SB excluding University Avenue OC - Borings B-68 to B-111 and B-122 to B-137
- l) US 101 SB at University Avenue OC - Borings B-113 to B-121
- m) US 101 NB from Marsh Road to University Avenue – Borings B-1 to B-48
- n) US 101 NB from University Avenue to Embarcadero Road – Borings B-49 to B-67
- o) US 101 SB from Marsh Road to University Avenue – Borings B-68 to B-116
- p) US 101 SB from University Avenue to Embarcadero Road – Borings B-117 to B-137

Statistical methods were applied to the total lead data to evaluate: 1) the upper confidence limits (UCLs) of the arithmetic means of the total lead concentrations for each sampling depth; and 2) if an acceptable correlation between total and WET lead concentrations exists that would allow the prediction of WET lead concentrations based on calculated UCLs. The statistical methods used are discussed in a book entitled *Statistical Methods for Environmental Pollution Monitoring*, by Richard Gilbert; in an EPA *Technology Support Center Issue* document entitled, *The Lognormal Distribution in Environmental Applications*, by Ashok Singh et. al., dated December 1997; and in a book entitled *An Introduction to the Bootstrap*, by Bradley Efron and Robert J. Tibshirani.

5.4.1 Calculating the UCLs for the Arithmetic Mean

The upper one-sided 90% and 95% UCLs of the arithmetic mean are defined as the values that, when calculated repeatedly for randomly drawn subsets of site data, equal or exceed the true mean 90% and 95% of the time, respectively. Statistical confidence limits are the classical tool for addressing uncertainties of a distribution mean. The UCLs of the arithmetic mean concentration are used as the mean concentrations because it is not possible to know the true mean due to the essentially infinite number of soil samples that could be collected from a site. The UCLs therefore account for uncertainties due to limited sampling data. As data become less limited at a site, uncertainties decrease, and the UCLs move closer to the true mean.

Non-parametric bootstrap techniques used to calculate the UCLs are discussed in the previously referenced EPA document and in *An Introduction to the Bootstrap*. For those samples in which total lead was not detected at concentrations exceeding the laboratory reporting limit, a value equal to one-half of the detection limit was used in the UCL calculation. The bootstrap test results are included in Appendix C.

The following tables present the calculated UCLs and statistics for each data set.

**US 101 NB
Borings B-1 to B-67**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	551.7	588.5	411.5	2.5	5,300
1.0 to 1.5	372.3	398.2	275.5	2.5	4,100
2.0 to 2.5	62.9	69.7	43.8	1.0	830

**US 101 NB excluding Willow Road OC and University Avenue OC
Borings B-1 to B-25, B-32 to B-42, and B-53 to B-67**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	329.3	349.9	257.3	2.5	2,000
1.0 to 1.5	431.3	468.1	312.7	2.5	4,100
2.0 to 2.5	79.2	85.8	53.5	2.5	830

**US 101 NB excluding Willow Road OC
Borings B-1 to B-25 and B-32 to B-67**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	431.8	463.9	322.3	2.5	4,600
1.0 to 1.5	394.5	423.6	294.6	2.5	4,100
2.0 to 2.5	68.3	72.9	46.5	1.0	830

**US 101 NB at Willow Road OC
Borings B-26 to B-31**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	2,274	2,547	1,318	100	5,300
1.0 to 1.5	108.8	116.3	81.8	15	150
2.0 to 2.5	23.0	24.6	16.6	2.5	35

**US 101 NB excluding University Avenue OC
Borings B-1 to B-42 and B-53 to B-67**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	502	536.6	369	2.5	5,300
1.0 to 1.5	392.3	426.8	288.4	2.5	4,100
2.0 to 2.5	72.2	78.8	49.6	2.5	830

**US 101 NB at University Avenue OC
Borings B-43 to B-52**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	1,202	1,374	653.7	17	4,600
1.0 to 1.5	346.1	382.4	201.9	8.0	1,200
2.0 to 2.5	16.2	18.0	10.9	1.0	49

**US 101 SB
Borings B-68 to B-137**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	649.7	683.5	525.7	2.5	5,300
1.0 to 1.5	227.1	240.9	182.7	1.5	1,300
2.0 to 2.5	70.8	78.2	41.5	2.4	1,900

**US 101 SB excluding Willow Road OC and University Avenue OC
Borings B-68 to B-97, B-102 to B-111, and B-122 to B-137**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	585.4	615.2	485.6	2.5	2,700
1.0 to 1.5	242.1	258.8	192.1	1.5	1,300
2.0 to 2.5	87.3	101.1	44.4	2.4	1,900

**US 101 SB excluding Willow Road
Borings B-68 to B-97 and B-102 to B-137**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	549.9	577	460	2.5	2,700
1.0 to 1.5	219.5	231.8	171.9	1.5	1,300
2.0 to 2.5	76.3	86.6	39.3	2.4	1,900

**US 101 SB at Willow Road OC
Borings B-98 to B-101**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	Not Calculated	Not Calculated	1,594	27	5,300
1.0 to 1.5	Not Calculated	Not Calculated	357	65	790
2.0 to 2.5	Not Calculated	Not Calculated	260.8	15	820

**US 101 SB excluding University Avenue OC
Borings B-68 to B-111 and B-122 to B-137**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	699.6	742.7	559.5	2.5	5,300
1.0 to 1.5	256.3	267	203.1	1.5	1,300
2.0 to 2.5	101	114.5	58.8	2.4	1,900

**US 101 SB at University Avenue OC
Borings B-113 to B-121**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	496.1	547.6	300.3	21	1,500
1.0 to 1.5	62.3	66.7	46.6	8.5	100
2.0 to 2.5	9.0	9.3	7.6	2.5	14

**US 101 NB from Marsh Road to University Avenue
Borings B-1 to B-48**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	626.8	667.1	441.9	2.5	5,300
1.0 to 1.5	257.1	275.3	197	2.5	1,400
2.0 to 2.5	57.5	62.0	39.9	2.5	560

**US 101 NB from University Avenue to Embarcadero Road
Borings B-49 to B-67**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	492.6	538	334.6	19	2,000
1.0 to 1.5	760.3	839.5	473.8	5.3	4,100
2.0 to 2.5	106	122.7	53.8	1.0	830

**US 101 SB from Marsh Road to University Avenue
Borings B-68 to B-116**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	705.3	753	547.2	2.5	5,300
1.0 to 1.5	236.3	252	182	1.5	1,300
2.0 to 2.5	123.8	139.1	70.4	2.4	1,900

**US 101 SB from University Avenue to Embarcadero Road
Borings B-117 to B-137**

SAMPLE INTERVAL (feet)	90% TOTAL LEAD UCL (mg/kg)	95% TOTAL LEAD UCL (mg/kg)	TOTAL LEAD MEAN (mg/kg)	MINIMUM VALUE (mg/kg)	MAXIMUM VALUE (mg/kg)
0.0 to 0.5	648.1	690.9	476.6	12	1,900
1.0 to 1.5	264.8	287.7	184.1	2.5	1,200
2.0 to 2.5	11.8	12.3	10.3	2.5	20

5.4.2 Correlation of Total and WET Lead

Total and corresponding WET lead concentrations are bivariate data with a linear structure. This linear structure should allow for the prediction of WET lead concentrations based on the UCLs calculated above in Section 5.4.1.

To estimate the degree of interrelation between total and corresponding WET lead values (x and y , respectively), the *correlation coefficient* [r] is used. The correlation coefficient is a ratio that ranges from +1 to -1. A *correlation coefficient* of +1 indicates a perfect direct relationship between two variables; a *correlation coefficient* of -1 indicates that one variable changes inversely with relation to the other. Between the two extremes is a spectrum of less-than-perfect relationships, including zero, which indicates the lack of any sort of linear relationship at all. The *correlation coefficient* was calculated for the 124 (x , y) data points (i.e., soil samples analyzed for both total lead [x] and WET lead [y]). To achieve an acceptable correlation, the 15 data points with the highest squared residual WET lead concentrations were eliminated from the regression analysis. The resulting *coefficient of determination* (r^2) equaled 0.6573, which yields a corresponding *correlation coefficient* (r) of 0.81.

For the *correlation coefficient* that indicates a linear relationship between total and WET lead concentrations, it is possible to compute the line of dependence or a best-fit line between the two variables. A least squares method was used to find the equation of a best-fit line (regression line) by forcing the y-intercept equal to zero since that is a known point. The equation of the regression line was determined to be $y = 0.046(x)$, where x represents total lead concentrations and y represents predicted WET lead concentrations.

This equation was used to estimate the expected WET lead concentrations for the UCLs calculated in for samples collected from the Site (see Section 5.4.1). Regression analysis results and a scatter plot depicting the (x , y) data points along with the regression line are included in Appendix C. The predicted WET lead concentrations are summarized in Tables 6a to 6p.

6.0 CONCLUSIONS

Waste classifications are evaluated based on the 90% UCL of the lead content for the relevant excavation depths; this has historically been considered sufficient to satisfy a good faith effort by the EPA as discussed in SW-846. Risk assessment characterization is based on the 95% UCL of the lead content in the waste for the relevant depths; this is in accordance with the Risk Assessment Guidance for Superfund (RAGS) Volume 1 Documentation for Exposure Assessment. Per Caltrans, the 90% UCLs are to be used to evaluate onsite reuse and the 95% UCLs are to be used to evaluate offsite disposal.

6.1 Predicted WET Lead Results

6.1.1 US 101 NB

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. Weighted averages are calculated by using the total lead concentration for each 0.5-foot depth interval as the value for the underlying 0.5-foot depth interval (unless a sample was collected from the underlying depth interval). The total and WET lead calculations are summarized in Table 6a.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	552	25	589	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	269	12	289	<i>Hazardous</i>
0 to 2.0 feet	462	21	493	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	63	2.9	70	<i>Non-Hazardous</i>
0 to 2.5 feet	382	18	409	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.2 US 101 NB excluding Willow Road OC and University Avenue OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6b.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	329	15	350	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	<i>314</i>	<i>14</i>	<i>341</i>	<i>Hazardous</i>
0 to 2.0 feet	380	17	409	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	<i>79</i>	<i>3.6</i>	<i>86</i>	<i>Non-Hazardous</i>
0 to 2.5 feet	320	15	344	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.3 US 101 NB excluding Willow Road OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6c.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	432	20	464	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	286	13	307	<i>Hazardous</i>
0 to 2.0 feet	413	19	444	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	68	3.1	73	<i>Non-Hazardous</i>
0 to 2.5 feet	344	16	370	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.4 US 101 NB at Willow Road OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6d.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	2,274	105	2,547	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	80	3.7	86	<i>Non-Hazardous</i>
0 to 2.0 feet	1,191	55	1,332	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	23	1.1	25	<i>Non-Hazardous</i>
0 to 2.5 feet	958	44	1,070	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 1.0 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 1.0 foot will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 1.0 foot) would be classified as non-hazardous.

6.1.5 US 101 NB excluding University Avenue OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6e.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	502	23	537	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	286	13	311	<i>Hazardous</i>
0 to 2.0 feet	447	21	482	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	72	3.3	79	<i>Non-Hazardous</i>
0 to 2.5 feet	372	17	401	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.6 US 101 NB at University Avenue OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6f.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	1,202	55	1,374	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	236	11	261	<i>Hazardous</i>
0 to 2.0 feet	774	36	878	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	16	0.74	18	<i>Non-Hazardous</i>
0 to 2.5 feet	622	29	706	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.7 US 101 SB

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6g.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	650	30	684	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	175	8.0	187	<i>Hazardous</i>
0 to 2.0 feet	438	20	462	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	71	3.3	78	<i>Non-Hazardous</i>
0 to 2.5 feet	365	17	385	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.8 US 101 SB excluding Willow Road OC and University Avenue OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6h.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	585	27	615	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	<i>191</i>	<i>8.8</i>	<i>206</i>	<i>Hazardous</i>
0 to 2.0 feet	414	19	437	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	<i>87</i>	<i>4.0</i>	<i>101</i>	<i>Non-Hazardous</i>
0 to 2.5 feet	348	16	370	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.9 US 101 SB excluding Willow Road OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6i.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	550	25	577	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	<i>172</i>	<i>7.9</i>	<i>183</i>	<i>Hazardous</i>
0 to 2.0 feet	385	18	404	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	<i>76</i>	<i>3.5</i>	<i>87</i>	<i>Non-Hazardous</i>
0 to 2.5 feet	323	15	341	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.10 US 101 SB at Willow Road OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the maximum total lead concentrations and the relationship between total and WET lead for data collected at the Site. Maximum concentrations were conservatively used because UCLs cannot be calculated for a data set that consists of less than four unique values. The total and WET lead calculations are summarized in Table 6j.

Excavation Depth	Maximum Total Lead (mg/kg)	Predicted WET Lead (mg/l)	Waste Classification
0 to 1.0 foot	5,300	244	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	<i>800</i>	<i>37</i>	<i>Hazardous</i>
0 to 2.0 feet	3,045	140	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	<i>820</i>	<i>38</i>	<i>Hazardous</i>
0 to 2.5 feet	2,600	120	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.5 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.5 feet will require disposal at a Class I landfill facility.

6.1.11 US 101 SB excluding University Avenue OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6k.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	700	32	743	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	205	9.4	216	<i>Hazardous</i>
0 to 2.0 feet	478	22	505	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	101	4.6	115	<i>Non-Hazardous</i>
0 to 2.5 feet	403	19	427	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.12 US 101 SB at University Avenue OC

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6l.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	496	23	548	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	45	2.0	48	<i>Non-Hazardous</i>
0 to 2.0 feet	279	13	307	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	9.0	0.41	9.3	<i>Non-Hazardous</i>
0 to 2.5 feet	225	10	248	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 1.0 foot would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 1.0 foot will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 1.0 foot) would be classified as non-hazardous.

6.1.13 US 101 NB from Marsh Road to University Avenue

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6m.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	627	29	667	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	191	8.8	204	<i>Hazardous</i>
0 to 2.0 feet	442	20	471	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	57	2.6	62	<i>Non-Hazardous</i>
0 to 2.5 feet	365	17	389	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.14 US 101 NB from University Avenue to Embarcadero Road

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6n.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	493	23	538	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	<i>542</i>	<i>25</i>	<i>601</i>	<i>Hazardous</i>
0 to 2.0 feet	626	29	689	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	<i>106</i>	<i>4.9</i>	<i>123</i>	<i>Non-Hazardous</i>
0 to 2.5 feet	522	24	576	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.1.15 US 101 SB from Marsh Road to University Avenue

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6o.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	705	32	753	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	199	9.1	214	<i>Hazardous</i>
0 to 2.0 feet	471	22	503	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	124	5.7	139	<i>Hazardous</i>
0 to 2.5 feet	401	18	430	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.5 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be considered a RCRA hazardous waste. Soil excavated to a depth of 2.5 feet will require disposal at a Class I landfill facility.

6.1.16 US 101 SB from University Avenue to Embarcadero Road

The following table summarizes the predicted WET lead concentrations and the waste classification for excavated soil based on the calculated weighted averages of the total lead UCLs and the relationship between total and WET lead for data collected at the Site. The total and WET lead calculations are summarized in Table 6p.

Excavation Depth	90% UCL Total Lead (mg/kg)	90% UCL Predicted WET Lead (mg/l)	95% UCL Total Lead (mg/kg)	Waste Classification
0 to 1.0 foot	648	30	691	Hazardous
<i>Underlying soil (1.0 to 2.5 ft)</i>	180	8.3	196	<i>Hazardous</i>
0 to 2.0 feet	456	21	489	Hazardous
<i>Underlying Soil (2.0 to 2.5 ft)</i>	12	0.54	12	<i>Non-Hazardous</i>
0 to 2.5 feet	368	17	394	Hazardous

90% UCL applicable for waste classification and onsite reuse; 95% UCL applicable for risk assessment and offsite disposal

Based on the data in the above table, soil excavated from the surface to a depth of 2.0 feet would be classified as a California hazardous waste since the 90% UCL-predicted WET lead concentrations are greater than the lead STLC of 5.0 mg/l. Based on the TCLP lead results excavated soil would not be

considered a RCRA hazardous waste. Soil excavated to a depth of 2.0 feet will require disposal at a Class I landfill facility. Underlying soil (i.e., deeper than 2.0 feet) would be classified as non-hazardous.

6.2 CAM 17 Metals

The CAM 17 metals concentrations in site soil were compared to ESLs (Table A, SFRWQCB, May 2008). The following metals were reported at concentrations greater than their respective ESL values in the soil samples collected at the Site: antimony, arsenic, cadmium, chromium, mercury, vanadium, and zinc. Arsenic and zinc were reported at concentrations exceeding their respective residential and commercial/industrial land use ESLs for shallow soil (≤ 3 meters; SFRWQCB, Table A). Antimony, cadmium, mercury, and vanadium were reported at concentrations exceeding their respective residential land use ESLs for shallow soil.

Upper one-sided 95% UCLs were calculated for the full set of metals concentrations with reported exceedances of ESLs. The 95% UCLs were compared with ESLs and with published background levels typically present in California soils as presented in *Background Concentrations of Trace and Major Elements in California Soils* (Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California, March 1996). The bootstrap results are included in Appendix C. The calculated standard bootstrap UCLs, ESLs and published background concentrations are summarized in the table below:

95% UCLs, ESLs and Published Background Concentrations for Selected Metals

Metal	95% UCL	Shallow Soil Residential ESL	Shallow Soil Commercial/Industrial ESL	Direct Exposure Construction Worker ESL	PUBLISHED BACKGROUND MEAN ¹	PUBLISHED BACKGROUND RANGE ¹
Antimony	1.9	6.3	40	310	0.60	0.15 to 1.95
Arsenic	1.4	0.39	1.6	15	3.5	0.6 to 11.0
Cadmium	1.2	1.7	7.4	39	0.36	0.05 to 1.70
Chromium*	46.3	750	750	1,200,000	122	23 to 1,579
Mercury	0.10	1.3	10	58	0.26	0.05 to 0.90
Vanadium	53.8	16	200	770	112	39 to 288
Zinc	151.8	600	600	230,000	149	88 to 236

Concentrations reported in milligrams per kilogram (mg/kg)

¹ Kearney Foundation of Soil Science, March 1996

* = Value is for Chromium III, no standard for total chromium.

The 95% UCL values for arsenic and vanadium in the soil samples collected at the Site are greater than their respective residential land use ESLs and are less than the commercial/industrial land use ESLs. The SFRWQCB *November 2007 Update to Environmental Screening Levels (ESLs) Technical Document* states that ambient background concentrations of arsenic typically exceed risk-based screening levels. In such instances, it may be more appropriate to compare site data to regionally specific established background levels.

The calculated 95% UCLs for antimony, cadmium, chromium, mercury and zinc are less than their respective ESLs. The 95% UCLs for these metals are all less than their respective published background mean concentrations, with the exception of antimony, which is within the published background range.

Offsite reuse or disposal of excavated soil may be restricted based on metals content.

6.3 Organics

6.3.1 Soil

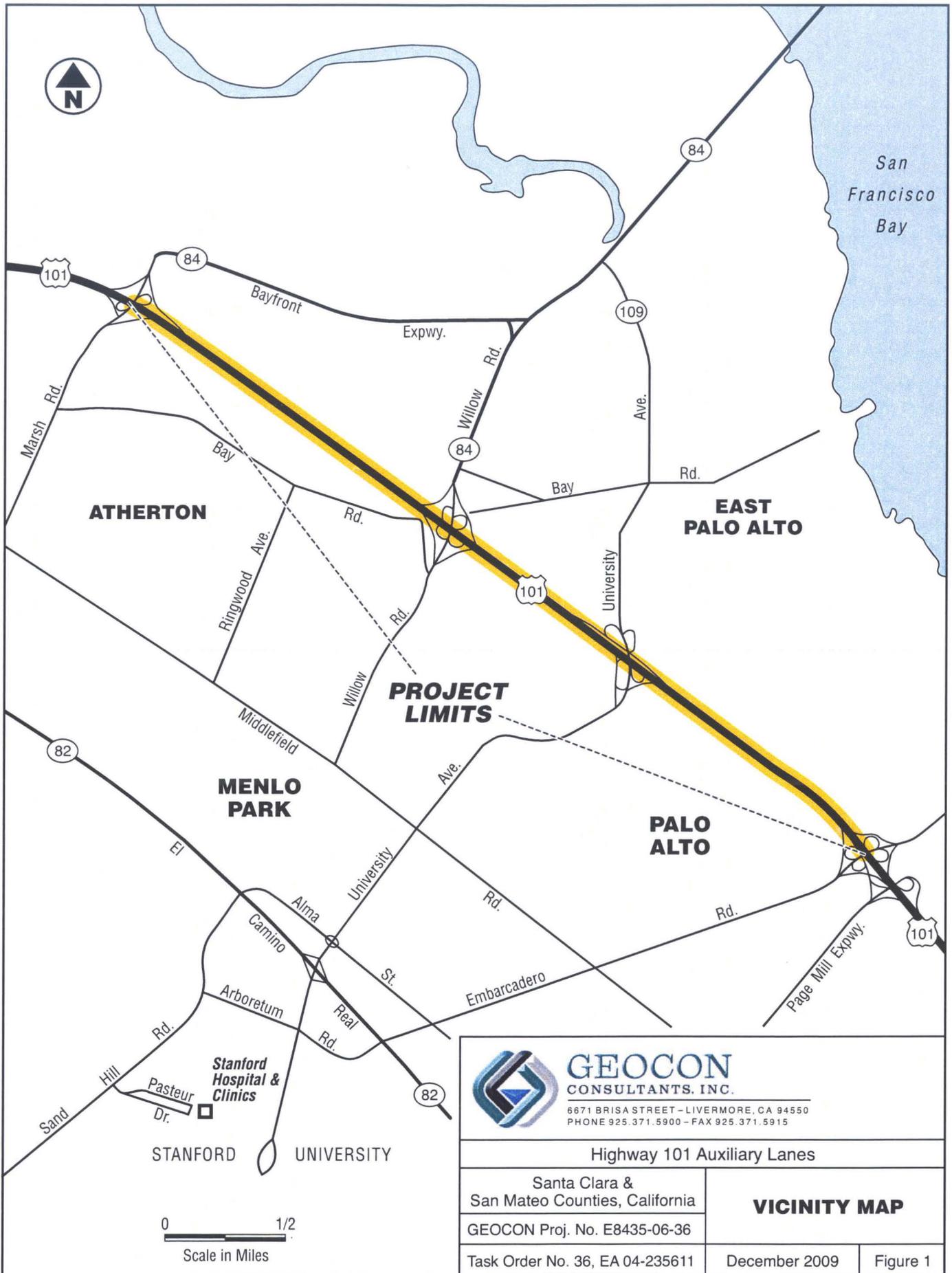
TPHg and VOCs were not detected above the laboratory reporting limits. The reported TPHd and TPHmo concentrations were below their respective ESLs.

6.3.2 Grab-Groundwater

Organic compounds were not detected above their respective laboratory reporting limits in the grab-groundwater samples, with the exception of 4-isopropyltoluene, which does not have a published ESL value.

6.4 Worker Protection

Per Caltrans' requirements, the contractor(s) should prepare a project-specific health and safety plan to prevent or minimize worker exposure to impacted soil and groundwater. The plan should include protocols for environmental and personnel monitoring, requirements for personal protective equipment, and other health and safety protocols and procedures for the handling of soil and groundwater.



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Highway 101 Auxiliary Lanes

Santa Clara &
San Mateo Counties, California

VICINITY MAP

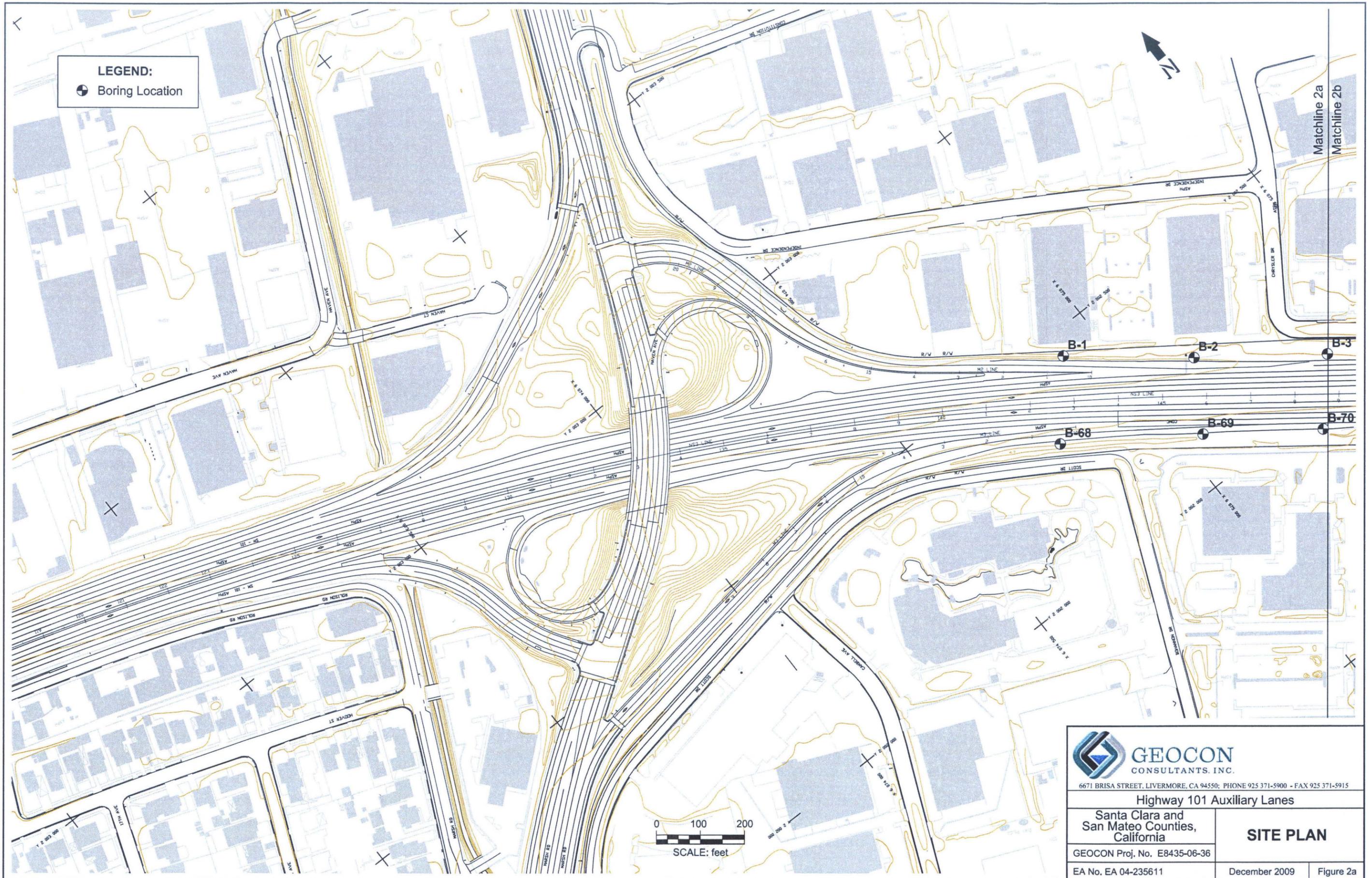
GEOCON Proj. No. E8435-06-36

Task Order No. 36, EA 04-235611

December 2009

Figure 1

0 1/2
Scale in Miles



LEGEND:
 ⊕ Boring Location



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Highway 101 Auxiliary Lanes

Santa Clara and
 San Mateo Counties,
 California

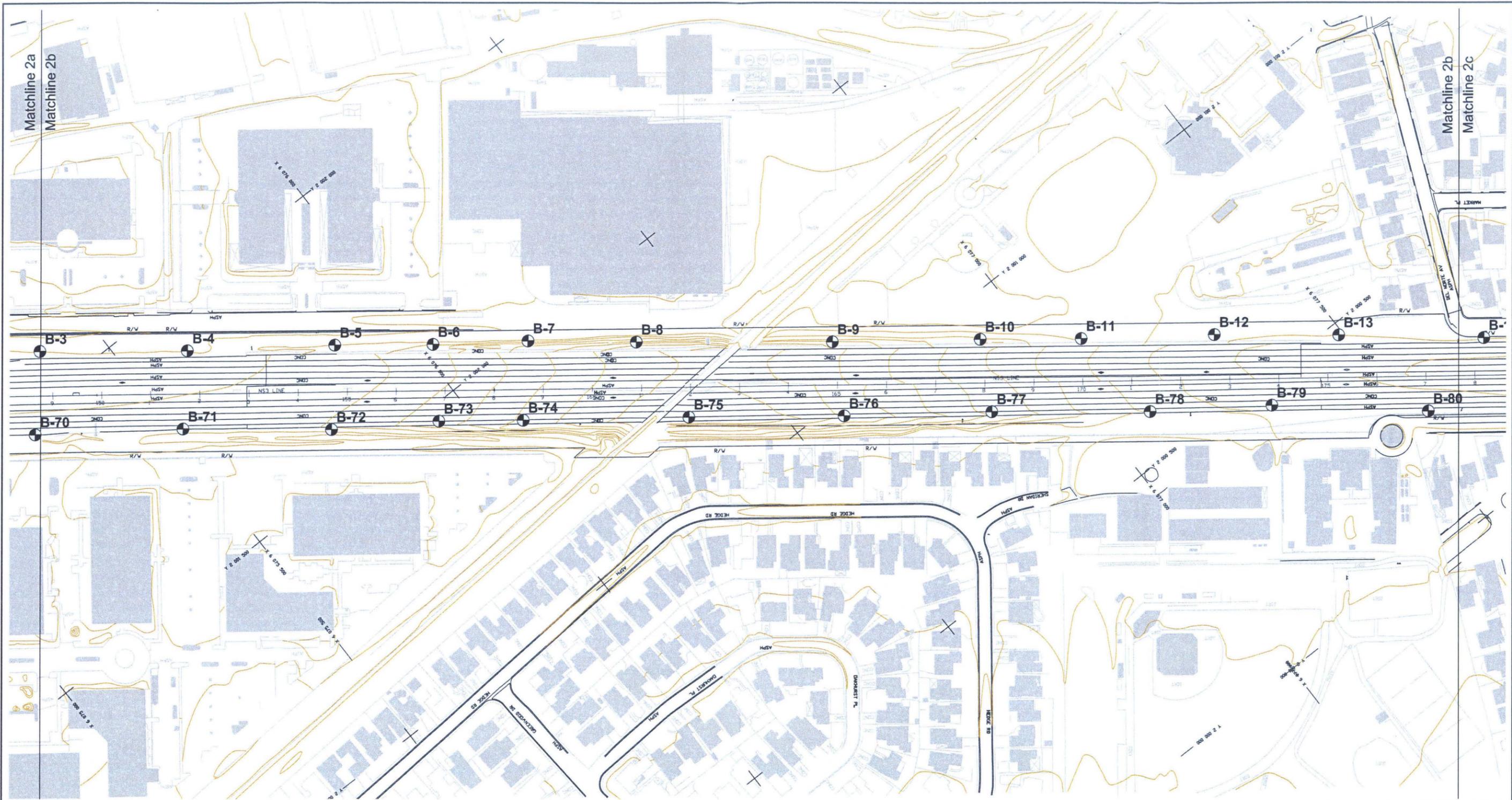
SITE PLAN

GEOCON Proj. No. E8435-06-36

EA No. EA 04-235611

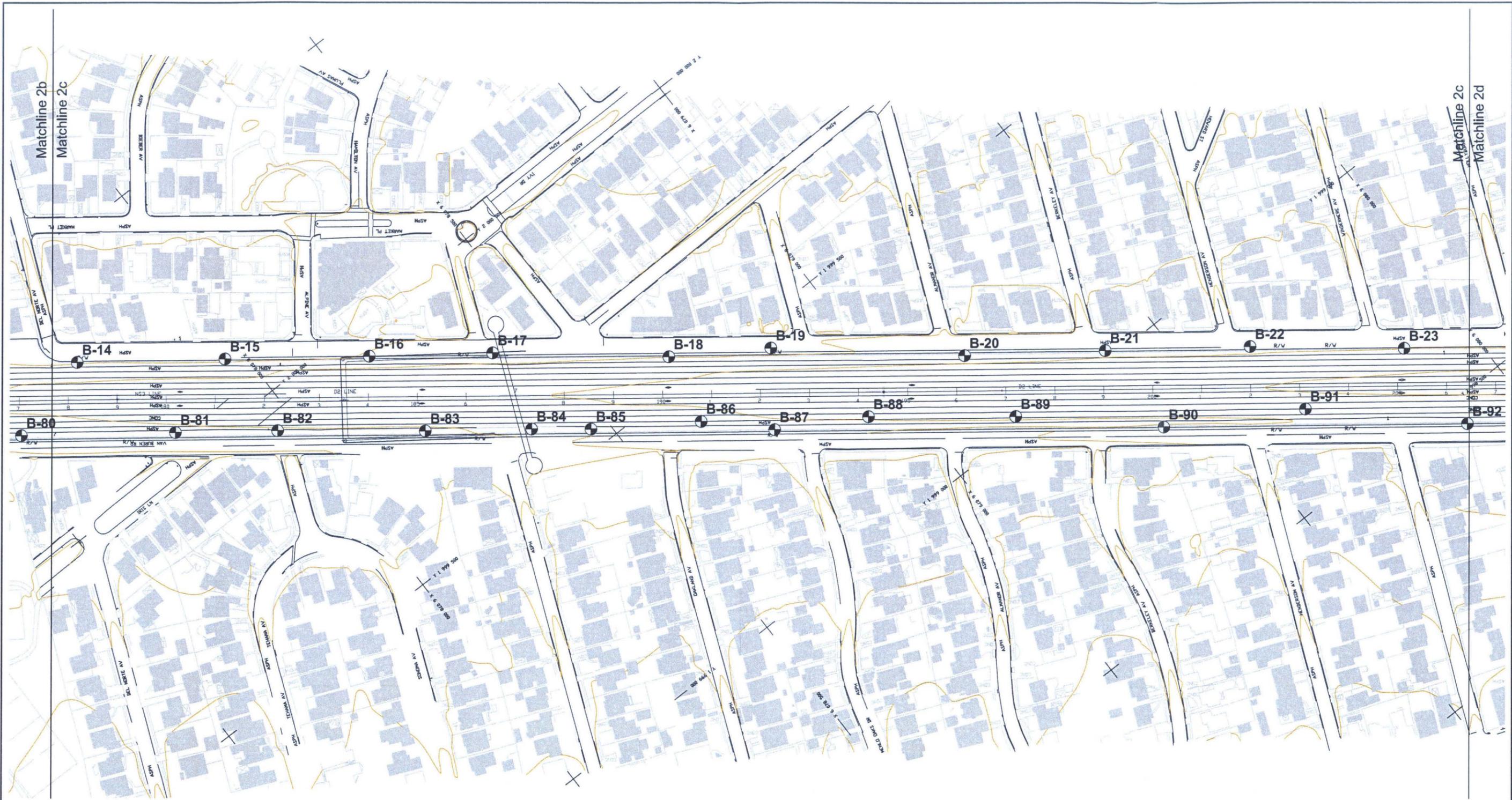
December 2009

Figure 2a

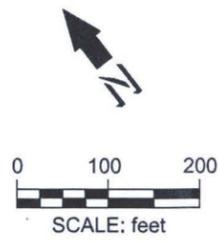


LEGEND:
 ● Boring Location

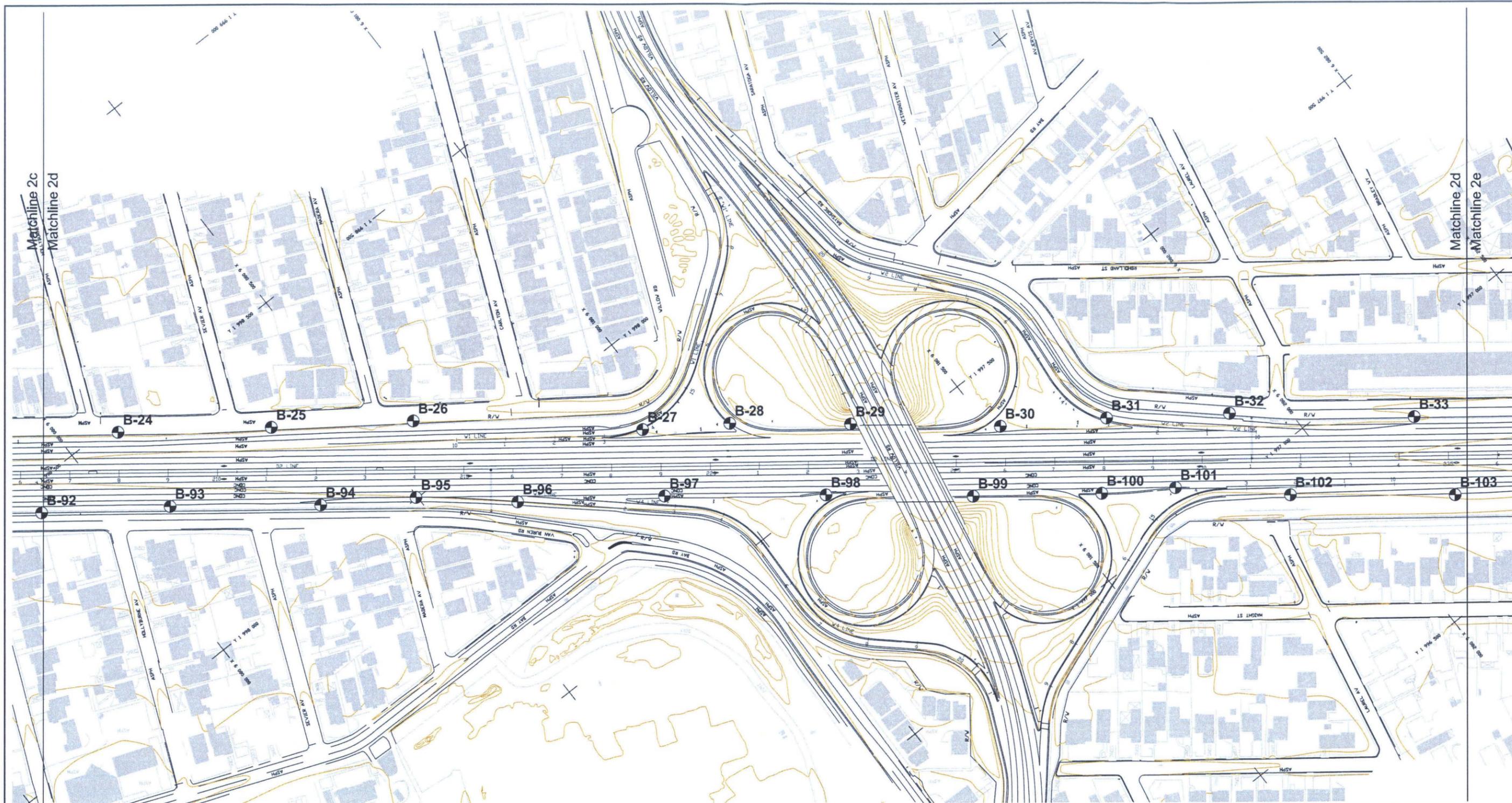
 GEOCON CONSULTANTS, INC. <small>6671 BRISA STREET, LIVERMORE, CA 94550; PHONE 925 371-5900 - FAX 925 371-5915</small>	
Highway 101 Auxiliary Lanes	
Santa Clara and San Mateo Counties, California	
SITE PLAN	
<small>GEOCON Proj. No. E8435-06-36</small>	
<small>EA No. EA 04-235611</small>	<small>December 2009</small>
<small>Figure 2b</small>	



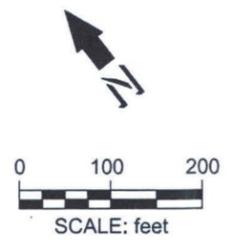
LEGEND:
 ● Boring Location



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Highway 101 Auxiliary Lanes	
Santa Clara and San Mateo Counties, California	
SITE PLAN	
<small>GEOCON Proj. No. E8435-06-36</small>	
<small>EA No. EA 04-235611</small>	<small>December 2009</small>
<small>Figure 2c</small>	



LEGEND:
 ● Boring Location



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Highway 101 Auxiliary Lanes

Santa Clara and
 San Mateo Counties,
 California

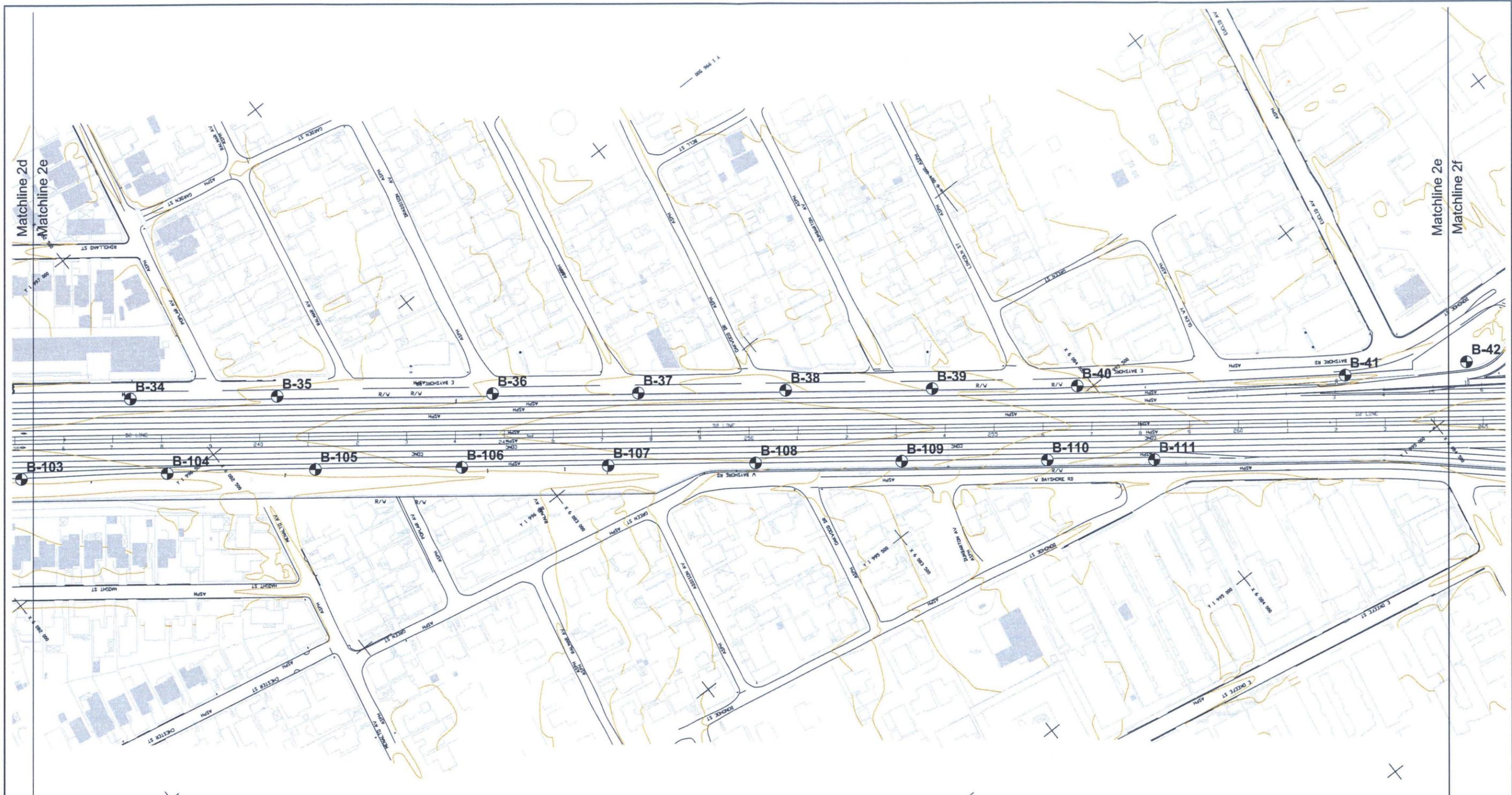
SITE PLAN

GEOCON Proj. No. E8435-06-36

EA No. EA 04-235611

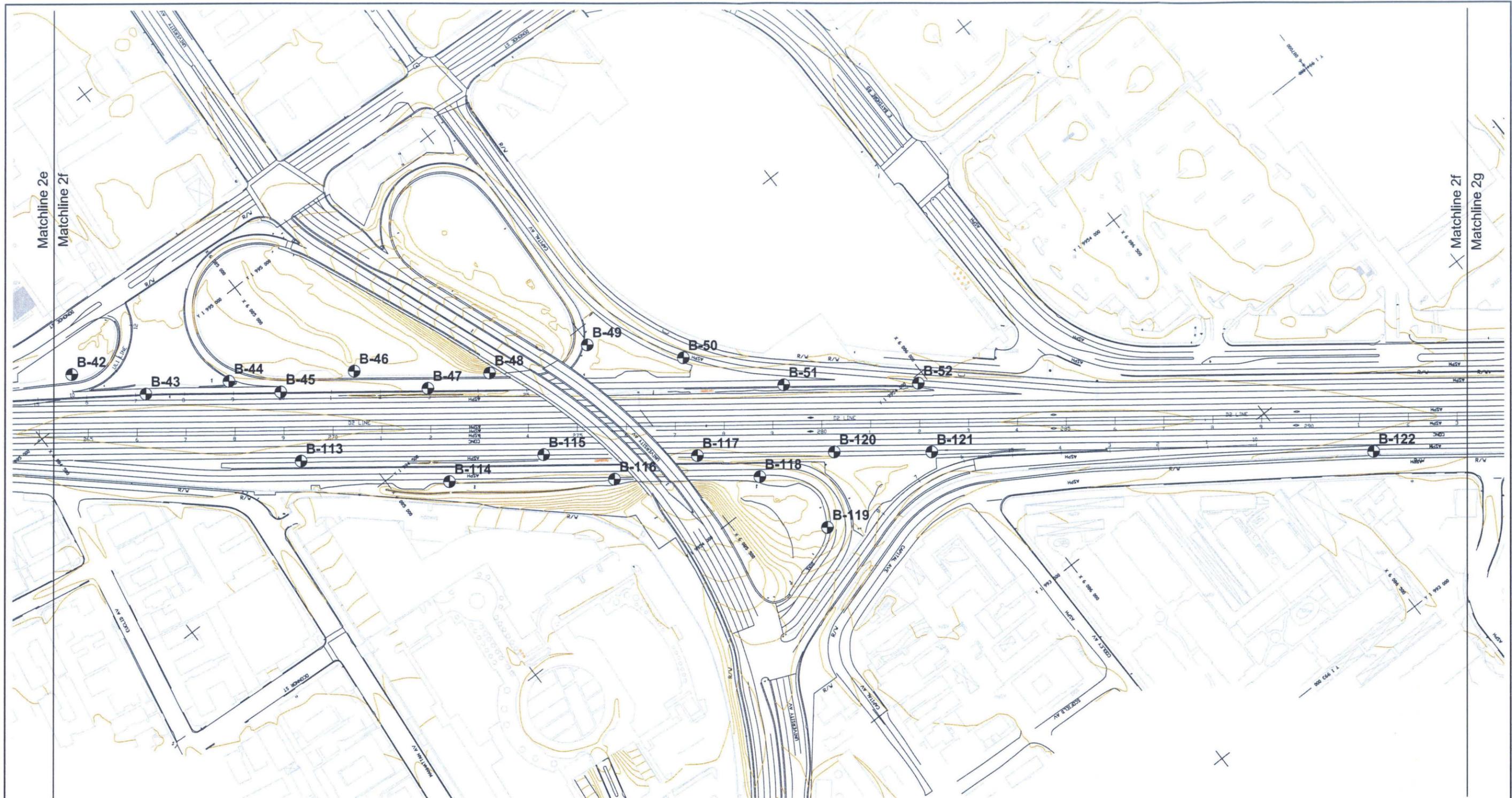
December 2009

Figure 2d

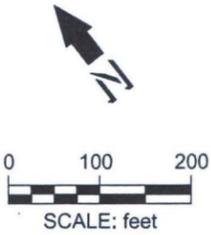


LEGEND:
 Boring Location

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Highway 101 Auxilliary Lanes	
Santa Clara and San Mateo Counties, California	
SITE PLAN	
GEOCON Proj. No. E8435-06-36	
EA No. EA 04-235611	December 2009
Figure 2e	

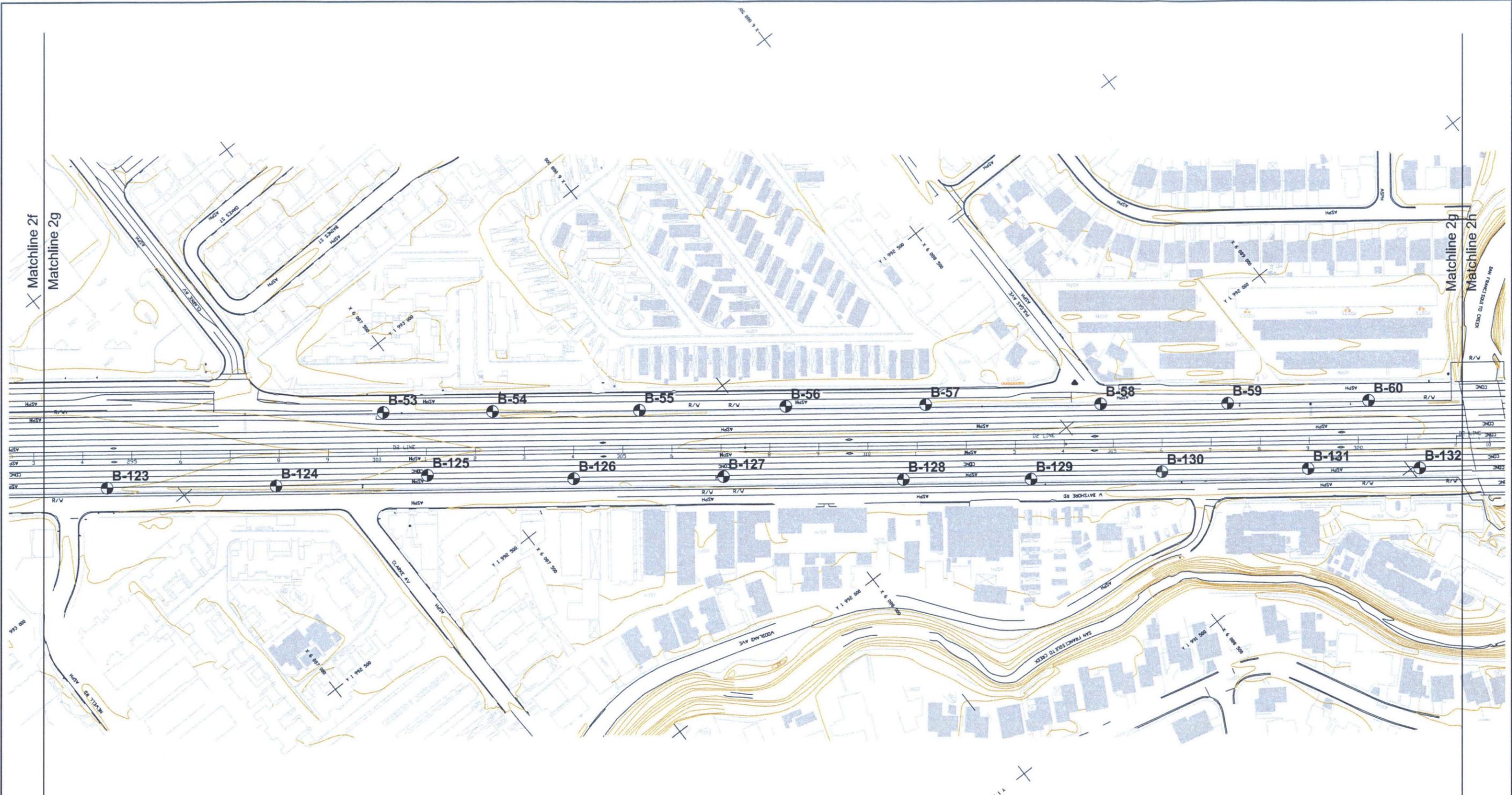


LEGEND:
 ● Boring Location



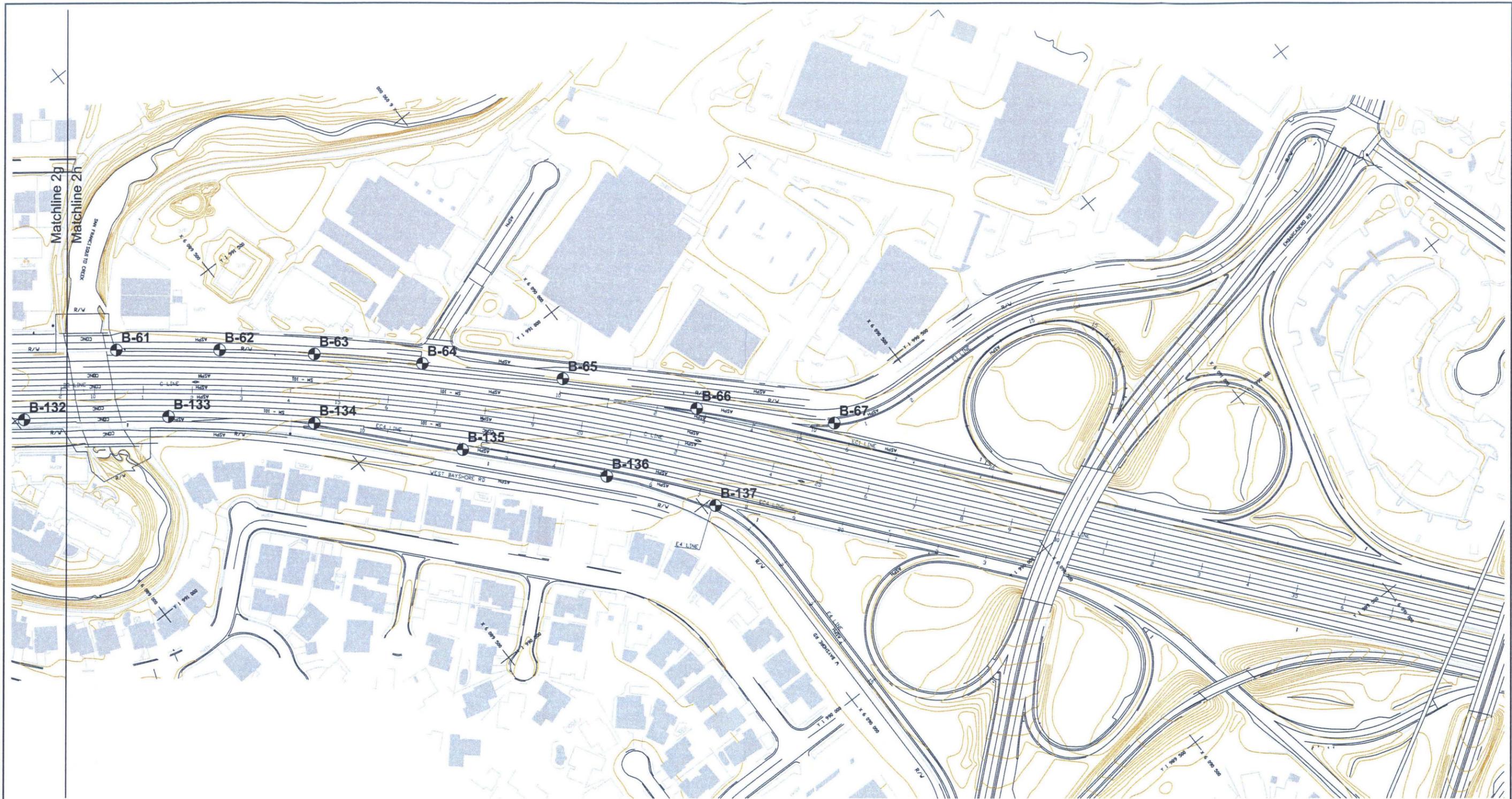
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 CONSULTANTS, INC.
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Highway 101 Auxiliary Lanes	
Santa Clara and San Mateo Counties, California	
GEOCON Proj. No. E8435-06-36	SITE PLAN
EA No. EA 04-235611	December 2009 Figure 2f

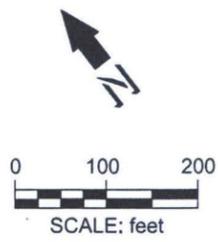


LEGEND:
 ● Boring Location

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Highway 101 Auxiliary Lanes	
Santa Clara and San Mateo Counties, California	
SITE PLAN	
GEOCON Proj. No. E8435-06-36	
EA No. EA 04-235611	December 2009
Figure 2g	



LEGEND:
 ● Boring Location



 GEOCON CONSULTANTS, INC. <small>6671 BRISA STREET, LIVERMORE, CA 94550; PHONE 925 371-5900 - FAX 925 371-5915</small>	
Highway 101 Auxiliary Lanes	
Santa Clara and San Mateo Counties, California	
SITE PLAN	
<small>GEOCON Proj. No. E8435-06-36</small>	
<small>EA No. EA 04-235611</small>	<small>December 2009</small>
<small>Figure 2h</small>	

TABLE 1
Boring Coordinates
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Boring	Northing	Easting
B-1	2,002,446.309	6,074,910.656
B-2	2,002,260.699	6,075,141.045
B-3	2,002,081.012	6,075,384.226
B-4	2,001,896.906	6,075,622.235
B-5	2,001,721.634	6,075,865.281
B-6	2,001,599.343	6,076,024.775
B-7	2,001,485.651	6,076,181.794
B-8	2,001,348.256	6,076,353.959
B-9	2,001,101.857	6,076,669.769
B-10	2,000,920.889	6,076,909.823
B-11	2,000,795.027	6,077,073.107
B-12	2,000,633.868	6,077,292.202
B-13	2,000,476.731	6,077,491.387
B-14	2,000,289.795	6,077,721.038
B-15	2,000,110.089	6,077,963.512
B-16	1,999,933.837	6,078,198.398
B-17	1,999,784.338	6,078,401.617
B-18	1,999,557.533	6,078,679.334
B-19	1,999,443.181	6,078,854.631
B-20	1,999,188.014	6,079,156.451
B-21	1,999,019.430	6,079,388.881
B-22	1,998,843.345	6,079,627.035
B-23	1,998,646.847	6,079,872.078
B-24	1,998,479.016	6,080,102.407
B-25	1,998,295.232	6,080,353.437
B-26	1,998,127.871	6,080,587.959
B-27	1,997,826.559	6,080,943.772
B-28	1,997,727.394	6,081,090.707
B-29	1,997,574.285	6,081,283.255
B-30	1,997,382.996	6,081,519.355
B-31	1,997,262.815	6,081,699.530
B-32	1,997,115.492	6,081,901.848
B-33	1,996,878.079	6,082,192.356
B-34	1,996,693.327	6,082,435.960
B-35	1,996,513.039	6,082,675.252
B-36	1,996,245.678	6,083,025.233
B-37	1,996,062.921	6,083,259.489
B-38	1,995,881.099	6,083,499.797
B-39	1,995,699.235	6,083,736.981
B-40	1,995,519.944	6,083,973.414
B-41	1,995,198.136	6,084,417.155
B-42	1,995,065.897	6,084,628.631
B-43	1,994,941.101	6,084,723.766
B-44	1,994,857.484	6,084,873.638
B-45	1,994,775.042	6,084,943.491
B-46	1,994,715.919	6,085,087.448
B-47	1,994,595.605	6,085,184.900
B-48	1,994,542.400	6,085,303.800

TABLE 1
Boring Coordinates
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Boring	Northing	Easting
B-49	1,994,464.136	6,085,496.276
B-50	1,994,322.707	6,085,634.374
B-51	1,994,152.199	6,085,762.596
B-52	1,993,985.513	6,085,981.139
B-53	1,992,883.124	6,087,422.287
B-54	1,992,747.120	6,087,599.693
B-55	1,992,564.565	6,087,836.138
B-56	1,992,386.674	6,088,076.288
B-57	1,992,214.222	6,088,302.727
B-58	1,991,995.120	6,088,584.610
B-59	1,991,835.945	6,088,789.316
B-60	1,991,662.919	6,089,018.964
B-61	1,991,486.187	6,089,251.610
B-62	1,991,357.127	6,089,418.304
B-63	1,991,231.759	6,089,565.182
B-64	1,991,080.731	6,089,727.702
B-65	1,990,879.289	6,089,935.383
B-66	1,990,663.933	6,090,113.300
B-67	1,990,466.578	6,090,317.079
B-68	2,002,293.865	6,074,783.337
B-69	2,002,112.092	6,075,051.309
B-70	2,001,953.288	6,075,272.788
B-71	2,001,777.023	6,075,517.779
B-72	2,001,590.504	6,075,754.905
B-73	2,001,468.909	6,075,938.681
B-74	2,001,364.641	6,076,075.200
B-75	2,001,161.954	6,076,344.889
B-76	2,000,968.586	6,076,596.277
B-77	2,000,790.197	6,076,838.131
B-78	2,000,591.500	6,077,093.000
B-79	2,000,448.399	6,077,296.335
B-80	2,000,242.451	6,077,540.327
B-81	2,000,054.115	6,077,792.164
B-82	1,999,929.309	6,077,958.636
B-83	1,999,743.709	6,078,195.633
B-84	1,999,613.413	6,078,369.473
B-85	1,999,539.025	6,078,464.483
B-86	1,999,413.304	6,078,650.851
B-87	1,999,307.551	6,078,759.000
B-88	1,999,210.562	6,078,926.080
B-89	1,999,026.268	6,079,162.459
B-90	1,998,823.041	6,079,388.241
B-91	1,998,673.656	6,079,637.928
B-92	1,998,446.341	6,079,880.071
B-93	1,998,295.400	6,080,093.500
B-94	1,998,109.600	6,080,335.300
B-95	1,998,002.460	6,080,497.200
B-96	1,997,867.715	6,080,654.718

TABLE 1
Boring Coordinates
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Boring	Northing	Easting
B-97	1,997,693.249	6,080,895.934
B-98	1,997,492.071	6,081,155.618
B-99	1,997,305.630	6,081,388.927
B-100	1,997,148.695	6,081,598.021
B-101	1,997,065.091	6,081,723.148
B-102	1,996,909.019	6,081,897.283
B-103	1,996,702.240	6,082,160.371
B-104	1,996,527.514	6,082,402.142
B-105	1,996,347.624	6,082,644.878
B-106	1,996,166.356	6,082,883.210
B-107	1,995,984.822	6,083,120.212
B-108	1,995,802.596	6,083,360.245
B-109	1,995,621.262	6,083,597.176
B-110	1,995,439.129	6,083,832.155
B-111	1,995,304.594	6,084,004.851
B-113	1,994,638.534	6,084,889.559
B-114	1,994,418.667	6,085,103.087
B-115	1,994,343.108	6,085,288.846
B-116	1,994,214.590	6,085,371.682
B-117	1,994,147.996	6,085,534.702
B-118	1,994,034.961	6,085,609.209
B-119	1,993,868.179	6,085,654.594
B-120	1,993,980.797	6,085,760.024
B-121	1,993,858.388	6,085,916.835
B-122	1,993,300.933	6,086,628.733
B-123	1,993,108.195	6,086,885.007
B-124	1,992,899.838	6,087,158.911
B-125	1,992,726.744	6,087,415.110
B-126	1,992,537.556	6,087,645.595
B-127	1,992,353.060	6,087,888.189
B-128	1,992,122.300	6,088,173.500
B-129	1,991,962.200	6,088,378.400
B-130	1,991,809.183	6,088,598.583
B-131	1,991,630.026	6,088,836.873
B-132	1,991,490.706	6,089,016.371
B-133	1,991,313.858	6,089,253.131
B-134	1,991,120.836	6,089,479.066
B-135	1,990,891.680	6,089,685.518
B-136	1,990,667.528	6,089,884.164
B-137	1,990,484.322	6,090,022.272

Coordinates are shown in feet, NAD 83 (Zone 3)

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-1 0'	0	34	---	---	---
B-1 1'	1	<5.0	---	---	8.7
B-1 2'	2	<5.0	---	---	---
B-2 0'	0	40	---	---	---
B-2 1'	1	4.0	---	---	---
B-2 2'	2	2.8	---	---	---
B-3 0'	0	360	40	---	---
B-3 1'	1	25	---	---	---
B-3 2'	2	110	15	---	---
B-4 0'	0	130	8.0	---	---
B-4 1'	1	19	---	---	---
B-4 2'	2	92	1.8	---	---
B-5 0'	0	540	22	---	---
B-5 1'	1	390	18	---	---
B-5 2'	2	5.4	---	---	---
B-6 0'	0	290	11	---	---
B-6 1'	1	1,100	---	0.47	7.6
B-6 2'	2	220	2.3	---	---
B-7 0'	0	730	---	<0.25	---
B-7 1'	1	100	0.39	---	7.3
B-7 2'	2	280	14	---	---
B-7 4'	4	12	---	---	---
B-7 6'	6	3.7	---	---	---
B-8 0'	0	840	---	<0.25	---
B-8 1'	1	450	24	---	---
B-8 2'	2	560	6.1	---	---
B-9 0'	0	610	---	---	---
B-9 1'	1	470	19	---	7.7
B-9 2'	2	15	---	---	---
B-10 0'	0	680	---	<0.25	---
B-10 1'	1	56	1.2	---	---
B-10 2'	2	7.7	---	---	---
B-11 0'	0	1,100	---	0.51	---
B-11 1'	1	120	7.6	---	---
B-11 2'	2	21	---	---	---
B-12 0'	0	500	28	---	---
B-12 1'	1	320	12	---	7.8
B-12 2'	2	100	1.8	---	---
B-13 0'	0	15	---	---	---
B-13 1'	1	7.0	---	---	---
B-13 2'	2	50	---	---	---

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-14 0'	0	33	---	---	---
B-14 1'	1	12	---	---	7.8
B-14 2'	2	8.1	---	---	---
B-15 0'	0	170	5.6	---	---
B-15 1'	1	11	---	---	8.1
B-15 2'	2	4.1	---	---	---
B-16 0'	0	28	---	---	---
B-16 1'	1	11	---	---	---
B-16 2'	2	<5.0	---	---	---
B-17 0'	0	110	3.7	---	---
B-17 1'	1	120	8.7	---	---
B-17 2'	2	7.4	---	---	---
B-17 6'	6	5.5	---	---	---
B-17 12'	12	8.3	---	---	---
B-17 18'	18	6.8	---	---	---
B-18 0'	0	23	---	---	---
B-18 1'	1	6.6	---	---	---
B-18 2'	2	4.4	---	---	---
B-19 0'	0	190	10	---	---
B-19 1'	1	57	<0.25	---	---
B-19 2'	2	26	---	---	---
B-19 6'	6	7.4	---	---	---
B-19 12'	12	4.9	---	---	---
B-19 18'	18	4.9	---	---	---
B-20 0'	0	16	---	---	---
B-20 1'	1	10	---	---	8.1
B-20 2'	2	<5.0	---	---	---
B-21 0'	0	4.2	---	---	---
B-21 1'	1	18	---	---	---
B-21 2'	2	4.2	---	---	---
B-22 0'	0	55	4.5	---	---
B-22 1'	1	17	---	---	---
B-22 2'	2	6.4	---	---	---
B-23 0'	0	32	---	---	---
B-23 1'	1	4.1	---	---	8.3
B-23 2'	2	3.6	---	---	---
B-24 0'	0	26	---	---	---
B-24 1'	1	100	18	---	---
B-24 2'	2	7.2	---	---	---
B-25 0'	0	74	1.1	---	---
B-25 1'	1	2.8	---	---	---

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-25 2'	2	5.3	---	---	---
B-26 0'	0	450	7.5	---	---
B-26 1'	1	23	---	---	7.4
B-26 2'	2	12	---	---	---
B-27 0'	0	1,200	---	0.55	---
B-27 1'	1	15	---	---	---
B-27 2'	2	<5.0	---	---	---
B-28 0'	0	5,300	---	4.6	---
B-28 1'	1	150	6.3	---	---
B-28 2'	2	9.3	---	---	---
B-29 0'	0	270	4.7	---	---
B-29 1'	1	110	5.9	---	8.1
B-29 2'	2	31	---	---	---
B-30 0'	0	590	25	---	---
B-30 1'	1	63	1.9	---	---
B-30 2'	2	35	---	---	---
B-31 0'	0	100	71	---	---
B-31 1'	1	130	13	---	---
B-31 2'	2	9.6	---	---	---
B-32 0'	0	35	---	---	---
B-32 1'	1	140	13	---	7.7
B-32 2'	2	89	9.5	---	---
B-33 0'	0	50	---	---	---
B-33 1'	1	25	---	---	---
B-33 2'	2	8.7	---	---	---
B-34 0'	0	18	---	---	---
B-34 1'	1	110	<0.25	---	---
B-34 2'	2	7.2	---	---	---
B-35 0'	0	99	4.1	---	---
B-35 1'	1	560	29	---	7.3
B-35 2'	2	8.7	---	---	---
B-36 0'	0	23	---	---	---
B-36 1'	1	1,400	---	6.2	---
B-36 2'	2	5.1	---	---	---
B-37 0'	0	32	---	---	---
B-37 1'	1	360	4.3	---	---
B-37 2'	2	7.6	---	---	---
B-38 0'	0	30	---	---	---
B-38 1'	1	9.3	---	---	8.6
B-38 2'	2	22	---	---	---

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-39 0'	0	39	---	---	---
B-39 1'	1	990	---	0.30	---
B-39 2'	2	12	---	---	---
B-40 0'	0	16	---	---	---
B-40 1'	1	180	5.8	---	---
B-40 2'	2	12	---	---	---
B-41 0'	0	130	8.3	---	---
B-41 1'	1	290	0.70	---	8.3
B-41 2'	2	<5.0	---	---	---
B-42 0'	0	<5.0	---	---	---
B-42 1'	1	6.7	---	---	---
B-42 2'	2	6.4	---	---	---
B-43 0'	0	4,600	---	3.9	---
B-43 1'	1	8.6	---	---	---
B-43 2'	2	7.5	---	---	---
B-44 0'	0	910	---	0.68	---
B-44 1'	1	43	---	---	---
B-44 2'	2	<5.0	---	---	---
B-45 0'	0	17	---	---	---
B-45 1'	1	36	---	---	---
B-45 2'	2	12	---	---	---
B-46 0'	0	79	5.9	---	---
B-46 1'	1	34	---	---	---
B-46 2'	2	12	---	---	---
B-47 0'	0	390	16	---	---
B-47 1'	1	140	5.9	---	---
B-47 2'	2	<5.0	---	---	---
B-48 0'	0	200	4.0	---	---
B-48 1'	1	1,200	---	0.49	7.2
B-48 2'	2	49	---	---	---
B-49 0'	0	23	---	---	---
B-49 1'	1	8.0	---	---	---
B-49 2'	2	6.1	---	---	---
B-50 0'	0	49	---	---	---
B-50 1'	1	42	---	---	---
B-50 2'	2	14	---	---	---
B-51 0'	0	59	3.4	---	---
B-51 1'	1	37	---	---	8.2
B-51 2'	2	<5.0	---	---	---

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-52 0'	0	210	17	---	---
B-52 1'	1	470	0.51	---	---
B-52 2'	2	1.0	---	---	---
B-53 0'	0	27	---	---	---
B-53 1'	1	53	1.2	---	---
B-53 2'	2	51	0.93	---	---
B-54 0'	0	37	---	---	---
B-54 1'	1	16	---	---	8.1
B-54 2'	2	12	---	---	---
B-55 0'	0	19	---	---	---
B-55 1'	1	57	10	---	---
B-55 2'	2	<5.0	---	---	---
B-56 0'	0	21	---	---	---
B-56 1'	1	1,100	---	0.77	---
B-56 2'	2	9.7	---	---	---
B-57 0'	0	310	11	---	---
B-57 1'	1	11	---	---	---
B-57 2'	2	<5.0	---	---	---
B-58 0'	0	260	19	---	---
B-58 1'	1	6.9	---	---	---
B-58 2'	2	10	---	---	---
B-59 0'	0	40	---	---	---
B-59 1'	1	5.3	---	---	8.3
B-59 2'	2	7.3	---	---	---
B-60 0'	0	39	---	---	---
B-60 1'	1	46	---	---	7.9
B-60 2'	2	6.5	---	---	---
B-60 4'	4	6.1	---	---	---
B-60 6'	6	6.3	---	---	---
B-61 0'	0	2,000	---	2.3	---
B-61 1'	1	33	---	---	---
B-61 2'	2	10	---	---	---
B-62 0'	0	260	12	---	---
B-62 1'	1	1,600	---	5.6	---
B-62 2'	2	23	---	---	---
B-63 0'	0	85	3.0	---	8.0
B-63 1'	1	4,100	---	5.6	8.1
B-63 2'	2	11	---	---	7.9
B-64 0'	0	78	6.1	---	---
B-64 1'	1	6.8	---	---	---
B-64 2'	2	7.9	---	---	---

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-65	0'	1,000	---	0.38	---
B-65	1'	1,200	---	0.71	---
B-65	2'	830	---	0.87	---
B-66	0'	1,400	---	1.7	---
B-66	1'	180	9.5	---	8.0
B-66	2'	11	---	---	---
B-67	0'	440	25	---	---
B-67	1'	31	---	---	---
B-67	2'	3.5	---	---	---
B-68	0'	140	7.1	---	---
B-68	1'	26	---	---	---
B-68	2'	1,900	---	<0.25	---
B-69	0'	7.8	---	---	8.1
B-69	1'	1.5	---	---	8.5
B-69	2'	55	2.0	---	8.3
B-70	0'	130	11	---	---
B-70	1'	29	---	---	---
B-70	2'	8.3	---	---	---
B-71	0'	1,000	---	0.75	---
B-71	1'	470	20	---	---
B-71	2'	7.2	---	---	---
B-72	0'	1,400	---	0.33	7.2
B-72	1'	330	9.3	---	8.1
B-72	2'	<5.0	---	---	8.7
B-73	0'	160	19	---	---
B-73	1'	10	---	---	7.9
B-73	2'	<5.0	---	---	---
B-73	4'	5.0	---	---	---
B-73	6'	4.4	---	---	---
B-74	0'	120	8.5	---	---
B-74	1'	160	5.9	---	7.9
B-74	2'	5.3	---	---	---
B-74	4'	3.5	---	---	---
B-74	6'	4.4	---	---	---
B-75	0'	370	24	---	---
B-75	1'	87	2.1	---	8.0
B-75	2'	57	1.6	---	---
B-75	4'	3.8	---	---	---
B-75	6'	3.2	---	---	---
B-76	0'	130	13	---	---
B-76	1'	8.2	---	---	8.0

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-76 2'	2	3.3	---	---	---
B-76 4'	4	4.4	---	---	---
B-76 6'	6	6.8	---	---	---
B-77 0'	0	210	3.9	---	---
B-77 1'	1	210	3.4	---	8.1
B-77 2'	2	5.6	---	---	---
B-77 4'	4	3.4	---	---	---
B-77 6'	6	2.8	---	---	---
B-78 0'	0	17	---	---	---
B-78 1'	1	27	---	---	7.8
B-78 2'	2	4.1	---	---	---
B-78 4'	4	6.0	---	---	---
B-78 6'	6	7.5	---	---	---
B-79 0'	0	2,700	---	0.86	---
B-79 1'	1	25	---	---	---
B-79 2'	2	2.4	---	---	---
B-80 0'	0	130	9.6	---	---
B-80 1'	1	1,100	---	0.44	---
B-80 2'	2	5.2	---	---	---
B-81 0'	0	450	3.8	---	7.5
B-81 1'	1	14	---	---	7.9
B-81 2'	2	16	---	---	8.4
B-82 0'	0	10	---	---	---
B-82 1'	1	870	---	<0.25	---
B-82 2'	2	8.9	---	---	---
B-83 0'	0	72	3.8	---	---
B-83 1'	1	1,300	---	2.9	---
B-83 2	2	12	---	---	---
B-84 0'	0	470	15	---	---
B-84 1'	1	9.5	---	---	---
B-84 2'	2	8.0	---	---	---
B-84 6'	6	8.5	---	---	---
B-84 12'	12	6.5	---	---	---
B-84 18'	18	4.8	---	---	---
B-85 0	0	11	---	---	8.4
B-85 1'	1	37	---	---	7.7
B-85 2'	2	6.1	---	---	7.6
B-86 0'	0	490	25	---	---
B-86 1'	1	150	9.0	---	---
B-86 2'	2	7.0	---	---	---
B-87 0'	0	300	14	---	---
B-87 1'	1	42	---	---	---

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-87 2'	2	8.0	---	---	---
B-87 6'	6	5.8	---	---	---
B-87 12'	12	4.5	---	---	---
B-87 18'	18	4.0	---	---	---
B-88 0'	0	1,100	---	2.2	---
B-88 1'	1	140	8.9	---	---
B-88 2'	2	8.0	---	---	---
B-89 0'	0	100	6.6	---	---
B-89 1'	1	630	---	---	---
B-89 2'	2	8.0	---	---	---
B-90 0'	0	30	---	---	---
B-90 1'	1	65	1.4	---	---
B-90 2'	2	7.1	---	---	---
B-91 0'	0	480	37	---	---
B-91 1'	1	9.1	---	---	---
B-91 2'	2	7.9	---	---	---
B-92 0'	0	560	25	---	7.6
B-92 1'	1	83	2.5	---	8.3
B-92 2'	2	8.4	---	---	7.9
B-93 0'	0	530	19	---	---
B-93 1'	1	160	7.4	---	---
B-93 2'	2	18	---	---	---
B-94 0'	0	46	---	---	---
B-94 1'	1	5.7	---	---	---
B-94 2'	2	6.7	---	---	---
B-95 0'	0	980	---	0.65	---
B-95 1'	1	22	---	---	---
B-95 2'	2	10	---	---	---
B-96 0'	0	1,100	---	0.50	7.4
B-96 1'	1	280	29	---	8.0
B-96 2'	2	8.2	---	---	7.7
B-97 0'	0	140	11	---	---
B-97 1'	1	22	---	---	---
B-97 2'	2	6.9	---	---	---
B-98 0'	0	240	15	---	---
B-98 1'	1	65	1.4	---	---
B-98 2'	2	15	---	---	---
B-99 0'	0	810	---	0.80	---
B-99 1'	1	790	---	1.3	7.8
B-99 2'	2	820	---	0.79	---

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-100 0'	0	5,300	--	1.1	--
B-100 1'	1	83	2.8	---	---
B-100 2'	2	18	---	---	---
B-101 0'	0	27	---	---	---
B-101 1'	1	490	40	---	---
B-101 2'	2	190	5.3	---	---
B-102 0'	0	170	12	--	7.4
B-102 1'	1	21	---	---	8.3
B-102 2'	2	11	---	---	8.3
B-103 0'	0	880	---	0.40	---
B-103 1'	1	79	1.5	---	---
B-103 2'	2	6.6	---	---	---
B-104 0'	0	1,800	---	51	---
B-104 1'	1	15	---	---	---
B-104 2'	2	15	---	---	---
B-105 0'	0	98	65	---	7.6
B-105 1'	1	16	---	---	7.8
B-105 2'	2	8.3	---	---	7.5
B-106 0'	0	1,200	---	1.9	---
B-106 1'	1	13	---	---	---
B-106 2'	2	8.6	---	---	---
B-107 0'	0	1,200	---	2.6	---
B-107 1'	1	6.1	---	---	---
B-107 2'	2	5.7	---	---	---
B-108 0'	0	56	4.1	---	7.8
B-108 1'	1	7.5	---	---	8.5
B-108 2'	2	7.0	---	---	7.5
B-109 0'	0	350	18	---	---
B-109 1'	1	540	38	---	---
B-109 2'	2	13	---	---	---
B-110 0'	0	30	---	---	---
B-110 1'	1	13	---	---	---
B-110 2'	2	6.3	---	---	---
B-111 0'	0	<5.0	---	---	7.4
B-111 1'	1	120	1.4	---	7.8
B-111 2'	2	8.6	---	---	7.1
B-113 0'	0	580	48	---	---
B-113 1'	1	45	---	---	---
B-113 2'	2	8.1	---	---	---
B-114 0'	0	21	---	---	---

TABLE 2
Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	TCLP Lead (mg/l)	pH
B-114 1'	1	8.5	---	---	7.7
B-114 2'	2	6.0	---	---	---
B-115 0'	0	43	---	---	---
B-115 1'	1	10	---	---	---
B-115 2'	2	6.4	---	---	---
B-116 0'	0	75	3.1	---	---
B-116 1'	1	93	3.3	---	---
B-116 2'	2	14	---	---	---
B-117 0'	0	1,500	---	<0.25	---
B-117 1'	1	9.6	---	---	7.0
B-117 2'	2	5.9	---	---	---
B-118 0'	0	98	4.3	---	---
B-118 1'	1	100	7.0	---	---
B-118 2'	2	8.7	---	---	---
B-119 0'	0	83	1.7	---	---
B-119 1'	1	96	3.5	---	---
B-119 2'	2	6.1	---	---	---
B-120 0'	0	33	---	---	---
B-120 1'	1	36	---	---	7.2
B-120 2'	2	<5.0	---	---	---
B-121 0'	0	270	23	---	---
B-121 1'	1	21	---	---	---
B-121 2'	2	11	---	---	---
B-122 0'	0	1,900	---	2.1	---
B-122 1'	1	250	7.9	---	---
B-122 2'	2	20	---	---	---
B-123 0'	0	23	---	---	7.6
B-123 1'	1	540	4.1	---	8.0
B-123 2'	2	8.0	---	---	7.8
B-124 0'	0	89	---	---	---
B-124 1'	1	8.1	13	---	---
B-124 2'	2	6.6	---	---	---

Summary of Lead and pH Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Total Lead (mg/l)	TCLP Lead (mg/l)	pH
B-114 1'	---	---	---
B-114 2'	---	---	---
B-115 0'	---	---	---
B-115 1'	---	---	---
B-115 2'	---	---	---
B-116 0'	0.82	---	---
B-116 1'	---	---	---
B-116 2'	---	---	---
B-117 0'	---	---	---
B-117 1'	---	---	---
B-117 2'	---	---	---
B-118 0'	---	---	---
B-118 1'	---	---	8.2
B-118 2'	---	---	7.7
B-119 0'	---	---	7.6
B-119 1'	---	0.51	---
B-119 2'	15	---	---
B-120 0'	---	---	---
B-120 1'	---	5.2	---
B-120 2'	---	<0.25	---
B-121 0'	---	---	---
B-121 1'	61	---	8.1
B-121 2'	---	---	8.4
B-122 0'	---	---	8.1
B-122 1'	31	---	---
B-122 2'	14	---	---
B-123 0'	---	---	---
B-123 1'	---	---	---
B-123 2'	---	---	---
B-124 0'	---	---	---
B-124 1'	---	0.53	---
B-124 2'	22	---	---

TABLE 3
Summary of CAM17 Metals Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B-2 0'	0	<2.0	<1.0	290	<1.0	1.0	130	20	26	40	<1.0	350	<1.0	<1.0	<1.0	23	87	0.14
B-2 1'	1	<2.0	<1.0	210	<1.0	<1.0	4.6	4.0	<2.0	4.0	<1.0	3.5	<1.0	<1.0	<1.0	27	1,600	<0.10
B-2 2'	2	<2.0	<1.0	220	<1.0	<1.0	4.1	3.8	<2.0	2.8	<1.0	1.5	<1.0	<1.0	<1.0	27	85	<0.10
B-7 0'	0	<2.0	2.0	160	<1.0	1.1	37	7.1	51	730	14	39	<1.0	<1.0	<1.0	36	150	0.19
B-7 1'	1	<2.0	<1.0	410	<1.0	<1.0	20	11	29	100	11	58	<1.0	<1.0	<1.0	24	60	0.21
B-7 2'	2	<2.0	2.1	140	<1.0	<1.0	35	6.2	34	280	14	31	<1.0	<1.0	<1.0	38	95	<0.10
B-7 4'	4	12	10	150	<1.0	1.2	37	17	32	12	<1.0	71	1.7	<1.0	<1.0	51	130	0.10
B-7 6'	6	5.9	2.3	110	<1.0	<1.0	32	7.0	24	8.3	<1.0	36	1.4	<1.0	<1.0	40	51	<0.10
B-8 0'	0	3.7	<1.0	200	<1.0	2.2	53	9.8	61	840	<1.0	57	<1.0	<1.0	<1.0	40	260	0.19
B-8 1'	1	2.6	<1.0	130	<1.0	1.7	50	9.2	42	450	<1.0	50	<1.0	<1.0	<1.0	37	160	0.12
B-8 2'	2	2.8	<1.0	140	<1.0	1.7	54	9.8	41	5.2	<1.0	62	<1.0	<1.0	<1.0	39	160	0.17
B-11 0'	0	3.5	<1.0	210	<1.0	2.7	51	8.2	120	1,100	1.2	66	<1.0	<1.0	<1.0	34	420	0.26
B-11 1'	1	<2.0	<1.0	120	<1.0	1.3	32	7.1	22	120	<1.0	39	<1.0	<1.0	<1.0	32	73	<0.10
B-11 2'	2	<2.0	<1.0	130	<1.0	1.0	35	7.2	19	21	<1.0	34	<1.0	<1.0	<1.0	34	45	<0.10
B-13 0'	0	<2.0	<1.0	130	<1.0	<1.0	14	8.5	39	15	15	17	<1.0	<1.0	<1.0	32	26	<0.10
B-13 1'	1	<2.0	1.9	160	<1.0	1.3	32	8.6	34	7.0	1.8	42	<1.0	<1.0	<1.0	35	59	<0.10
B-13 2'	2	<2.0	<1.0	96	<1.0	<1.0	22	5.3	12	50	<1.0	24	<1.0	<1.0	<1.0	22	90	1.6
B-15 0'	0	<2.0	<1.0	150	<1.0	1.3	42	9.0	36	170	<1.0	39	<1.0	<1.0	<1.0	43	110	<0.10
B-15 1'	1	<2.0	<1.0	150	<1.0	<1.0	27	8.5	18	11	<1.0	33	<1.0	<1.0	<1.0	28	64	0.79
B-15 2'	2	<2.0	<1.0	100	<1.0	<1.0	61	6.8	17	4.1	<1.0	48	<1.0	<1.0	<1.0	33	43	<0.10
B-17 0'	0	<2.0	<1.0	140	<1.0	<1.0	46	11	32	110	<1.0	43	<1.0	<1.0	<1.0	54	120	<0.10
B-17 1'	1	<2.0	<1.0	130	<1.0	1.1	46	12	33	120	<1.0	45	<1.0	<1.0	<1.0	56	880	0.37
B-17 2'	2	<2.0	4.4	190	<1.0	<1.0	37	8.4	24	7.4	<1.0	39	<1.0	<1.0	<1.0	41	60	<0.10
B-17 6'	0	<2.0	2.4	150	<1.0	<1.0	38	6.2	22	5.5	<1.0	34	<1.0	<1.0	<1.0	39	49	<0.10
B-17 12'	12	<2.0	7.6	150	<1.0	<1.0	33	6.9	24	8.3	<1.0	32	<1.0	<1.0	<1.0	49	58	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B-17 18'	18	<2.0	5.2	83	<1.0	<1.0	33	8.1	21	6.8	<1.0	38	<1.0	<1.0	<1.0	39	60	<0.10
B-18 0'	0	<2.0	<1.0	220	<1.0	1.2	35	7.8	38	23	<1.0	47	<1.0	<1.0	<1.0	38	110	<0.10
B-18 1'	1	<2.0	<1.0	160	<1.0	1.2	24	7.0	15	6.6	<1.0	28	<1.0	<1.0	<1.0	25	52	<0.10
B-18 2'	2	<2.0	<1.0	77	<1.0	<1.0	33	5.4	18	4.4	<1.0	32	<1.0	<1.0	<1.0	28	46	<0.10
B-19 0'	0	<2.0	<1.0	110	<1.0	1.0	44	13	35	190	<1.0	42	<1.0	<1.0	<1.0	68	92	<0.10
B-19 1'	1	<2.0	3.0	160	<1.0	<1.0	47	9.8	25	57	<1.0	47	<1.0	<1.0	<1.0	40	79	<0.10
B-19 2'	2	<2.0	3.8	130	<1.0	<1.0	28	7.1	19	26	<1.0	34	<1.0	<1.0	<1.0	32	53	0.22
B-19 6'	6	<2.0	4.7	180	<1.0	<1.0	37	8.7	23	7.4	<1.0	41	<1.0	<1.0	<1.0	44	56	0.12
B-19 12'	12	<2.0	<1.0	91	<1.0	1.9	32	5.7	19	4.9	<1.0	34	<1.0	<1.0	<1.0	27	53	<0.10
B-19 18'	18	<2.0	<1.0	56	<1.0	<1.0	34	5.5	20	4.9	<1.0	40	<1.0	<1.0	<1.0	33	44	<0.10
B-21 0'	0	2.5	<1.0	260	<1.0	<1.0	24	8.5	19	4.2	<1.0	37	<1.0	<1.0	<1.0	49	39	<0.10
B-21 1'	1	4.7	<1.0	130	<1.0	1.2	41	13	40	18	<1.0	27	<1.0	<1.0	<1.0	70	39	<0.10
B-21 2'	2	2.1	<1.0	130	<1.0	<1.0	29	6.9	10	4.2	<1.0	30	<1.0	<1.0	<1.0	28	35	<0.10
B-23 0'	0	2.3	<1.0	430	<1.0	1.5	53	12	28	32	<1.0	85	<1.0	<1.0	<1.0	47	54	<0.10
B-23 1'	1	7.0	<1.0	46	<1.0	1.6	40	18	31	4.1	<1.0	26	<1.0	<1.0	<1.0	110	46	<0.10
B-23 2'	2	<2.0	<1.0	130	<1.0	<1.0	29	6.5	12	3.6	<1.0	30	<1.0	<1.0	<1.0	29	37	<0.10
B-25 0'	0	<2.0	<1.0	150	<1.0	1.0	33	8.6	61	74	1.3	35	<1.0	<1.0	<1.0	59	990	<0.10
B-25 1'	1	<2.0	<1.0	55	<1.0	1.7	84	21	44	2.8	<1.0	39	<1.0	<1.0	<1.0	140	50	<0.10
B-25 2'	2	2.3	<1.0	110	<1.0	<1.0	31	6.2	13	5.3	<1.0	26	<1.0	<1.0	<1.0	32	36	<0.10
B-28 0'	0	<2.0	<1.0	200	<1.0	2.8	50	11	82	5,300	<1.0	51	<1.0	<1.0	<1.0	51	470	0.11
B-28 1'	1	<2.0	<1.0	130	<1.0	1.5	56	16	40	150	<1.0	39	<1.0	<1.0	<1.0	96	84	<0.10
B-28 2'	2	<2.0	<1.0	180	<1.0	1.1	46	8.6	25	9.3	<1.0	37	<1.0	<1.0	<1.0	49	1,200	<0.10
B-31 0'	0	<2.0	<1.0	130	<1.0	1.4	46	11	32	100	1.4	35	<1.0	<1.0	<1.0	68	75	0.16
B-31 1'	1	<2.0	<1.0	190	<1.0	1.2	40	11	32	130	1.1	39	<1.0	<1.0	<1.0	43	87	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
Highway 101 Auxillary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B-31 2'	2	<2.0	<1.0	180	<1.0	1.2	50	9.3	25	9.6	<1.0	41	<1.0	<1.0	<1.0	50	65	<0.10
B-32 0'	0	3.0	<1.0	320	<1.0	1.1	31	6.1	41	35	<1.0	33	<1.0	<1.0	<1.0	32	190	<0.10
B-32 1'	1	<2.0	<1.0	160	<1.0	1.2	38	8.5	25	140	<1.0	38	<1.0	<1.0	<1.0	39	110	<0.10
B-32 2'	2	2.0	<1.0	130	<1.0	1.3	39	9.4	25	89	<1.0	38	<1.0	<1.0	<1.0	43	85	<0.10
B-33 0'	0	<2.0	<1.0	370	<1.0	1.3	49	11	56	50	<1.0	61	<1.0	<1.0	<1.0	54	110	<0.10
B-33 1'	1	<2.0	1.3	190	<1.0	1.2	40	9.4	25	25	1.3	43	<1.0	<1.0	<1.0	39	64	<0.10
B-33 2'	2	<2.0	3.2	260	<1.0	1.4	50	10	27	8.7	<1.0	44	<1.0	<1.0	<1.0	54	77	<0.10
B-35 0'	0	<2.0	<1.0	320	<1.0	1.4	58	10	54	99	<1.0	69	<1.0	<1.0	<1.0	48	150	<0.10
B-35 1'	1	<2.0	<1.0	250	<1.0	1.7	42	11	41	560	1.4	45	<1.0	<1.0	<1.0	43	150	<0.10
B-35 2'	2	<2.0	2.4	190	<1.0	1.2	44	8.7	25	8.7	<1.0	39	<1.0	<1.0	<1.0	47	68	<0.10
B-37 0'	0	<2.0	<1.0	350	<1.0	1.5	50	13	67	32	1.7	74	<1.0	<1.0	<1.0	54	180	<0.10
B-37 1'	1	<2.0	<1.0	210	<1.0	1.3	41	9.0	30	360	2.3	39	<1.0	<1.0	<1.0	47	110	<0.10
B-37 2'	2	<2.0	1.6	190	<1.0	1.2	45	8.9	23	7.6	<1.0	42	<1.0	<1.0	<1.0	45	65	<0.10
B-39 0'	0	<2.0	<1.0	430	<1.0	1.8	68	16	67	39	2.2	91	<1.0	<1.0	<1.0	71	180	<0.10
B-39 1'	1	<2.0	<1.0	180	<1.0	1.9	90	15	48	990	1.0	150	<1.0	<1.0	<1.0	47	230	<0.10
B-39 2'	2	<2.0	<1.0	150	<1.0	<1.0	38	7.7	19	12	<1.0	36	<1.0	<1.0	<1.0	39	53	0.16
B-41 0'	0	<2.0	<1.0	470	<1.0	1.3	47	8.2	86	130	1.7	47	<1.0	<1.0	<1.0	37	170	<0.10
B-41 1'	1	<2.0	<1.0	86	<1.0	1.3	47	13	38	290	<1.0	70	<1.0	<1.0	<1.0	61	110	<0.10
B-41 2'	2	<2.0	<1.0	32	<1.0	1.4	37	22	44	6.4	<1.0	31	<1.0	<1.0	<1.0	97	80	<0.10
B-43 0'	0	<2.0	5.5	170	<1.0	3.5	52	9.8	96	4,600	<1.0	51	<1.0	<1.0	<1.0	37	2,300	0.18
B-43 1'	1	<2.0	<1.0	14	<1.0	1.6	47	17	60	8.6	<1.0	29	<1.0	<1.0	<1.0	88	60	<0.10
B-43 2'	2	<2.0	2.9	170	<1.0	1.1	30	8.1	21	12	<1.0	36	<1.0	<1.0	<1.0	29	61	<0.10
B-46 0'	0	<2.0	<1.0	76	<1.0	1.3	43	14	36	79	<1.0	29	<1.0	<1.0	<1.0	75	68	<0.10

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Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B-46 1'	1	<2.0	<1.0	140	<1.0	1.2	36	15	44	34	<1.0	32	<1.0	<1.0	<1.0	70	88	<0.10
B-46 2'	2	<2.0	1.4	150	<1.0	1.1	32	7.4	25	49	<1.0	34	<1.0	<1.0	<1.0	34	79	0.51
B-49 0'	0	<2.0	<1.0	130	<1.0	1.3	47	13	40	23	<1.0	38	<1.0	<1.0	<1.0	63	110	<0.10
B-49 1'	1	<2.0	3.0	170	<1.0	1.3	31	9.0	23	8.0	<1.0	37	<1.0	<1.0	<1.0	33	75	0.16
B-49 2'	2	<2.0	1.4	140	<1.0	<1.0	28	6.6	20	<5.0	<1.0	30	<1.0	<1.0	<1.0	30	66	<0.10
B-52 0'	0	<2.0	<1.0	290	<1.0	1.2	36	8.2	53	210	<1.0	41	<1.0	<1.0	<1.0	38	140	<0.10
B-52 1'	1	<2.0	<1.0	160	<1.0	1.3	55	14	46	470	2.2	45	<1.0	<1.0	<1.0	46	87	<0.10
B-52 2'	2	<2.0	<1.0	51	<1.0	<1.0	46	19	40	51	<1.0	31	<1.0	<1.0	<1.0	66	40	<0.10
B-54 0'	0	<2.0	<1.0	280	<1.0	1.5	48	12	52	37	<1.0	72	<1.0	<1.0	<1.0	69	140	<0.10
B-54 1'	1	<2.0	<1.0	210	<1.0	1.5	46	13	33	16	<1.0	51	<1.0	<1.0	<1.0	55	75	<0.10
B-54 2'	2	<2.0	4.1	250	<1.0	1.9	49	12	37	<5.0	<1.0	56	<1.0	<1.0	<1.0	51	110	<0.10
B-56 0'	0	<2.0	<1.0	440	<1.0	1.0	44	8.9	41	21	<1.0	74	<1.0	<1.0	<1.0	37	120	0.11
B-56 1'	1	<2.0	<1.0	160	<1.0	2.3	57	10	78	1,100	1.2	56	<1.0	<1.0	<1.0	46	220	0.13
B-56 2'	2	<2.0	2.4	180	<1.0	1.3	34	9.0	25	220	<1.0	41	<1.0	<1.0	<1.0	35	76	<0.10
B-60 0'	0	8.2	<1.0	190	<1.0	1.0	45	8.9	84	39	2.4	47	<1.0	<1.0	<1.0	49	230	<0.10
B-60 1'	1	8.0	2.3	130	<1.0	<1.0	32	8.8	22	46	<1.0	34	<1.0	<1.0	<1.0	39	52	<0.10
B-60 2'	2	7.7	3.8	130	<1.0	<1.0	27	6.7	16	6.5	<1.0	31	<1.0	<1.0	<1.0	29	47	<0.10
B-60 4'	4	8.6	4.3	150	<1.0	<1.0	28	7.0	19	6.1	<1.0	33	<1.0	<1.0	<1.0	30	56	<0.10
B-60 6'	6	8.8	4.6	160	<1.0	1.1	28	6.4	20	23	<1.0	31	<1.0	<1.0	<1.0	32	56	<0.10
B-63 0'	0	<2.0	<1.0	230	<1.0	1.3	43	7.9	51	85	<1.0	45	<1.0	<1.0	<1.0	40	170	<0.10
B-63 1'	1	<2.0	<1.0	160	<1.0	2.6	71	13	59	4,100	<1.0	67	<1.0	<1.0	<1.0	56	320	0.11
B-63 2'	2	<2.0	<1.0	140	<1.0	<1.0	30	6.7	15	7.9	<1.0	30	<1.0	<1.0	<1.0	31	47	<0.10
B-65 0'	0	4.4	<1.0	240	<1.0	2.5	66	9.8	130	1,000	1.9	67	<1.0	<1.0	<1.0	46	450	0.16
B-65 1'	1	4.3	<1.0	110	<1.0	1.8	58	14	56	1,200	<1.0	48	<1.0	<1.0	<1.0	61	230	0.10

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B-65 2'	2	4.1	<1.0	80	<1.0	1.7	54	18	49	11	<1.0	42	<1.0	<1.0	<1.0	73	120	0.10
B-67 0'	0	4.0	<1.0	160	<1.0	1.7	58	10	49	440	<1.0	47	<1.0	<1.0	<1.0	48	210	<0.10
B-67 1'	1	2.4	<1.0	81	<1.0	<1.0	39	12	32	31	<1.0	29	<1.0	<1.0	<1.0	50	42	0.34
B-67 2'	2	4.9	<1.0	23	<1.0	1.3	55	18	33	1,900	<1.0	35	<1.0	<1.0	<1.0	83	42	<0.10
B-69 0'	0	<2.0	<1.0	35	<1.0	<1.0	8.5	9.1	40	7.8	<1.0	12	<1.0	<1.0	<1.0	70	57	0.14
B-69 1'	1	<2.0	<1.0	64	<1.0	<1.0	12	12	41	1.5	<1.0	35	<1.0	<1.0	<1.0	71	38	<0.10
B-69 2'	2	<2.0	<1.0	66	<1.0	1.3	47	16	39	55	<1.0	36	<1.0	<1.0	<1.0	91	61	<0.10
B-71 0'	0	<2.0	<1.0	160	<1.0	2.5	68	11	68	1,000	<1.0	64	<1.0	<1.0	<1.0	46	260	0.14
B-71 1'	1	<2.0	<1.0	120	<1.0	1.9	61	14	43	470	<1.0	42	<1.0	<1.0	<1.0	74	100	0.18
B-71 2'	2	<2.0	<1.0	58	<1.0	1.6	45	20	36	<5.0	<1.0	30	<1.0	<1.0	<1.0	120	51	<0.10
B-73 0'	0	<2.0	1.3	150	<1.0	<1.0	34	8.0	55	160	13	37	<1.0	<1.0	<1.0	39	91	<0.10
B-73 1'	1	<2.0	1.7	150	<1.0	<1.0	37	7.6	22	10	14	38	<1.0	<1.0	<1.0	36	60	<0.10
B-73 2'	2	<2.0	<1.0	42	<1.0	<1.0	62	20	45	<5.0	21	37	<1.0	<1.0	<1.0	110	52	<0.10
B-73 4'	4	<2.0	5.0	260	<1.0	<1.0	31	8.8	24	5.0	14	29	<1.0	<1.0	<1.0	44	57	<0.10
B-73 6'	6	<2.0	<1.0	64	<1.0	<1.0	34	5.7	16	4.4	12	25	<1.0	<1.0	<1.0	30	55	<0.10
B-74 0'	0	<2.0	<1.0	130	<1.0	<1.0	30	8.5	27	120	13	40	<1.0	<1.0	<1.0	37	62	<0.10
B-74 1'	1	<2.0	<1.0	130	<1.0	<1.0	35	8.6	28	160	14	39	<1.0	<1.0	<1.0	40	75	<0.10
B-74 2'	2	<2.0	1.3	100	<1.0	<1.0	32	8.1	22	5.3	14	34	<1.0	<1.0	<1.0	39	61	<0.10
B-74 4'	4	<2.0	<1.0	68	<1.0	<1.0	27	4.8	16	3.5	11	26	<1.0	<1.0	<1.0	27	41	<0.10
B-74 6'	6	<2.0	1.9	140	<1.0	<1.0	30	9.0	29	4.4	14	45	<1.0	<1.0	<1.0	36	51	<0.10
B-75 0'	0	<2.0	<1.0	84	<1.0	<1.0	36	8.0	23	370	13	37	<1.0	<1.0	<1.0	42	58	<0.10
B-75 1'	1	<2.0	<1.0	57	<1.0	<1.0	52	12	27	87	15	35	<1.0	<1.0	<1.0	67	51	<0.10
B-75 2'	2	<2.0	<1.0	18	<1.0	<1.0	37	4.6	7.5	57	9.0	20	<1.0	<1.0	<1.0	41	45	<0.10
B-75 4'	4	<2.0	<1.0	62	<1.0	<1.0	36	5.2	20	3.8	14	30	<1.0	<1.0	<1.0	34	46	<0.10
B-75 6'	6	<2.0	<1.0	480	<1.0	<1.0	33	7.2	18	3.2	15	30	<1.0	<1.0	<1.0	41	43	<0.10

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Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B-76 0'	0	<2.0	<1.0	130	<1.0	<1.0	36	5.9	19	130	12	30	<1.0	<1.0	<1.0	35	55	<0.10
B-76 1'	1	<2.0	<1.0	97	<1.0	<1.0	31	6.1	16	8.2	11	27	<1.0	<1.0	<1.0	39	37	<0.10
B-76 2'	2	3.8	<1.0	43	<1.0	<1.0	29	8.1	17	3.3	<1.0	42	<1.0	<1.0	<1.0	34	30	<0.10
B-76 4'	4	3.5	1.9	200	<1.0	<1.0	28	4.1	15	4.4	<1.0	23	<1.0	<1.0	<1.0	31	37	<0.10
B-76 6'	6	5.9	2.7	86	<1.0	<1.0	33	7.6	21	6.8	<1.0	35	<1.0	<1.0	<1.0	44	63	<0.10
B-77 0'	0	5.0	<1.0	120	<1.0	<1.0	36	7.3	23	210	<1.0	32	<1.0	<1.0	<1.0	37	69	<0.10
B-77 1'	1	7.6	3.1	130	<1.0	<1.0	37	7.5	25	210	<1.0	34	<1.0	<1.0	<1.0	40	74	<0.10
B-77 2'	2	7.0	<1.0	85	<1.0	<1.0	34	6.9	17	5.6	<1.0	26	<1.0	<1.0	<1.0	31	51	<0.10
B-77 4'	4	<2.0	<1.0	110	<1.0	<1.0	28	6.2	18	3.4	10	24	<1.0	<1.0	<1.0	28	40	<0.10
B-77 6'	6	<2.0	1.5	100	<1.0	<1.0	25	4.8	15	2.8	10	27	<1.0	<1.0	<1.0	26	34	<0.10
B-78 0'	0	<2.0	<1.0	120	<1.0	<1.0	33	8.2	20	17	12	37	<1.0	<1.0	<1.0	33	47	<0.10
B-78 1'	1	<2.0	1.8	150	<1.0	<1.0	35	8.4	23	27	13	38	<1.0	<1.0	<1.0	35	55	0.15
B-78 2'	2	<2.0	<1.0	110	<1.0	<1.0	31	6.3	19	4.1	11	31	<1.0	<1.0	<1.0	31	37	<0.10
B-78 4'	4	<2.0	1.9	130	<1.0	<1.0	37	8.5	28	6.0	15	41	<1.0	<1.0	<1.0	37	60	<0.10
B-78 6'	6	<2.0	2.2	540	<1.0	<1.0	30	15	22	7.5	17	37	<1.0	<1.0	<1.0	37	58	<0.10
B-79 0'	0	5.0	<1.0	210	<1.0	2.4	55	8.5	77	2,700	1.7	46	<1.0	<1.0	<1.0	40	340	0.27
B-79 1'	1	2.2	<1.0	130	<1.0	1.2	38	7.7	21	25	<1.0	34	<1.0	<1.0	<1.0	41	52	<0.10
B-79 2'	2	7.6	<1.0	48	<1.0	1.9	70	23	47	2.4	<1.0	36	<1.0	<1.0	<1.0	120	47	<0.10
B-81 0'	0	<2.0	<1.0	160	<1.0	2.1	180	18	48	450	<1.0	210	<1.0	<1.0	<1.0	56	180	0.11
B-81 1'	1	<2.0	<1.0	86	<1.0	1.5	49	16	35	14	<1.0	34	<1.0	<1.0	<1.0	91	54	<0.10
B-81 2'	2	<2.0	<1.0	220	<1.0	1.5	49	15	30	8.9	<1.0	45	<1.0	<1.0	<1.0	72	56	<0.10
B-83 0'	0	<2.0	<1.0	370	<1.0	1.5	77	15	67	72	<1.0	93	<1.0	<1.0	<1.0	58	130	0.12
B-83 1'	1	<2.0	<1.0	110	<1.0	2.0	46	13	41	1,300	<1.0	50	<1.0	<1.0	<1.0	73	130	<0.10
B-83 2	2	<2.0	1.3	180	<1.0	1.2	44	8.6	22	12	<1.0	38	<1.0	<1.0	<1.0	45	61	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
Highway 101 Auxillary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B-84 0'	0	<2.0	2.1	150	<1.0	1.2	45	10	40	470	<1.0	42	<1.0	<1.0	<1.0	50	170	0.13
B-84 1'	1	<2.0	4.5	190	<1.0	<1.0	37	8.6	25	9.5	<1.0	39	<1.0	<1.0	<1.0	39	60	<0.10
B-84 2'	2	<2.0	4.3	180	<1.0	<1.0	37	8.4	24	8.0	<1.0	39	<1.0	<1.0	<1.0	42	58	<0.10
B-84 6'	6	<2.0	3.4	320	<1.0	<1.0	39	8.9	27	8.5	<1.0	41	<1.0	<1.0	<1.0	39	63	<0.10
B-84 12'	12	<2.0	4.7	89	<1.0	<1.0	28	7.3	18	6.5	<1.0	26	<1.0	<1.0	<1.0	35	49	<0.10
B-84 18'	18	<2.0	2.5	130	<1.0	<1.0	32	6.7	19	4.8	<1.0	31	<1.0	<1.0	<1.0	36	42	<0.10
B-86 0'	0	<2.0	<1.0	160	<1.0	1.7	69	12	51	490	<1.0	68	<1.0	<1.0	<1.0	53	180	0.20
B-86 1'	1	<2.0	<1.0	54	<1.0	1.6	57	21	44	150	<1.0	35	<1.0	<1.0	<1.0	100	59	0.64
B-86 2'	2	<2.0	2.3	170	<1.0	1.1	44	8.4	23	7.0	<1.0	38	<1.0	<1.0	<1.0	46	58	<0.10
B-87 0'	0	<2.0	2.7	150	<1.0	1.1	46	9.6	32	300	<1.0	40	<1.0	<1.0	<1.0	49	150	<0.10
B-87 1'	1	<2.0	3.7	190	<1.0	1.1	36	8.1	23	42	<1.0	36	<1.0	<1.0	<1.0	40	74	<0.10
B-87 12'	12	<2.0	1.1	100	<1.0	<1.0	33	5.7	17	4.5	<1.0	33	<1.0	<1.0	<1.0	27	53	<0.10
B-87 18'	18	<2.0	<1.0	88	<1.0	<1.0	31	4.5	15	4.0	<1.0	31	<1.0	<1.0	<1.0	26	45	<0.10
B-88 0'	0	<2.0	<1.0	150	<1.0	2.2	65	13	54	1,100	<1.0	55	<1.0	<1.0	<1.0	72	190	0.12
B-88 1'	1	<2.0	<1.0	75	<1.0	1.4	56	17	39	140	<1.0	36	<1.0	<1.0	<1.0	91	57	<0.10
B-88 2'	2	<2.0	2.4	250	<1.0	1.1	44	8.3	22	8.0	<1.0	37	<1.0	<1.0	<1.0	46	60	<0.10
B-90 0'	0	<2.0	<1.0	120	<1.0	1.3	50	11	28	30	<1.0	44	<1.0	<1.0	<1.0	58	51	0.19
B-90 1'	1	<2.0	<1.0	110	<1.0	1.6	52	14	35	65	<1.0	41	<1.0	<1.0	<1.0	76	62	<0.10
B-90 2'	2	<2.0	2.1	240	<1.0	1.3	49	9.2	23	7.1	<1.0	42	<1.0	<1.0	<1.0	49	59	<0.10
B-91 0'	0	<2.0	<1.0	84	<1.0	1.9	64	20	47	480	<1.0	41	<1.0	<1.0	<1.0	120	82	<0.10
B-91 1'	1	<2.0	1.4	150	<1.0	1.1	42	8.3	22	9.1	<1.0	35	<1.0	<1.0	<1.0	46	59	<0.10
B-91 2'	2	<2.0	1.6	210	<1.0	1.1	44	8.5	21	7.9	<1.0	38	<1.0	<1.0	<1.0	46	56	<0.10
B-93 0'	0	<2.0	<1.0	210	<1.0	1.7	45	11	49	530	<1.0	48	<1.0	<1.0	<1.0	57	140	0.14
B-93 1'	1	<2.0	<1.0	86	<1.0	1.3	51	17	40	160	<1.0	35	<1.0	<1.0	<1.0	85	65	<0.10
B-93 2'	2	<2.0	2.9	180	<1.0	1.2	43	11	26	18	<1.0	58	<1.0	<1.0	<1.0	46	77	0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B-96 0'	0	<2.0	2.4	250	<1.0	2.2	54	13	57	1,100	<1.0	55	<1.0	<1.0	<1.0	61	260	0.12
B-96 1'	1	<2.0	<1.0	110	<1.0	1.3	51	11	34	280	<1.0	37	<1.0	<1.0	<1.0	58	81	0.22
B-96 2'	2	<2.0	2.4	170	<1.0	1.1	44	8.6	22	8.2	<1.0	38	<1.0	<1.0	<1.0	44	63	<0.10
B-99 0'	0	<2.0	<1.0	81	<1.0	1.6	51	17	48	810	<1.0	34	<1.0	<1.0	<1.0	83	230	<0.10
B-99 1'	1	<2.0	<1.0	61	<1.0	1.5	51	17	39	790	<1.0	30	<1.0	<1.0	<1.0	84	150	<0.10
B-99 2'	2	<2.0	<1.0	67	<1.0	1.5	46	16	40	820	<1.0	29	<1.0	<1.0	<1.0	81	150	<0.10
B-102 0'	0	<2.0	<1.0	170	<1.0	1.6	50	8.4	84	170	2.6	45	<1.0	<1.0	<1.0	45	350	<0.10
B-102 1'	1	<2.0	<1.0	46	<1.0	1.8	53	21	37	21	<1.0	34	<1.0	<1.0	<1.0	130	55	<0.10
B-102 2'	2	<2.0	<1.0	100	<1.0	1.5	65	18	38	11	<1.0	44	<1.0	<1.0	<1.0	88	58	<0.10
B-104 0'	0	<2.0	<1.0	64	<1.0	2.1	120	21	86	1,800	<1.0	57	<1.0	<1.0	<1.0	93	130	<0.10
B-104 1'	1	<2.0	1.9	140	<1.0	1.4	44	8.0	28	15	<1.0	37	<1.0	<1.0	<1.0	48	68	<0.10
B-104 2'	2	<2.0	2.9	250	<1.0	1.3	45	9.3	26	15	<1.0	40	<1.0	<1.0	<1.0	49	72	<0.10
B-106 0'	0	<2.0	<1.0	230	<1.0	1.6	56	13	67	1,200	<1.0	46	<1.0	<1.0	<1.0	67	160	<0.10
B-106 1'	1	<2.0	<1.0	100	<1.0	1.3	43	13	28	13	<1.0	32	<1.0	<1.0	<1.0	72	57	<0.10
B-106 2'	2	<2.0	<1.0	170	<1.0	1.2	47	9.2	22	8.6	<1.0	44	<1.0	<1.0	<1.0	47	65	0.14
B-108 0'	0	<2.0	<1.0	130	<1.0	1.1	36	9.1	30	56	<1.0	35	<1.0	<1.0	<1.0	50	65	<0.10
B-108 1'	1	<2.0	<1.0	110	<1.0	1.5	45	17	33	7.5	<1.0	36	<1.0	<1.0	<1.0	86	56	<0.10
B-108 2'	2	<2.0	1.4	180	<1.0	1.1	39	8.7	22	7.0	<1.0	39	<1.0	<1.0	<1.0	39	60	<0.10
B-110 0'	0	<2.0	<1.0	140	<1.0	1.3	40	10	26	30	<1.0	37	<1.0	<1.0	<1.0	51	66	<0.10
B-110 1'	1	<2.0	<1.0	100	<1.0	1.2	38	12	24	13	<1.0	36	<1.0	<1.0	<1.0	67	55	<0.10
B-110 2'	2	<2.0	1.3	150	<1.0	1.1	36	7.6	21	6.3	<1.0	35	<1.0	<1.0	<1.0	37	62	<0.10
B-113 0'	0	3.4	<1.0	140	<1.0	2.1	42	11	57	580	<1.0	40	<1.0	<1.0	<1.0	57	1,100	0.12
B-113 1'	1	<2.0	4.8	180	<1.0	1.2	33	6.9	26	45	<1.0	33	<1.0	<1.0	<1.0	33	130	0.11

TABLE 3
Summary of CAM17 Metals Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury
B-113	2'	<2.0	1.7	150	<1.0	1.0	31	6.8	19	8.1	<1.0	33	<1.0	<1.0	<1.0	33	60	<0.10
B-116	0'	2.0	<1.0	170	<1.0	1.3	36	8.6	34	75	<1.0	38	<1.0	<1.0	<1.0	38	150	<0.10
B-116	1'	<2.0	1.5	120	<1.0	1.2	30	7.1	25	93	<1.0	32	<1.0	<1.0	<1.0	31	140	<0.10
B-116	2'	<2.0	1.3	150	<1.0	1.0	29	7.0	19	14	<1.0	34	<1.0	<1.0	<1.0	30	60	<0.10
B-119	0'	<2.0	<1.0	140	<1.0	1.4	43	12	30	83	<1.0	47	<1.0	<1.0	<1.0	42	98	<0.10
B-119	1'	<2.0	<1.0	130	<1.0	1.2	36	10	24	96	<1.0	31	<1.0	<1.0	<1.0	56	88	<0.10
B-119	2'	<2.0	1.6	180	<1.0	1.0	33	7.3	18	6.1	<1.0	37	<1.0	<1.0	<1.0	33	57	<0.10
B-122	0'	<2.0	<1.0	160	<1.0	2.2	200	18	62	1,900	<1.0	290	<1.0	<1.0	<1.0	50	220	0.16
B-122	1'	<2.0	<1.0	170	<1.0	1.5	46	12	31	250	<1.0	44	<1.0	<1.0	<1.0	61	88	<0.10
B-122	2'	<2.0	<1.0	120	<1.0	1.4	42	15	28	20	<1.0	35	<1.0	<1.0	<1.0	78	57	<0.10
B-124	0'	<2.0	<1.0	280	<1.0	1.5	52	12	50	89	<1.0	64	<1.0	<1.0	<1.0	59	150	<0.10
B-124	1'	<2.0	<1.0	85	<1.0	1.3	41	14	28	8.1	<1.0	33	<1.0	<1.0	<1.0	79	64	<0.10
B-124	2'	<2.0	1.4	160	<1.0	1.1	37	7.7	20	6.6	<1.0	38	<1.0	<1.0	<1.0	36	59	<0.10
B-126	0'	<2.0	<1.0	110	<1.0	1.3	55	12	34	260	<1.0	54	<1.0	<1.0	<1.0	58	140	<0.10
B-126	1'	<2.0	6.2	110	<1.0	1.8	100	15	130	600	<1.0	110	<1.0	<1.0	<1.0	77	190	0.17
B-126	2'	<2.0	<1.0	140	<1.0	1.2	36	9.2	24	19	<1.0	36	<1.0	<1.0	<1.0	41	66	0.25
B-130	0'	<2.0	<1.0	60	<1.0	<1.0	16	4.4	10	15	<1.0	13	<1.0	<1.0	<1.0	24	24	<0.10
B-130	1'	<2.0	<1.0	89	<1.0	1.3	47	17	36	20	<1.0	34	<1.0	<1.0	<1.0	100	57	<0.10
B-130	2'	<2.0	<1.0	29	<1.0	<1.0	29	11	20	<5.0	<1.0	20	<1.0	<1.0	<1.0	69	28	<0.10
B-131	4'	7.7	4.7	150	<1.0	<1.0	26	6.8	16	5.5	<1.0	34	<1.0	<1.0	<1.0	27	55	<0.10
B-131	6'	6.7	3.2	130	<1.0	<1.0	27	7.5	13	4.5	<1.0	35	<1.0	<1.0	<1.0	26	41	<0.10
B-131	0'	<2.0	<1.0	150	<1.0	1.0	40	11	37	35	5.4	40	<1.0	<1.0	<1.0	48	62	<0.10
B-131	1'	<2.0	<1.0	150	<1.0	1.2	45	20	46	15	<1.0	38	<1.0	<1.0	<1.0	65	69	0.11
B-131	2'	<2.0	<1.0	140	<1.0	<1.0	27	5.9	17	10	<1.0	29	<1.0	<1.0	<1.0	27	53	<0.10

TABLE 3
Summary of CAM17 Metals Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Mercury	
B-132	0'	<2.0	<1.0	150	<1.0	1.6	45	10	44	910	2.5	42	<1.0	<1.0	<1.0	51	160	0.18	
B-132	1'	<2.0	<1.0	61	<1.0	1.7	94	21	52	180	<1.0	43	<1.0	<1.0	<1.0	110	66	<0.10	
B-132	2'	<2.0	1.0	150	<1.0	1.0	35	7.9	20	8.1	<1.0	35	<1.0	<1.0	<1.0	35	58	<0.10	
B-134	0'	<2.0	<1.0	60	<1.0	2.0	72	22	46	140	<1.0	38	<1.0	<1.0	<1.0	120	140	<0.10	
B-134	1'	<2.0	<1.0	40	<1.0	1.8	73	21	41	5.6	<1.0	34	<1.0	<1.0	<1.0	120	52	<0.10	
B-134	2'	<2.0	<1.0	130	<1.0	1.2	38	11	27	20	<1.0	35	<1.0	<1.0	<1.0	46	62	<0.10	
B-136	0'	<2.0	<1.0	92	<1.0	1.2	41	16	36	12	<1.0	35	<1.0	<1.0	<1.0	67	49	<0.10	
B-136	1'	<2.0	<1.0	530	<1.0	<1.0	20	17	63	7.1	<1.0	44	<1.0	<1.0	<1.0	37	51	<0.10	
B-136	2'	<2.0	<1.0	99	<1.0	1.1	53	12	26	4.0	<1.0	41	<1.0	<1.0	<1.0	62	39	<0.10	
ESLs																			
Residential Land Use		6.3	0.39	750	4.0	1.7	750	40	230	200	40	150	10	20	1.3	16	600	1.3	
Comm/Ind Land Use		40	16	1500	8.0	7.4	750	80	230	750	40	150	10	40	16	200	600	10	
Construction Exposure		310	15	2,600	98	39	1,200,000	94	310,000	750	78	260	3,900	3,900	62	770	230,000	58	

Notes:

Results are shown in milligrams per kilogram (mg/kg).

Values listed for chromium are for Chromium III, as there is no standard for total chromium.

< = Analyte was not detected above the laboratory reporting limit.

ESLs = Environmental Screening Levels, Tables A and K-3, SFRWQCB, Revised May 2008.

TABLE 4
Summary of Organics Results - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	Sample Depth (ft)	TPHg (mg/kg)	TPHd (mg/kg)	TPHmo (mg/kg)	BTEX (ug/kg)	VOCs (ug/kg)
B-3 10'	10	<1.0	2.1	<1.0	ND	ND
B-5 10'	10	<1.0	1.7	<1.0	ND	ND
B-42 10'	10	<1.0	3.2	23	ND	ND
B-57 10'	10	<1.0	1.0	13	ND	ND
B-58 10'	10	<1.0	<1.0	12	ND	ND
B-61 10'	10	<1.0	<1.0	6.0	ND	ND
B-94 10'	10	<1.0	4.1	<1.0	ND	ND
B-128 10'	10	<1.0	<1.0	1.2	ND	ND
B-129 10'	10	<1.0	5.8	2.9	ND	ND

ESLs

Residential	83	83	370	---	---
Commercial/Industrial	83	83	2,500	---	---
Construction Exposure	4,200	4,200	12,000	---	---

Notes:

mg/kg = milligrams per kilogram

ug/kg = microgram per kilogram

TPHg = Total Petroleum Hydrocarbons as gasoline

BTEX = Benzene, toluene, ethylbenzene,
and xylenes

TPHd = Total Petroleum Hydrocarbons as diesel

TPHmo = Total Petroleum Hydrocarbons as motor oil

VOCs = Volatile organic compounds

--- = Not Analyzed or Not Applicable

< = Not detected above the stated laboratory reporting limit

ESLs = Environmental Screening Levels, Tables A and K-3, SFRWQCB, Revised May 2008.

TABLE 5
Summary of Grab-Groundwater Sample Results
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Sample ID	TPHg	TPHd	TPHmo	BTEX	Other VOCs
B-17	<0.050	<0.050	<0.050	ND	ND
B-19	<0.050	<0.050	<0.050	ND	ND
B-75	<0.050	<0.050	<0.062	ND	4-isopropyltoluene=0.82
B-84	<0.050	<0.050	<0.050	ND	ND
ESLs					
GW is current/potential source	100	100	100	---	---
GW not current/potential source	2,100	2,100	2,100	---	---
Surface Water - Freshwater	100	100	100	---	---
Surface Water - Marine	2,100	2,100	2,100	---	---
Surface Water - Estuarine	2,100	2,100	2,100	---	---

Notes:

Data are shown in units of micrograms per liter (µg/l).

TPHg = Total Petroleum Hydrocarbons as gasoline

TPHd = Total Petroleum Hydrocarbons as diesel

TPHmo = Total Petroleum Hydrocarbons as motor oil

--- = Not Analyzed or Not Applicable

<

ESLs = Environmental Screening Levels, Tables A, B, & F, SFRWQCB, Revised May 2008.

BTEX = Benzene, toluene, ethylbenzene, and xylenes

VOCs = Volatile organic compounds

TABLE 6a
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Northbound
Borings B1 to B67

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	551.7	588.5
1.0 to 1.5 ft	372.3	398.2
2.0 to 2.5 ft	62.9	69.7

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	552	25	589
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	269	12	289
0 to 2.0 ft	462	21	493
<i>Underlying Soil (2.0 to 2.5 ft)</i>	63	2.9	70
0 to 2.5 ft	382	18	409

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6b
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Northbound excluding borings at Willow Road (B-26 to B-31)
and University Avenue (B-43 to B-52) Overcrossings
Borings B-1 to B-25, B-32 to B-42 and B-53 to B-67

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	329.3	349.9
1.0 to 1.5 ft	431.3	468.1
2.0 to 2.5 ft	79.2	85.8

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	90% UCL Total Lead (mg/kg)	Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	329	15	350
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	314	14	341
0 to 2.0 ft	380	17	409
<i>Underlying Soil (2.0 to 2.5 ft)</i>	79	3.6	86
0 to 2.5 ft	320	15	344

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line,
where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6c
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Northbound excluding borings at Willow Road Overcrossing (B-26 to B-31)
Borings B-1 to B-25 and B-32 to B-67

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	431.8	463.9
1.0 to 1.5 ft	394.5	423.6
2.0 to 2.5 ft	68.3	72.9

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	90% UCL Total Lead (mg/kg)	Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	432	20	464
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	286	13	307
0 to 2.0 ft	413	19	444
<i>Underlying Soil (2.0 to 2.5 ft)</i>	68	3.1	73
0 to 2.5 ft	344	16	370

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line,
where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6d
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Northbound at Willow Road Overcrossing
Borings B-26 to B-31

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	2,274	2,547
1.0 to 1.5 ft	108.8	116.3
2.0 to 2.5 ft	23.0	24.6

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	90% UCL Total Lead (mg/kg)	Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft <i>Underlying Soil (1.0 to 2.5 ft.)</i>	2,274 80	105 3.7	2,547 86
0 to 2.0 ft <i>Underlying Soil (2.0 to 2.5 ft)</i>	1,191 23	55 1.1	1,332 25
0 to 2.5 ft	958	44	1,070

Notes:

- UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
- mg/kg = milligrams per kilogram
- mg/l = milligrams per liter
- Weighted average values are based upon calculated UCLs for each depth interval.
- * = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6e
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Northbound excluding borings at University Avenue Overcrossing (B-43 to B-52)
Borings B-1 to B-42 and B-53 to B-67

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	502	536.6
1.0 to 1.5 ft	392.3	426.8
2.0 to 2.5 ft	72.2	78.8

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	502	23	537
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	286	13	311
0 to 2.0 ft	447	21	482
<i>Underlying Soil (2.0 to 2.5 ft)</i>	72	3.3	79
0 to 2.5 ft	372	17	401

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6f
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Northbound at University Avenue Overcrossing
Borings B-43 to B-52

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	1,202	1,374
1.0 to 1.5 ft	346.1	382.4
2.0 to 2.5 ft	16.2	18.0

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	1,202	55	1,374
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	236	11	261
0 to 2.0 ft	774	36	878
<i>Underlying Soil (2.0 to 2.5 ft)</i>	16	0.74	18
0 to 2.5 ft	622	29	706

Notes:

- UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
- mg/kg = milligrams per kilogram
- mg/l = milligrams per liter
- Weighted average values are based upon calculated UCLs for each depth interval.
- * = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6g
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Southbound
Borings B68 to B137

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	649.7	683.5
1.0 to 1.5 ft	227.1	240.9
2.0 to 2.5 ft	70.8	78.2

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		95% UCL Total Lead (mg/kg)
	90% UCL Total Lead (mg/kg)	Soluble (WET) Lead* (mg/l)	
0 to 1.0 ft	650	30	684
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	175	8.0	187
0 to 2.0 ft	438	20	462
<i>Underlying Soil (2.0 to 2.5 ft)</i>	71	3.3	78
0 to 2.5 ft	365	17	385

Notes:

- UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
- mg/kg = milligrams per kilogram
- mg/l = milligrams per liter
- Weighted average values are based upon calculated UCLs for each depth interval.
- * = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6h
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Southbound excluding borings at Willow Road (B-98 to B-101)
and University Avenue (B-113 to B-121) Overcrossings
Borings B-68 to B-97, B-102 to B-111 and B-122 to B-137

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	585.4	615.2
1.0 to 1.5 ft	242.1	258.8
2.0 to 2.5 ft	87.3	101.1

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		95% UCL Total Lead (mg/kg)
	Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	
0 to 1.0 ft	585	27	615
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	191	8.8	206
0 to 2.0 ft	414	19	437
<i>Underlying Soil (2.0 to 2.5 ft)</i>	87	4.0	101
0 to 2.5 ft	348	16	370

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line,
where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6i
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Southbound excluding borings at Willow Road Overcrossing (B-98 to B-101)
Borings B-68 to B-97 and B-102 to B-137

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	549.9	577
1.0 to 1.5 ft	219.5	231.8
2.0 to 2.5 ft	76.3	86.6

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	550	25	577
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	172	7.9	183
0 to 2.0 ft	385	18	404
<i>Underlying Soil (2.0 to 2.5 ft)</i>	76	3.5	87
0 to 2.5 ft	323	15	341

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line,
where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6j
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Southbound at Willow Road Overcrossing
Borings B-98 to B-101

TOTAL LEAD

	<u>Maximums</u> (mg/kg)
0 to 0.5 ft	5,300
1.0 to 1.5 ft	790
2.0 to 2.5 ft	820

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages	
	Total Lead (mg/kg)	Maximum Soluble (WET) Lead* (mg/l)
0 to 1.0 ft	5,300	244
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	800	37
0 to 2.0 ft	3,045	140
<i>Underlying Soil (2.0 to 2.5 ft)</i>	820	38
0 to 2.5 ft	2,600	120

Notes:

Maximum concentrations used because data set consists of four or less unique values.

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line,
where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6k
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Southbound excluding borings at University Avenue Overcrossing (B-113 to B-121)
Borings B-68 to B111 and B-122 to B-137

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	699.6	742.7
1.0 to 1.5 ft	256.3	267
2.0 to 2.5 ft	101	114.5

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	700	32	743
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	205	9.4	216
0 to 2.0 ft	478	22	505
<i>Underlying Soil (2.0 to 2.5 ft)</i>	101	4.6	115
0 to 2.5 ft	403	19	427

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line,
where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 61
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Southbound at University Avenue Overcrossing
Borings B-113 to B-121

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	496.1	547.6
1.0 to 1.5 ft	62.3	66.7
2.0 to 2.5 ft	9.0	9.3

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	90% UCL Total Lead (mg/kg)	Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	496	23	548
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	45	2.0	48
0 to 2.0 ft	279	13	307
<i>Underlying Soil (2.0 to 2.5 ft)</i>	9.0	0.41	9.3
0 to 2.5 ft	225	10	248

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line,
 where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6m
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Northbound - Marsh Road to University Avenue
Borings B1 to B48

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	626.8	667.1
1.0 to 1.5 ft	257.1	275.3
2.0 to 2.5 ft	57.5	62.0

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	90% UCL Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	627	29	667
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	191	8.8	204
0 to 2.0 ft	442	20	471
<i>Underlying Soil (2.0 to 2.5 ft)</i>	57	2.6	62
0 to 2.5 ft	365	17	389

Notes:

- UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
- mg/kg = milligrams per kilogram
- mg/l = milligrams per liter
- Weighted average values are based upon calculated UCLs for each depth interval.
- * = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6n
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Northbound - University Avenue to Embarcadero
Borings B-49 to B-67

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	492.6	538.0
1.0 to 1.5 ft	760.3	839.5
2.0 to 2.5 ft	106	122.7

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	493	23	538
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	542	25	601
0 to 2.0 ft	626	29	689
<i>Underlying Soil (2.0 to 2.5 ft)</i>	106	4.9	123
0 to 2.5 ft	522	24	576

Notes:

UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

Weighted average values are based upon calculated UCLs for each depth interval.

* = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6o
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Southbound - Marsh Road to University Avenue
Borings B-68 to B-137

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	705.3	753
1.0 to 1.5 ft	236.3	252
2.0 to 2.5 ft	123.8	139.1

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	Total Lead (mg/kg)	90% UCL Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	705	32	753
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	199	9.1	214
0 to 2.0 ft	471	22	503
<i>Underlying Soil (2.0 to 2.5 ft)</i>	124	5.7	139
0 to 2.5 ft	401	18	430

Notes:

- UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
- mg/kg = milligrams per kilogram
- mg/l = milligrams per liter
- Weighted average values are based upon calculated UCLs for each depth interval.
- * = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

TABLE 6p
Summary of Lead Statistical Analysis - Soil
Highway 101 Auxiliary Lane Addition Project
Santa Clara and San Mateo Counties, California

Highway 101 Southbound - University Avenue to Embarcadero
Borings B-117 to B-137

TOTAL LEAD

	UCLs (mg/kg)	
	90% UCL	95% UCL
0 to 0.5 ft	648.1	690.9
1.0 to 1.5 ft	264.8	287.7
2.0 to 2.5 ft	11.8	12.3

EXCAVATION SCENARIOS

Excavation Depth	Weighted Averages		
	90% UCL Total Lead (mg/kg)	Soluble (WET) Lead* (mg/l)	95% UCL Total Lead (mg/kg)
0 to 1.0 ft	648	30	691
<i>Underlying Soil (1.0 to 2.5 ft.)</i>	180	8.3	196
0 to 2.0 ft	456	21	489
<i>Underlying Soil (2.0 to 2.5 ft)</i>	12	0.54	12
0 to 2.5 ft	368	17	394

Notes:

- UCL = Upper Confidence Limit (90% UCL is applicable for waste classification; 95% UCL applicable for risk assessment)
- mg/kg = milligrams per kilogram
- mg/l = milligrams per liter
- Weighted average values are based upon calculated UCLs for each depth interval.
- * = Soluble (WET) lead concentrations are predicted using slope of regression line, where y = predicted soluble (WET) lead and x = total lead.

Regression Line Slope: $y = 0.046 x$

APPENDIX

A



City of Menlo Park 701 Laurel Street
 Menlo Park, CA 94025
 Engineering Division
 Phone:(650) 330-6740

Permit No.: ECR2009-00165
 Issued:8/5/2009

Keep Permit at work site

ENCROACHMENT PERMIT

Call for Inspections

- Curb & Gutter Permit
 Street Opening Permit
 Other:
 Sidewalk, Driveway Permit
 Debris Box

ONE PERMIT PER ADDRESS

Name of Applicant (person) JOHN LOVE		Representing <input checked="" type="checkbox"/> Owner	Location of work Van Buren Road and Pierce Road.			
Name of Owner	Address		City	State	Zip	Telephone
Name of Contractor GEOCON CONSULTANTS	Address 6671 BRISA STREET		City LIVERMORE	State CA	Zip 94550	Telephone 925-371-5900
CA Contractor License No	Menlo Park Business License No		Est. Start Date		Est. Completion Date	
Estimated Construction Cost <small>(Estimate work in city R/W only. Do not include value of utility.)</small> \$5,000.00		Insurance provided by				

Description of work to be done:

Advance 4 temporary soil borings in public right of way. Conditions: Notify neighbors 72 hours before work is to begin. Include work schedule.

Call Underground Service Alert (USA) at 1-800-227-2600 before you dig

GENERAL CONDITIONS OF PERMIT: (See attached sheet)

I hereby acknowledge that I have read this permit and the attached conditions, that the information given by me is correct, that I am the owner or the duly authorized agent of the owner, and that I agree to comply with the conditions and all applicable provisions of state laws, city ordinances, and the rules of any governmental agency involved.

On File

Signature of Applicant
(Owner or authorized agent)

Title

Date

Approved by Director of Engineering Services Approved by: <i>[Signature]</i>	Date 8/5/09	Permit expires 11/5/2009	Fees <small>(retained by city)</small> \$400.00
Approved by Transportation Manager Approved by: <i>[Signature]</i>	Date		Deposit <small>(refundable)</small> PAID
Total due to City			JUL 27 2009



GENERAL CONDITIONS OF PERMIT

City of Menlo Park 701 Laurel Street Menlo Park, CA 94025
Engineering Division

Phone:(650) 330-6740

Permit No.: ECR2009-00165

1. This permit, regardless of when dated, shall not be in effect until the applicant has obtained all licenses and other permits required by law.
2. This permit is declared null and void if work has not begun three (3) months after the date of application and shall expire on _____.
3. Any damages to existing facilities and improvements above ground or below ground, shall be promptly repaired or replaced at the permittee's expense, and claims for damage to City property must be promptly paid.
4. The City of Menlo Park shall not be responsible for exact locations or depths of existing utilities or other facilities.
5. The permittee shall be responsible and liable for, and shall hold the City and its Commissions, Boards, Officers, and employees free and harmless from all liens and claims involving personal injury or property damage of any kind due, directly, or indirectly, to said permittee's operations and use of City's lands herein described.
6. All work shall comply with the City Standards including safety precautions (warning signs, barricades, lights) site restoration, and clean-up shall be done by a licensed and insured contractor.
7. Street Opening, Sidewalk, Curb and Gutter, and Driveway Permits. The Construction Supervisor shall be notified at least 24 hours prior to beginning work and 24 hours prior to each inspection. The number and type of inspections required, and any tests that may be required will be as directed by the Construction Supervisor. The Construction Supervisor may be contacted by calling (650) 330-6740, and shall also be notified 24 hours prior to concrete pour.
8. Construction activities are restricted to the weekdays between 8:00 AM and 6:00 PM.

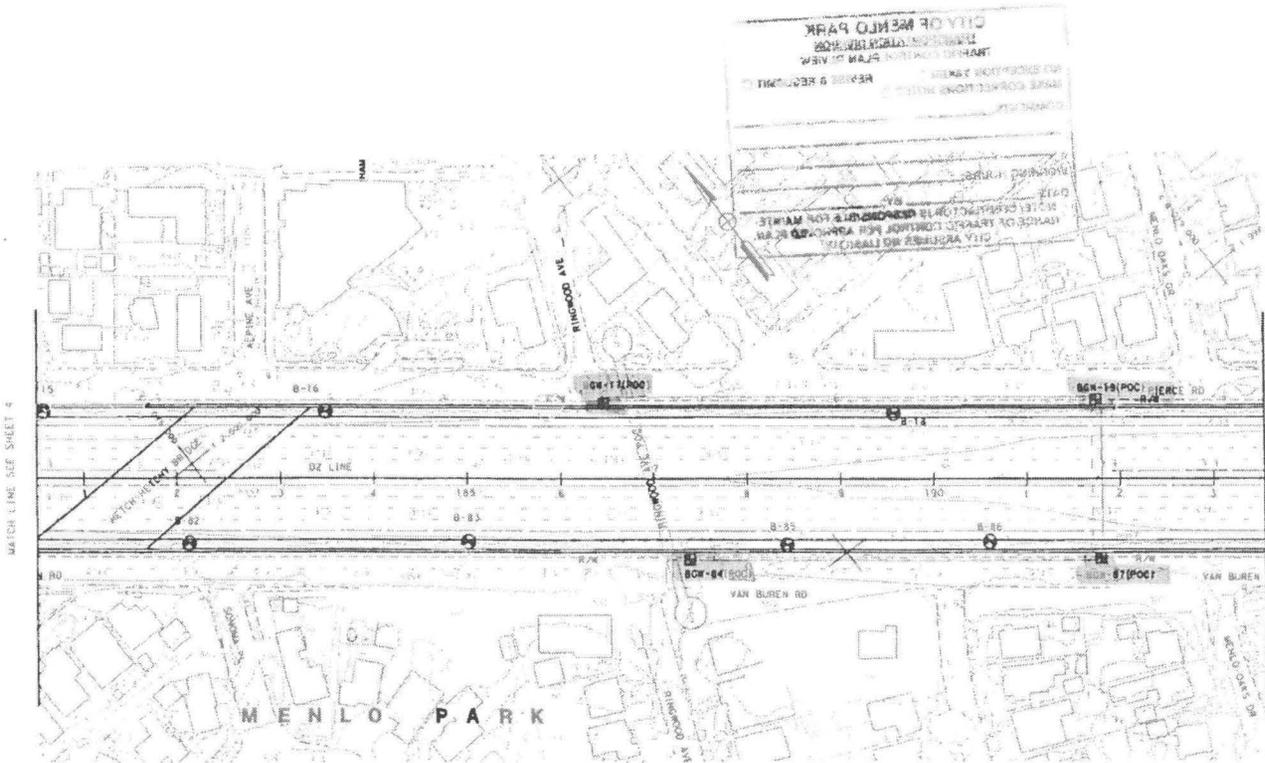
SPECIAL CONDITIONS

- This grant of permission does not constitute a deed or grant of any easement by the City, is not transferable or assignable and is revocable at any time at the will of the City.
- This permit does not authorize tree trimming or tree removal.
- Obtain permit from City for traffic lane closure.
- The use of City property by permittee shall be limited to the purposes set forth by this permit and no structures of any kind, except those expressly permitted shall be erected or placed thereon.

ADDITIONAL CONDITIONS

Conditions: Notify neighbors 72 hours before work is to begin. Include work schedule. Maintain pedestrian and bicyclist safety at all times.

TRANSPORTATION CONTROL PLAN



Soil Boring Location Map

ATTACHMENT B
SHEET 5 OF 17
SM 101 PM 0.0/3.6
SCL PM 52.2/52.6

Project Name: Greenway Hwy 101 Subarea

Project Location: Project #101 - 101 Highway

City Inspector: _____

Purpose of Work: Advance Signage
(This traffic control plan is valid for this function only!)

Working Hours: 9:00 a.m. to 3:00 p.m.
(contractor must request working hour extension in writing to the Transportation Manager).

Duration of Work: From _____ to _____
(contractor must request working hour extension in writing to the Transportation Manager).

Contractor Name: Green Consultants, Inc.

Foreman Name: John Love

Foreman Cell Number: 925-525-9192

Emergency Number: 925-371-5900

Contractor shall not start work until inspector approves the traffic control in the field. Call 650.330.6740

SPECIAL INSTRUCTIONS

Reviewed by _____ Date _____

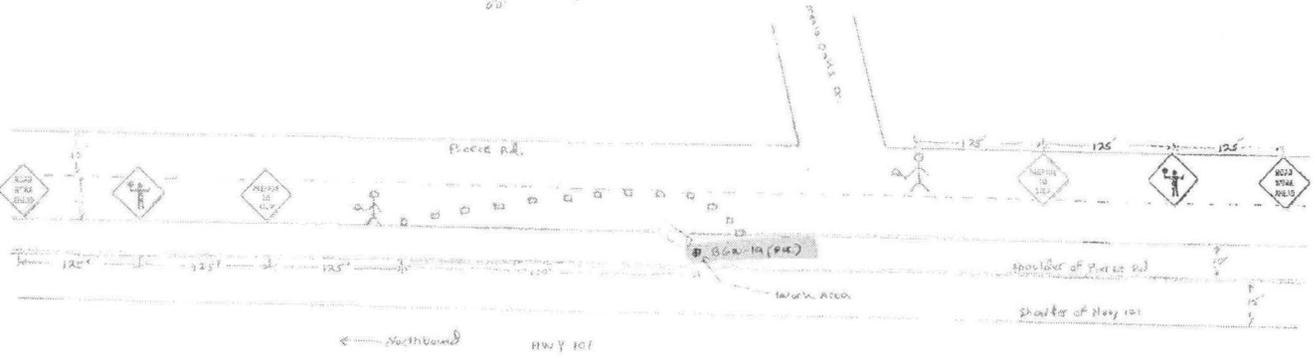
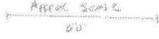
Revised by _____ Date _____

TRANSPORTATION CONTROL PLAN

Sheet 3 of 5

Traffic Control Plan
for Sample Location **66W-19 (P&C)**

- Speed Limit = 35 mph
- (BOW-19(P&C)) Sign - Being Location
- Traffic Cones (Spaced 5' apart)



CITY OF MENLO PARK
TRANSPORTATION DIVISION
TRAFFIC CONTROL PLAN REVIEW

NO EXCEPTION TAKEN REVISE & RESUBMIT

MAKE CORRECTIONS NOTED

COMMENTS: _____

WORKING HOURS: _____ BY: _____

DATE: _____

NOTE: CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF TRAFFIC CONTROL PER APPROVED PLAN. CITY ASSUMES NO LIABILITY.

Project Name: Castroville - Hwy 101 Widening
Project Location: Pierce Rd. near
Menlo Oaks Dr

City Inspector: _____

Purpose of Work: Adoptive Sign Posting
(This traffic control plan is valid for this function only!)

Working Hours: 9:00 a.m. to 3:00 p.m.
(contractor must request working hour extension in writing to the Transportation Manager).

Duration of Work: From _____ to _____
(contractor must request working hour extension in writing to the Transportation Manager).

Contractor Name: Gecon Consultants

Foreman Name: John Lora

Foreman Cell Number: 925-525-4147

Emergency Number: 925-371-5900

Contractor shall not start work until inspector approves the traffic control in the field. Call 650.330.6740

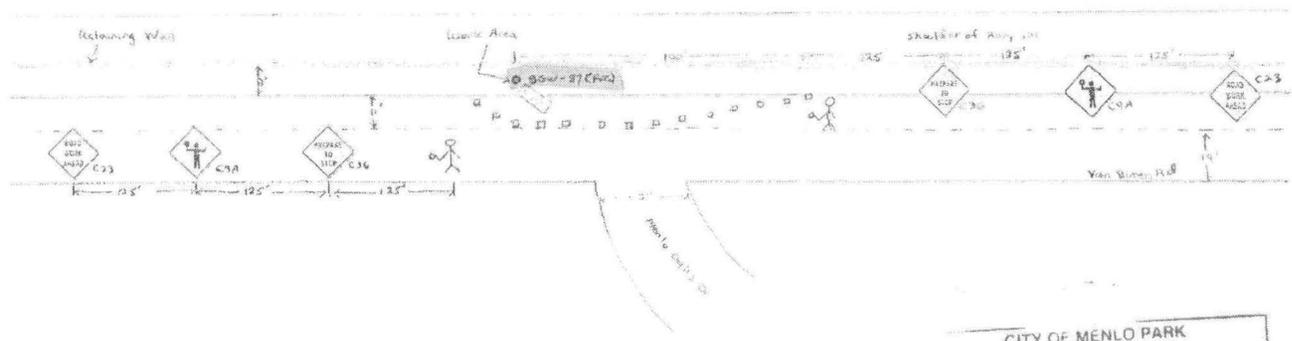
SPECIAL INSTRUCTIONS

Reviewed by _____ Date _____

Revised by _____ Date _____

TRANSPORTATION CONTROL PLAN

TRAFFIC CONTROL PLAN
 for Sample Location B-87 (P-1)
 APPROX SCALE
 50'



CITY OF MENLO PARK
 TRAFFIC CONTROL DIVISION
 PLAN REVIEW

NO EXCEPTIONS
 COMMENTS

REVISIONS
 DATE: 7/29/09 BY: [Signature]

NOTE: CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF TRAFFIC CONTROL PER APPROVED PLAN. CITY ASSUMES NO LIABILITY.

Project Name: California Hwy 101 widening

Project Location: Van Gilder Rd. near Menlo Oaks Dr

City Inspector: _____

Purpose of Work: Advance Soil Boring
(This traffic control plan is valid for this function only!)

Working Hours: 9:00 a.m. to 3:00 p.m.
(contractor must request working hour extension in writing to the Transportation Manager).

Duration of Work: From ____ to ____
(contractor must request working hour extension in writing to the Transportation Manager).

Contractor Name: Gecon Consultants

Foreman Name: John Love

Foreman Cell Number: 925-525-4172

Emergency Number: 925-371-5900

Contractor shall not start work until inspector approves the traffic control in the field. Call 650.330.6740

SPECIAL INSTRUCTIONS

Reviewed by _____ Date _____

Revised by _____ Date _____

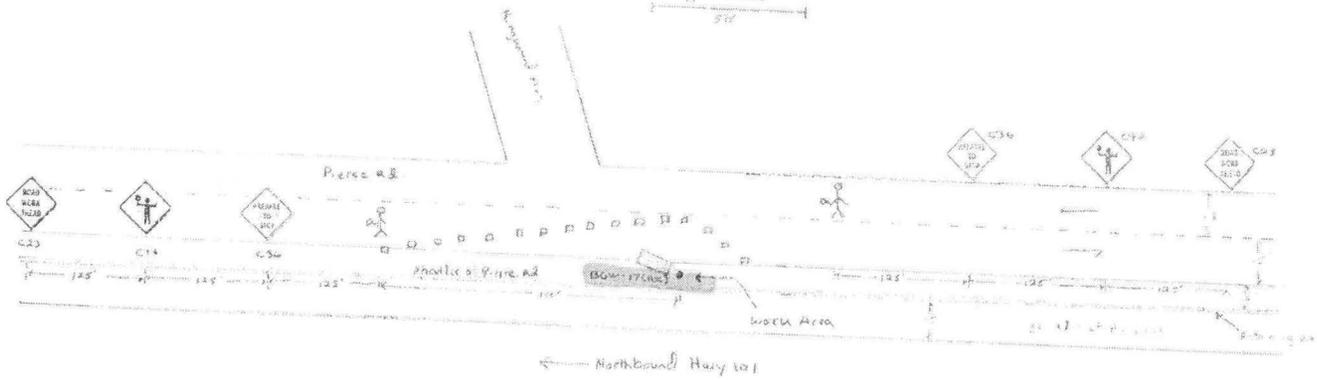
TRANSPORTATION CONTROL PLAN

Sheet 5 of 5

Traffic Control Plan
for Sample Location: **EGW-17 (PUC)**

- Speed Limit = 35 mph
- B BGV-17 (PUC) Soil Boring Location
- B Traffic cones (speed limit)

Approx Scale
1" = 50'



CITY OF MENLO PARK
TRANSPORTATION DIVISION
TRAFFIC CONTROL PLAN REVIEW

NO EXCEPTION TAKEN REVISIONS
 MAKE CORRECTIONS NOTED REVISIONS

COMMENTS: _____

WORKING HOURS: _____ BY: _____

DATE: _____

NOTE: CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF TRAFFIC CONTROL PER APPROVED PLAN. CITY ASSUMES NO LIABILITY.

Project Name: San Jose Water
 Project Location: Pierce Rd near Kingswood Ave
 City Inspector: _____

Purpose of Work: Advance Soil Boring
 (This traffic control plan is valid for this function only!)

Working Hours: 9:00 a.m. to 3:00 p.m.
 (contractor must request working hour extension in writing to the Transportation Manager).

Duration of Work: From ____ to ____
 (contractor must request working hour extension in writing to the Transportation Manager).

Contractor Name: Geoson Consultants
 Foreman Name: John Love
 Foreman Cell Number: 925-525-4147
 Emergency Number: 925-371-5900

Contractor shall not start work until inspector approves the traffic control in the field. Call 650.330.6740

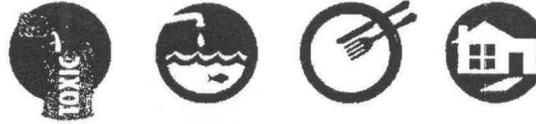
SPECIAL INSTRUCTIONS

Reviewed by _____ Date _____
 Revised by _____ Date _____

ORDINANCE: 04023

ENVIRONMENTAL HEALTH
SAN MATEO COUNTY

PERMIT 09- 1469



Protecting Our Health and Environment

P/E: 2010 MONITORING WELLS - INSTALLATION/DESTRUCTION

FACILITY:

ADJ TO HWY 101, MENLO PARK

OWNER:

CALTRANS-DISTRICT 4
171 GRAND AVENUE, MS8C
OAKLAND

WP0007720
NO APN LISTED
AMOUNT PAID: 544.00

CONTRACTOR:

VIRONEX, INC

TERMS & CONDITIONS:

CONSTRUCT SOIL BORINGS (13)
CONSULTANT: GEOCON CONSULTANTS, INC
(JOHN LOVE)

DATE ISSUED: 8/19/2009

DENO MILANO

ENVIRONMENTAL HEALTH SPECIALIST

EXPIRATION DATE: 12/19/2009

THIS PERMIT IS NONTRANSFERABLE AND MUST BE POSTED ON-SITE IN A CONSPICUOUS PLACE



2009 SUBSURFACE DRILLING PERMIT APPLICATION

SAN MATEO COUNTY ENVIRONMENTAL HEALTH

ENVIRONMENTAL HEALTH SERVICES DIVISION

SAN MATEO COUNTY HEALTH DEPARTMENT
2000 ALAMEDA DE LAS PULGAS, SUITE 100, SAN MATEO CA 94403

VOICE (650) 372-6200 FAX (650) 627-8244

AUG 12 2009

ALLOW FIVE (5) WORKING DAYS FOR PROCESSING PERMIT

54902
146912

Fees: \$544 (env/wells)
\$340 (geo borings only)

RECEIVED DRILLING DATE & TIME MUST BE SCHEDULED WITH COUNTY STAFF AT LEAST THREE (3) WORKING DAYS IN ADVANCE

PURPOSE OF APPLICATION	<input type="checkbox"/> GROUNDWATER MONITORING WELL INSTALLATION/DESTRUCTION	<input type="checkbox"/> CONSTRUCT SOIL BORINGS
	<input type="checkbox"/> VAPOR WELL INSTALLATION/DESTRUCTION	<input type="checkbox"/> PERMIT EXTENSION OF PERMIT #/W
NO. OF WELLS	NO. OF BORINGS	WELL/BORING NAMES
	13	BGW-17(POC), BGW-19, BGW-84(POC), BGW-87(POC), B-3(GW), B-5(GW), B-42(GW), B-57(GW), B-58(GW), B-61(GW), B-74(GW), B-128(GW), B-129(GW)
PURPOSE OF DRILLING	<input checked="" type="checkbox"/> ENVIRONMENTAL	<input type="checkbox"/> GEOTECHNICAL
REQUIRED BY	<input type="checkbox"/> COUNTY GROUNDWATER PROTECTION PROGRAM	<input checked="" type="checkbox"/> RWQCB/DTSC/USEPA (Provide approval letter)
		<input checked="" type="checkbox"/> OTHER (i.e. voluntary)

Site Name Adj. to Hwy 101 Assessor's Parcel # NA (one per permit)

Drilling Location Address Hwy 101 between Marsh Rd + Embarcadero Rd. City Menlo Park

To Be Constructed In: Public Property Private Property Refuse Other

Maximum Proposed Depth Wells/Borings 18 (feet) Drilling Method Direct Push

Boring Diameter 2" Casing Diameter _____ Screen Interval _____

Development Method _____ (additional 72 hour staff notification required)

Destruction Method (6 gallons water max per 94 lb cement, up to 5% bentonite): Pressure grouting (provide well construction logs) Overdrilling

WELL/BORING OWNER: (WELL/BORING OWNER NAME OR CONTACT NAME SHOULD MATCH SIGNATURE)

Name Caltrans - District 4 Contact Person Ana Uribe

Address 111 Grand Ave, MS 8C City, State, ZIP Oakland, CA 94623

Telephone (510) 286-4914 Email ana_m_uribe@dot.ca.gov

It is my responsibility to notify the County of any known changes in the purpose of this well/boring from that which is indicated on this application. It is my responsibility to notify the County of any known damage to the well, and to maintain the well in good condition. (Letter signed by well/boring owner/contact person, containing above language and attesting to knowledge of all permit requirements and conditions, may be substituted for signature on permit application.)

Well/Boring Owner's/Contact Person's Signature Ana Maria Uribe Date 08/10/09

PROPERTY OWNER: (NAME AS APPEARS ON ASSESSOR'S ROLES SHOULD MATCH SIGNATURE)

Name Caltrans - District 4 Contact Person Ana Uribe

Address 111 Grand Ave, MS 8C City, State, ZIP Oakland, CA 94623

Telephone (510) 286-4914 Email ana_uribe@dot.ca.gov

I understand that a well/boring is being installed on my property. I agree to notify the County and Well Owner of any known damage to the well. (Letter signed by property owner, containing above language, or encroachment permit may be substituted for signature on permit application.)

Property Owner's Signature Ana Maria Uribe Date 08/10/09

Drilling Company: Vironex, Inc. Contact Person John Angela Damanti

Address: 5292 Pacheco Blvd. C57 Drillers License # 705927

City, State, ZIP Pacheco, CA 94553 Telephone/Email 925-521-1490/

I certify that the well/boring will be constructed in compliance with the conditions of this permit (see reverse), the San Mateo County Ordinance, and the State Water Well Standards, and that the license listed above is considered current and active by the Contractors State License Board.

Driller's Signature See attached page Date _____

Consultant Company: Geocon Consultants, Inc Project Manager John Love

Address: 6671 Balsa St. Telephone (925) 371-5900

City, State, ZIP Livermore, CA 94550 Email love@geoconinc.com

I certify that this application is correct to the best of my knowledge. I certify the well/boring will be constructed/destroyed in compliance with the conditions of this permit (see reverse), the San Mateo County Ordinance, and the State Water Well Standards. I understand that I am responsible for General Conditions "D and E" of this permit. I certify if I indicated the purpose of drilling is geotechnical, then no one will use the boring to collect any samples for environmental analyses. (Responsible Professional must be a California Professional Geologist or Civil Engineer.)

Responsible Professional's Name (Please print legibly) John Love

Responsible Professional's Signature [Signature] Date 8/10/09

California Professional Geologist (PG) No. 6315 or Civil Engineer No. _____

REQUIREMENTS:

An accurate & correct map of existing and proposed well/boring locations **must** be included with the permit application. The well/boring location map **must** include the following.

1. North arrow, existing & historic site features, wells, approximate property lines and any other pertinent existing & historic features and information.
2. Proposed well/boring locations to scale.

A work plan describing the drilling and construction/destruction methodology, at a minimum, is **required** by County Staff. Upon review of information on this application and the submitted work plan, and subject to approval noted below, a permit will be issued allowing well/boring owner, driller, and responsible professional (consultant) to perform the specified work. The permit is subject to both General and Special Conditions stated below. A copy of the approved Subsurface Drilling Permit **must** be available on site while work related to the permit is being performed. Drilling date and time **must** be scheduled with County staff at least three (3) working days in advance of field work. Drilling may begin at the notified date and time whether County staff is present or not.

GENERAL CONDITIONS:

- A. Well and boring construction and destruction under this permit is subject to the Standards for the Construction of Wells in San Mateo County, County Groundwater Protection Program (GPP) Guidelines, Policies & Procedures, the State Water Well Standards, and any instructions by a Health Department representative.
- B. Well/Boring Owner, Driller, and Responsible Professional assume responsibility for all activities and uses under the permit, including compliance with Workmen's Compensation Laws, and indemnify, defend and save the County of San Mateo, its' officers, agents and employees, free and harmless from any and all expense, cost, or liability in connection with or resulting from work or stopped-work associated with the permit, including, but not limited to, property damage, personal injury, wrongful death, and loss of income.
- C. All borings **must** be properly destroyed (grouted/sealed) within 24 hours of drilling unless special conditions are approved in writing as part of this permit.
- D. Analytical results of all soil and groundwater samples collected during the execution of drilling under this permit **must** be submitted to County GPP staff by the Responsible Professional within 60 days of sample collection. If contamination is discovered during drilling, verbal notification to County GPP by the Responsible Professional is **required** within 72 hours of discovery. Proper storage, labeling & disposal of investigation-derived residual wastes are the responsibility of the consultant unless stated otherwise contractually.
- E. In addition to the County copy of the State DWR Form 188, boring logs and well construction details for all borings/wells except geotechnical borings, signed by a Responsible Professional, **must** be submitted to County GPP by the Responsible Professional within 60 days of drilling/construction/destruction. As-built locations/dimensions **must** be finalized in subsequent report of findings submitted to County GPP by the Responsible Professional within 60 days of drilling/construction/destruction.
- F. Permit is valid only for the purpose specified herein. No change in construction procedure, as described on this permit application, in the associated workplan, or in the special conditions below, will be allowed except upon written permission from the County.
- G. Permit is valid for one mobilization only and is automatically canceled if not exercised, or if an extension is not applied for and granted by County GPP, within 120 days of the original permit issuance date. Failure to notify staff of cancellation or delay in start time, at least one minute prior to notified start time, will result in the Consultant will be billed an Inspection Cancellation fee of \$249 for 2009 if GPP staff attempted to perform an inspection.
- H. Wells installed under this permit may not be used for domestic, municipal, commercial, or irrigation water supply.
- I. All work plans and reports related to work performed under County oversight **must** conform to County GPP guidelines, Regional Water Quality Control Board guidelines, and State Water Well Standards.
- J. Top-of-casing elevation of all wells **must** be surveyed to the nearest 0.01-foot relative to Mean Sea Level (NAVD88) and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate.
- K. Latitude and longitude of all wells **must** be surveyed with sub-meter accuracy relative to NAD83 and submitted to County GPP within 60 days of drilling, and to State GeoTracker as appropriate.
- L. Violation of any requirement or general or special permit condition may result in an order by GPP staff to cease work under this permit, correct the violation, and potentially re-permit the work as a new mobilization.

SPECIAL CONDITIONS:

Approved: _____

Revised every January 1

RO/SD# _____

Date: _____

8.13.09

APPENDIX

B

APPENDIX

C

APPENDIX C

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B-93 1'	1	160	7.4	0.04	0.00
B-62 0'	0	260	12	0.04	0.00
B-5 1'	1	390	18	0.07	0.00
B-127 1'	1	100	4.5	-0.10	0.01
B-87 0'	0	300	14	0.20	0.04
B-118 0'	0	98	4.3	-0.21	0.04
B-116 0'	0	75	3.1	-0.35	0.12
B-35 0'	0	99	4.1	-0.45	0.20
B-83 0'	0	72	3.8	0.49	0.24
B-69 2'	2	55	2.0	-0.53	0.28
B-47 1'	1	140	5.9	-0.54	0.29
B-28 1'	1	150	6.3	-0.60	0.36
B-68 0'	0	140	7.1	0.66	0.44
B-51 0'	0	59	3.4	0.69	0.47
B-92 0'	0	560	25	-0.75	0.57
B-29 1'	1	110	5.9	0.84	0.71
B-63 0'	0	85	3.0	-0.91	0.83
B-119 1'	1	96	3.5	-0.91	0.84
B-116 1'	1	93	3.3	-0.98	0.95
B-30 1'	1	63	1.9	-1.00	0.99
B-100 1'	1	83	2.8	-1.02	1.03
B-75 2'	2	57	1.6	-1.02	1.04
B-7 2'	2	280	14	1.12	1.26
B-66 1'	1	180	9.5	1.22	1.49
B-53 1'	1	53	1.2	-1.24	1.53
B-19 0'	0	190	10	1.26	1.59
B-92 1'	1	83	2.5	-1.32	1.73
B-17 0'	0	110	3.7	-1.36	1.85
B-10 1'	1	56	1.2	-1.38	1.89
B-53 2'	2	51	0.93	-1.42	2.00
B-74 1'	1	160	5.9	-1.46	2.12
B-108 0'	0	56	4.1	1.52	2.33
B-90 1'	1	65	1.4	-1.59	2.53
B-98 1'	1	65	1.4	-1.59	2.53
B-71 1'	1	470	20	-1.61	2.60
B-75 1'	1	87	2.1	-1.90	3.61
B-109 0'	0	350	18	1.91	3.63
B-47 0'	0	390	16	-1.93	3.74
B-22 0'	0	55	4.5	1.97	3.88
B-89 0'	0	100	6.6	2.00	4.01
B-4 0'	0	130	8.0	2.02	4.09
B-11 1'	1	120	7.6	2.08	4.33
B-86 1'	1	150	9.0	2.10	4.42
B-119 0'	0	83	1.7	-2.12	4.48
B-30 0'	0	590	25	-2.13	4.54
B-103 1'	1	79	1.5	-2.13	4.55
B-15 0'	0	170	5.6	-2.22	4.92
B-46 0'	0	79	5.9	2.27	5.14
B-25 0'	0	74	1.1	-2.30	5.30
B-41 0'	0	130	8.3	2.32	5.39
B-6 0'	0	290	11	-2.34	5.46
B-118 1'	1	100	7.0	2.40	5.77
B-4 2'	2	92	1.8	-2.43	5.91
B-88 1'	1	140	8.9	2.46	6.06
B-86 0'	0	490	25	2.47	6.09

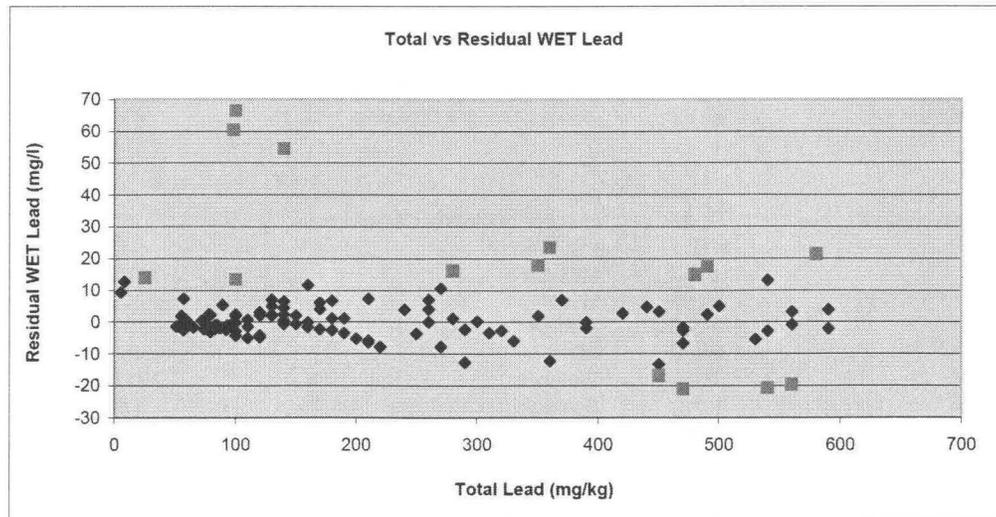
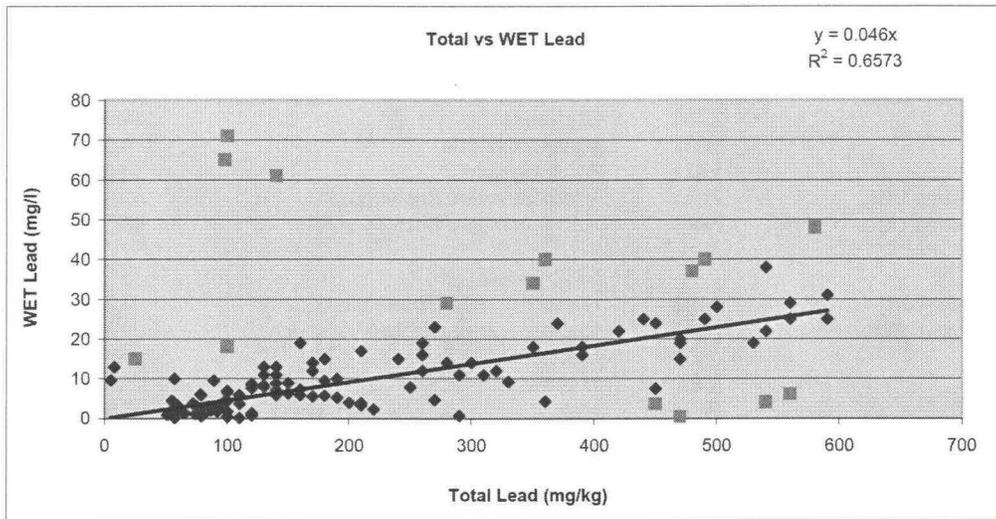
APPENDIX C

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B-40 1'	1	180	5.8	-2.48	6.14
B-19 1'	1	57	0.125	-2.50	6.23
B-64 0'	0	78	6.1	2.51	6.32
B-9 1'	1	470	19	-2.61	6.83
B-137 1'	1	420	22	2.69	7.21
B-12 1'	1	320	12	-2.72	7.37
B-12 2'	2	100	1.8	-2.80	7.83
B-5 0'	0	540	22	-2.83	8.02
B-74 0'	0	120	8.5	2.98	8.89
B-125 1'	1	79	0.59	-3.04	9.26
B-17 1'	1	120	8.7	3.18	10.12
B-35 1'	1	560	29	3.25	10.55
B-57 0'	0	310	11	-3.26	10.60
B-8 1'	1	450	24	3.31	10.93
B-101 2'	2	190	5.3	-3.44	11.81
B-122 1'	1	250	7.9	-3.60	12.93
B-135 0'	0	590	31	3.87	14.97
B-98 0'	0	240	15	3.96	15.71
B-126 0'	0	260	16	4.04	16.35
B-111 1'	1	120	1.4	-4.12	16.96
B-102 0'	0	170	12	4.18	17.49
B-7 1'	1	100	0.39	-4.21	17.71
B-97 0'	0	140	11	4.56	20.81
B-129 0'	0	120	0.82	-4.70	22.07
B-67 0'	0	440	25	4.77	22.72
B-34 1'	1	110	0.125	-4.93	24.34
B-12 0'	0	500	28	5.01	25.07
B-70 0'	0	130	11	5.02	25.22
B-48 0'	0	200	4.0	-5.20	27.01
B-93 0'	0	530	19	-5.37	28.86
B-32 2'	2	89	9.5	5.41	29.24
B-77 0'	0	210	3.9	-5.76	33.14
B-72 1'	1	330	9.3	-5.88	34.52
B-135 1'	1	170	14	6.18	38.22
B-77 1'	1	210	3.4	-6.26	39.15
B-32 1'	1	140	13	6.56	43.06
B-84 0'	0	470	15	-6.61	43.74
B-132 1'	1	180	15	6.72	45.19
B-75 0'	0	370	24	6.99	48.79
B-31 1'	1	130	13	7.02	49.31
B-76 0'	0	130	13	7.02	49.31
B-58 0'	0	260	19	7.04	49.61
B-52 0'	0	210	17	7.34	53.92
B-55 1'	1	57	10	7.38	54.45
B-29 0'	0	270	4.7	-7.72	59.54
B-6 2'	2	220	2.3	-7.82	61.10
B-80 2'	2	5.2	9.6	9.36	87.63
B-121 0'	0	270	23	10.58	112.02
B-73 0'	0	160	19	11.64	135.54
B-37 1'	1	360	4.3	-12.25	150.18
B-124 1'	1	8.1	13	12.63	159.45
B-41 1'	1	290	0.70	-12.64	159.66
B-109 1'	1	540	38	13.17	173.39
B-26 0'	0	450	7.5	-13.19	174.07

Not Used

APPENDIX C

Sample ID	Sample Depth (feet)	Total Lead (mg/kg)	WET Lead (mg/l)	Residual WET Lead (mg/l)	Squared Residual WET Lead (mg/l)
B-24 1'	1	100	18	13.40	179.60
B-3 1'	1	25	15	13.85	191.83
B-91 0'	0	480	37	14.93	222.81
B-96 1'	1	280	29	16.12	259.98
B-81 0'	0	450	3.8	-16.89	285.39
B-101 1'	1	490	40	17.47	305.10
B-125 0'	0	350	34	17.91	320.59
B-8 2'	2	560	6.1	-19.65	386.20
B-123 1'	1	540	4.1	-20.73	429.83
B-52 1'	1	470	0.51	-21.10	445.35
B-113 0'	0	580	48	21.33	454.90
B-3 0'	0	360	40	23.45	549.68
B-134 0'	0	140	61	54.56	2977.01
B-105 0'	0	98	65	60.49	3659.45
B-31 0'	0	100	71	66.40	4409.15



APPENDIX C - Lead UCLs

SB-WR-X-0		NB-OCs-X-0	
Number of Valid Observations	65	Number of Valid Observations	51
Number of Distinct Observations	54	Number of Distinct Observations	44
Minimum	2.5	Minimum	2.5
Maximum	2700	Maximum	2000
Mean	460	Mean	257.3
Median	160	Median	55
SD	580	SD	405.3
Variance	336390	Variance	164237
Coefficient of Variation	1.261	Coefficient of Variation	1.575
Skewness	1.766	Skewness	2.476
Mean of log data	5.163	Mean of log data	4.457
SD of log data	1.622	SD of log data	1.551
90% Standard Bootstrap UCL	549.9	90% Standard Bootstrap UCL	329.3
95% Standard Bootstrap UCL	577	95% Standard Bootstrap UCL	349.9
SB-WR-X-1		NB-OCs-X-1	
Number of Valid Observations	65	Number of Valid Observations	51
Number of Distinct Observations	56	Number of Distinct Observations	43
Minimum	1.5	Minimum	2.5
Maximum	1300	Maximum	4100
Mean	171.9	Mean	312.7
Median	37	Median	53
SD	292	SD	671.6
Variance	85290	Variance	451048
Coefficient of Variation	1.699	Coefficient of Variation	2.147
Skewness	2.488	Skewness	4.051
Mean of log data	3.882	Mean of log data	4.05
SD of log data	1.679	SD of log data	1.962
90% Standard Bootstrap UCL	219.5	90% Standard Bootstrap UCL	431.3
95% Standard Bootstrap UCL	231.8	95% Standard Bootstrap UCL	468.1
SB-WR-X-2		NB-OCs-X-2	
Number of Valid Observations	65	Number of Valid Observations	51
Number of Distinct Observations	42	Number of Distinct Observations	39
Minimum	2.4	Minimum	2.5
Maximum	1900	Maximum	830
Mean	39.28	Mean	53.47
Median	8	Median	8.1
SD	234.6	SD	143.6
Variance	55030	Variance	20626
Coefficient of Variation	5.971	Coefficient of Variation	2.686
Skewness	8.043	Skewness	4.293
Mean of log data	2.188	Mean of log data	2.53
SD of log data	0.912	SD of log data	1.434
90% Standard Bootstrap UCL	76.28	90% Standard Bootstrap UCL	79.21
95% Standard Bootstrap UCL	86.62	95% Standard Bootstrap UCL	85.83
SB-UA-X-0		SB-UA-0	
Number of Valid Observations	60	Number of Valid Observations	9
Number of Distinct Observations	50	Number of Distinct Observations	9
Minimum	2.5	Minimum	21
Maximum	5300	Maximum	1500
Mean	559.5	Mean	300.3
Median	225	Median	83
SD	849.9	SD	483.9
Variance	722309	Variance	234125
Coefficient of Variation	1.519	Coefficient of Variation	1.611
Skewness	3.462	Skewness	2.356
Mean of log data	5.279	Mean of log data	4.766
SD of log data	1.688	SD of log data	1.4
90% Standard Bootstrap UCL	699.6	90% Standard Bootstrap UCL	496.1
95% Standard Bootstrap UCL	742.7	95% Standard Bootstrap UCL	547.6
SB-UA-X-1		SB-UA-1	
Number of Valid Observations	60	Number of Valid Observations	9
Number of Distinct Observations	52	Number of Distinct Observations	9

APPENDIX C - Lead UCLs

Minimum	1.5	Minimum	8.5
Maximum	1300	Maximum	100
Mean	203.1	Mean	46.57
Median	65	Median	36
SD	312.2	SD	39.33
Variance	97442	Variance	1547
Coefficient of Variation	1.537	Coefficient of Variation	0.845
Skewness	2.071	Skewness	0.531
Mean of log data	4.049	Mean of log data	3.427
SD of log data	1.756	SD of log data	1.031
90% Standard Bootstrap UCL	256.3	90% Standard Bootstrap UCL	62.33
95% Standard Bootstrap UCL	267	95% Standard Bootstrap UCL	66.74
SB-UA-X-2		SB-UA-2	
Number of Valid Observations	60	Number of Valid Observations	9
Number of Distinct Observations	39	Number of Distinct Observations	9
Minimum	2.4	Minimum	2.5
Maximum	1900	Maximum	14
Mean	58.8	Mean	7.633
Median	8.15	Median	6.4
SD	264.4	SD	3.338
Variance	69885	Variance	11.14
Coefficient of Variation	4.496	Coefficient of Variation	0.437
Skewness	6.338	Skewness	0.636
Mean of log data	2.372	Mean of log data	1.938
SD of log data	1.16	SD of log data	0.486
90% Standard Bootstrap UCL	101	90% Standard Bootstrap UCL	8.984
95% Standard Bootstrap UCL	114.5	95% Standard Bootstrap UCL	9.324
SB-OCs-X-0		NB-UA-0	
Number of Valid Observations	56	Number of Valid Observations	10
Number of Distinct Observations	46	Number of Distinct Observations	10
Minimum	2.5	Minimum	17
Maximum	2700	Maximum	4600
Mean	485.6	Mean	653.7
Median	190	Median	139.5
SD	593.8	SD	1413
Variance	352541	Variance	1996000
Coefficient of Variation	1.223	Coefficient of Variation	2.161
Skewness	1.726	Skewness	2.962
Mean of log data	5.226	Mean of log data	5.017
SD of log data	1.657	SD of log data	1.728
90% Standard Bootstrap UCL	585.4	90% Standard Bootstrap UCL	1202
95% Standard Bootstrap UCL	615.2	95% Standard Bootstrap UCL	1374
SB-OCs-X-1		NB-UA-1	
Number of Valid Observations	56	Number of Valid Observations	10
Number of Distinct Observations	50	Number of Distinct Observations	10
Minimum	1.5	Minimum	8
Maximum	1300	Maximum	1200
Mean	192.1	Mean	201.9
Median	39.5	Median	39.5
SD	309.9	SD	377.2
Variance	96036	Variance	142289
Coefficient of Variation	1.613	Coefficient of Variation	1.869
Skewness	2.247	Skewness	2.528
Mean of log data	3.955	Mean of log data	4.064
SD of log data	1.757	SD of log data	1.592
90% Standard Bootstrap UCL	242.1	90% Standard Bootstrap UCL	346.1
95% Standard Bootstrap UCL	258.8	95% Standard Bootstrap UCL	382.4
SB-OCs-X-2		NB-UA-2	
Number of Valid Observations	56	Number of Valid Observations	10
Number of Distinct Observations	37	Number of Distinct Observations	7
Minimum	2.4	Minimum	1
Maximum	1900	Maximum	49
Mean	44.37	Mean	10.91

APPENDIX C - Lead UCLs

Median	8	Median	6.8
SD	252.7	SD	14.17
Variance	63843	Variance	200.9
Coefficient of Variation	5.694	Coefficient of Variation	1.299
Skewness	7.466	Skewness	2.556
Mean of log data	2.228	Mean of log data	1.807
SD of log data	0.96	SD of log data	1.138
90% Standard Bootstrap UCL	87.3	90% Standard Bootstrap UCL	16.18
95% Standard Bootstrap UCL	101.1	95% Standard Bootstrap UCL	17.96
NB-WR-X-0		SB-WR-0	
Number of Valid Observations	61	Number of Valid Observations	4
Number of Distinct Observations	53	Number of Distinct Observations	4
Minimum	2.5	Minimum	27
Maximum	4600	Maximum	5300
Mean	322.3	Mean	1594
Median	74		
SD	676.9	SB-WR-1	
Variance	458163	Number of Valid Observations	4
Coefficient of Variation	2.1	Number of Distinct Observations	4
Skewness	4.705	Minimum	65
Mean of log data	4.549	Maximum	790
SD of log data	1.58	Mean	357
90% Standard Bootstrap UCL	431.8		
95% Standard Bootstrap UCL	463.9	SB-WR-2	
NB-WR-X-1		Number of Valid Observations	4
		Number of Distinct Observations	4
		Minimum	15
Number of Valid Observations	61	Maximum	820
Number of Distinct Observations	50	Mean	260.75
Minimum	2.5		
Maximum	4100	NB-WR-0	
Mean	294.6	Number of Valid Observations	6
Median	43	Number of Distinct Observations	6
SD	631.6	Minimum	100
Variance	398930	Maximum	5300
Coefficient of Variation	2.144	Mean	1318
Skewness	4.158	Median	520
Mean of log data	4.052	SD	1987
SD of log data	1.895	Variance	3947097
90% Standard Bootstrap UCL	394.5	Coefficient of Variation	1.507
95% Standard Bootstrap UCL	423.6	Skewness	2.262
		Mean of log data	6.393
		SD of log data	1.353
		90% Standard Bootstrap UCL	2274
		95% Standard Bootstrap UCL	2547
NB-WR-X-2			
Number of Valid Observations	61		
Number of Distinct Observations	44		
Minimum	1		
Maximum	830		
Mean	46.5		
Median	7.9		
SD	132.2		
Variance	17471		
Coefficient of Variation	2.843		
Skewness	4.715		
Mean of log data	2.412		
SD of log data	1.407		
90% Standard Bootstrap UCL	68.31		
95% Standard Bootstrap UCL	72.91		
NB-UA-X-0			
Number of Valid Observations	57		
Number of Distinct Observations	50		
Minimum	2.5		
Maximum	5300		
Mean	369		
Median	85		
SD	779.1		

APPENDIX C - Lead UCLs

Variance	606989
Coefficient of Variation	2.112
Skewness	4.914
Mean of log data	4.661
SD of log data	1.634
90% Standard Bootstrap UCL	502
95% Standard Bootstrap UCL	536.6

NB-UA-X-1

Number of Valid Observations	57
Number of Distinct Observations	48
Minimum	2.5
Maximum	4100
Mean	288.4
Median	56
SD	638.8
Variance	408120
Coefficient of Variation	2.215
Skewness	4.297
Mean of log data	4.055
SD of log data	1.877
90% Standard Bootstrap UCL	392.3
95% Standard Bootstrap UCL	426.8

NB-UA-X-2

Number of Valid Observations	57
Number of Distinct Observations	43
Minimum	2.5
Maximum	830
Mean	49.59
Median	8.7
SD	136.2
Variance	18562
Coefficient of Variation	2.747
Skewness	4.556
Mean of log data	2.525
SD of log data	1.385
90% Standard Bootstrap UCL	72.17
95% Standard Bootstrap UCL	78.76

SB-68-116-0

Number of Valid Observations	48
Number of Distinct Observations	42
Minimum	2.5
Maximum	5300
Mean	547.2
Median	190
SD	891.7
Variance	795178
Coefficient of Variation	1.63
Skewness	3.704
Mean of log data	5.231
SD of log data	1.69
90% Standard Bootstrap UCL	705.3
95% Standard Bootstrap UCL	753

SB-68-116-1

Number of Valid Observations	48
Number of Distinct Observations	42
Minimum	1.5
Maximum	1300
Mean	182
Median	43.5
SD	300.2
Variance	90099
Coefficient of Variation	1.649

NB-WR-1

Number of Valid Observations	6
Number of Distinct Observations	6
Minimum	15
Maximum	150
Mean	81.83
Median	86.5
SD	56.64
Variance	3209
Coefficient of Variation	0.692
Skewness	-0.0957
Mean of log data	4.094
SD of log data	0.964
90% Standard Bootstrap UCL	108.8
95% Standard Bootstrap UCL	116.3

NB-WR-2

Number of Valid Observations	6
Number of Distinct Observations	6
Minimum	2.5
Maximum	35
Mean	16.57
Median	10.8
SD	13.18
Variance	173.6
Coefficient of Variation	0.795
Skewness	0.743
Mean of log data	2.48
SD of log data	0.961
90% Standard Bootstrap UCL	22.95
95% Standard Bootstrap UCL	24.61

NB-1-48-0

Number of Valid Observations	48
Number of Distinct Observations	44
Minimum	2.5
Maximum	5300
Mean	441.9
Median	99.5
SD	1002
Variance	1003417
Coefficient of Variation	2.267
Skewness	4.101
Mean of log data	4.701
SD of log data	1.714
90% Standard Bootstrap UCL	626.8
95% Standard Bootstrap UCL	667.1

NB-1-48-1

Number of Valid Observations	48
Number of Distinct Observations	42
Minimum	2.5
Maximum	1400
Mean	197
Median	56.5
SD	330.5
Variance	109249
Coefficient of Variation	1.678

APPENDIX C - Lead UCLs

Skewness	2.293	Skewness	2.417
Mean of log data	3.979	Mean of log data	3.994
SD of log data	1.65	SD of log data	1.744
90% Standard Bootstrap UCL	236.3	90% Standard Bootstrap UCL	257.1
95% Standard Bootstrap UCL	252	95% Standard Bootstrap UCL	275.3
SB-68-116-2		NB-1-48-2	
Number of Valid Observations	48	Number of Valid Observations	48
Number of Distinct Observations	39	Number of Distinct Observations	35
Minimum	2.4	Minimum	2.5
Maximum	1900	Maximum	560
Mean	70.44	Mean	39.88
Median	8	Median	8.4
SD	295	SD	93.76
Variance	87026	Variance	8791
Coefficient of Variation	4.188	Coefficient of Variation	2.351
Skewness	5.653	Skewness	4.307
Mean of log data	2.381	Mean of log data	2.493
SD of log data	1.259	SD of log data	1.359
90% Standard Bootstrap UCL	123.8	90% Standard Bootstrap UCL	57.45
95% Standard Bootstrap UCL	139.1	95% Standard Bootstrap UCL	61.99
SB-117-137-0		NB-49-67-0	
Number of Valid Observations	21	Number of Valid Observations	19
Number of Distinct Observations	20	Number of Distinct Observations	18
Minimum	12	Minimum	19
Maximum	1900	Maximum	2000
Mean	476.6	Mean	334.6
Median	140	Median	78
SD	615.2	SD	544
Variance	378435	Variance	295990
Coefficient of Variation	1.291	Coefficient of Variation	1.626
Skewness	1.476	Skewness	2.254
Mean of log data	5.167	Mean of log data	4.747
SD of log data	1.605	SD of log data	1.479
90% Standard Bootstrap UCL	648.1	90% Standard Bootstrap UCL	492.6
95% Standard Bootstrap UCL	690.9	95% Standard Bootstrap UCL	538
SB-117-137-1		NB-49-67-1	
Number of Valid Observations	21	Number of Valid Observations	19
Number of Distinct Observations	20	Number of Distinct Observations	19
Minimum	2.5	Minimum	5.3
Maximum	1200	Maximum	4100
Mean	184.1	Mean	473.8
Median	79	Median	42
SD	293.1	SD	1001
Variance	85920	Variance	1001179
Coefficient of Variation	1.592	Coefficient of Variation	2.112
Skewness	2.47	Skewness	3.009
Mean of log data	3.943	Mean of log data	4.212
SD of log data	1.808	SD of log data	2.061
90% Standard Bootstrap UCL	264.8	90% Standard Bootstrap UCL	760.3
95% Standard Bootstrap UCL	287.7	95% Standard Bootstrap UCL	839.5
SB-117-137-2		NB-49-67-2	
Number of Valid Observations	21	Number of Valid Observations	19
Number of Distinct Observations	16	Number of Distinct Observations	15
Minimum	2.5	Minimum	1
Maximum	20	Maximum	830
Mean	10.25	Mean	53.76
Median	8.7	Median	9.7
SD	5.7	SD	188.3
Variance	32.49	Variance	35456
Coefficient of Variation	0.556	Coefficient of Variation	3.502
Skewness	0.652	Skewness	4.334
Mean of log data	2.165	Mean of log data	2.227
SD of log data	0.614	SD of log data	1.408
90% Standard Bootstrap UCL	11.8	90% Standard Bootstrap UCL	106
95% Standard Bootstrap UCL	12.29	95% Standard Bootstrap UCL	122.7

APPENDIX C

SB-0		NB-0	
Number of Valid Observations	69	Number of Valid Observations	67
Number of Distinct Observations	58	Number of Distinct Observations	59
Minimum	2.5	Minimum	2.5
Maximum	5300	Maximum	5300
Mean	525.7	Mean	411.5
Median	170	Median	85
SD	813.6	SD	893.1
Variance	661985	Variance	797654
Coefficient of Variation	1.548	Coefficient of Variation	2.171
Skewness	3.538	Skewness	4.265
Mean of log data	5.212	Mean of log data	4.714
SD of log data	1.653	SD of log data	1.64
90% Standard Bootstrap UCL	649.7	90% Standard Bootstrap UCL	551.7
95% Standard Bootstrap UCL	683.5	95% Standard Bootstrap UCL	588.5

SB-1		NB-1	
Number of Valid Observations	69	Number of Valid Observations	67
Number of Distinct Observations	58	Number of Distinct Observations	55
Minimum	1.5	Minimum	2.5
Maximum	1300	Maximum	4100
Mean	182.7	Mean	275.5
Median	45	Median	46
SD	295.9	SD	605.5
Variance	87546	Variance	366652
Coefficient of Variation	1.62	Coefficient of Variation	2.198
Skewness	2.291	Skewness	4.37
Mean of log data	3.968	Mean of log data	4.056
SD of log data	1.687	SD of log data	1.826
90% Standard Bootstrap UCL	227.1	90% Standard Bootstrap UCL	372.3
95% Standard Bootstrap UCL	240.9	95% Standard Bootstrap UCL	398.2

SB-2		NB-2	
Number of Valid Observations	89	Number of Valid Observations	67
Number of Distinct Observations	59	Number of Distinct Observations	48
Minimum	2.4	Minimum	1
Maximum	1900	Maximum	830
Mean	41.53	Mean	43.82
Median	7.2	Median	8.7
SD	217.9	SD	126.4
Variance	47481	Variance	15970
Coefficient of Variation	5.247	Coefficient of Variation	2.884
Skewness	7.742	Skewness	4.954
Mean of log data	2.146	Mean of log data	2.418
SD of log data	1.029	SD of log data	1.368
90% Standard Bootstrap UCL	70.8	90% Standard Bootstrap UCL	62.89
95% Standard Bootstrap UCL	78.2	95% Standard Bootstrap UCL	69.65

TCLP Pb

Number of Valid Observations	44
Number of Distinct Observations	36
Minimum	0.125
Maximum	51
Mean	2.624
Median	0.76
SD	7.647
Variance	58.48
Coefficient of Variation	2.915
Skewness	6.159
Mean of log data	-0.0966
SD of log data	1.29
95% Standard Bootstrap UCL	4.512

APPENDIX C

Sb		V	
Number of Valid Observations	226	Number of Valid Observations	226
Number of Distinct Observations	31	Number of Distinct Observations	70
Minimum	1	Minimum	22
Maximum	12	Maximum	140
Mean	1.669	Mean	51.35
Median	1	Median	45
SD	1.796	SD	22.88
Variance	3.227	Variance	523.3
Coefficient of Variation	1.076	Coefficient of Variation	0.446
Skewness	3.059	Skewness	1.477
Mean of log data	0.25	Mean of log data	3.856
SD of log data	0.593	SD of log data	0.394
95% Standard Bootstrap UCL	1.865	95% Standard Bootstrap UCL	53.82
As		Zn	
Number of Valid Observations	225	Number of Valid Observations	226
Number of Distinct Observations	37	Number of Distinct Observations	83
Minimum	0.5	Minimum	24
Maximum	10	Maximum	2300
Mean	1.243	Mean	126.5
Median	0.5	Median	64
SD	1.426	SD	227.8
Variance	2.034	Variance	51900
Coefficient of Variation	1.148	Coefficient of Variation	1.801
Skewness	2.583	Skewness	6.366
Mean of log data	-0.185	Mean of log data	4.419
SD of log data	0.801	SD of log data	0.725
95% Standard Bootstrap UCL	1.398	95% Standard Bootstrap UCL	151.8
Cd		Hg	
Number of Valid Observations	226	Number of Valid Observations	226
Number of Distinct Observations	21	Number of Distinct Observations	23
Minimum	0.5	Minimum	0.05
Maximum	3.5	Maximum	1.6
Mean	1.14	Mean	0.0877
Median	1.2	Median	0.05
SD	0.57	SD	0.132
Variance	0.325	Variance	0.0175
Coefficient of Variation	0.5	Coefficient of Variation	1.508
Skewness	0.71	Skewness	7.966
Mean of log data	-0.00232	Mean of log data	-2.718
SD of log data	0.534	SD of log data	0.585
95% Standard Bootstrap UCL	1.204	95% Standard Bootstrap UCL	0.102
Cr			
Number of Valid Observations	226		
Number of Distinct Observations	63		
Minimum	4.1		
Maximum	200		
Mean	43.99		
Median	41		
SD	21.04		
Variance	442.9		
Coefficient of Variation	0.478		
Skewness	3.672		
Mean of log data	3.699		
SD of log data	0.423		
95% Standard Bootstrap UCL	46.33		

Attachment F

**Information on Disposing Groundwater to City of Palo Alto
Sanitary Sewer System During the time of implementing
CSWPPP**

Dewatering and Non-Storm Water Discharge Control during the time of CSWPPP before "Dewatering Discharge Plan" is approved

During the time of implementing CSWPPP, groundwater may be generated from the following work activities:

Perform roadway excavation for the new abutment and pier walls (see Structure Plans sheet 2) at the two locations as shown on Water Pollution Control Drawing sheet 4 of this Conceptual SWPPP. Perform pile driving and some portions of the abutment and pier wall construction which can be accomplished from outside creek. Remove and abandon the 96" culvert (see Drainage Details sheet DD-2). All these activities will be performed from outside creek.

At this time, Contractor is still in the process of preparing and obtaining approval for the Dewatering Discharge Plan (DDP) according to the Caltrans standard specification section 13-8 "Temporary Active Treatment System". Prior to approval of DDP, you may dispose the groundwater to the City of Palo Alto sanitary sewer system. Please contact City of Palo Alto Water Pollution Control Plant for disposing the groundwater to sanitary sewer system.

Contact Name: Kirsten Struve

Contact Number: 650-329-2421

An Exceptional Waste Discharge Permit will be required for disposing groundwater to city sanitary sewer system with an application fee of \$750. The quantity rate is \$5.65 per 100 cubic feet of discharge per city utility fee schedule.

Attached please find the application form for the Exceptional Waste Discharge Permit and a sewer map in the project area for your reference.

Chen, Jiangfan@DOT

From: Struve, Kirsten [Kirsten.Struve@CityofPaloAlto.org]
Sent: Thursday, December 11, 2014 10:53 AM
To: Chen, Jiangfan@DOT
Subject: RE: Sewer Discharge Permit

Discharge of clean groundwater can go to the storm drain system (please contact Mike Nafziger):
The street work permit as well as street work permit information can be found by following the link below:

http://www.cityofpaloalto.org/gov/depts/pwd/forms_and_permits.asp

Under the bold text 'Forms and Permits', you'll see 'Permit Applications and Information' and the first permit listed is the Street Work Permit.

Discharge of contaminated water to the sanitary sewer system:
<http://www.cityofpaloalto.org/gov/depts/pwd/pollution/forms.asp>

Scroll down to exceptional waste discharge permit. You do not need to do additional sampling, just submit what you have done already. The most important elements are: dates of discharge, estimated volume, treatment system (baker tanks), and preferred manhole that is close to your site (you can submit a google earth image or if you need to, I can send you a sewer map of the area as well). The permit fee is \$750. You can submit a check with your application. If you need to pay by credit card (which you would do at the counter at City Hall), please contact us for instructions. The quantity rate is \$5.65 per 100 cubic feet of discharge per our utility fee schedule.

Hope this helps, Kirsten

Thanks, Kirsten

Kirsten Struve

Manager, Environmental Control Program
650-329-2421

REGIONAL WATER QUALITY CONTROL PLANT
2501 Embarcadero Way
Palo Alto, CA 94303

TELEPHONE: 650/329-2598

OPERATED BY THE CITY OF PALO ALTO FOR THE
EAST PALO ALTO SANITARY DISTRICT-LOS ALTOS-LOS ALTOS HILLS-MOUNTAIN VIEW-PALO ALTO-STANFORD

DISCHARGE APPLICATION FOR EXCEPTIONAL WASTEWATER

One-Time Batch Discharge_____ Series of Batches_____

A. PROJECT IDENTIFICATION

Business Name:_____

Address at Point of Discharge:_____

Contact Person:_____

Mailing Address:_____

Telephone:_____ Emergency Telephone:_____

B. PERMITTEE'S CONSULTANT

Name:_____

Address:_____

Contact Person:_____

Telephone:_____ Fax:_____

C. PROJECT DESCRIPTION

Decontamination

Excavation Dewatering

Vault Dewatering

Line Flushing

Site Clean-up

Tank Removal

Elevator Shaft Dewatering

Other:_____

D. TYPE OF CONTAMINANTS

Fuel Solvents Heavy Metals Cyanide Others_____

E. DISCHARGE QUALITY

1. Please indicate the proposed quantity of wastewater and the desired dates of discharge:
 Quantity Discharged: _____ (gallons)
 Flow Rate: _____ (gallons per minute)
 Anticipated date of discharge: _____
2. Provide a map identifying the exact discharge location(s) (clean out, manhole, etc.).
3. Describe treatment systems, if any, to be used to treat contaminated water. List the parameters to be treated:

F. CERTIFICATION SIGNATURE

I certify, under penalty of law, that the information contained in this report is true and correct to the best of my knowledge. I am personally qualified to make this certification or I have consulted with a professional who is qualified to make this certification.

Please check one of the following:

- a. I am a principal of at least the level of vice president (if the permittee is a corporation).
- b. I am a general partner or proprietor (if the permittee is a partnership or sole proprietorship respectively).
- c. I am a duly authorized representative of the individual designated in A or B above (if such representative is responsible for the overall operation of the facility from which the discharge originates.) I further certify that a DESIGNATION OF AUTHORIZED REPRESENTATIVE (DOAR) form has been sent to the Control Authority.

PRINT NAME OF OFFICIAL

DATE

SIGNATURE OF OFFICIAL

TITLE OF SIGNING OFFICIAL

PHONE OF SIGNING OFFICIAL

ADDRESS IF DIFFERENT THAN "A" ABOVE

Attachments:

- 1) Table 1 Metals Required
- 2) Table 2 List of Organics
- 3) Sampling Instructions
- 4) Hazardous Waste Certification
- 5) DOAR Statement

ATTACHMENT 1

TABLE 1	
INORGANICS REQUIRED for ANALYSIS	
TOXICANT	MAXIMUM
Arsenic	0.1 mg/liter
Cadmium	0.1 mg/liter
Chromium Total	2.0 mg/liter
Copper**	2.0 mg/liter
Lead	0.5 mg/liter
Mercury	0.05 mg/liter
Nickel*	0.5 mg/liter
Selenium	1.0 mg/liter
Silver*	0.25 mg/liter
Zinc	2.0 mg/liter
Suspended Solids*	3000 mg/liter
Total Dissolved Solids*	5000 mg/liter
pH	5.5 - 11.0

For discharges <50K gallons per day the maximum concentration will be 2 the values listed in the table with the exception of A*≡.

****Copper Limit:**

0.25 mg/liter effective July 1, 1998 for all non-process discharge points.

0.25 mg/liter effective July 1, 1997 for cooling system discharges exceeding 2,000 gallons per day.

0.4 mg/liter annual average effective July 1, 1996 for metal finishing process discharges plus reasonable control measures or mass limit specific to an individual industry.

For vehicle service, photoprocessing and metal fabrication, the limit will remain at 2.0 mg/liter.

ATTACHMENT 2

TABLE 2
TOTAL TOXIC ORGANICS
 (40 CFR, Section 413.02(I))

Acenaphthene	N-nitrosodimethylamine
Acrolein	N-nitrosodiphenylamine
Acrylonitrile	N-nitrosodi-n-propylamine
Benzene	Pentachlorophenol
Benzidine	Phenol
Carbon tetrachloride (tetrachloromethane)	Bis (2-ethylhexyl) phthalate
Chlorobenzene	Butyl benzyl phthalate
1,2,4-trichlorobenzene	Di-n-butyl phthalate
Hexachlorobenzene	Di-n-octyl phthalate
1,2-dichloroethane	Diethyl phthalate
1,1,1-trichloroethane	Dimethyl phthalate
Hexachloroethane	1,2-benzanthracene (benzo(a)anthracene)
1,1-dichloroethane	Benzo(a)pyrene (3,4-benzopyrene)
1,1,2-trichloroethane	3,4-Benzofluoranthene (benzo(b)fluoranthene)
1,1,2,2-tetrachloroethane	11,12-benzofluoranthene (benzo(k)fluoranthene)
Chloroethane	Chrysene
Bis (2-chloroethyl) ether	Acenaphthylene
2-chloroethyl vinyl ether (mixed)	Anthracene
2-chloronaphthalene	1,12-benzoperylene (benzo(ghi)perylene)
2,4,6-trichlorophenol	Fluorene
Parachlorometa cresol	Phenanthrene
Chloroform (trichloromethane)	1,2,5,6-dibenzanthracene (dibenzo(a,h)anthracene)
2-chlorophenol	Indeno (1,2,3-cd) pyrene (2,3-o-phenylene pyrene)
1,2-dichlorobenzene	Pyrene
1,3-dichlorobenzene	Tetrachloroethylene
1,4-dichlorobenzene	Toluene
3,3-dichlorobenzidine	Trichloroethylene
1,1-dichloroethylene	Vinyl chloride (chloroethylene)
1,2-trans-dichloroethylene	Aldrin
2,4-dichlorophenol	Dieldrin
1,2-dichloropropane	Chlordane (technical mixture and metabolites)
1,3-dichloropropylene (1,3-dichloropropene)	4,4-DDT
2,4-dimethylphenol	4,4-DDE (p,p-DDX)
2,4-dinitrotoluene	4,4-DDD (p,p-TDE)
2,6-dinitrotoluene	Alpha-endosulfan
1,2-diphenylhydrazine	Beta-endosulfan
Ethylbenzene	Endosulfan sulfate
Fluoranthene	Endrin
4-chlorophenyl phenyl ether	Endrin aldehyde
4-bromophenyl phenyl ether	Heptachlor
Bis (2-chloroisopropyl) ether	Heptachlor epoxide
Bis (2-chloroethoxy) methane	(BHC-hexachlorocyclohexane)
Methylene chloride (dichloromethane)	Alpha-BHC
Methyl chloride (chloromethane)	Beta-BHC
Methyl bromide (bromomethane)	Gamma-BHC
Bromoform (tribromomethane)	Delta-BHC
Dichlorobromomethane	(PCB-polychlorinated biphenyls)
Chlorodibromomethane	PCB-1242 (Arochlor 1242)
Hexachlorobutadiene	PCB-1254 (Arochlor 1254)
Hexachlorocyclopentadiene	PCB-1221 (Arochlor 1221)
Isophorone	PCB-1232 (Arochlor 1232)
Naphthalene	PCB-1248 (Arochlor 1248)
Nitrobenzene	PCB-1260 (Arochlor 1260)
2-nitrophenol	PCB-1016 (Arochlor 1016)
4-nitrophenol	Toxaphene
2,4-dinitrophenol	2,3,7,8-tetrachlorodibenzo-p-dioxin
4,6-dinitro-o-cresol	(TCDD)

ATTACHMENT 3

SAMPLING INSTRUCTIONS

[PLEASE REFER TO THE APPROPRIATE REQUIRED ANALYSIS]

I. Definitions

1. Sample: A sample is a known volume of wastewater representing the true characteristics of the effluent which is discharged from industrial wastewater processes and collected for a specific duration of time.
2. Types of Samples: The two most common types of samples are grab samples and 24 hour composite samples and may be obtained either manually or automatically.
 - a. A grab sample is a given volume of discharge which is collected at a single point in time.
 - b. A 24 hour composite sample is a mixture of individual grab samples which are collected at regular intervals. Equal volumes of the individual samples shall be used unless flow monitoring allows for flow proportioning of the composite sample. Unless flow proportioning is being conducted, each grab sample shall be at least 50 ml.
3. Manual Sampling: Manual sampling is the manual collection of a sample using an appropriate container (see attachment, table 1).
4. Automatic Sampling: Automatic sampling is the collection of grab samples at regular intervals using a mechanical device.

II. Sample Collection and Sample Preservation

1. Metals

Collect self-monitoring samples for metals analysis at the point of discharge of the contaminated groundwater downstream of any pretreatment system but prior to any dilution streams. A grab sample for metals analysis may be taken.

Immediately after collection, samples must be measured for pH and preserved by adding nitric acid until a pH <2 is attained. Please record the time and date of sample collection, pH, and the name of the person(s) collecting/preserving the samples. Submit the composite sample as soon as collected to a laboratory approved by the California Department of Health Services for such analysis.

2. Cyanide

Collect self-monitoring samples for cyanide analysis at the point of discharge of the cyanide bearing wastestream downstream of any pretreatment system but prior to any dilution streams.

Each cyanide sample shall be collected as a grab sample and immediately preserved by adding sodium hydroxide until a pH >12 is attained. If chlorine destruction of cyanide has been used, check the sample for chlorine residual and dechlorinate the sample with 0.6 g. ascorbic acid per liter of sample before adjusting pH with sodium hydroxide. Cyanide samples shall be kept in the dark and refrigerated at 4 degrees centigrade. Please record the time and date of sample collection, pH, and the name of the person(s) collecting/preserving the samples. Submit composite samples to a laboratory approved by the California Department of Health Services for such analysis.

3. Fluoride

Collect self-monitoring samples for fluoride analysis at the point of discharge of the fluoride bearing wastestream downstream of any pretreatment system but prior to any dilution stream.

A 24-hour composite sample shall be taken consisting of individual representative samples collected every 15 minutes. It is recommended that an automatic sampler be used, but if an automatic sampler is not available, manual grab samples may be taken every 15 minutes. A composite sample may then be prepared from the set of preserved grab samples. Equal volumes of the individual samples shall be used unless flow monitoring allows for flow proportioning of the composite sample.

Both grab and composite sample containers should be supplied to you by your analytical laboratory. Plastic containers, not glass, are appropriate for fluoride samples.

Immediately after collection, samples must be measured for pH. Please record the time and date of sample collection, pH, and the name of the person(s) collecting the samples. Submit the composite sample within one week of collection to a laboratory approved by the California Department of Health Services for such analysis.

All records must be retained and made available to City personnel upon demand. Results shall be transcribed onto self-monitoring logs and submitted along with the original laboratory reports.

4. TTO

Collect self-monitoring samples for TTO analysis at the point of discharge from the process streams downstream of any pretreatment system but prior to any dilution streams.

A 6-hour composite sample is required, but neither automatic nor field compositing of the individual grab samples is permitted due to the volatility of the compounds. Individual grab samples must be taken manually at least once every two hours.

For maximum reliability, it is suggested that at least three duplicates of each grab

sample be taken. Only glass containers are appropriate for TTO samples and should be supplied to you by your analytical laboratory. Due to their volatile nature, a special sampling technique shall be used to collect samples for TTO analysis. A 40-ml glass sample bottle (or vial) should be filled in such a manner that no air bubbles pass through the sample as the bottle is being filled. The bottle or vial shall then be carefully sealed so that no air bubbles are entrapped in it. This hermetic seal must be maintained until the sample is analyzed. The analytical laboratory performing the analysis will then composite the individual grab samples for a single analysis for each analytical method.

The laboratory shall use the following procedure for compositing grab samples:

Composite only grab samples of equal volume. Carefully pour the contents of all individual grab samples collected from a given source during the specified time period into a 1,000 ml round bottom flask which is chilled in a wet ice bath. Stir the mixture gently with a glass rod for approximately one minute while in the ice bath. Carefully fill four to six clean 40 ml vials with composited sample, following same protocol for ensuring that no trapped air is in the container, and seal hermetically. Hold composited samples at 4 deg C, hermetically sealed, and analyze within acceptable holding time for the analysis. Preserve the replicate samples for verification analysis if needed. A similar protocol may be followed for other types of volatile organics samples using other container types and sizes.

The method of analysis shall be capable of detecting at least 0.005 mg/l of each of the organic constituents in the discharge.

5. COD, NH₃ and SS

The COD, NH₃ and SS samples shall be 24-hour composite samples collected every 15 minutes from the designated sampling point. If an automatic sampler is used, the sampler must be equipped with ice to prevent the biological degradation of the sample during the sample collection period. Immediately after collection, the COD and NH₃ samples must be measured for pH and preserved by adding sulfuric acid until a pH<2 is attained. The suspected solids sample must be kept refrigerated until delivery to the laboratory and does not need chemical preservation.

III. Sample Chain of Custody and Analysis

The time and date of sample collection, pH (if applicable), and the name of the person(s) collecting, preserving and delivering the sample to the laboratory must be recorded on the sample chain of custody form. The chain of custody form must be retained for a minimum of three years and made available to the City personnel upon demand. Samples shall be analyzed at the discharger's expense by a laboratory accredited by the California Department of Health Services for such analysis unless otherwise specified in the Industrial Waste Permit.

Table 1
SUMMARY OF SAMPLE HANDLING REQUIREMENTS

DETERMINATIONS	CONTAINER	PRESERVATION	MAXIMUM STORAGE RECOMMENDED/REGULATORY *
Ammonia	P, G	Analyze as soon as possible or add H ₂ SO ₄ to pH<2	7 days/28 days
COD	P, G	Analyze immediately or add H ₂ SO ₄ to pH<2	7 days/28 days
Cyanide (total)	P, G	Add NaOH to pH>12 Refrigerate in dark	24 hours/14 days (24 hours if sulfide present)
Fluoride	P	None required	28 days/28 days
Metals	P, G	Add HNO ₃ to pH<2	180 days/180 days
Suspended Solids	P, G	Refrigerate	2 days/7 days
TTO	G, TFE-lined cap	Refrigerate	7 days/7 days until extraction
Phenols	G	Add H ₂ SO ₄ to pH<2, then refrigerate	28 days

G: glass
P: plastic

HNO₃: nitric acid
NaOH: sodium hydroxide

H₂SO₄: sulfuric acid
TFE: teflon

* Environmental Protection Agency, Rules and Regulations, Federal Register 49: No. 209, October 26, 1984. See this citation for possible differences regarding container and preservation requirements.

ATTACHMENT 4

HAZARDOUS WASTE

Certification Addendum

An application for discharge to the Palo Alto Regional Water Quality Control Plant has been prepared and is dated _____.

I certify that the wastes for which the discharge application is being filed does not and will not constitute "hazardous waste" under Chapter 6.5 of the Health and Safety Code (Sections 25115 and 25117) and Title 22 of the California Administrative Code (Sections 66680 to, and including, 66746) at the point of discharge into the City sanitary sewer system. I am personally qualified to make this certification or I have consulted with a qualified professional who is qualified to make this certification.

- 1. I am a principal executive officer of at least the level of vice president (if the permittee is a corporation).
- 2. I am a general partner or proprietor (if the permittee is a partnership or sole proprietorship respectively).
- 3. I am a duly authorized representative of the individual designated in 1 or 2 above (if such representative is responsible for the overall operation of the facility from which the discharge originates).

PRINT NAME OF OFFICIAL

SIGNATURE OF OFFICIAL

TITLE OF OFFICIAL

DATE

REGIONAL WATER QUALITY CONTROL PLANT
2501 Embarcadero Way
Palo Alto, CA 94303
Telephone: 650/329-2598

Serving the Communities of
East Palo Alto Sanitary District, Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford

DESIGNATION OF AUTHORIZED REPRESENTATIVE

An Industrial Waste Discharge Permit has been issued to this facility in accordance with the City of Palo Alto Sewer Use Ordinance No. 3889, Section 16.09.020. As stated in this permit, various reports are periodically due as required by Federal and State regulations. These reports require the signature of a principal executive officer of at least the level of vice-president if the permittee is a corporation OR a general partner or proprietor if the permittee is a partnership or sole proprietorship. A duly authorized representative may be designated to sign if such representative is responsible for the overall environmental compliance of the facility from which the industrial waste discharge originates. If a representative is designated to sign, then the permittee must submit to the Control Authority (jointly owned Palo Alto-Mountain View-Los Altos Public Operated Treatment Plant) a DESIGNATION OF AUTHORIZED REPRESENTATIVE (DOAR) statement.

1.

Print name of Designated Representative

Signature of Designated Representative

Title of Designated Representative

Name of Company

Street Address with Suite Number

City, State, ZIP Code

Telephone Number of Designated Representative: _____

2. FACILITY NAME: _____

Mailing Address: _____

Facility Address: _____

3. SIGNATURE: The above person is authorized as my representative to sign reports and certification statements submitted to the Control Authority as required by the Industrial Waste Discharge Permit. This authority shall remain in effect until the Control Authority is notified in writing of any changes.

4. Please check one of the following boxes before signing:

A. I am a principal executive officer of at least the level of vice president (if the permittee is a corporation).

B. I am a general partner or proprietor (if the permittee is a partnership or sole proprietorship respectively).

PRINT NAME OF OFFICIAL

SIGNATURE OF OFFICIAL

TITLE OF SIGNING OFFICIAL

DATE

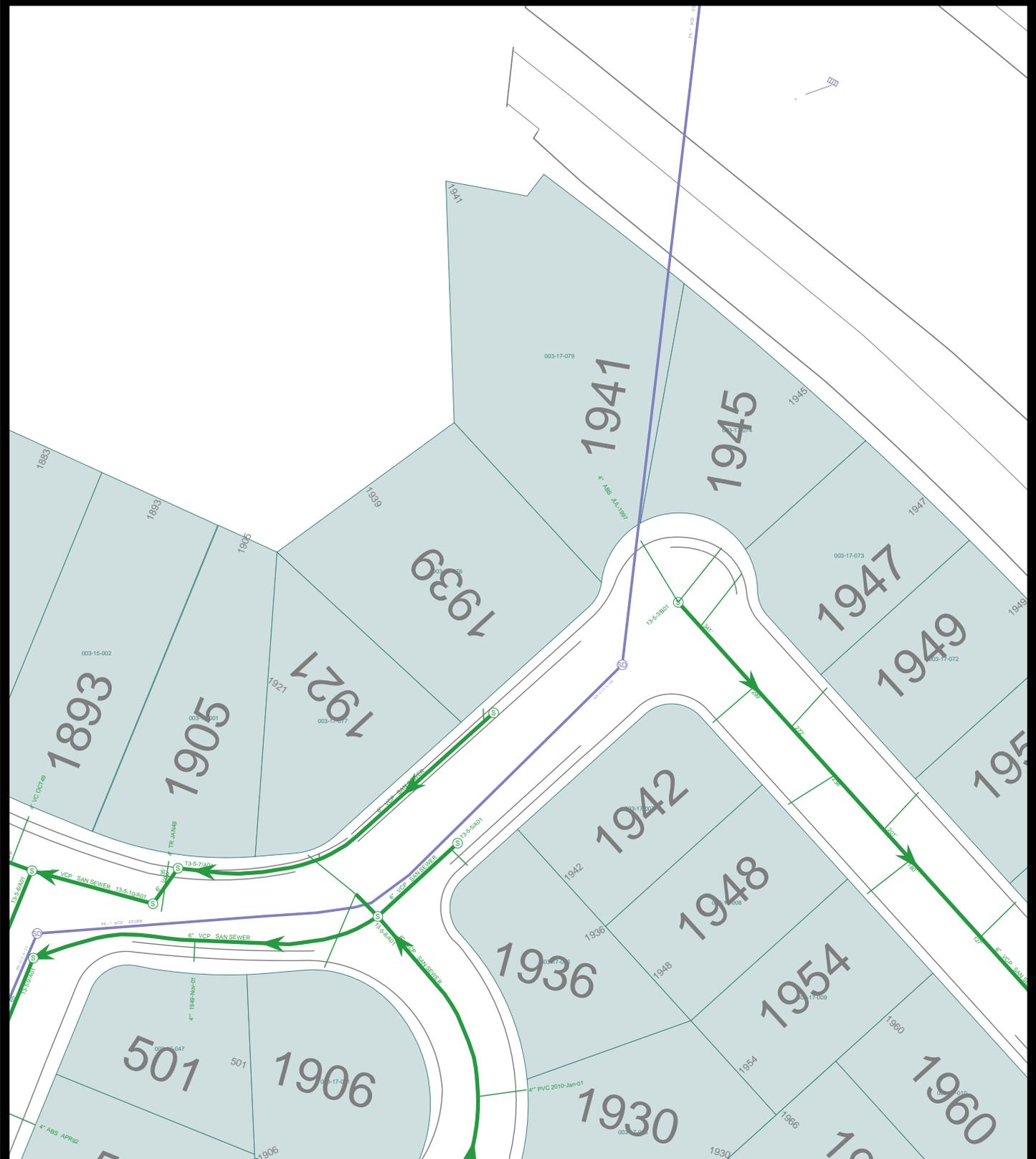
MAILING ADDRESS OF SIGNING OFFICIAL:

TELEPHONE NUMBER OF SIGNING OFFICIAL: _____

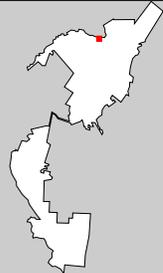
5. MAILING: Please return the completed DOAR to:

ENVIRONMENTAL COMPLIANCE DIVISION
REGIONAL WATER QUALITY CONTROL PLANT
2501 Embarcadero Way
Palo Alto, CA 94303

West Bayshore Sanitary and Storm Sewer



The City of Palo Alto



West Bayshore Sanitary and Storm Sewer

This map is a product of the City of Palo Alto GIS



East Bayshore Sanitary and Storm Sewer



The City of
Palo Alto



East Bayshore Sanitary and Storm

This map is a product of the
City of Palo Alto GIS



WASTE DISCHARGE IDENTIFICATION (WDID) NUMBER: N/A

CONCEPTUAL STORMWATER POLLUTION PREVENTION PLAN

for

101 San Francisquito Creek Bridge Replacement

CONTRACT NO.: 235624

CALTRANS Project Identifier NUMBER: 04000006781

RISK LEVEL: 2

Prepared for:

Caltrans District 4
111 Grand Avenue
Oakland, CA 94612
Fernando Abela
(650) 315-8432

Submitted by:

To be determined
To be determined
To be determined, To be determined To be determined
To be determined
To be determined

Project Site Address

US 101/San Francisquito Creek Bridge Crossing in the City of East Palo Alto and
Palo Alto;
Latitude: 37.4527358 degrees North, Longitude: 122.1279212 degrees West
(650) 315-8432

Contractor's Water Pollution Control (WPC) Manager/Qualified SWPPP Developer(OSD)

To be determined
To be determined

Contractor's Qualified SWPPP Developer (OSD) (if SWPPP not developed by WPC Manager)

To be determined

To be determined

Contractor's Qualified S WPPP Practitioner (OSP) (if different from WPC Manager)

To be determined

To be determined

CSWPPP developed by:

To be determined

To be determined

To be determined, To be determined

To be determined

To be determined - To be determined

CSWPPP date

01/09/2015

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Attachment BNotice of Construction (NOC) / Notice of Intent (NOI)
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Appendix BCEM-2009 SWPPP/WPCP Amendments Log Form
Appendix CCEM-2070 SWPPP/WPCP Annual Certification of Compliance Form
Appendix DSubcontractor/Material Supplier Notification Letter and Contact Information
Appendix ECEM-2023 Stormwater Training Record Form
Appendix FCEM-2024 Stormwater Training Log-Optional Form
Appendix GCEM-2030 Stormwater Site Inspection Report
Appendix H CEM-2034 Monthly Stormwater Best Management & Materials Inventory Report Form
Appendix ICEM-2035 Stormwater Corrective Actions Summary
Appendix JCEM-2045 Rain Event Action Plan Forms
Appendix KCEM- 2061 Notice of Discharge Form
Appendix LCEM-2058 Stormwater Meter Calibration Record– Specialty Meters Form
Appendix MCEM-2051 Stormwater Sampling and Testing Activity Log – Optional Form
Appendix NCEM-2052 Stormwater Sample Field Test Report Form
Appendix OCEM-2062 Numeric Action Level Exceedance Report Form
Appendix PCEM-2063 Numeric Effluent Limitation Violation Report – ATS Discharges Form

SWPPP Files

File Category 20.01Stormwater Pollution Prevention Plan (SWPPP)
File Category 20.02Stormwater Pollution Prevention Plan Amendments
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File Category 20.05Notice of Construction or Notice of Intent
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File Category 20.55Field Testing Equipment Maintenance and Calibration Records
File Category 20.61Notice of Discharge Reports
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File Category 20.63Numeric Effluent Limitation Violation Reports
File Category 20.70Annual Certification of Compliance
File Category 20.80Stormwater Annual Reports
File Category 20.90Notice of Termination

SECTION 100

SWPPP Certifications and Approval

100.1 Legally Responsible Person Certification and Caltrans Approval

The California Department of Transportation (Caltrans) District Director, as the Legally Responsible Person (LRP), has authorized the Caltrans RE to be the authorized Approved Signatory of Caltrans for reviewing, signing, and certifying the Stormwater Pollution Prevention Plan (SWPPP) in conformance with Section IV.I of the Construction General Permit (CGP) (CAS000002, Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ). The LRP authorization for the RE to be the Approved Signatory is provided as Attachment A. The SWPPP was developed by the Contractor and submitted for review and acceptance to the RE, pursuant to the Special Provisions, the SWPPP / Water Pollution Control Program (WPCP) Preparation Manual, and the Standard Specifications Section 7-1.01G – Water Pollution. The Contractor is responsible and liable at all times for compliance with applicable requirements of the CGP (CAS000002, Order No. 2009-009- DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ) for which compliance is ultimately determined by the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB), and/or the U.S. Environmental Protection Agency (USEPA). Copies of the SWRCB-issued Waste Discharge Identification Number and Notice of Intent form are provided as Attachment B.

For Caltrans Use Only

**RE's Acceptance of the
Stormwater Pollution Prevention Plan**

Project Name: 101 San Francisquito Creek Bridge Replacement

Caltrans Contract Number: 235624

Caltrans Project Identification Number: 04000006781

“I certify under penalty of law that this document and all attachments were reviewed under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.”

This SWPPP is accepted based on a review performed by myself or personnel acting under my direction that determined that the SWPPP meets the requirements set forth in the contract special provisions, Caltrans Standard Specifications, and the Caltrans SWPPP/WPCP Preparation Manual.

RE's Signature

Date of SWPPP Acceptance

Fernando Abela

(650) 315-8432

RE's Name

RE's Telephone Number

100.2 Contractor and QSD SWPPP Certification

Contractor's Certification of SWPPP

Project Name: 101 San Francisquito Creek Bridge Replacement

Caltrans Contract Number: 235624

Caltrans Project Identification Number: 04000006781

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

Contractor's Signature

Date

To be determined

To be determined

Contractor's Name

Telephone Number

To be determined

Contractor's Title

QSD's Certification of SWPPP

Project Name: 101 San Francisquito Creek Bridge Replacement

Caltrans Contract Number: 235624

Caltrans Project Identification Number: 04000006781

“I certify under penalty of law that I relied upon available project and site information, current watershed and basin plan maps and available soil data to develop this SWPPP so that Best Management Practices (BMPs) were designed and placed in accordance with industry standards and best professional judgment to reduce pollutants from leaving the job site. All other sources relied upon to gain information for this project’s SWPPP were appropriate and dependable, based on my best professional judgment. To the best of my knowledge and belief, the information submitted in this SWPPP is in compliance with all requirements of the Construction General Permit (CAS000002, Order No. 2009-009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ). I certify that the ‘required text’ portions of this document are unaltered from the original required text and content.”

QSD’s Signature	Date
To be determined	To be determined
QSD’s Name	QSD’s Telephone Number
To be determined	
QSD’s Title	

100.3 Amendments

100.3.1 SWPPP Amendments Certification and Approval

This SWPPP is meant to be a “living document,” therefore, updated and additional information is expected to be added to the SWPPP as the project progresses, including information regarding changes in the field that do not require an amendment, such as the following:

- adding BMPs as required by a *Rain Event Action Plan*
- increasing or decreasing the quantity of BMPs in the field that are already part of the erosion control plan in the SWPPP,
- moving BMPs shown on the WPCDs to protect water quality during different phases of construction,
- updating WPCDs to reflect actual site conditions, and
- maintenance and repairs to BMPs.

This SWPPP shall be amended when:

- a change in construction or operations affects the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4);
- a contract change order includes additional water pollution control practices, not already specified in the approved SWPPP;
- deemed necessary by the RE;
- SWPPP objectives to reduce or eliminate pollutants in stormwater discharges have not been achieved; or
- a CGP violation has occurred; when the RWQCB determines that a CGP violation has occurred, the SWPPP shall be amended and corrective actions implemented within 14 calendar days after notification by the RWQCB.

The following information shall be included in each amendment:

- who requested the amendment;
- the location of proposed change;
- the reason for the change;
- the original BMP proposed, if any;
- the new BMP proposed; and
- any existing implemented BMP(s).

Approved and certified amendments shall be inserted into the appropriate section or attachment of the SWPPP. All SWPPP amendments prepared by the WPC Manager and approved by the Contractor shall be accepted and certified by the LRP or Approved Signatory. A blank copy of the CEM-2008 SWPPP/WPCP Amendment Certification and Approval form is in Appendix A. For approved amendments, the signed SWPPP Amendment Certification and Approval form shall be attached to the SWPPP amendment.

A copy of each approved and certified amendment shall be inserted into Attachment AA. All SWPPP amendments shall be listed in the SWPPP Amendment Log, available in Appendix B. The Amendment Log shall be kept in SWPPP File Category 20.02 and a copy shall be inserted into Attachment AA.

The SWPPP will be completely revised if either the number of amendments or the amount of information contained in the amendments makes implementation of the SWPPP confusing, as determined by the RE, or the Contractor requests to revise the SWPPP based on planned changes in activities that would require a major SWPPP amendment.

100.3.2 Amendment Log

All approved and certified SWPPP amendments shall be shown on the SWPPP Amendment Log. A blank Amendment Log is available in Appendix B. The SWPPP Amendment Log shall include the following information:

- amendment number;
- amendment date;
- brief description of the amendment;
- name of individual requesting amendment; and
- approval date.

All SWPPP amendment(s) prepared and approved as discussed in Section 100.3.1 shall be documented in the Amendment Log and kept in SWPPP File Category 20.02: Stormwater Pollution Prevention Plan Amendments. A copy of the Amendment Log shall also be inserted into Attachment AA.

100.4 Annual Compliance and Approval

By July 15 of each year, the Contractor shall submit the Contractor's Annual Certification of Compliance to the RE stating that the project is in compliance with the terms and conditions of the Permits and the SWPPP. By August 1 of each year, the Caltrans LRP, or RE as authorized Approved Signatory, will complete an Annual Certification of Compliance stating that the project is in compliance with the terms and conditions of the Permits and the SWPPP. A blank copy of the CEM-2070 SWPPP/WPCP Annual Certification of Compliance form is included in Appendix C. Completed Annual Certification of Compliance forms will be filed in SWPPP File Category 20.70: Annual Certification of Compliance.

SECTION 200

OBJECTIVES

This SWPPP has five (5) main objectives, which are listed below.

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion, and all other activities associated with construction activity, are controlled.
2. Where not otherwise required to be under a California Regional Water Quality Control Board (RWQCB) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated.
3. Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non- stormwater discharges from the construction activity to the best available technology (BAT) / best conventional technology (BCT) standard.
4. Calculations and design details for site run-on, as well as BMP controls, are complete and correct.
5. Stabilization BMPs designed to eliminate or reduce pollutants after construction is complete have been installed

This SWPPP was developed to conform to the required elements of the CGP (CAS000002, Order No. 2009-0009-DWQ as ammended by Order 2010-0014-DWQ and 2012-006-DWQ) issued by the SWRCB.

This SWPPP is designed to be a useful document for those who must implement the SWPPP on a daily basis in the field. Most of the information necessary for the daily implementation of the SWPPP is contained in Attachment BB: Water Pollution Control Drawings, Attachment CC: Water Pollution Control Best Management Practices List, and Attachment DD: Water Pollution Control Schedule.

This SWPPP is also a “living document” because updated and additional information is added to the SWPPP file categories as the project progresses, including:

- SWPPP Amendments;
- Subcontractor and Material Supplier Information;
- Contractor Personnel Training Documentation;
- Site Inspection Reports;
- Monthly Status Reports;
- Rain Event Action Plans;
- Sampling and Analysis Results; and
- Notice of Discharge Reports.

The SWPPP shall be readily available on site for the duration of the project.

SECTION 300

PROJECT AND CONTRACTOR INFORMATION

300.1 Project Description

This Conceptual SWPPP only covers the following preliminary works outside of San Francisquito Creek to be completed in the first 45 days of construction:

1. Shift NB freeway traffic to the east and SB freeway traffic to the west away from the center median. Remove the freeway median barrier using a mounted hydraulic jack hammer, backhoes and dump trucks. Cold plane and/or overlay the freeway with HMA to level the median. Install temporary drainage inlets to drain the modified profile grade.
2. Perform roadway excavation for the new abutment and pier walls (see Structure Plans sheet 2) at the two locations as shown on Water Pollution Control Drawing sheet 4 of this Conceptual SWPPP. Perform dewatering, pile driving, and some portions of the abutment and pier wall construction which can be accomplished from outside creek. Remove and abandon the 96" culvert (see Drainage Details sheet DD-2). All these activities will be performed from outside creek.

Any work beyond the preliminary work scope described above that results in soil disturbance or any work that needs to be conducted in the creek is not covered under this Conceptual SWPPP. Any amendment to this CSWPPP involving creek

work is not allowed until Temporary Creek Diversion System Plan is approved by the Regional Water Quality Control Board. On the 45th day of construction, this Conceptual SWPPP will no longer be effective.

The SWPPP to be developed by the Contractor and approved by the Resident Engineer will cover all construction work involved with the Project beyond the preliminary stage described above. If the Contractor's SWPPP is approved by the Resident Engineer within the first 45 days of construction, then the Contractor's SWPPP will supersede this Conceptual SWPPP. If work is completed in less than 45 days, then the Contractor has to wait until their SWPPP is approved to perform any work beyond.

It is proposed that the existing San Francisquito Creek freeway and frontage road bridges be demolished, and that a new bridge be constructed to satisfy standard lane requirements and to provide increased flow capacity to the creek. The added length to the bridge will necessitate that three pier walls be constructed instead of two. In addition, the freeway profile on each side of the bridge will be modified to conform to the new bridge deck, and the soundwall location on the bridge will be shifted to conform to the wider roadway.

The project requires an early start of the construction due to critical work window in the San Francisquito Creek (June 1st to October 15th). The project contract approval is expected to be 5/5/15, and construction start is 5/20/15. Because of the short duration between Contract Approval and Construction Start, a conceptual SWPPP will be prepared by the Department and included in the supplemental project information to allow Contractor to start construction immediately after Contract Approval while they are preparing the SWPPP.

Once Contractor's SWPPP is approved, it supersedes the Conceptual SWPPP.

300.2 Project Risk Level

Environmentally Sensitive Areas Other None

300.6 Contact Information for Responsible Parties

The following parties are responsible for this SWPPP:

WPC Manager

Name: **To be determined**
Title: **Water Pollution Control Manager**
Company: **To be determined**
Address: **To be determined**
To be determined, To be determined To be determined
Phone Number: **To be determined**
Emergency Phone Number (24/7): **To be determined**
Email address: **To be determined**

Resident Engineer

Name: **Fernando Abela**
Title: **Resident Engineer**
Company: **Caltrans District 4**
Address: **111 Grand Avenue**
Oakland, CA 94612
Phone Number: **(650) 315-8432**
Emergency Phone Number (24/7) **(650) 315-8432**
Email address: **Fernando.Abela@dot.ca.gov**

Contractor

Name: **To be determined**
Title: **Contractor**
Company: **To be determined**

Address: **To be determined**
To be determined, To be determined To be determined

Phone Number: **To be determined**

Emergency Phone Number (24/7) **To be determined**

Email address: **To be determined**

Erosion and Sediment Control Provider

Name: **To be determined**

Title: **To be determined**

Company: **To be determined**

Address: **To be determined**
To be determined, To be determined To be determined

Phone Number: **To be determined**

Emergency Phone Number (24/7) **To be determined**

Email address: **To be determined**

Stormwater Sampling and Testing Agent

Name: **To be determined**

Title: **To be determined**

Company: **To be determined**

Address: **To be determined**
To be determined, To be determined To be determined

Phone Number: **To be determined**

Emergency Phone Number (24/7) **To be determined**

Email address:

300.7 List of Subcontractor and Materials Suppliers

The following subcontractors will be working on this project:

1 To be determined

SWPPP Responsibility: To be determined

Contact information for each subcontractor will be provided in the SWPPP Notification log in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters. Contact information shall include subcontractor name, type of work performed, contact name, phone number and emergency telephone number (24/7).

The following materials suppliers will be delivering materials to the project site and must comply with pertinent SWPPP requirements:

1 To be determined

Contact information for each material supplier will be provided in the SWPPP Notification log in SWPPP File Category 20.22: Material Supplier Contact Information and Notification Letters. Contact information shall include company name, type of material supplied, contact name and phone number.

All subcontractors and material suppliers shall be notified that the project is covered by the

- SWRCB Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ, NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, September 02, 2009 (Construction General Permit).

Each subcontractor and material supplier shall also be notified that the project has a SWPPP and the pertinent water pollution control BMPs with which the subcontractor or material supplier must comply. If subcontractors or material suppliers are added during the project, appropriate notification that the project has a SWPPP and the pertinent water pollution control BMPs shall be given to the subcontractor or materials supplier prior to working or supplying materials on the project site.

A SWPPP Notification Letter shall be sent to all subcontractors and material suppliers. A sample notification letter and notification letter log is provided in Appendix D. A copy of SWPPP Notification Letters sent to subcontractors and material suppliers are in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters or 20.22 Material Supplier Contact Information and Notification Letters. Notification letter logs and contact information are filed in SWPPP File Category 20.21: Subcontractor Contact Information and Notification Letters and File Category 20.22: Material Supplier Contact Information and Notification Letters.

300.8 Training

The Contractor's WPC Manager is a QSD. The WPC Manager for this project, meets the qualifications and certification requirements of Section VII, Training Qualifications and Certification Requirements, of the CGP based on:

- To be determined

The WPC Manager has received the following training:

- To be determined

The WPC Manager has the following SWPPP development and implementation experience:

- To be determined

Ongoing, formal training sessions for individuals responsible for SWPPP development and implementation shall be selected from one of the following organizations.

- City of Los Angeles Storm Water Program
- County of Los Angeles Storm Water Program
- State of California RWQCB
- IECA-, ABAG- and/or AGC-sponsored training
- USEPA-sponsored training
- Recognized municipal stakeholder organizations throughout California
- Professional organizations and societies in the building and construction field
- To be determined

Contractor or subcontractor employees responsible for water pollution control BMP installation, maintenance and repair have received the following training.

- To be determined

Contractor and subcontractor employees shall be trained prior to working on the site in the following subjects:

- water pollution control rules and regulations
- implementation and maintenance for:
 - temporary soil stabilization,
 - temporary sediment control,
 - tracking control,
 - wind erosion control,
 - material pollution prevention control,
 - waste management, and
 - non-stormwater management
- identification and handling of hazardous substances
- potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances

Informal employee training shall include tailgate site meetings to be conducted weekly; tailgate meetings should address the following topics:

- water pollution control BMP deficiencies and corrective actions;
- BMPs that are required for work activities during the week;

- spill prevention and control;
- material delivery, storage, use, and disposal;
- waste management; and
- non-stormwater management procedures.

A summary of formal and informal training of various personnel is shown in Attachment E. A copy of all training certificate(s) (e.g., Caltrans 24-Hour Training Class and CGP Training) for the WPC Manager and the Qualified SWPPP Developer are included in Attachment E.

Training records for project personnel shall be updated by completing the CEM-2023 Stormwater Training Record form, available in Appendix E, and the CEM-2024 Stormwater Training Log - Optional form, available in Appendix F. Records of training, with training certificates attached, when applicable, and the training log will be kept in SWPPP File Category 20.23: Contractor Personnel Training Documentation. Personnel training records, with required documentation attached and an updated training log, shall be submitted to the RE within five (5) days of completion of training.

Training information, consisting of the following items, shall be provided in the Stormwater Annual Report:

- documentation of all training for individuals responsible for all activities associated with compliance with CGP
- documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair, and
- documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.
-

SECTION 400

REFERENCES, OTHER PLANS, PERMITS AND AGREEMENTS

The documents listed below are made a part of this SWPPP by reference.

- Standard Plans and Specifications, dated 2010.
- Contract Plans and Special Provisions for Contract No. 04-235624, dated October 2014, prepared by Caltrans District 4.
- SWRCB-Order No. 2009-0009-DWQ, Order No. 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-006-DWQ NPDES General Permit No. CAS000002, National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated With Construction and Land Disturbance Activities (Construction General Permit), September 2009
- *Caltrans Statewide Storm Water Management Plan* (SWMP), dated July 2012
- *Caltrans SWPPP/WPCP Preparation Manual*, dated March 2011
- *Caltrans Construction Site Monitoring Program Guidance Manual*, August 2013
- Water Quality Information Handout
- Geotechnical Report

Attachment F includes copies of the Caltrans Statewide Permit, the CGP, and other local, state, and federal plans and permits. A list of the other local, state, and federal plans and permits included in Attachment F is provided below.

- SF Bay RWQCB, Water Quality Certification for the U.S. 101 San Francisquito Creek Bridge Replacement Project, Cities of Palo Alto and East Palo Alto, Santa Clara and San Mateo County, dated June 12, 2013
- US Department of the Army Nationwide Permit Section 404 of the Clean Water Act authorization to replace the San Francisquito Creek Bridge located at US 101, dated March 4, 2013
- California Department of Fish and Wildlife Final Lake or Streambed Alteration Agreement Notification No. 1600-2011-0270-3, Interstate 101 San Francisquito Creek Bridge Replacement, dated May 20, 2013

SECTION 500

DETERMINATION OF CONSTRUCTION SITE BEST MANAGEMENT PRACTICES

500.1.2 Potential Pollutants from Site Features or Known Contaminates

Former site usage or known site contamination may contribute pollutants to stormwater discharges from the site. Based on information available for the project site, the following site usage and historical contamination has been determined:

Former Industrial Operations: Yes No

Description of Former Industrial Operations

Historic Contamination: Yes No

- Aerially deposited lead (ADL)

The following contaminants are known to exist at the project site locations identified:

- Lead in yellow thermoplastic
- Asbestos

500.1.3 Risk Level Determination

The Project risk level is 2.

500.2 Pre-Construction Existing Stormwater Control Measures

The following are existing (pre-construction) control measures encountered within the project site.

- Vegetated slopes
- Vegetated unlined ditches
- Drainage facilities
- Santa Clara County's Storm Water Pump Station

500.3 BMP Selection for Erosion and Sediment Control

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The Contractor shall control construction site erosion through the implementation of effective erosion and sediment control measures in accordance with the CGP. The Contractor and the WPC Manager shall develop a schedule that includes the sequencing of construction activities and the implementation of effective erosion control BMPs while taking local climate (rainfall, wind, etc.) into consideration, thereby reducing the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. The SWPPP schedule shall: describe when work activities will be performed that could cause the discharge of pollutants in stormwater; describe the water pollution control practices associated with each construction phase; and identify the soil stabilization and sediment control practices for all disturbed soil areas. Effective soil cover shall be provided for:

- Disturbed soil area
- Stockpiles

Additional erosion and sediment control BMPs may be required in other locations on the project site as work progresses in order to prevent sediment from leaving the construction site. These measures shall be determined by the Contractor and the WPC Manager in the field. As long as the water pollution control measures consist of additions to the BMPs already selected in the approved SWPPP, then these additional measures do not require a SWPPP amendment and the WPC Manager shall simply show the additional measures on the WPCDs. If erosion control or sediment control BMPs must be changed because of field conditions or because they are determined to be ineffective, the SWPPP must be amended. Once deemed necessary, corrective actions/design changes to the SWPPP shall be reviewed and signed by the WPC Manager, implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). Immediate corrective action is required for numeric action level (NAL) exceedances. Routine BMP maintenance or the implementation of an additional quantity of a BMP included in the SWPPP as recommended by the WPC Manager does not require an amendment to the SWPPP.

An effective combination of erosion (soil stabilization) and sediment control BMPs shall be implemented and maintained during the project. The following principles shall be followed to the maximum extent practicable to control erosion and sedimentation in disturbed areas at the site.

- Remove and dispose of litter, trash, debris, and weeds

A more concise listing of the BMP control measures to be implemented and maintained at the project site are denoted in the BMP selection tables in the following sub-sections.

500.3.1 Temporary Run-on Control BMPs

TABLE 500.3.1 TEMPORARY RUN-ON CONTROL BMPs						
CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE- MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SS-1	Scheduling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-2	Preservation of Property/ Preservation of Existing Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
To be determined						

To be determined

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SS-9	Earth Dikes / Drainage Swales & Lined Swales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-10	Outlet Protection / Velocity Dissipation Devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-11	Slope Drains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-12	Streambank Stabilization	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SC-4	Temporary Check Dam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SC-5	Fiber Rolls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SC-6	Temporary Gravel Bag Berm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SC-8	Temporary Sandbag Barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
ALTERNATIVE BMPs USED⁽³⁾						
<input type="radio"/> Yes <input checked="" type="radio"/> No						

Notes:

(1) The BMP designations (SS-1, SC-5, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.

(2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.

(3) Use of alternative BMPs will require written approval by the RE.

Implementation of Temporary Run-on Controls BMPs

There is no run-on from off-site areas anticipated.

500.3.2 Soil Stabilization (Erosion Control)

Soil stabilization, also referred to as erosion control, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Soil stabilization BMPs protect the soil surface by covering and/or binding soil particles. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary soil stabilization requirements, temporary soil stabilization measures required by the contract documents, and other measures selected by the Contractor.

Sufficient soil stabilization materials will be maintained on site to allow implementation in conformance with Caltrans requirements and as described in this SWPPP. This includes implementation requirements for active and non-active areas that require deployment before the onset of rain.

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The following soil stabilization BMP selection table indicates the BMPs that shall be implemented to control erosion on the construction site. Temporary soil stabilization BMPs are listed by location in the WPCBMPL in Attachment CC and are shown on the WPCDs from Attachment BB. Any details for temporary soil stabilization BMPs are shown in Attachment BB.

TABLE 500.3.2 TEMPORARY EROSION CONTROL BMPs						
CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE- MENT (2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SS-1	Scheduling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
SS-2	Preservation of Property/ Preservation of Existing Vegetation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
SS-3	Temporary Hydraulic Mulch (Bonded Stabilized Fiber Matrix)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
SS-3	Temporary Hydraulic Mulch (Polymer Stabilized Fiber Matrix)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-4	Temporary Erosion Control (With Temporary Seeding)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-5	Temporary Soil Stabilizer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-6	Temporary Erosion Control (Straw Mulch with Stabilizing Emulsion)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-7	Temporary Erosion Control Blanket (On Slope)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-7	Temporary Erosion Control Blanket (In swale or ditch)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-7	Temporary Cover (Geotextiles and Mats)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
SS-8	Temporary Mulch (Wood)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-9	Earth Dikes / Drainage Swales & Lined Swales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SS-10	Outlet Protection/ Velocity Dissipation Devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
To be determined						

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SS-11	Slope Drains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	
SS-12	Streambank Stabilization	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
SS-13	Polyacrylamide	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	
ALTERNATIVE BMPs USED ⁽³⁾						
<input type="radio"/> Yes <input checked="" type="radio"/> No						

Notes:

- (1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
- (2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
- (3) Use of alternative BMPs will require written approval by the RE.

The BMPs selected for the project are listed below along with an explanation of how they will be incorporated into the project.

- SS-2 Preservation of Existing Vegetation
- SS-7 Temporary Cover
- SS-1 Scheduling

SS-1 Scheduling

Within 5 days of the Contract award, the Contractor or Contractor's WPC Manager must develop a schedule detailing the work to be completed within the first 45 days of construction, the period covered under this Conceptual SWPPP. The schedule shall present the proposed sequencing of work and planned BMP implementation, including temporary soil stabilization BMPs.

SS-2 Preservation of Existing Vegetation

Temporary Fence (Type ESA) will be the first order of work prior to the start of any work or any soil disturbance. The fencing must be placed around locations identified as outside the limits of work. Fencing placed in the field should be in compliance with the Contract Plans and as directed by the field biologist. No construction work is permitted beyond these fenced locations; and damage or disturbance to these areas shall be identified, reported to the Resident Engineer, and mitigated with corrective actions per direction of the Resident Engineer; and required corrective action will be at the Contractor's expense.

SS-7 Temporary Cover

Temporary cover will be placed on temporary stockpiles to prevent erosion due to rain or wind. Temporary cover will be placed over construction material (as needed to avoid sediment or debris transport by rain or wind). Temporary cover will be used as stated in the stockpile management section of this Conceptual SWPPP and in compliance with the Contract Special Provisions. Stockpiles shall be placed 50 ft away from San Francisquito Creek and approved by the Resident Engineer. The stockpile locations can be any place on the freeway or frontage road pavement protected by k-rail during stage construction or an off-site location as determined by the Contractor and approved by the Resident Engineer. For short-term durations, plastic covers should be used. For long-term stabilization, blankets should be utilized. Areas requiring temporary covers should be identified in the field.

500.3.3 Sediment Control

Sediment controls are structural measures that are intended to complement and enhance the selected soil stabilization (erosion control) measures and reduce sediment discharges from construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary sediment control requirements, temporary sediment control measures required by the contract documents, and other measures selected by the Contractor.

Sediment control BMPs will be installed at all appropriate locations along the site perimeter and at all operational internal inlets to storm drain systems at all times.

Throughout the duration of the project, temporary sediment control materials, equivalent to 10 percent of the materials installed on site, will be maintained on site for implementation in event of predicted rain, or the need for rapid response to failures or emergencies, in conformance with other Caltrans requirements, and as described in the SWPPP. This includes implementation requirements for active areas and non-active areas before the onset of rain.

The following sediment control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Temporary sediment control BMPs are listed by location in the WPCBMPL in Attachment CC and are shown on the WPCDs from Attachment BB. Any details for temporary sediment control BMPs are shown in Attachment BB.

TABLE 500.3.3 TEMPORARY SEDIMENT CONTROL BMPs						
CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE- MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SC-1	Temporary Silt Fence	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
SC-2	Temporary Sediment Basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SC-3	Temporary Sediment Trap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SC-4	Temporary Check Dam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SC-5	Fiber Rolls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
SC-6	Temporary Gravel Bag Berm	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
SC-7	Street Sweeping	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
SC-8	Temporary Sandbag Barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
To be determined						

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SC-9	Temporary Straw Bale Barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
SC-10	Temporary Drain Inlet Protection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
SC-11	Temporary Chemical Treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
ALTERNATIVE BMPs USED⁽³⁾						
<input type="radio"/> Yes <input checked="" type="radio"/> No						

Notes:

- (1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
- (2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
- (3) Use of alternative BMPs will require written approval by the RE

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

- SC-7 Street Sweeping
- SC-10 Temporary Drain Inlet Protection

SC-7 Street Sweeping

Street sweeping shall be conducted using machine-operated sweepers along paved areas, roadways, and pathways where sediment has been tracked or transported by construction equipment. At least a single sweeper is needed for one day per week. Additional sweepers should be conducted as approved by the Resident Engineer. Debris material generated from street sweeping activities will be managed daily by either immediately disposing of the waste material using an on-site, watertight container or temporarily stockpiling the material using temporary cover and temporary perimeter control BMPs to prevent sediment transport.

SC-10 Temporary Drain Inlet Protection

Temporary protection should be placed at all drain inlets (existing and proposed) that are subject to runoff from construction activities or can be impacted by sediment transport from construction activities. To limit the amount of sediment entering the drain inlets, a temporary gravel bag berm must be used in addition to standard temporary drain inlet protection measures. The locations with temporary drain inlet protection are shown on the Water Pollution Control Drawings included in Attachment BB. If any drain inlet not shown on the plans are identified, which are impacted by construction activities, then temporary drain inlet protection should be placed at these locations.

500.3.4 Tracking Control

Tracking control BMPs are implemented to reduce sediment tracking from the construction site onto private or public roads. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary tracking control requirements, temporary tracking control measures required by the contract documents, and other measures selected by the Contractor.

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The following tracking control BMP selection table indicates the BMPs that shall be implemented to reduce sediment tracking from the construction site onto private or public roads. Temporary tracking control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for temporary tracking control BMPs are shown in Attachment BB.

TABLE 500.3.4 TEMPORARY TRACKING CONTROL BMPs						
CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE- MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
SC-7	Street Sweeping	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
TC-1	Temporary Construction Entrance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
TC-2	Stabilized Construction Roadway	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
TC-3	Temporary Entrance / Outlet Tire Wash	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
ALTERNATIVE BMPs USED(3)						
<input type="radio"/> Yes <input checked="" type="radio"/> No						

Notes:

- (1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
- (2) Minimum requirements are based on the required Contract Provisions, Standard Special Provisions, Plans and Specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
- (3) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

- SC-7 Street Sweeping

SC-7 Street Sweeping

Street sweeping shall be conducted using machine-operated sweepers along paved areas, roadways, and pathways where sediment has been tracked or transported by construction equipment. At least a single sweeper is needed for one day per week. Additional sweepers should be conducted as approved by the Resident Engineer. Debris material generated from street sweeping activities will be managed daily by either immediately disposing of the waste material using an on-site, watertight container or temporarily stockpiling the material using temporary cover and temporary perimeter BMPs to prevent sediment transport.

TC-1 Temporary Construction Entrance

There are no construction entrances in Stage 1 because everything is paved.

TC-2 Stabilized Construction Roadway

Temporary construction roadway to be used at a later stage when the temporary creek diversion plan is approved.

500.3.5 Wind Erosion Control

Wind erosion control BMPs will be implemented to prevent sediment from leaving the construction site. This project will incorporate SWPPP/WPCP Preparation Manual minimum temporary wind erosion control requirements, temporary wind erosion control measures required by the contract documents, and other measures selected by the Contractor.

The following temporary wind erosion control BMP selection table indicates the BMPs that shall be implemented to reduce wind erosion at the construction site. Temporary wind erosion control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for temporary wind erosion control BMPs are shown in Attachment BB.

TABLE 500.3.5 TEMPORARY WIND EROSION CONTROL BMPs						
CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE- MENT (2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
WE-1	Wind Erosion Control	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
TC-1	Temporary Construction Entrance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
TC-2	Stabilized Construction Roadway	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later stage.
----	All Soil Stabilization Measures included in Section 500.3.2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
ALTERNATIVE BMPs USED (3)						
<input type="radio"/> Yes <input checked="" type="radio"/> No						

Notes:

(1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.

(2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.

(3) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and narrative explain how the selected BMPs shall be incorporated into the project.

- WE-1 Wind Erosion Control

WE-1 Wind Erosion Control

Wind erosion control must be in place and used during windy conditions (forecast or actual wind conditions of 25 mph or greater) and whenever there is a potential for wind erosion. Potable water shall be applied to disturbed soil areas to control dust and maintain optimum moisture levels for compaction. The water shall be applied using water trucks. Wind erosion control and water conservation practices shall be implemented during construction. Water application rates shall be minimized, as necessary, to prevent runoff and ponding. Water equipment leaks shall be repaired immediately. Wind

erosion control is not a separate contract bid item, but is considered as covered under the various other BMPs used to prevent sediment transport and under Job Site Management lump sum.

TC-1 Temporary Construction Entrance

There are no construction entrances in Stage 1 because everything is paved.

500.4 BMP Selection for Construction Site Management

Construction site management shall consist of controlling potential sources of water pollution before they come in contact with stormwater systems or watercourses. The Contractor shall control material pollution and manage waste and non-stormwater discharges at the construction site by implementing effective handling, storage, use, and disposal practices.

500.4.1 Non-Stormwater Site Management

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the Caltrans Permit or authorized under a separate NPDES permit, shall be prohibited. The selection of non-stormwater BMPs is based on whether construction activities with a potential for non-stormwater discharges will be conducted, as discussed in the Materials Management Plan and in Section 500.4. This project will incorporate SWPPP/WPCP Preparation Manual minimum non-stormwater pollution control requirements, non-stormwater pollution temporary wind erosion control measures required by the contract documents, and other measures selected by the Contractor.

The following non-stormwater control BMP selection table indicates the BMPs that shall be implemented to prevent non-stormwater discharges from construction activities conducted at the project site. Non-stormwater pollution control BMPs are listed by location in the WPCBMPL in Attachment CC and shown on the WPCDs from Attachment BB. Any details for non-stormwater pollution control BMPs are shown in Attachment BB.

TABLE 500.4.1 TEMPORARY NON-STORMWATER POLLUTION CONTROL BMPs						
CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE- MENT (2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
NS-1	Water Control and Conservation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-2	Dewatering(3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-3	Paving, Sealing, Sawcutting, and Grinding Operations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-4	Temporary Stream Crossing (3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
NS-5	Clear Water Diversion (3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	This BMP will be used in a later Stage.
NS-6	Illegal Connection and Illegal Discharge Detection Reporting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
To be determined						

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NS-7	Potable Water / Irrigation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-8	Vehicle and Equipment Cleaning	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-9	Vehicle and Equipment Fueling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-10	Vehicle and Equipment Maintenance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-11	Pipe Driving Operations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-12	Concrete Curing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-13	Material and Equipment Used Over Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-14	Concrete Finishing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
NS-15	Structure Demolition / Removal Over or Adjacent to Water	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
ALTERNATIVE BMPs USED⁽⁴⁾						
<input type="radio"/> Yes <input checked="" type="radio"/> No						

Notes:

- (1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
- (2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
- (3) The BMPs listed above are incidental and do not include operations listed as separated line items in the contract.
- (4) Use of alternative BMPs will require written approval by the RE.

The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

- NS-6 Illegal Connection and Illegal Discharge Detection Reporting
- NS-7 Potable Water/Irrigation
- NS-8 Vehicle and Equipment Cleaning
- NS-9 and NS-10 Vehicle and Equipment Fueling and Maintenance
- NS-12 Concrete Curing
- NS-14 Concrete Finishing
- NS-1 Water Control and Conservation

NS-1 Water Control and Conservation

Water that is used during construction shall be minimized in order to control erosion and discharge into storm drain systems or receiving water bodies. Water shall be used conservatively to prevent ponding, erosion and transport of sediment, and discharge from watering operations into storm drain facilities or water bodies shall be documented and reported to the Resident Engineer. Water equipment shall be inspected at least once a week and equipment failures shall be repaired immediately.

NS-6 Illegal Connection and Illegal Discharge Detection Reporting

The job site and perimeter shall be inspected for evidence of illegal or illicit connections, illegal discharges and dumping prior to the start of work, and daily after work has started. Illegal connections, discharges, or dumping should be reported to the Resident Engineer and appropriate action taken upon direction of Resident Engineer. All leaks, spills, breaches or other unauthorized discharges observed and identified must be cleaned up immediately and managed and/or disposed of properly.

NS-7 Potable Water/Irrigation

Potable water used during construction activities, including irrigation or wind erosion control uses, shall be controlled so as to not result in permanent standing water or non-stormwater discharge to storm drain facilities or receiving water bodies. All necessary permit and approvals shall be obtained prior to connecting to and using potable sources.

NS-8 Vehicle and Equipment Cleaning

Vehicles and equipment should be cleaned off-site except when it is necessary to avoid tracking of sediment or hazardous waste. The Resident Engineer shall be notified when equipment is washed on the job site using soap, solvents or steam. The use of diesel to clean vehicles and equipment is prohibited and the use of solvents and water should be minimized; any residue or runoff from cleaning operations should be collected and disposed of as stated in the Contract Special Provision and as directed by the Resident Engineer.

NS-9 and NS-10 Vehicle and Equipment Fueling and Maintenance

Vehicles and equipment should be fueled off-site. If fueling or maintenance must be done at the job site, assign a site that is on level ground and in an area protected from stormwater runoff. Containment berms or dikes should be placed and adequate quantities of absorbent material and spill kits should be made available. Fueling nozzles must be equipped with an automatic shutoff control, and must be equipped with vapor-recovery systems. Used materials should be recycled or properly disposed of. If leaks cannot be repaired immediately, the vehicle or equipment should be removed from the job site.

500.4.2 Waste Management and Materials Pollution Control

An inventory of construction activities, materials, and wastes is provided in Section 500.1.1. The following BMP consideration checklist lists the BMPs that have been selected to control construction site wastes and materials. Locations and details of applicable materials handling and waste management BMPs are shown on the WPCDs from Attachment BB. In the narrative description, a list of waste disposal facilities and the type of waste to be disposed at each facility is also provided. The following list of BMPs and associated narratives explain how the selected BMPs will be incorporated into the project.

TABLE 500.4.2 TEMPORARY WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs						
CONSTRUCTION BMP ID NO.(1)	BMP NAME	CONTRACT MIN REQUIRE- MENT(2)	CONTRACT BID ITEM	BMP USED		IF A CONTRACT MINIMUM REQUIREMENT BUT NOT USED, STATE REASON
				Yes	No	
WM-1	Material Delivery and Storage	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
To be determined						

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WM-2	Material Use	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-3	Stockpile Management	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-4	Spill Prevention and Control	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-5	Solid Waste Management	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-6	Hazardous Waste Management (3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-7	Contaminated Soil Management (3)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-8	Concrete Waste Management	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-8	Temporary Concrete Washout (Portable)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-8	Temporary Concrete Washout Facility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="radio"/>	<input checked="" type="radio"/>	
WM-9	Sanitary/Septic Waste Management	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
WM-10	Liquid Waste Management	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	
ALTERNATIVE BMPs USED⁽⁴⁾						
<input type="radio"/> Yes <input checked="" type="radio"/> No						

Notes:

- (1) The BMP designations (SS-1, SC-3, etc.) are solely for maintaining continuity with existing Caltrans documents and are not provided to imply that the Construction Site BMP Reference Manual is a required contract document.
- (2) Minimum requirements are based on the required contract provisions, standard special provisions, plans and specifications. Not all minimum requirements may be applicable to every project. Applicability to a specific project shall be determined by the QSD or WPC Manager.
- (3) The BMPs listed above are incidental and do not include operations listed as separated line items in the contract.
- (4) Use of alternative BMPs will require written approval by the RE.

Only a limited amount of items would be stored in the first 70 days for stage 1 and the beginning of stage 2. Employees trained in emergency spill clean-up procedures will be present.

WM-1 Material Delivery and Storage and WM-2 Material Use

Minimize or eliminate the discharge of material into the air, storm drain systems, and receiving waters while taking delivery of, using or storing the following material:

1. Hazardous chemicals, including acids, lime, glues, adhesives, paints, solvents, and curing compounds

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2. Soil stabilizers and binders
 3. Fertilizers
 4. Detergents
 5. Plaster
 6. Petroleum materials, including fuel, oil, and grease
 7. Asphalt and concrete components
 8. Pesticides and herbicides

Dedicated refueling areas will be located at least 50 ft from a body of water. Waste materials shall not be placed within 50 linear feet of waters of the State or where the material may be washed by rainfall into waters of the State. For example, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement, or concrete or concrete washings, welding slag, oil or associated activity or whatever nature, shall not be allowed to enter into waters of the State. The minimum requirements shall include: storing hazardous material at least 50 linear feet outside of the stream banks; checking equipment for leaks and preventing the use of equipment with leaks; and pressure washing or steam cleaning equipment to remove fluid residue on any of its surfaces prior to its entering any stream channel in a manner that does not result in a discharge to waters of the State.

If materials are stored:

1. Store liquids, petroleum materials, and substances listed in 40 CFR 110, 117, 302, and place them in secondary containment facilities as specified by US DOT for storage of hazardous materials.
2. Secondary containment facilities must be impervious to the materials stored therein for a minimum contact time of 72 hours.
3. Cover secondary containment facilities during non-working days and whenever precipitation is forecasted. Secondary containment facilities must be adequately ventilated.
4. Keep secondary containment facilities free of accumulated stormwater or spills. After precipitation, or in the event of spills or leaks, collect accumulated liquid and place it into drums within 24 hours. Handle the liquid as hazardous waste under "Waste Management" of these special provisions. Unless testing confirms that the liquid is non-hazardous.
5. Do not store incompatible materials, such as chlorine and ammonia, in the same secondary containment facility.
6. Store materials in their original material labels maintained in legible condition. Immediately replace damaged or illegible labels.
7. Secondary containment facilities must have the capacity to contain precipitation from a 24-hour, 25-year storm, plus 10 percent of the aggregate volume of all containers or the entire volume of the largest container within the facility, whichever is greater.
8. Store bagged or boxed material on pallets. Protect bagged or boxed material from wind and rain during non-working days and whenever precipitation is forecasted.
9. Provide sufficient separation between stored containers to allow for spill cleanup or emergency response access. Storage areas must be kept clean, well-organized, and equipped with cleanup supplies appropriate for the material being stored.
10. Repair or replace perimeter controls, containment structures, covers, and liners as necessary. Inspect storage areas before and after precipitation and at least weekly during other times.

WM-3 Stockpile Management

Stockpiling of materials at the job site should be minimized. The stockpile locations can be any place on the freeway or frontage road pavement protected by k-rail during stage construction or an off-site location as determined by the the

Contractor and approved by the Resident Engineer. Protection of stockpiles is required and must be implemented in compliance with the Contract Specifications and as directed by the Resident Engineer. Stockpiles will be properly covered and sediment/perimeter controls will be used for stockpiles after 14 days of inactivity. Water pollution control practices should be implemented 72 hours of stockpiling material or before a forecasted storm event, whichever occurs first. If stockpiles are being used, soil, sediment or other debris are not allowed to enter storm drains, open drainages, and watercourses. In addition, stockpile locations must be a minimum, 50 feet away from concentrated flows of stormwater, drainage courses, and inlets. Linear sediment barriers and covers should be repaired or replaced as needed to keep them functioning properly.

Active and inactive soil stockpiles must be:

1. Covered with soil stabilization material or a temporary cover
2. Surrounded with a linear sediment barrier

WM-4 Spill Prevention and Control

Material or waste storage areas must be kept clean, well-organized, and equipped with enough cleanup supplies for the material being stored. Spill and leak prevention procedures should be implemented for chemicals and hazardous substances stored on the job site. All hazardous spills must be reported to the WPC Manager and Resident Engineer immediately. As soon as it is safe, spills of petroleum materials and sanitary and septic waste substances must be contained and cleaned as described under 40 CFR, Parts 110, 117, and 302.

WM-9 Sanitary/Septic Waste Management

Local health agency provisions shall be compiled with when using an on-site disposal system. Sanitary or septic system wastewater must not be buried or discharged within the highway. A sanitary facility discharging into a sanitary sewer system must be properly connected and free from leaks. Portable sanitary facilities must be placed at least 50 feet away from receiving water and 50 feet away from waters of the State or where the material may be washed by rainfall into waters of the State.

500.5 Water Pollution Control Drawings

The WPCDs are the component of the project SWPPP that show the BMPs, by project phase/stage, that are necessary for the project to be in compliance with the CGP. The construction activity phases used in this SWPPP are the preliminary phase, grading phase, highway construction phase, and the highway planting / erosion control establishment phase. These phases are defined below.

Preliminary Phase (Pre-Construction Phase – Part of the Grading Phase)

Includes rough grading/or disking, clearing and grubbing operations, or any soil disturbance prior to mass grading.

Grading Phase

Includes reconfiguring the topography for the highway, including excavation for roadway (e.g., necessary blasting of hard rock), highway embankment construction (fills); mass grading, and stockpiling of select material for capping operations.

Highway Construction Phase

Encompasses both highway and structure construction. Highway construction includes final roadway excavation, placement of base materials and highway paving, finish grading, curbs, gutters and sidewalks, public utilities, public water facilities including fire hydrants, public sanitary sewer systems, storm drain systems and/or other drainage improvements, highway lighting, traffic signals and/or other highway electrical work, guardrail, concrete barriers, sign installation, pavement markers, traffic striping and pavement markings. Structure construction includes structure footings, bridges, retaining walls, major culverts, overhead sign structures and buildings.

Highway Planting / Erosion Control Establishment Phase

Includes clearing and grubbing operations, soil preparation (grading, incorporation of soil amendments, and placement of topsoil), irrigation (trenching, installation and trench backfilling), minor grading (top dressing and fine grading of lawn and ground cover areas), planting (seeding and planting of vegetation), mulching (application of wood chips or other mulches) and plant establishment (weeding, plant replacement, and, if needed, fertilizer application, irrigation maintenance, and reapplication of mulch). Erosion control includes placement of permanent erosion control materials and maintenance of temporary sediment controls during the erosion control establishment period.

The WPCDs provide field staff with the information on where to install BMPs so that they are effective. The WPCDs, WPCBML and Water Pollution Control Schedule provide the necessary tools for a Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCD cover sheet(s) shall include a listing of the BMPs that will be used along with the associated BMP symbols used on the WPCDs.

WPCDs are provided for all areas that are directly related to the construction activity, including but not limited to staging areas, storage yards, material borrow areas and storage areas, access roads, etc., whether or not they reside within the Caltrans rights-of-way

The WPCDs shall show the construction project site in detail, including:

- the construction site perimeter;
- geographic features within or immediately adjacent to the site; include surface waters such as lakes, streams, springs, wetlands, estuaries, ponds, and the ocean;
- site topography before and after construction; include roads, paved areas, buildings, slopes, drainage facilities, and areas of known or suspected contamination; and
- permanent (post-construction) BMPs.

The WPCDs shall show the following site information:

- discharge points from the project to off-site storm drain systems or receiving waters;
- tributary areas and drainage patterns across the project area (show using flow arrows) into each on-site stormwater inlet or receiving water;
- tributary areas and drainage patterns to each on-site stormwater inlet, receiving water or discharge point;
- off-site tributary drainage areas that generate run-on to the project;
- temporary on-site drainage(s) to carry concentrated flows;
- drainage patterns and slopes anticipated after major grading activities are completed;
- outlines of all areas of existing vegetation, soil cover, or native vegetation that will remain undisturbed during the project;
- outlines of all areas of planned soil disturbance (disturbed soil areas, DSAs);
- known location(s) of contaminated or hazardous soils; and
- any potential non-stormwater discharges and activities, such as dewatering operations, concrete saw-cutting or coring, pressure washing, waterline flushing, diversions, cofferdams, and vehicle and equipment cleaning; if operations can't be located on the WPCDs, a narrative description should be provided.

The WPCDs show proposed locations of all construction site BMPs. Additional detail drawings are provided if necessary to convey site-specific BMP configurations. The WPCDs shall show construction site BMPs including the following:

- temporary soil stabilization and temporary sediment control BMPs that will be used during construction; any temporary on-site drainage(s) to carry concentrated flows, BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets;
- construction entrances used for site ingress and egress points and any proposed temporary construction roads;
- BMPs to mitigate or eliminate non-stormwater discharges;
- BMPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal; and
- BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning.

The WPCDs can be found in Attachment BB of the SWPPP.

500.6 Water Pollution Control BMP List

The Water Pollution Control Best Management Practices List (WPCBMPL) provides, by location and project phase/stage, the BMPs necessary for the project to be in compliance with the CGP. The WPCBMPL provides field staff both with a list of necessary BMPs and with an estimated quantity for each BMP by location and phase/stage of the project. The construction activity phases are typically the Preliminary Phase, Grading Phase, Highway Construction Phase, and the Highway Planting / Erosion Control Establishment Phase. The construction activity phases are defined in Section 500.5.

The WPCBMPL, water pollution control drawings and water pollution control schedule provide the tools necessary for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP. The BMPs listed on the WPCBMPL are the base line for site inspections and visual monitoring.

The WPCBMPL cover sheet includes a list of all BMPs to be used on the project based on Section 500 Determination of Construction Site Best Management Practices.

The names and number of locations listed on the WPCBMPL were established so that field staff and inspectors can easily identify where BMPs need to be located. The WPCBMPL includes all locations that are directly related to the construction activity, including but not limited to staging areas, storage yards, material borrow areas and storage areas, access roads, etc., whether or not they reside within Caltrans rights-of-way.

Necessary additional information to convey site-specific BMP configurations or BMP modifications are noted on the WPCBMPL.

All construction site BMPs are listed on the WPCBMPL including the following:

- temporary soil stabilization and temporary sediment control BMPs that will be used during construction; include temporary on-site drainage(s) to carry concentrated flows
- BMPs implemented to divert off-site drainage around or through the construction site, and BMPs that protect stormwater inlets

-
- BMPs to mitigate or eliminate non-stormwater discharges BMPs for waste management and materials pollution control, including, but not limited to storage of soil or waste; construction material loading, unloading, storage and access areas; and areas designated for waste handling and disposal
 - BMPs for vehicle and equipment storage, fueling, maintenance, and cleaning
 - permanent BMPs that are a component of the project SWPPP

The WPCBMPL can be found in Attachment CC of the SWPPP.

500.7 Water Pollution Control Schedule

The Water Pollution Control Schedule (WPCS) is the component of the project SWPPP that shows the timeline for when BMPs will be installed so that the project is in compliance with the CGP. The WPCS provides field staff with the information necessary to plan for adequate materials and crews to install BMPs at the right time so that they are effective. The WPCS, WPCBMPL, and WPCDs provide the necessary tools for the Contractor to plan and implement BMPs to meet the requirements of the project SWPPP.

The WPCS shall contain an adequate level of detail to show major activities sequenced with the implementation of construction site BMPs, including:

- project start and finish dates, including each stage of the project
- SWPPP review and approval
- annual certifications
- mobilization dates
- mass clearing and grubbing/roadside clearing dates
- major grading/excavation dates
- dates named in other permits such as TRPA, Fish and Game and Army Corps of Engineers Permits
- dates for submittal of SWPPP amendments as required in the contract specifications

The WPCS shall show by location the dates for the deployment of:

- temporary soil stabilization BMPs
- temporary sediment control BMPs
- wind erosion control BMPs
- tracking control BMPs
- non-stormwater BMPs
- waste management and materials pollution control BMPs

The WPCS shall include:

- paving, saw-cutting, and any other pavement-related operations;
- major planned stockpiling operations;

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- dates for other significant long-term operations or activities that may cause non-stormwater discharges, such as dewatering, grinding, etc; and

 - final stabilization activities for each disturbed soil area of the project.

The WPCS shall be updated quarterly and the quarterly updates shall be filed in SWPPP File Category 20.03: Water Pollution Control Schedule Updates.

The Water Pollution Control Schedule can be found in Attachment DD of the SWPPP.

The WPCS shall be provided prior to the start of Stage 1 work and any other work proposed during the first 45 days of construction for the Resident Engineer's approval. The WPCS must include scheduling for the placement of Temporary Fence (Type ESA) for designation of environmentally sensitive areas, and implementation of BMPs during Stage 1. This Conceptual SWPPP only covers work outside of San Francisquito Creek. Any in-creek work is not covered, such as: temporary creek diversion system, cofferdam, temporary gravel bag berms, etc. Any additional work, or other work that results in soil disturbance, is beyond the allowable work covered under this Conceptual SWPPP; if additional or other work is scheduled, a plan and amendment to this Conceptual SWPPP must be provided to the Resident Engineer for approval. Once the WPCS has been approved by the Resident Engineer, the WPCS will be included as Attachment B to this Conceptual SWPPP.

The updated Water Pollution Control Schedule will be provided by the Contractor or the Contractor's WPC Manager within 5 days of the Contract award.

SECTION 600

PROJECT SITE IMPLEMENTATION PROGRAM

600.1 Water Pollution Control Manager Responsibilities

The WPC Manager shall have primary responsibility and authority to implement the SWPPP and ensure the project is in compliance with the CGP. The WPC Manager is responsible for implementing the SWPPP and amending the SWPPP when any of the conditions specified in Section 100.3 are met. The Contractor has assigned authority to the WPC Manager to mobilize crews and subcontractors, as necessary, for SWPPP and CGP compliance. The WPC Manager will be available at all times throughout duration of the project.

Duties of the Contractor's WPC Manager include but are not limited to the following

- ensuring full compliance with the SWPPP and the CGP
- implementing all elements of the SWPPP, including but not limited to implementing:
 - prompt and effective erosion and sediment control measures
 - all non-stormwater management, and materials and waste management activities such as: monitoring discharges (dewatering, diversion devices); performing general site cleanup; cleaning vehicles and equipment, performing fueling and maintenance activities; providing spill control; ensuring that no materials other than stormwater are discharged in quantities that will have an adverse effect on receiving waters or storm drain systems, etc.
- overseeing and ensuring that the following site inspections and visual site monitoring are conducted:
 - daily required BMP inspections
 - weekly routine stormwater site BMP inspections
 - quarterly non-stormwater site inspections
 - pre-storm inspections prior to forecasted storm events
 - daily inspections during extended forecasted storm events
 - post-storm inspections for qualifying rain events
- mobilizing crews to repair, replace, and/or implement additional BMPs due to deficiencies, failures or other shortcomings identified during inspections, to be completed within 24 hours of identification in compliance with Standard Specification 13-1.03A (the contractor's WPC Manager shall be assigned authority by the Contractor to mobilize crews), unless a longer period is authorized.
- coordinating with the RE to assure that if design changes to BMPs are required due to deficiencies, failures or other shortcomings identified during inspections, the changes are completed as soon as possible and the SWPPP is revised accordingly
- monitoring NWS Forecast Office forecasts for both forecasted storm events and qualifying rain events; these events are defined as follows:
 - a forecasted storm event is defined as a 50% or greater likelihood that 0.10 inch or more of precipitation will fall within a 24-hour period

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- a qualifying rain event is defined as a rain event that may produce or has produced ½ inch or greater of precipitation at the time of discharge, with a 72-hour dry period between events
 - monitoring weather at the project site
 - preparing and implementing qualifying rain event sampling and analysis plans
 - preparing and implementing Rain Event Action Plans for forecasted storm events
 - mobilizing crews immediately, in the event of NAL exceedances, to repair existing BMPs and/or implement additional BMPs (the Contractor's WPC Manager shall be assigned authority by the Contractor to mobilize crews),
 - coordinating with the RE in the event of NAL exceedances to assure that any SWPPP revisions (corrective actions) are made immediately, either to prevent pollutants and authorized non-stormwater discharges from contaminating stormwater, or to substantially reduce the pollutants to levels consistently below the NALs, so that the project complies with the SWPPP, the CGP and approved plans at all times,
 - submitting NAL exceedances reports to the RE
 - submitting test results for stormwater samples to the RE
 - preparing amendments to the SWPPP when required
 - preparing contractor's SWPPP Annual Compliance Certification
 - preparing the Stormwater Annual Reports
 - ensuring elimination of all unauthorized discharges
 - preparing and submitting Notice of Discharge reports to the RE
 - preparing and submitting reports of illicit connections or illegal discharges to the RE

600.2 Site Inspections

Stormwater site inspections and visual monitoring are necessary to ensure that the project is in compliance with the requirements of the CGP. Project site visual monitoring requirements are covered in Section 700 Construction Site Monitoring Program. Project site inspections of stormwater BMPs are conducted to identify and record:

- that BMPs are properly installed
- what BMPs need maintenance to operate effectively
- what BMPs have failed
- what BMPs could fail to operate as intended.

Routine stormwater site inspections shall be conducted by the contractor's WPC Manager or other 24-hour trained staff at the following minimum frequencies:

- daily inspections of:
 - storage areas for hazardous materials and waste
 - hazardous waste disposal and transporting activities

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- hazardous material delivery and storage activities
 - vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
 - vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
 - vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
 - demolition sites within 50 feet of storm drain systems and receiving waters
 - pile driving areas for leaks and spills if pile driving occurs daily
 - temporary concrete washouts if concrete work occurs daily
 - paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
 - dewatering work if dewatering work occurs daily
 - temporary active treatment system if temporary active treatment system activities occur daily
 - work over water if work over water occurs daily
- daily inspections for projects within the Lake Tahoe Hydrologic Unit
 - daily inspections of access roadways
 - weekly inspection of site BMPs

Stormwater site inspections shall be documented on CEM-2030 Stormwater Site Inspection Report, in Appendix G. Completed stormwater inspection reports shall be submitted to the RE within 24 hours after completion of the inspection. Copies of completed inspection reports will be kept in SWPPP File Category 20.31: Contractor Stormwater Site Inspection Reports,

Deficiencies identified during site inspections and correction of deficiencies will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective Action Summary forms shall be submitted to the RE when corrections are completed but must be submitted within five (5) days after completion of the site inspection. Completed Stormwater Site Inspection Report Corrective Actions Summary forms shall be filed in SWPPP File Category 20.35: Corrective Actions Summary. A copy of the completed Corrective Actions Summary form will also be attached to the corresponding Stormwater Site Inspection Report that generated the need for the CEM-2035 Stormwater Corrective Actions Summary

600.3 Weather Forecast Monitoring

The WPC Manager shall have primary responsibility to monitor the National Weather Service Forecast Office for forecasted precipitation based on project site location. Precipitation forecast information shall be obtained from the National Weather Service Forecast Office accessible at: <http://www.srh.noaa.gov/>.

The project site location to be used for obtaining forecast from National Weather Forecast Office website is:

US 101/San Francisquito Creek Bridge Crossing in the City of East Palo Alto and Palo Alto;
Latitude: 37.4527358 degrees North, Longitude: 122.1279212 degrees West

The WPC Manager shall monitor the weather forecast on a daily basis for predicted precipitation within the following 96 hours. The WPC Manager shall monitor the forecast for the next 24, 48, 72 and 96 hours to determine if the forecast for precipitation is 50 percent or greater for any 6-hour period. If the forecast for precipitation is 50 percent or greater, the WPC Manager shall calculate the amount of precipitation forecasted for each 24-hour period and the total precipitation for the forecasted storm event and record the information. Weather forecast monitoring shall be recorded be filed in File Category 20.40: Weather Monitoring Logs.

When the forecast for precipitation is 50 percent or greater and the forecasted amount of precipitation is 0.10 inch or more for any 24-hour period within the next 72 hours, the WPC Manager shall perform a pre-storm site inspection and ensure that the site is prepared for the likely forecasted storm event.

For Risk Level 2 and 3 the WPC Manager will prepare a Rain Event Action Plan for forecasted storm events.

Forecasted storm event site preparation shall include, but is not limited to, the installation of soil stabilization and sediment BMPs on active disturbed soil areas and stockpiles.

600.4 Weather Monitoring

The WPC Manager shall have primary responsibility to monitor weather at the project site. The WPC Manager, on a daily basis, shall monitor the weather and record the weather conditions.

When there is precipitation, the WPC Manager shall ensure that storm precipitation data is obtained from the project site rain gauge. Precipitation monitoring will include recording the time, amount of precipitation measured in the project site rain gauge, amount of precipitation within a 24-hour period, and total cumulative amount of precipitation for the forecasted storm event.

If no pre-storm visual site monitoring was performed, and the amount of precipitation for any 24-hour period is 0.10 inch or greater, the WPC Manager will implement during storm visual site monitoring, as discussed in Section 700.1.

When a forecasted storm event was not forecasted to be a qualifying rain event, but the measured cumulative amount of precipitation for the storm event and the expected severity of the continuing storm event results in ½ inch or more of precipitation, the WPC Manager will prepare to sample.

Weather monitoring will be conducted daily. Weather monitoring documentation shall be kept in File Category 20.40: Weather Monitoring Logs.

600.5 Best Management Practices Status Report

The WPC Manager shall prepare a monthly status report of the water pollution control BMPs (site BMPs) installed on the project site. The monthly BMP status report will be based on the progress of the work and the WPCBMPL for the project, with any additional BMPs the WPC Manager has determined are necessary based on the stage of construction and construction activities.

Because the SWPPP, including the WPCBMPL and WPCDs, are based on the entire project site and all construction activities, the monthly BMP status report should be a “snapshot” of which BMPs are deployed on the project site, so a project inspector or reviewer can easily determine what could be expected to be seen on the project site that month. The monthly status report will be used by stormwater inspectors and contractor personnel to ensure SWPPP compliance.

The weekly status report will be used to ensure that weekly training meetings cover BMPs that are required for work activities during the week. The weekly status report will be provided to regulatory agency staff who visit the project site to indicate which BMPs should be in place and which are scheduled to be implemented during the coming week.

The monthly status of stormwater BMPs will be documented on CEM-2034 Stormwater Best Management Practices and Materials Inventory Report form, in Appendix H. Completed monthly status reports shall be submitted to the RE 48 hours prior to the beginning of the work week. Copies of the completed reports will be kept in SWPPP File Category 20.34: Monthly Best Management Practices and Materials Inventory Reports.

600.6 Rain Event Action Plans (REAP)

REAPs will be prepared by the WPC Manager when there is a forecasted storm event. A forecasted storm event is any weather pattern that is forecasted to have a 50 percent or greater probability of producing precipitation of 0.10 inch or more within any 24-hour period at the project site location. The WPC Manager will prepare the REAP for the forecasted storm event based on the current construction activity phase of the project. For REAPs, the construction activity phases are the Highway Construction Phase, Highway Planting / Erosion Control Establishment Phase or Inactive Project Phase. The construction activity phases are defined in Section 500.5.

When the NWS forecast for 72 hours and greater predicts a forecasted storm event, the WPC Manager will prepare a REAP using the REAP form appropriate to the current project stage. REAP forms are available in Appendix L. Prepared REAPs shall be submitted to the RE at least 48 hours prior to a forecasted storm event. If the NWS forecast changes and a storm event is forecasted to occur within 24-72 hours then a REAP must be prepared. If the NWS forecast changes and a storm event is forecasted to occur within the next 24 hours a REAP will not be prepared and the WPC Manager will take immediate actions to ready the project site for the forecasted storm event.

The WPC Manager shall implement a REAP within the 48 hours prior to the forecasted storm event. A copy of the REAP shall be available on the job site at least 48 hours prior to the forecasted storm event. Copies of REAPs will be maintained in SWPPP File Category 20.45: Rain Event Action Plans in reverse chronologic order.

SECTION 700

CONSTRUCTION SITE MONITORING PROGRAM

700.1 Site Visual Monitoring Inspection

This Construction Site Monitoring Program includes conducting site visual monitoring inspections of the project site to address the following objectives:

- determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives
- determine whether BMPs included in the SWPPP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges
- determine whether BMPs included in the REAP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges
- demonstrate that the site is in compliance with the discharge prohibitions and applicable NALs and Receiving Water Monitor Triggers of the CGP
- determine whether immediate corrective actions, additional BMP implementation, or SWPPP amendments are necessary to reduce pollutants in stormwater and authorized non-stormwater discharges
- demonstrate that the site is in compliance with the discharge prohibitions
- document the presence or evidence of any non-stormwater discharge (authorized or unauthorized), pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.), and source, if applicable, and the response taken to eliminate unauthorized non-stormwater discharges and to reduce or prevent pollutants from contacting non-stormwater discharges

700.1.1 Visual Monitoring Locations

Locations of Visual Monitoring Prior To A Storm Event

Visual monitoring (a pre-storm inspection) of the project site is required when the forecast for precipitation is greater than 50 percent within the next 24, 48, 72, 96 hours, and the amount of precipitation forecasted for any 24-hour period is 0.10 inch or greater. Within 48 hours of a forecasted storm event, a stormwater visual monitoring site inspection shall be performed and shall include observations of:

- stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources
- BMPs to identify whether they have been properly implemented
- any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard

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3 drainage area(s) on the project site and the Contractor’s yard, staging areas, and storage areas have been identified as required forecasted storm event visual observation location(s), according to Section I.3.e of Attachments C, D, and E of the CGP. Drainage area(s) are shown on the WPCDs in Attachment BB and are listed by drainage area location number and location description in Table 700.1.1.1: Drainage Areas.

TABLE 700.1.1.1 DRAINAGE AREAS	
Drainage Area No.	Location
D1	82.59' LT "RD" Line 322+04.97
D2	1.37' Lt "RD" Line 322+08.58
D3	114.33' Rt "RD" Line 321+30.04

0 stormwater storage or containment area(s) are located on the project site. These stormwater storage and containment area(s) have been identified as required forecasted storm event visual observation location(s). Stormwater storage or containment area(s) are shown on the WPCDs from Attachment BB and are listed by storage or containment area location number and location description in Table 700.1.1.2: Stormwater Storage and Containment Areas.

TABLE 700.1.1.2 STORMWATER STORAGE AND CONTAINMENT AREAS	
Location No.	Location
N/A	N/A

Locations of Visual Monitoring during Extended Forecasted Storm Events and within 48 Hours After a Qualifying Rain Event

During any extended forecasted storm events and within 48 hours after a qualifying rain event (a rain event that has produced ½ inch or more of precipitation), a stormwater visual monitoring site inspection is required to observe:

- stormwater discharges at all discharge locations
- BMPs to identify and record those that need maintenance to operate effectively, those that have failed, and those that could fail to operate as intended
- the discharge of stored or contained stormwater

1 discharge location(s) are located on the project site. These stormwater discharge location(s) have been identified as required visual observation location(s). Stormwater discharge location(s) are shown on the WPCDs in Attachment BB and are listed in Table 700.1.1.3: Stormwater Discharge Locations.

TABLE 700.1.1.3 STORMWATER DISCHARGE LOCATIONS	
Unique Sampling Location Identifier	Location

01RWD1	244.00' LT "RD" Line 322+59.00
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BMP locations shown on the WPCDs in Attachment BB and are listed on the WPCBMPL in Attachment CC.

0 stormwater storage or containment area(s) are located on the project site. Stormwater storage or containment area(s) are shown on the WPCDs in Attachment BB and are listed on Table 700.1.1.2: Stormwater Storage and Containment Areas.

Locations of Visual Monitoring for Non-Stormwater Discharges

A visual monitoring site inspection for non-stormwater discharges requires that each drainage area be observed for the presence of or indications of prior unauthorized and authorized non-stormwater discharges.

3 drainage area(s) are located on the project site and in the contractor's yard, staging areas, and storage areas that have been identified as observation location(s) for non-stormwater discharges. Drainage area(s) are shown on the WPCDs in Attachment BB and are listed in Table 700.1.1.1: Drainage Areas.

700.1.2 Visual Monitoring Schedule

On a daily basis, contractor personnel will visual monitor the all immediate access roadways.

On a daily basis contractor personnel will visually monitor BMPs during applicable activities:

- storage areas for hazardous materials and waste
- hazardous waste disposal and transporting activities
- hazardous material delivery and storage activities
- vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
- vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
- vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
- demolition sites within 50 feet of storm drain systems and receiving waters
- pile driving areas for leaks and spills if pile driving occurs daily
- temporary concrete washouts if concrete work occurs daily
- paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
- dewatering work if dewatering work occurs daily
- temporary active treatment system if temporary active treatment system activities occur daily
- work over water if work over water occurs daily

Stormwater site visual monitoring inspections shall be conducted at a minimum:

- within 48 hours prior to a forecasted storm event (any weather pattern that is forecasted to have a 50 percent or greater probability of producing 0.1 inches or more of precipitation in the project area within a 24 period)
- at 24-hour intervals during any extended forecasted storm event
- within 48 hours after a qualifying rain event (a rain event that has produced ½ inch or more of precipitation)

Non-stormwater discharge site visual monitoring inspections shall be conducted, at a minimum, during each of the following periods: January-March, April-June, July-September, and October-December.

If visual monitoring of the site for stormwater is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the site inspector shall document the conditions that prevented the inspection. The documentation of the site visual monitoring inspection shall be filed in SWPPP File Category 20.33: Site Visual Monitoring Inspection Reports.

700.1.3 Visual Monitoring Procedures

Site visual monitoring inspections shall be overseen by the contractor's WPC Manager. Site visual monitoring will be conducted by the WPC Manager, appointed QSP or stormwater inspector.

The name(s) and contact number(s) of the site visual monitoring inspection personnel are listed below and their training qualifications are provided in Attachment E:

- | | | | |
|------------------------|------------------|----------------|------------------|
| ● Assigned Inspector: | To be determined | Contact phone: | To be determined |
| ● Alternate Inspector: | To be determined | Contact phone: | To be determined |

Daily Access Road Monitoring

All immediate access roads must be inspected on a daily basis. Any sediment or other construction-related materials deposited on the roads must be removed daily (or more frequently when necessary) and prior to any rain event.

Daily BMP Monitoring During Applicable Activities

Standard Specification 13-1.03C requires that the contractor personnel on the site shall inspect the following activities on a daily basis:

- storage areas for hazardous materials and waste
- hazardous waste disposal and transporting activities
- hazardous material delivery and storage activities
- vehicle and equipment cleaning facilities if vehicle and equipment cleaning occurs daily
- vehicle and equipment maintenance and fueling areas if vehicle and equipment maintenance and fueling occurs daily
- vehicles and equipment at the job site to verify that operators are inspecting vehicles and equipment each day of use.
- demolition sites within 50 feet of storm drain systems and receiving waters
- pile driving areas for leaks and spills if pile driving occurs daily
- temporary concrete washouts if concrete work occurs daily

- paved roads at job site access points for street sweeping if earthwork and other sediment or debris generating activities occur daily
- dewatering work if dewatering work occurs daily
- temporary active treatment system if temporary active treatment system activities occur daily
- work over water if work over water occurs daily

Discharge Monitoring

During inspections, the contractor personnel shall be observant of any discharges or evidence of a prior discharge that could cause adverse conditions in the storm sewer system or the receiving water. If a discharge or evidence of a prior discharge is discovered by the contractor, the WPC Manager or contractor shall immediately notify the RE, and shall file a written report on the CEM-2061 Notice of Discharge form with the RE within 24 hours of the discharge or discovery of evidence of a prior discharge. Corrective measures shall be implemented immediately following the discovery of the discharge. Form CEM-2061 for reporting discharges is available in Appendix K.

Caltrans will notify the owner/operator of the MS4 and the RWQCB as soon as practicable, but no later than 24 hours after onset of or threat of discharge which can cause adverse conditions to the storm sewer system or the receiving water. This applies to any such discharge that is not covered by California Emergency Management Agency procedures for discharges from a highway to a storm sewer system subject to a MS4 permit.

Discharges requiring reporting include:

- stormwater from a DSA discharged to a waterway without treatment by an effective combination of temporary erosion and sediment control BMPs
- non-stormwater, except conditionally exempted discharges, discharged to a waterway or a storm drain system, without treatment by an approved control measure (BMP)
- stormwater discharged to a waterway or a storm drain system where the control measures (BMPs) have been overwhelmed or not properly maintained or installed
- discharge of hazardous substances above the reportable quantities, as provided in 40 CFR 110.3, 117.3 or 302.4
- stormwater runoff containing hazardous substances from spills discharged to a waterway or storm drain system

The initial notification to the RWQCB of a discharge or threat of discharge will be made immediately for any discharge that can cause adverse conditions to the storm sewer system or the receiving water, with a follow-up in writing within 24 hours. Adverse conditions include, but are not limited to, serious violations or serious threatened violations of Waste Discharge Requirements (WDRs), significant spills of petroleum products or toxic chemicals, or serious damage to control facilities that could affect compliance. Caltrans shall perform follow-up monitoring of major spills and/or perform confirmation sampling to ensure that threats to waters of the U.S. have been eliminated as determined by the local RWQCB.

Weekly BMP Monitoring

Weekly monitoring is required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. The weekly BMP monitoring shall include observations of:

- all stormwater storage and containment areas identified in Table 700.1.1.2 to detect leaks and ensure maintenance of adequate freeboard
- all BMPs for proper installation and adequate maintenance.

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced in the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 24 hours.

Visual Monitoring Prior To A Forecasted Storm Event

Visual monitoring of the project site is required when the forecast for precipitation is greater than 50 percent within the next 24, 48, 72, or 96 hours and the amount of precipitation forecasted for any 24-hour period during the storm event is 0.10 inch or greater within a 24-hour period. Site visual monitoring shall be conducted within 48 hours prior to a forecasted storm event. The pre-storm site visual monitoring shall include observations of:

- all drainage areas identified in Table 700.1.1.1 to identify any spills, leaks, or uncontrolled pollutant sources;
- all stormwater storage and containment areas identified in Table 700.1.1.2 to detect leaks and ensure maintenance of adequate freeboard
- all BMPs for proper installation and adequate maintenance.

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced in the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented within 24 hours and prior to the forecasted storm event.

Any corrective actions identified by a pre-storm visual monitoring site inspection shall be included in the REAP for the forecasted storm event.

Visual Monitoring during Extended Forecasted Storm Events

Stormwater visual monitoring site inspections shall be conducted at least once each 24-hour period during any extended forecasted storm events. During any extended forecasted storm event, the site visual monitoring inspector shall visually observe:

- stormwater discharges at all discharge locations (Table 700.1.1.3)
- all stored or contained stormwater that is derived from and discharged subsequent to the qualifying rain event producing precipitation of ½ inch or more at the time of discharge; stored or contained stormwater that will likely discharge after working hours, due to anticipated precipitation, shall be observed prior to the discharge during working hours

Stormwater discharges and stored or contained stormwater will be observed for the presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

During any forecasted storm event, stormwater visual monitoring site inspections will include the observation of all site BMPs for:

- proper installation
- achievement of maintenance requirements
- possible failure
- BMPs that could fail to operate as intended
- effectiveness, so that design changes can be implemented as soon as feasible if needed

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced on the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes.

Visual Monitoring Within 48 Hours after a Qualifying Rain Event

Site visual monitoring post-qualifying rain events shall be conducted within 48 hours after the qualifying rain event. The post-storm site visual monitoring inspection shall include observations of:

- discharges of stormwater that have not been processed by a BMP or evidence of stormwater that has not been processed by a BMP at all discharge locations
- evidence of a breach at stored or contained stormwater that is derived from and discharged subsequent to the qualifying rain event producing precipitation of ½ inch or more at the time of discharge; stored or contained stormwater that will likely discharge after working hours, due to anticipated precipitation, shall be observed prior to the discharge during working hours

Stormwater discharges and stored or contained stormwater will be observed for the presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

Post-qualifying rain event stormwater visual monitoring site inspections will include observation of all site BMPs to determine if BMPs have failed to operate as intended because of:

- improper installation
- lack of maintenance
- lack of effectiveness

Observations of the site and any recommended corrective actions will be documented in the CEM-2030 Stormwater Site Inspection Report. Any photographs used to document observations will be referenced on the stormwater site inspection report. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary, necessary implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes.

Visual Monitoring of Non-Stormwater Discharges

For non-stormwater site visual monitoring, each drainage area will be monitored quarterly for the presence or prior indications of unauthorized and authorized non-stormwater discharges, and their sources. The presence or absence of non-stormwater discharges based on site observations will be documented in the CEM-2030 Stormwater Site Inspection Report. Documentation of observed non-stormwater discharges will include presence or absence of floating and suspended materials, sheens on the surface, discolorations, turbidity, odors, and source(s) of any observed pollutants.

Site observations of the site and any recommended corrective actions will be documented. Corrective actions documented in site inspection reports shall be immediately reviewed by the WCP Manager and, if deemed necessary implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). If BMPs require design changes, the changes shall be implemented and the SWPPP shall be amended to include the changes. Corrective actions shall be documented in the CEM-2035 Stormwater Corrective Actions Summary. Any photographs used to document observations will be referenced in the CEM-2030 Stormwater Site Inspection Report.

700.1.4 Visual Monitoring Follow-up and Tracking Procedures

For deficiencies identified during visual monitoring (site inspections), the required repairs or maintenance of BMPs shall begin and be completed as soon as possible, while taking into consideration worker safety. For deficiencies identified during visual site inspections that require design changes, including additional BMPs, the implementation, as required by Standard Specification 13-1.03A, will begin within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter). When design changes to BMPs are required, the SWPPP shall be amended, including the WCBMPL and WPCDs. If NALs are exceeded, corrective actions shall be approved by the WPC Manager and implemented immediately.

Deficiencies identified on site inspection reports, as well as corrections of deficiencies, will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective action summaries shall be submitted to the RE when corrections are completed, but must be submitted within five (5) days of a site inspection.

700.1.5 Data Management and Reporting

The results of site visual monitoring (pre-storm, during storm, post-storm, and quarterly inspections) shall be recorded on the CEM-2030 Stormwater Site Inspection Report, in Appendix G. A copy of each report shall be kept in SWPPP File Category 20.33.

All reports shall be provided to the RE within 24 hours of the site inspection.

Deficiencies identified during visual monitoring (site inspections) and correction of deficiencies will be tracked on the CEM-2035 Stormwater Corrective Actions Summary, in Appendix I. Corrective Action Summary forms shall be submitted to the RE when corrections are completed, but must be submitted within five (5) days of the site inspection. Completed Stormwater Corrective Actions Summary forms shall be filed in SWPPP File Category 20.35: Corrective Actions Summary. A copy of the completed Corrective Actions Summary form will also be attached to the corresponding inspection report and shall be kept in the SWPPP Category 20.33.

If a discharge or evidence of a prior discharge that could cause adverse condition in the storm sewer or the receiving water is discovered by the Contractor, the WPC Manager or Contractor shall immediately notify the RE, and no more than 6 hours after discovery, and will file a written report to the RE within 24 hours of the discovery of evidence of a prior discharge. The written report to the RE will contain:

- the date, time, location, and type of unauthorized discharge;
- The nature of the operation that caused the discharge;
- An initial assessment of any impacts caused by the discharge;
- the BMPs deployed before the discharge;

-
- the date of deployment and type of BMPs deployed after the discharge, including additional measures installed or planned to reduce or prevent re-occurrence
 - steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Reporting of discharges shall be documented on the CEM-2061 Notice of Discharge form, in Appendix K. Completed Notice of Discharge reports shall be submitted to the RE within 24 hours of discovery of evidence of a discharge. Copies of the Notice of Discharge reports will be kept in SWPPP File Category 20.61: Notice of Discharge Reports.

700.2 Sampling and Analysis Plans

700.2.1 General SAP

A sampling and analysis plan (SAP) describes how samples will be collected, under what conditions, where and when the samples will be collected, what the sample will be tested for, what test methods and detection limits will be used, and what methods/procedures will be performed to ensure the integrity of the sample during collection, storage, shipping and testing (i.e., quality assurance/quality control protocols). Therefore, a SAP shall include the components listed below.

1. Scope of Monitoring Activities
2. Monitoring Preparation
3. Monitoring Strategy
4. Sample Collection and Handling
5. Sampling Analysis
6. Quality Control and Assurance
7. Data Management and Reporting
8. Data Evaluation
9. Change of Conditions

This SWPPP contains a non-visible pollutants SAP. The SWPPP may also contain four additional specific SAPS based on the project risk level, project dewatering requirements, RWQCB sampling and analysis requirements, and a SAP for monitoring an active treatment system.

700.2.1.1 Scope of Monitoring Activities

For specific details with regard to monitoring activities, refer to the specific SAP identified below.

- Non-visible Pollutants (Section 700.2.2.1)
- Non-Stormwater Discharges (Section 700.2.3.1)
- Stormwater pH and Turbidity (Section 700.2.4.1)
- Monitoring required by the Regional Board (Section 700.2.5.1)
- Monitoring for Active Treatment Systems (ATS) (Section 700.2.6.1)

700.2.1.2 Monitoring Preparation

To ensure an effective construction site monitoring and reporting program, the following monitoring preparation activities are required:

- identifying qualified sampling personnel
- ensuring the availability of an adequate quantity of monitoring supplies
- ensuring the availability of field instruments; field instruments must be properly maintained and calibrated prior to sampling events
- identifying a qualified testing laboratory that is capable of performing stormwater and non-stormwater analysis for those constituents that must be tested in a laboratory

700.2.1.2.1 Qualified Sampling Personnel

Sampling personnel shall be trained to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring Program (SWAMP) 2008 Quality Assurance Program Plan (QAPrP).

- Stormwater sampling and field analysis will be performed by the following primary and alternative stormwater samplers: To be determined
- To be determined

The primary stormwater sampler has received the following stormwater sampling training:

-

The primary stormwater sampler has the following stormwater sampling experience:

-

The alternate stormwater sampler has received the following stormwater sampling training:

-

The alternate stormwater sampler has the following stormwater sampling experience:

-

Training records of designated contractor sampling personnel are provided in Attachment D, Contractor Personnel Stormwater Training.

Safety practices for sample collection will be in accordance with the To be determined.

700.2.1.2.2 Monitoring Supplies

700.2.1.2.3 Field Instruments

The field instrument(s) shown in Table 700.2.1.2.3: Field Instruments will be used to analyze the constituents shown:

TABLE 700.2.1.2.3 FIELD INSTRUMENTS	
Field Instrument	Constituent
To be determined	To be determined

The instrument(s) shall be maintained in accordance with manufacturer’s instructions.

The instrument(s) shall be calibrated before each sampling and analysis event.

A Standard Operating Procedure (SOP) for calibration and maintenance of field instruments shall be implemented based on the meter manufacturer’s instructions. A copy of the manufacturer’s instructions shall be attached to the SOP so that they are readily available.

Maintenance and calibration records shall be maintained in SWPPP File Category 20.55: Field Testing Equipment Maintenance and Calibration Records.

700.2.1.2.4 Testing Laboratory

Samples collected on the project site that require laboratory testing will be tested by a laboratory certified by the State Department of Health Services. Samples collected on the project site will be analyzed by:

- Laboratory Name: **To be determined**
- Address: **To be determined**
To be determined, To be determined To be determined
- Contact Name: **To be determined**
- Title: **To be determined**
- Phone Number: **To be determined**
- Emergency Phone Number (24/7): **To be determined**
- Email Address: **To be determined**

700.2.1.3 Monitoring Strategy

The monitoring strategy includes identifying analytical constituents, potential sampling locations, identification of actual sampling locations, and sampling schedule,

700.2.1.3.1 Analytical Constituents

Stormwater and non-stormwater discharges shall be monitored for the analytical constituents specified in the specific SAP(s) in this SWPPP.

700.2.1.3.2 Potential Sampling Locations

Potential sampling locations must be representative of the stormwater and non-stormwater discharges from the construction site. Existing conditions and associated construction activities within each drainage area form the basis for determining representative stormwater sampling locations.

Project drainage areas and potential sampling locations have been determined by:

- reviewing project plans
- visiting project site
- reviewing topography maps

The WPCDs show the demarcation of all drainage areas that are either:

- within the project site
- cover part of the project site

The QSD must identify potential sampling locations where concentrated run-off:

- leaves the Caltrans right-of-way
- drains into an MS4
- discharges into a receiving water

Potential run-on sampling locations were determined where concentrated run-on:

- enters the right-of-way
- combines with the stormwater on site and then discharges into an MS4, including the location(s) of discharge into the MS4

The following locations were determined when runoff discharges directly into receiving water bodies:

- the discharge location(s) into the receiving water
- a potential sampling location upstream of all discharge locations
- a potential sampling location downstream from all discharge location(s) into the receiving water.

Necessary potential sampling locations were determined when:

- there are potential sources of non-visible pollutants, as discussed in Section 500.1, and discharge locations are downgradient
- run-on locations are present that may contribute non-visible pollutants
- there are potential non-stormwater discharges and corresponding discharge locations are downgradient
- there are proposed dewatering construction activities

If an ATS is used on site, then sample locations must be included in Section 700.2.6.

Potential stormwater and non-stormwater sampling locations must be shown on the WPCDs in Attachment BB and listed in Attachment EE: Stormwater Sample Locations. The QSD has identified each of the potential sampling locations with a unique sample location identification code, as shown below. The identification code must start with a number and must be different for each location. If the construction site lies in a west-to-east orientation, starting with one (01) from the east, the potential sampling locations shall be numbered toward the west. If the construction site lies in a south-to-north orientation, the potential sampling locations shall be numbered toward the north.

To further distinguish among the locations, each potential sampling location has been identified with one of the following abbreviations based on the sampling location type:

- discharge locations leaving Caltrans right-of-way: DL
- discharge locations from areas with known non-visible pollutants: NVP
- discharge locations upgradient of areas with known non-visible pollutants: UNVP
- discharge locations to an MS4: MS
- run-on locations: RO
- discharge locations into a receiving water: RW
- downstream of all discharge locations: RWD
- upstream of all discharge locations: RWU
- dewatering discharge locations: DDL
- contained stormwater discharge locations: CSDL
- discharge locations for ATS: ATS

The unique sample location identification code shall follow this format, **SSSTTTTXX** , where:

SSS = sampling location identifier number (e.g., 010)
 TTTT = sampling location type (e.g. DL)
 XX = identifier number for the type of sampling location

For example, the sampling location identification for the 15th sampling location based on starting from the south end of the project for a stormwater discharge location that has been identified to be the ninth discharge location would be **015DL09**.

Potential sampling locations shown on the WPCDs shall be identified with unique sampling location identifiers. Each potential sample location must be listed on Stormwater Sample Locations in Attachment EE. The unique identification of each potential sampling location based on its number and abbreviation of type shall be used on all sampling documentation.

The WPC Manager may have to revise and/or add additional sampling locations during the course of construction as conditions dictate.

700.2.1.3.3 Identification of Actual Sampling Locations

For each forecasted storm event, actual sampling locations will be determined by the WPC Manager based on the strategy described in each specific SAP.

700.2.1.3.4 Sampling Schedule

For the sampling schedule, see the specific SAPs in this CSMP. If a scheduled sampling activity is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document why an exception to performing the sampling was necessary.

700.2.1.4 Sample Collection and Handling

Sample collection procedures shall be used to ensure that representative samples are collected and that the potential for contamination of samples is minimized. Sample handling procedures are followed to ensure that samples are identified accurately and that the required analysis is clearly documented. Chain-of-custody requirements for samples are necessary to trace the possession of the sample from collection through analysis.

700.2.1.4.1 Sample Collection Procedures

Samples shall be collected, maintained and shipped in accordance with the SWAMP's 2008 QAPrP.

Grab samples shall be collected and preserved in accordance with the methods identified in each specific SAP. Only personnel trained in proper water quality sampling shall collect samples.

Samples from areas of sheet flow can be collected using the collection procedures shown in the video at <http://www.youtube.com/watch?v=AmEJUNp44aU>. For pH and turbidity sampling, sheet flow sampling can be conducted as described below to concentrate the flow in order to collect a sample or follow other procedures approved by the RE.

- Place several rows of sandbags in a half circle directly in the path of the sheet flow to pond water, and wait for enough water to spill over. Then place a cleaned or decontaminated flexible hose along the top, and cover with another sandbag so that ponded water will only pour through the flexible hose and into sample bottles. Do not reuse the same sandbags during future sampling events as they may cross-contaminate future samples.
- Place a cleaned or decontaminated dustpan with open handle in the path of the sheet flow so that water will pour through the handle and into sample bottles.

For receiving water sampling, upstream samples shall be collected to represent the water body upgradient of the construction site. Downstream samples shall be collected to represent the water body mixed with direct discharge from the construction site. Samples shall not be collected directly from ponded, sluggish, or stagnant water.

Receiving water upstream and downstream samples shall be collected using one of the following methods:

- placing a sample bottle directly into the stream flow in or near the main current upstream of sampling personnel and allowing the sample bottle to fill completely;
- OR
- placing a decontaminated or sterile bailer or other sterile collection device in or near the main current to collect the sample and then transferring the collected water to appropriate sample bottles allowing the sample bottle to fill completely.

To maintain sample integrity and prevent cross-contamination, sampling collection personnel shall follow the procedures listed below.

- Wear a clean pair of surgical gloves donned prior to the collection and handling of each sample at each location.

-
- Decontaminate sampling equipment prior to sample collection using a TSP-soapy water wash, distilled water rinse, and final rinse with distilled water. Dispose of decontamination water/soaps appropriately (i.e., do not discharge to the storm drain system or receiving water).
 - Do not allow the inside of the sample bottle to come into contact with any material other than the run-off sample.
 - Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection.
 - Do not leave the cooler lid open for an extended period of time once samples are placed inside.
 - Do not sample near a running vehicle where exhaust fumes may impact the sample.
 - Do not touch the exposed end of a sampling tube, if applicable.
 - Avoid allowing rainwater to drip from rain gear or other surfaces into sample bottles.
 - Do not eat, smoke, or drink during sample collection/field measurement.
 - Do not sneeze or cough in the direction of an open sample bottle.
 - Minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample.

700.2.1.4.2 Sample Handling Procedures

Immediately following collection, sample bottles to be forwarded for laboratory analytical testing shall be capped, labeled, documented on the Chain-of-Custody Record, sealed in a re-sealable storage bag, placed in an ice-chilled cooler, at 0 ±4 degrees Celsius, and delivered within 24 hours to the laboratory shown in sub-section 700.2.1.2.4.

Immediately following collection, samples used for field analysis shall be tested in accordance with the field instrument manufacturer's instructions and results recorded on the CEM-2052 Stormwater Sample Field Test Report form.

700.2.1.4.3 Sample Documentation Procedures

All original data documented on sample bottle identification labels, the Chain-of-Custody, and the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

The following form, used for sample documentation, is provided in the SWPPP appendices:

- CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, in Appendix M

Duplicate samples shall be identified in a manner consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples can be identified in the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form.

Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle, which shall include, at a minimum, the following information:

- project name
- contract number and/or project identifier number

- unique sample identification code, which shall follow this format, **SSSSYYMMDDHHmmTT** , where

SSSSS	=	sampling location identifier number (e.g., 01MS1)
YY	=	last two digits of the year (e.g. 11)
MM	=	month (01-12)
DD	=	day (01-31)
HH	=	hour sample collected (00-23)
mm	=	minute sample collected (00-59)
TT	=	Type or QA/QC Identifier (if applicable)
G	=	grab
FS	=	field duplicate

For example, the sample number for a grab sample collected at Station 01MS1, collected at 4:15PM on December 8, 2011 would be **01MS11112081615G**.

- constituent to be analyzed
- initials of person who collected the sample

Stormwater Sampling and Testing Activity Log: A log of sampling events and test results shall include:

- sampling date
- separate times for collected samples and QA/QC samples, recorded to the nearest minute
- unique sample identification number and location
- constituent analyzed
- names of sampling personnel
- weather conditions (including precipitation amount)
- test results
- other pertinent data

Sample Information, Identification and Chain-of-Custody Record Forms: All samples to be analyzed by a laboratory will be accompanied by a Chain-of-Custody. The samplers will sign the Chain-of-Custody when samples are turned over to the testing laboratory. Chain-of-custody procedures will be strictly adhered to for QA/QC purposes.

700.2.1.5 Sample Analysis

For the analytical methods to be used to determine the presence of pollutant(s), see the specific SAPs in this CSMP.

700.2.1.6 Quality Assurance/Quality Control

For verification of laboratory or field analysis, duplicate samples shall be collected at a rate of 10 percent or 1 minimum duplicate per sampling event. The duplicate sample shall be collected, handled, and analyzed using the same protocols as primary samples. A duplicate sample shall be collected immediately after the primary sample has been collected. Duplicate samples shall not influence any evaluations or conclusions; however, they shall be used as a check on laboratory or field analysis quality assurance.

700.2.1.7 Data Management and Reporting

All test results shall be documented on either the CEM-2052 Stormwater Sample Field Test Report form and/or may be entered on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

For field tests, the submitted information shall include a signed copy of the Chain-of-Custody and CEM-2052 Stormwater Sample Field Test Report form. Appendix N contains the CEM-2052 Stormwater Sample Field Test Report form, which must accompany the Chain-of-Custody Record. The test results can be recorded on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form, in Appendix M.

For laboratory testing, all laboratory analysis results shall be reviewed for consistency among laboratory methods, sample identifications, dates, and times for both primary samples and QA/QC samples. The test results may be recorded on the CEM-2051 Stormwater Sampling and Testing Activity Log - Optional Form.

All sampling and testing documentation, including the Chain-of-Custody, CEM-2051 Stormwater Sampling and Testing Activity Logs - Optional Form, CEM-2052 Stormwater Sample Field Test Reports, and Laboratory Test Reports shall be kept in the appropriate SWPPP file category. Sampling and testing documentation shall be filed in the appropriate following SWPPP file category based on the specific SAP that required the sampling and analysis:

- non-visible pollutant sampling and testing – SWPPP File Category 20.51;
- non-stormwater discharge sampling and testing – SWPPP File Category 20.50
- turbidity, pH, and SSC sampling and testing – SWPPP File Category 20.52
- required RWQCB sampling and testing – SWPPP File Category 20.53
- ATS sampling and testing – SWPPP File Category 20.54

If corrective actions are taken as a result of the data evaluation, a copy of the completed CEM-2035 Stormwater Corrective Actions Summary shall be filed in File Category 20.35: Corrective Actions Summary.

A copy of completed sampling records and reports and an updated CEM-2051 Stormwater Sampling and Testing Log - Optional shall be submitted to the RE. All water quality analytical results, including QA/QC data, shall be submitted to the RE within 48 hours of sampling for field analyzed samples, and within 30 days for laboratory analyses.

In addition to a paper copy of the water quality test results, the test results shall be submitted electronically in Microsoft Excel (.xls) format, and shall include, at a minimum, the following information from the lab: Sample ID Number, Contract Number, Constituent, Reported Value, Laboratory Name, Method Reference, Method Number, Method Detection Limit, and Reported Detection Limit. Electronic copies of stormwater data shall be forwarded by email to Fernando Abela at Fernando.Abela@dot.ca.gov for inclusion into a statewide database.

700.2.1.8 Data Evaluation

For data evaluation of stormwater sample test results, see specific SAPs.

700.2.1.9 Change of Conditions

Whenever stormwater visual monitoring site inspections indicate a change in site conditions that might affect the appropriateness of sampling locations, sampling and testing protocols shall be revised accordingly. All such revisions shall be implemented as soon as feasible, and the SWPPP updated or amended.

700.2.2 Sampling and Analysis Plan for Non-Visible Pollutants

This SAP has been prepared for monitoring non-visible pollutants in stormwater and non-stormwater discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. This SAP for monitoring non-visible pollutants includes all of the components listed in Section 700.2.1.

700.2.2.1 Scope of Monitoring Activities

The scope of monitoring for discharges of non-visible pollutants from the construction site is based on the construction materials and construction activities to be performed on the project site, potential for the presence of non-visible pollutants, based on the historical use of the site, and potential non-visible pollutants in run-off from areas where soil amendments have been used on the project site.

The construction materials, wastes or activities listed below, and identified in Section 500.1.1, are potential sources of non-visible pollutants to stormwater discharges from the project. Storage, use, and operational locations are shown on the WPCDs in Attachment BB.

- Vehicle

The existing site features listed below, and identified in Section 500.1.2, are potential sources of non-visible pollutants to stormwater discharges from the project.

- Not applicable

The soil amendments listed below have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil and will be used on the project site.

- Soil Stabilization Products

700.2.2.2 Monitoring Preparation

Refer to the general requirements in General SAP Section 700.2.1.2 for monitoring preparation.

700.2.2.2.1 Qualified Sampling Personnel

Refer to the general requirements in General SAP Section 700.2.1.2.1 for Qualified Sampling Personnel.

700.2.2.2.2 Monitoring Supplies

Refer to the general information in General SAP Section 700.2.1.2.2 regarding monitoring supplies.

700.2.2.2.3 Field Instruments

Refer to the general information in General SAP Section 700.2.1.2.3 regarding field instruments.

700.2.2.2.4 Testing Laboratory

Refer to the contact information found in General SAP Section 700.2.1.2.4 for the Testing Laboratory.

700.2.2.3 Monitoring Strategy

The monitoring strategy for non-visible pollutants in stormwater discharges is to identify all potential non-visible pollutants that may be on the project site, non-visible pollutant sources, and water quality indicators that will indicate the presence of the non-visible pollutant in stormwater discharges. Locations will be identified where sources of non-visible pollutants will be used, stored or exist because of historical use of the project site so that these areas are monitored prior to and during forecasted storm events.

Non-visible pollutant monitoring is only required where a discharge can cause or contribute to an exceedance of a water quality standard based on one of the following triggers:

- construction materials are waste are exposed
- the site contains historical non-visible pollutants
- construction activity has occurred or material has been placed within the past 24 hours that may cause an exceedance of a water quality standard
- there is run-on to the site that may contains non-visible pollutants
- there is a breach, malfunction, leak or spill from a BMP

When one of the triggers that indicates a non-visible pollutant source may have come in contact with stormwater is discovered during a site inspection conducted prior to, during or after a forecasted storm event, the WPC Manager will require that sampling and analysis of the stormwater discharge be conducted for the applicable non-visible pollutant water quality indicator(s).

For the forecasted storm event in which a trigger for a non-visible pollutant sampling and analysis has occurred, the WPC Manager will also require the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. The WPC Manager will perform an evaluation of the analysis results from the non-visible pollutant stormwater discharge sampling location and the analysis results from the uncontaminated run-off sampling location to determine if there is an increased level of the tested non-visible pollutant analyte in the stormwater discharge.

700.2.2.3.1 Analytical Constituents

Identification of Potential Non-Visible Pollutants

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The following table lists the specific sources and types of potential non-visible pollutants on the project site and the applicable water quality indicator constituent(s) for that pollutant.

TABLE 700.2.2.3.1 POTENTIAL NON-VISIBLE POLLUTANTS AND WATER QUALITY INDICATOR CONSTITUENTS		
Pollutant Source	Pollutant	Water Quality Indicator Constituent
Vehicle	Antifreeze, Batteries, Fuels, Lubricants	Lead, pH, Sulfuric Acid
Soil Stabilization Products	Polymer/Copolymer	BOD, COD, DOC, Nitrate, Sulfate, Nickel

700.2.2.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring non-visible pollutants were identified. Sampling locations are based on: proximity to planned non-visible pollutant storage; occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual, latest edition. Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

3 sampling location(s) on the project site and the contractor’s support facilities have been identified as potential locations for the collection of samples of runoff from planned material and waste storage areas and areas where non-visible pollutant producing construction activities are planned. Potential non-visible pollutant sampling locations are listed in the Table 700.2.2.3.2.1: Potential Non-Visible Pollutant Sampling Locations.

TABLE 700.2.2.3.2.1 POTENTIAL NON-VISIBLE POLLUTANT SAMPLING LOCATIONS	
Sampling Location Identifier	Location Description
NVS1	70.00' Rt "RD" Line 318+04.00
NVS2	77.00' Rt "RC" Line 12+67.50
NVS3	98.00' Lt "RC" Line 11+48.00

Potential non-visible pollutant sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE:

1 sampling location(s) has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location(s) was selected such that the sample will not have come in contact with (1) operational or storage areas associated with the materials, wastes, and activities identified in Section 500.1.1; (2) potential non-visible pollutants due to historical use of the site, as identified in Section 500.1.2; (3) areas in which soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied; or (4) disturbed soils areas. Potential non-visible pollutant uncontaminated sampling locations are listed in Table 700.2.2.3.2.2: Potential Uncontaminated Non-visible Pollutant Sampling Locations.

TABLE 700.2.2.3.2.2 POTENTIAL UNCONTAMINATED NON-VISIBLE POLLUTANT SAMPLING LOCATIONS	
Sampling Location Identifier	Location Description
UNVP1	165.00' Rt "RC" Line 10+90.00

To be determined

Potential non-visible pollutant uncontaminated sampling locations shall be shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

700.2.2.3.3 Actual Sampling Locations

Sampling for non-visible pollutants at any potential non-visible pollutant sampling location will be based on any of the conditions listed below having been identified during the visual monitoring site inspections.

- Locations where materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.
- Locations where materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the forecasted storm event, and (3) the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.
- Locations where a construction activity (including but not limited to those identified in Section 500.1.1) with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the forecasted storm event, (2) involved the use of applicable BMPs that were observed to be breached, malfunctioning, or improperly implemented, and (3) resulted in the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Locations where soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.
- Locations where stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and the potential exists for discharge of non-visible pollutants to surface waters or a storm drain system.

If the presence of a material storage, waste storage, or operations area where spills have been observed or the potential for the discharge of non-visible pollutants to surface waters or a storm drain system was noted during a site inspection conducted prior to or during a forecasted storm event and such an area has not been identified on the list of potential non-visible pollutant sampling locations, the WPC Manager must identify the corresponding discharge location and the corresponding upgradient sampling location as actual non-visible sampling locations. The additional sampling location for non-visible pollutant monitoring shall be shown on the WPCDs from Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

For forecasted storm events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2048 Storm Event Sampling and Analysis Plan form, in Appendix N. The completed SAP for each storm event will be filed in File Category 20.46: Storm/Rain Event Action, Sampling and Analysis Plans. Within 24 hours prior to a storm event, a copy of the storm event SAP shall be submitted to the RE.

For qualifying rain events, the selection of the actual sampling locations for non-visible pollutants by the WPC Manager will be documented on the CEM-2049 Qualifying Rain Event Sampling and Analysis Plan, in Appendix O. The completed SAP for each qualifying rain event will be filed in File Category 20.46: Storm/Rain Event Sampling and Analysis Plans. Within 24 hours prior to a storm event, a copy of the SAP shall be attached to the REAP and submitted to the RE.

700.2.2.3.4 Sampling Schedule

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In addition to the general scheduling requirements in General SAP Section 700.2.1.3.4, samples for non-visible pollutant monitoring, including both the non-visible pollutants samples and uncontaminated background samples, shall be collected during the first two hours of discharge from storm events that result in a sufficient discharge for sample collection. Samples shall be collected during daylight hours, 7 days a week.

700.2.2.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.2.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.2.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.2.4.3 Sample Documentation Procedures

In addition to the general sample documentation procedures provided in General SAP Section 700.2.1.4.3, when applicable, the contractor’s stormwater inspector will document in the CEM-2030 Stormwater Site Inspection Report, that samples for non-visible pollutants were taken during a storm event, based on the criteria for non-visible pollutant sampling described in Section 700.2.2.3.3.

700.2.2.5 Sample Analysis

Samples collected for monitoring of non-visible pollutants will be analyzed by the laboratory identified in Section 700.2.1.2.4. Samples shall be analyzed for the constituents identified in Table 700.2.2.3.1, using the analytical methods identified in the following table, entitled “Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants.”

TABLE 700.2.2.5 SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING NON-VISIBLE						
Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time
COD	EPA 410.4	1 x 100 mL	Glass Amber	Store at 4 degree Celsius	5 mg/L	28 days
pH	EPA 150.1	100 mL	Polypropylene				None	+/- 0.2 pH units	15 minutes
Lead	EPA 200.8 (Pb)	500 mL	Polypropylene or Glass	Store at 4 degree Celsius, HCl to pH<2	1 ug/L	7 days
Turbidity	EPA 180.1 SM 2130(b)	100 mL	Glass				Store at 4 degrees Celsius	1 NTU	48 hours

700.2.2.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6.

700.2.2.7 Data Management and Reporting

Refer to general requirements for data management and reporting in Section General SAP 700.2.1.7.

700.2.2.8 Data Evaluation

Water quality sample analytical results for non-visible pollutants shall be compared to the uncontaminated background sample results. Should the discharge (downgradient) sample show an increased level of the tested non-visible pollutant analyte relative to the background sample, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visual pollutant concentrations. Once deemed necessary, corrective actions shall be implemented, as required by Standard Specification 13-1.03A, within 24 hours of identification unless a longer period is authorized (but cannot be authorized longer than required by the CGP: implemented within 72 hours of identification and completed as soon as possible thereafter), and documented on the CEM-2035 Stormwater Corrective Actions Summary. Revisions/design changes to BMPs required as a result of data evaluation and site assessment shall be implemented based on an amendment to the SWPPP.

700.2.2.9 Change of Conditions

Refer to the general requirements for change of conditions in General SAP Section 700.2.1.9.

700.2.3 Sampling and Analysis Plan for Non-Stormwater Discharges

This SAP has been prepared for monitoring non-stormwater discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. This SAP for monitoring non-stormwater discharges includes all of the components listed in Section 700.2.1.

700.2.3.1 Scope of Monitoring Activities

Non-stormwater discharges can be authorized by a separate NPDES permit or conditional exemption. For non-stormwater discharges that are unauthorized where runoff is discharged off site, sampling and testing of the discharge must be conducted in compliance with the CGP.

Examples of unauthorized non-stormwater discharges common to construction activities include:

- vehicle and equipment wash water, including concrete washout water
- slurries from concrete cutting and coring operations, or grinding operations
- slurries from concrete or mortar mixing operations
- residue from high-pressure washing of structures or surfaces
- wash water from cleaning painting equipment
- runoff from dust control applications of water or dust palliatives
- sanitary and septic wastes
- chemical leaks and/or spills of any kind, including but not limited to, petroleum, paints, cure compounds, etc

When an unauthorized non-stormwater discharge is discovered, the WPC Manager will require sampling and analysis of the effluent to detect whether non-visible pollutants are present in the discharge. Sampling and analysis of non-stormwater discharges shall be performed in accordance with Section 700.2.2, the SAP for non-visible pollutants.

Sampling and analysis for pH and turbidity of stored or impounded stormwater discharges subsequent to a qualifying rain event (a rain event that has produced ½ inch or more of precipitation at the time of discharge) shall be performed in accordance with Section 700.2.4, the SAP for stormwater pH and turbidity.

700.2.3.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.3.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.3.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.3.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.3.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.3.3 Monitoring Strategy

Non-stormwater discharges from the construction site will be monitored for exceedances of water quality standards.

700.2.3.3.1 Analytical Constituents

For non-stormwater dewatering discharges and discharges of stored stormwater, samples shall be analyzed for the following constituents:

- turbidity
- pH

700.2.3.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, potential sampling locations on the project site for monitoring dewatering discharges, discharges of impounded stormwater, and other non-stormwater discharges were identified. Sampling locations were based on: proximity to planned non-stormwater dewatering; non-stormwater occurrence or use; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the

Caltrans Construction Site Monitoring Program Guidance Manual, August 2013

Sampling locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sampling Locations in Attachment EE.

sampling location(s) on the project site have been identified as potential locations for the collection of non-stormwater dewatering samples and the sampling location(s) are listed in Table 700.2.3.3.2.1: Potential Non-stormwater Dewatering Sampling Locations.

TABLE 700.2.3.3.2.1	
POTENTIAL NON-STORMWATER DEWATERING SAMPLING LOCATIONS	
Sampling Location Identifier	Location Description
NSDWS2	100' Rt "RC" Line 10+50.00
NSDWS1	100' Lt "RC" Line 10+00.00

sampling location(s) on the project site been identified as potential locations for the collection of discharge samples of impounded stormwater and the sampling location(s) are listed in Table 700.2.3.3.2.2: Potential Impounded Stormwater Discharge Sampling Locations.

TABLE 700.2.3.3.2.2	
POTENTIAL IMPOUNDED STORMWATER DISCHARGE SAMPLING LOCATIONS	
Sampling Location Identifier	Location Description
N/A	Not Applicable

700.2.3.3.3 Actual Sampling Locations

Actual sampling locations will be determined by the WPC Manager prior to dewatering activities based on the potential dewatering discharge sample locations initially selected.

When stormwater is impounded in excavations on the project site and the impounded stormwater has the potential to create runoff from the project site, the WPC Manager will determine the actual sampling location for collecting impounded stormwater discharge samples.

If new locations for dewatering discharges or impounded stormwater discharges that have not been identified on the list of potential stormwater and non-stormwater sampling locations are identified during the course of construction, the WPC Manager must create sampling location identifiers for the dewatering discharge sampling location. The additional sampling location for dewatering discharge monitoring shall be shown on the WPCDs in Attachment BB and added to Attachment EE: Stormwater Sampling Locations.

700.2.3.3.4 Sampling Schedule

Whenever there are dewatering discharges or impounded stormwater discharges, sampling will be performed daily during discharging. Sampling will be performed upon commencement of the dewatering discharge or impounded stormwater discharge, and then at least a minimum of three (3) samples per day will be collected for analysis, depending on visual monitoring.

700.2.3.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.3.4.1 Sample Collection Procedures

Refer to the general procedures for sample collection in General SAP Section 700.2.1.4.1.

700.2.3.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.3.4.3 Sample Documentation Procedures

In addition to the general procedures for sample documentation in General SAP Section 700.2.1.4.3, when applicable, the contractor's stormwater inspector will document on the CEM-2030 Stormwater Site Inspection Report that samples for non-stormwater discharge pollutants were taken based on a visual monitoring site inspection.

700.2.3.5 Sample Analysis

Samples from non-stormwater discharges shall be analyzed for pH and turbidity.

The WPC Manager may determine that samples of non-stormwater discharges, need to be analyzed for non-visible pollutants. If the WPC Manager determines that non-visible pollutants may have contaminated the discharge, the samples shall be analyzed for the suspected pollutants. Sampling and analysis for non-visible pollutants in non-stormwater discharges shall be performed following the guidance in Section 700.2.2, the SAP for non-visible pollutants.

Samples shall be analyzed for the constituents indicated in the following table, titled “Sample Collection, Preservation and Analysis for Monitoring Water Extracted by Dewatering or Impounded Stormwater Discharges.”

TABLE 700.2.3.5 SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING WATER EXTRACTED BY DEWATERING OR IMPOUNDED STORMWATER DISCHARGES						
Parameter	Test Method	Sample Preservation	Minimum Sample Volume⁽¹⁾	Sample Bottle	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Store at 4° C (39.2° F)	100 mL	Polypropylene or Glass	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Store at 4° C (39.2° F)	100 mL	Polypropylene	15 Minutes	0.2

Notes: 1. Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

- °C - degrees Celsius
- °F - degrees Fahrenheit
- L - liter
- ML - milliliters
- NTU - Nephelometric Turbidity Unit

700.2.3.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in Section General SAP 700.2.1.6. For samples analyzed for turbidity and pH the following replaces the requirements for QA/QC in Section 700.2.1.6:

The contractor shall coordinate with the Caltrans RE on sampling locations and timing for quality assurance verification of field sampling and analysis. The contractor shall notify the RE at least 24 hours prior to dewatering discharge or impounded stormwater discharge sampling events.

700.2.3.7 Data Management and Reporting

Refer to the general requirements for data management and reporting in General SAP Section 700.2.1.7.

700.2.3.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day that the water from dewatering is discharged. Should the dewatering discharge concentrations exceed applicable water quality standards, discharging will be stopped immediately and the WPC Manager or other personnel shall evaluate the dewatering BMPs to determine the probable cause for the exceedance. For dewatering discharges, Caltrans requires that the turbidity of any sample must not exceed 200 NTU. The pH value of any sample must be within the range of 6.7 to 8.3 pH units.

Samples of non-stormwater collected during discharge shall be evaluated by determining if suspected contaminants are present. Unauthorized discharges will be stopped as soon as possible and the RE will be notified immediately and a written report of discharge shall be completed and submitted to the RE. Authorized discharges shall be sampled for pH and turbidity and all suspected pollutants. For pH and turbidity, sample results shall be compared to the NAL.

As determined by the data evaluation and project site assessment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documents on the CEM-2035 Stormwater Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

700.2.3.9 Changes of Conditions

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.4 Sampling and Analysis Plan for Stormwater pH and Turbidity

This SAP has been prepared for monitoring pH and turbidity in stormwater discharges from the project site and off-site activities directly related to the project in accordance with the requirements of the CGP and applicable requirements of the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. This SAP for monitoring pH and turbidity includes all of the components listed in Section 700.2.1.

700.2.4.1 Scope of Monitoring Activities

The scope of monitoring for this SAP includes monitoring for pH and turbidity in stormwater discharges from the project site and, run-on to the project site.

700.2.4.2 Monitoring Preparation

Refer to the general requirements for monitoring preparation in General SAP Section 700.2.1.2.

700.2.4.2.1 Qualified Sampling Personnel

Refer to the general requirements for Qualified Sampling Personnel in General SAP Section 700.2.1.2.1.

700.2.4.2.2 Monitoring Supplies

Refer to the general information regarding monitoring supplies in General SAP Section 700.2.1.2.2.

700.2.4.2.3 Field Instruments

Refer to the general information regarding field instruments in General SAP Section 700.2.1.2.3.

700.2.4.2.4 Testing Laboratory

Refer to the contact information for the testing laboratory found in General SAP Section 700.2.1.2.4.

700.2.4.3 Monitoring Strategy

Monitor representative stormwater discharges from the project site for pH and turbidity during qualifying rain events (a rain event that has produced precipitation in the form of rain and produced run-off at the time of discharge).

700.2.4.3.1 Analytical Constituents

Stormwater discharge samples are to be analyzed for pH and turbidity.

700.2.4.3.2 Potential Sampling Locations

Using the criteria in Section 700.2.1.3.2, the potential sampling locations on the project site for monitoring pH and turbidity were identified. Potential sampling locations for monitoring stormwater discharges for pH and turbidity are based on drainage areas; run-on and runoff locations; accessibility for sampling and personnel safety; and other factors in accordance with the applicable requirements in the Caltrans Construction Site Monitoring Program Guidance Manual, August 2013. Stormwater discharge locations shall be shown on the WPCDs in Attachment BB and listed on Stormwater Sample Locations in Attachment EE:

The stormwater discharge locations on the project site are listed in Table 700.2.4.3.2.1 “Stormwater Discharge Locations.”

TABLE 700.2.4.3.2.1 STORMWATER DISCHARGE LOCATIONS	
Sampling Location Identifier	Location
See attached	See attached Storm Water Sampling Layout Sheets

The project does not receive run-on with the potential to combine with stormwater discharges.

700.2.4.3.3 Actual Sampling Locations

The WPC Manager shall select sampling locations from the list of potential sampling locations for stormwater discharge sampling shown on the WPCDs from Attachment BB and listed on Stormwater Sampling Locations in Attachment EE. If the construction activity has not started within the drainage area at a sampling location, and there is no disturbed soil within a drainage area, sampling from the stormwater discharge location from that drainage area is not required.

Within 72 to 48 hours prior to each qualifying rain event, the WPC Manager must identify the drainage areas that must be sampled. To identify these drainage areas, the WPC Manager must refer to the WPCDs and consider the conditions described below and activities within each drainage area that could have an effect on the stormwater discharge pH or turbidity.

1. Turbidity: The area of the disturbed soil at the time of precipitation could have an impact on the stormwater run-off turbidity. The area of the disturbed soil at the time of predicted precipitation must be expressed as a percentage of the total drainage area. It is reasonable to assume that a larger percentage of disturbed soil area could result in a more turbid run-off.
2. pH: The type of construction activities that could have an impact on stormwater run-off pH (for example, concrete work and saw cutting, lime stabilization work, use of crushed concrete, etc).

For representative sampling of construction site discharges, 20 percent of the drainage areas with disturbed soil areas and 20 percent of the drainage areas where activities that could potentially have an impact on the discharge pH must be sampled. At least five (5) drainage area discharge locations for each qualifying rain event must be sampled. If there are five (5) or fewer drainage area sampling locations in a project, then all drainage area sampling locations must be sampled. The drainage areas with the largest percentage of disturbed soil area must be included in the selected drainage areas to be sampled. The drainage areas where the most extensive activities (activities that potentially can alter discharge pH) are in progress must be included in the selected drainage areas to be sampled.

This representative monitoring strategy for stormwater discharges requires collection of additional samples based upon the preceding sampling event stormwater discharge pH or turbidity analysis results when the:

- turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 200 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 50 percent.
- turbidity analysis results – even in one sampling location – in the previous sampling event have exceeded 250 NTU, the number of drainage areas with disturbed soil areas requiring sampling will be raised to 100 percent.
- pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.5 to 8.5 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 50 percent.
- pH analysis results – even in one sampling location – in the previous sampling event have not fallen within 6.0 to 9.0 pH unit range, the number of drainage areas requiring sampling where construction activities could have an impact on the discharge pH readings will be raised to 100 percent.

The selection of additional sampling locations, based on turbidity results, will involve drainage areas with the highest percentage of disturbed soil area. The selection of additional sampling locations, based on pH results, will be involve drainage areas with construction activities that are most likely to affect stormwater discharge pH.

700.2.4.3.4 Sampling Schedule

Discharge samples shall be collected for turbidity and pH for qualifying rain events that result in a discharge from the project site. When applicable, upstream, downstream, and run-on samples shall be collected for analysis of turbidity and pH. Sampling and testing for turbidity and pH will be performed daily during all qualifying rain events. Samples shall be collected during working hours.

At least 48 hours prior to each qualifying rain event, the WPC Manager must prepare a list of sampling locations that must be sampled for the qualifying rain event.

The locations shall include all of the following sampling location types:

- discharge locations from the drainage areas with the largest percentage of disturbed soil areas,

-
- discharge locations from the drainage areas where construction activities that could have an impact on stormwater run-off pH are in progress, and
 - if applicable, at least one sampling location from drainage areas where the disturbed soil areas have been stabilized.

The sampling locations must be sampled in the following order: starting with the sampling location on the northwest corner of the WPCDs as the first entry and move clockwise on the WPCDs.

The Caltrans stormwater site inspector and contractor inspector must coordinate and select the sampling locations and the time to meet and collect simultaneous samples for the purposes of QA/QC.

Every reasonable attempt has to be made to collect at least three grab samples per day from each sampling location during the qualifying rain event.

Sampling must start immediately after the flow begins or as soon as possible thereafter. The individual responsible for collecting samples must begin sampling with the first sampling location identified and move on to the next sampling location until all locations are sampled. It is preferable that the three rounds of sampling are performed over the first three hours of the flow; however, depending on the time of the day or other dictating conditions in the field, the three rounds of sampling could be performed over a shorter period of time to ensure that three samples per location are collected.

If stormwater sampling is unsafe because of dangerous weather conditions, such as flooding and electrical storms, then the stormwater sampler shall document the conditions resulting in the sampling not being performed as planned.

700.2.4.4 Sample Collection and Handling

Refer to the general requirements for sample collection and handling in General SAP Section 700.2.1.4.

700.2.4.4.1 Sample Collection Procedures

In addition to the general procedures for sample collection in General SAP Section 700.2.1.4.1, the procedures described below apply to sample collection for monitoring of pH and turbidity.

- Grab samples shall be collected and preserved in accordance with the methods identified in Table 700.2.4.5.1: Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH, provided in Section 700.2.4.5.
- Only personnel trained in proper water quality sampling shall collect samples.

700.2.4.4.2 Sample Handling Procedures

Refer to the general procedures for sample handling in General SAP Section 700.2.1.4.2.

700.2.4.4.3 Sample Documentation Procedures

Refer to the general procedures for sample documentation in General SAP Section 700.2.1.4.3.

700.2.4.5 Sample Analysis

Samples shall be analyzed for the constituents indicated in Table 700.2.4.5.1: “Sample Collection, Preservation and Analysis for Monitoring Turbidity and pH.”

TABLE 700.2.4.5.1 SAMPLE COLLECTION, PRESERVATION AND ANALYSIS FOR MONITORING TURBIDITY AND PH						
Parameter	Test Method	Sample Bottle	Minimum Sample Volume⁽¹⁾	Sample Preservation	Maximum Holding Time	Detection Limit (min)
Turbidity	Field test with calibrated portable instrument	Polypropylene or Glass	100 mL	Store at 4° C (39.2° F)	48 hours	1 NTU
pH	Field test with calibrated portable instrument	Polypropylene	100 mL	Store at 4° C (39.2° F)	15 minutes	0.2

Acronyms/Notes:

- C = Celsius
- F = Fahrenheit
- Min = minimum
- mL = milliliter
- NTU = Nephelometric Turbidity Units

(1) Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

700.2.4.6 Quality Assurance/Quality Control

Refer to the general requirements regarding Quality Assurance/Quality Control (QA/QC) in General SAP Section 700.2.1.6. The following replaces the requirements for QA/QC in Section 700.2.1.6 for turbidity and pH quality assurance testing. However, Section 700.2.1.6 requirements apply for SSC quality assurance testing: The contractor shall coordinate with Caltrans RE on sampling locations and timing for quality assurance verification of field sampling and analysis activities. The contractor shall notify the RE at least 24 hours prior to sampling events.

700.2.4.7 Data Management and Reporting

Refer to general requirements for data management and reporting in General SAP Section 700.2.1.7.

In addition to the general requirements for data management and reporting in Section 700.2.1.7, the additional reporting described below is required.

Numeric Action Limit Exceedance Reportin - This project is subject to NALs for pH and turbidity as shown in Table 700.2.4.7.1 “NALs for Monitoring pH and Turbidity.”

**TABLE 700.2.4.7.1
 NALs FOR MONITORING pH AND TURBIDITY**

Parameter	Test Method	Detection Limit (min)	Unit	Numeric Action Level
pH	Field test with calibrated portable instrument	0.2	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	Field test with calibrated portable instrument	1	NTU	250 NTU

Acronyms:

Min = Minimum

NAL = numeric action level

NTU = Nephelometric Turbidity Units

If an NAL for pH is exceeded, then form CEM-2062 NAL Exceedance Report will be completed and submitted to the RE within 48 hours after the sampling and analysis event. The NAL Exceedance Report will include:

- test results, analytical methods, reporting units, and detection limits
- date, sampling location, time of sampling, and visual observations
- predicted quantity of precipitation of the forecasted storm event, and estimated quantity of precipitation at the time of sampling
- description of BMPs
- corrective actions taken to manage the NAL exceedance

Once deemed necessary, corrective actions shall be immediately implemented and documented. Appendix I contains the CEM-2035 Stormwater Corrective Actions Summary form and Appendix O contains the CEM-2062 NAL Exceedance Report form. NAL exceedance reports will be filed in SWPPP File Category 20.62: Numeric Action Level Exceedance Reports.

700.2.4.8 Data Evaluation

An evaluation of the water quality sample analytical results, including sampling locations and the QA/QC data, shall be submitted to the RE for every day of stormwater sampling. If the stormwater discharge concentrations exceed applicable water quality standards, the WPC Manager or other personnel shall evaluate the project site BMPs to determine the probable cause for the exceedance.

As determined by the data evaluation and project site assessment, appropriate BMPs shall be repaired or modified to mitigate the exceedances. Corrective actions taken shall be documented on the CEM-2035 Stormwater Corrective Actions Summary. Any revisions/design changes to BMPs shall be implemented based on an amendment to the SWPPP.

700.2.4.9 Change of Condition

Refer to the general requirements for changes of conditions in General SAP Section 700.2.1.9.

700.2.5 *Sampling and Analysis Plan for Monitoring Required by Regional Board*

This project does not require a Sampling and Analysis Plan for Monitoring required by a RWQCB.

700.2.6 *Sampling and Analysis Plan for Monitoring of Active Treatment System*

This project does not require a SAP for an ATS because deployment of such a system is not planned.

SECTION 800

POST-CONSTRUCTION CONTROL PRACTICES

800.1 Post-Construction Control Practices

The following are the post-construction BMPs for the project site

- Hydroseed, and Hydromulch
- Rock Slope Protection
- New Storm Drainage
- Biofiltration Trench/Ditch
- Permanent erosion control, pure live seeding, and planting

800.2 Post-Construction Operation/Maintenance

The post-construction BMPs that are listed above will be funded and maintained in the following manner.

short-term funding: Caltrans District 4 Maintenance

long-term funding: Caltrans District 4 Maintenance

The responsible party for the long-term maintenance of post-construction BMPs is Caltrans District 4 Maintenance

SECTION 900

SWPPP REPORTING REQUIREMENTS

900.1 Recordkeeping

To manage the various documents required by the SWPPP and to provide easy access to the documents, the following SWPPP file categories will be used to file SWPPP compliance documents:

File Category 20.01	.....Stormwater Pollution Prevention Plan (SWPPP)
File Category 20.02	.....Stormwater Pollution Prevention Plan Amendments
File Category 20.03	.....Water Pollution Control Schedule Updates
File Category 20.05	.....Notice of Construction or Notice of Intent
File Category 20.06	.....Legally Responsible Person Authorization of Approved Signatory
File Category 20.10	.....Correspondence
File Category 20.21	.....Subcontractor Contact Information and Notification Letters
File Category 20.22	.....Material Suppliers Contact Information and Notification Letters
File Category 20.23	.....Contractor Personnel Training Documentation
File Category 20.31	.....Contractor Stormwater Site Inspection Reports
File Category 20.32	.....Caltrans Stormwater Site Inspection Reports
File Category 20.33	.....Site Visual Monitoring Inspection Reports
File Category 20.34	.....Best Management Practices Weekly Status Reports
File Category 20.35	.....Corrective Actions Summary
File Category 20.40	.....Weather Monitoring Logs
File Category 20.45	.....Rain Event Action Plans
File Category 20.46	.....Storm/Rain Event Sampling and Analysis Plan
File Category 20.50	.....Non-Stormwater Discharge Sampling and Test Results
File Category 20.51	.....Non-Visible Pollutant Sampling and Test Results
File Category 20.52	.....Turbidity, pH and SSC Sampling and Test Results
File Category 20.53	.....Required Regional Water Board Monitoring Sampling and Test Results
File Category 20.54	.....ATS Monitoring Sampling and Test Results
File Category 20.55	.....Field Testing Equipment Maintenance and Calibration Records
File Category 20.61	.....Notice of Discharge Reports
File Category 20.62	.....Numeric Action Level Exceedance Reports
File Category 20.63	.....Numeric Effluent Limitation Violation Reports
File Category 20.70	.....Annual Certification of Compliance
File Category 20.80	.....Stormwater Annual Reports
File Category 20.90	.....Notice of Termination

Records shall be retained for a minimum of three years for the following items:

- approved SWPPP document and amendments
- Stormwater Site Inspection Reports
- Site Inspection Report Corrections Summary
- Rain Event Action Plans (REAPs)
- Notice of Discharge Reports
- Numeric Action Limit (NAL) Exceedance Reports
- Numeric Effluent Limitaion (NEL) Violation Reports
- sampling records and analysis reports
- Annual Compliance Certifications
- copies of all applicable permits

900.2 Stormwater Annual Report

A Stormwater Annual Report will be prepared for this project to document the stormwater monitoring information and training information.

The stormwater monitoring information listed below shall be included in the Stormwater Annual Report.

- A summary and evaluation of all sampling and analysis results, including copies of laboratory reports.
- The analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter.
- A summary of all corrective actions taken during the compliance year.
- Identification of any compliance activities or corrective actions that were not implemented.
- A summary of all violations of the CGP.
- The names of individual(s) who performed site inspections, sampling, site visual monitoring inspections and/or measurements.
- The date, place, and time of site inspections, sampling, site visual monitoring inspections, and/or measurements, including precipitation (rain gauge).
- Any site visual monitoring inspection and sample collection exception records.

The stormwater training information listed below shall be included in the Stormwater Annual Report.

- Documentation of all training for individuals responsible for all activities associated with compliance with the CGP.
- Documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair.
- Documentation of all training for individuals responsible for overseeing, revising and amending the SWPPP.

900.3 Discharge Reporting

If an unauthorized discharge is discovered or evidence of a previously unseen discharge is discovered, the Contractor shall notify the RE within 6 hours of the discovery, and will file a written report with the RE within 24 hours after the discovery. The written report to the RE will contain the following items:

- date, time, location, and type of unauthorized discharge
- nature of operation that caused the discharge
- initial assessment of any impacts caused by the discharge
- BMPs deployed before the discharge event and date(s) of deployment
- BMPs deployed after the discharge event, including re-installation, maintenance or repair of initial BMPs
- steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Reporting of discharges shall be documented on the CEM-2061 Notice of Discharge form in Appendix M. A log of all reportable discharges shall be documented on CEM-2065 Discharge Reporting Log form in Appendix Z. Completed CEM-2061 Notice of Discharge forms shall be submitted to the RE within 24 hours after the discharge event or discovery of evidence of a prior discharge. Copies of completed forms will be kept in File Category 20.61: Notice of Discharge Reports.

900.4 Regulatory Agency Notice or Order Reporting

If a written notice or order is issued to the project by any regulatory agency, the Contractor will notify the RE within 6 hours of receiving the notice or order and will file a written report to the RE within 48 hours of receiving the notice or order. Corrective measures will be implemented immediately following receipt of the notice or order.

The report to the RE will contain the following items

- the date, time, location, and cause or nature of the notice or order
- the BMPs deployed prior to receiving the notice or order
- the date of deployment and type of BMPs deployed after receiving the notice or order, including additional BMPs installed or planned to reduce or prevent recurrence
- an implementation and maintenance schedule for any affected BMPs

900.5 Illicit Connection/Illegal Discharge Reporting

If the Contractor discovers an illicit connection to a storm drain system or any pipe discharging onto the project site, not shown on the project plans, the Contractor shall notify the RE within 6 hours of the discovery and shall file a written report to the RE within 48 hours of the discovery.

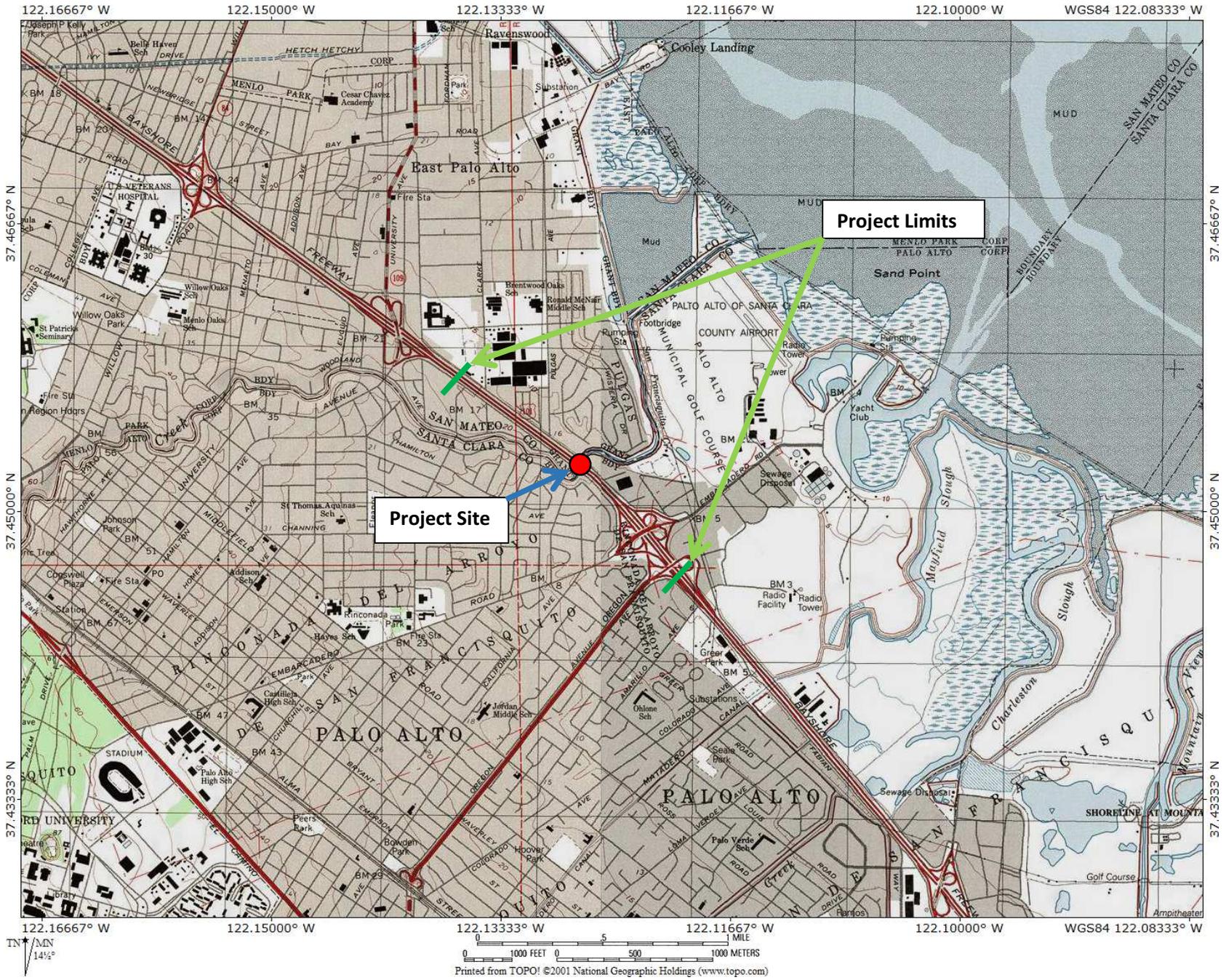
If the Contractor discovers any illegal discharge, including illegal disposing of material on the project site, the Contractor shall immediately notify the RE and shall file a written report to the RE within 3 days of discovery.

The report to the RE will contain the following items:

- the date, time, and location of the discovery
- the details for the illicit connection or illegal discharge, including any photographs taken
- any actions taken to contain the illegal discharge

- any sampling and testing performed on material that was illegally disposed of or discharged

Attachment D Vicinity Map and Site Map



Project Vicinity Map

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98-117	ELECTRICAL PLANS
118-141	REVISED STANDARD PLANS

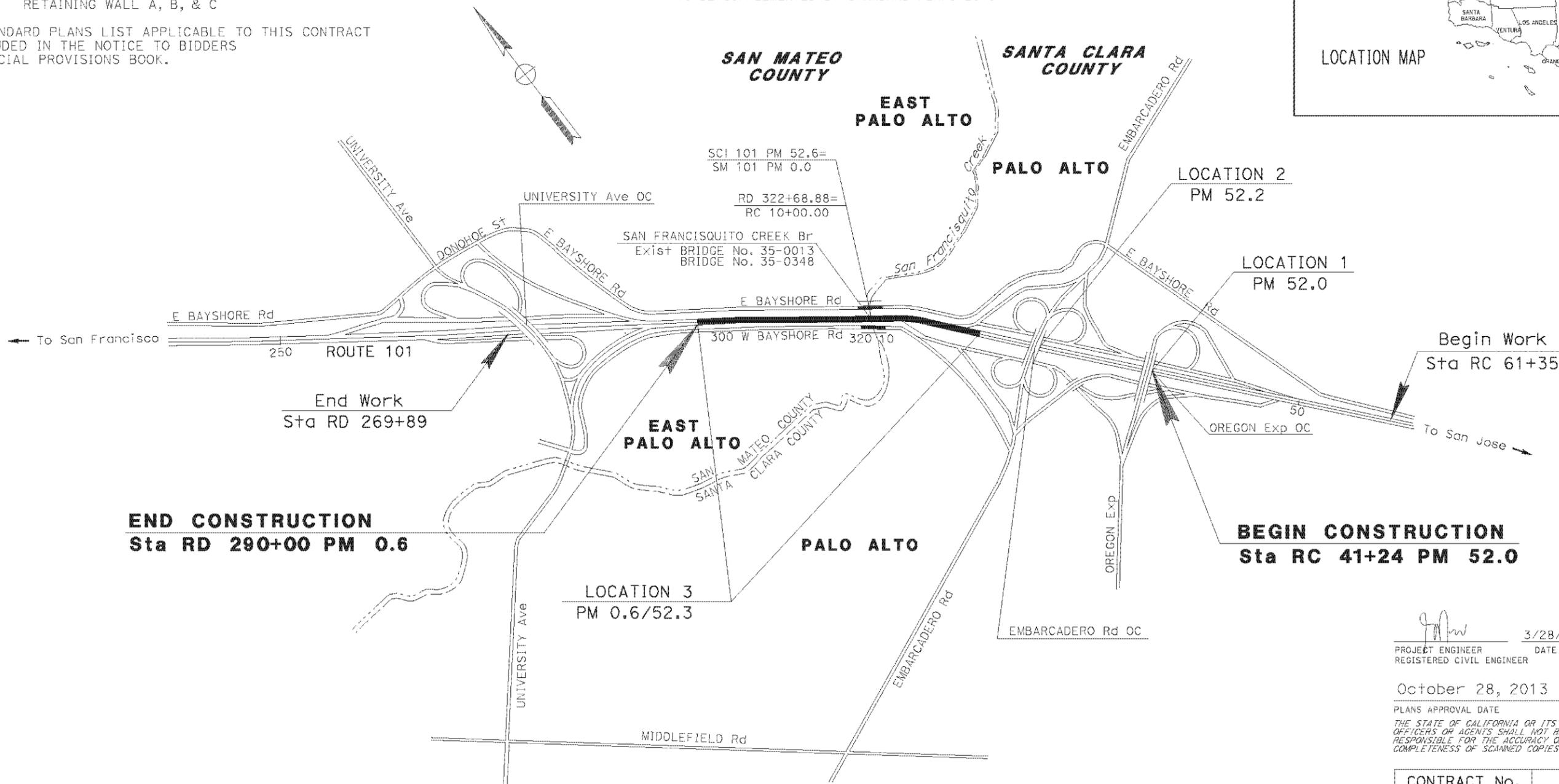
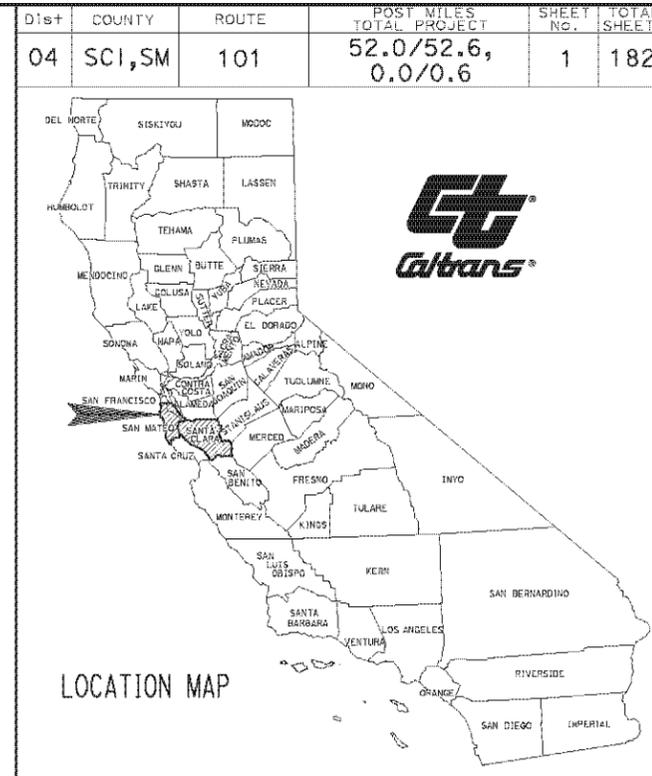
STRUCTURE PLANS

142-174	SAN FRANCISQUITO CREEK BRIDGE No. 35-0348
175-182	RETAINING WALL A, B, & C

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

STATE OF CALIFORNIA **ACNHP-000C(366)E**
DEPARTMENT OF TRANSPORTATION
PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN SANTA CLARA AND SAN MATEO COUNTIES
IN PALO ALTO AND EAST PALO ALTO
FROM OREGON EXPRESSWAY OVERCROSSING
TO 0.3 MILE SOUTH OF
UNIVERSITY AVENUE OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS 2010



PROJECT MANAGER
RON MORTIGUCHI

DESIGN MANAGER
DUAT NGUYEN

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

NO SCALE

RELATIVE BORDER SCALE 0 1 2 3
 USERNAME => 6121614
 DGN FILE => 0400000678cb001.dgn

UNIT 0722 PROJECT NUMBER & PHASE 0400000678

3/28/13
 PROJECT ENGINEER DATE
 REGISTERED CIVIL ENGINEER
 G.B. Modesto
 No. 50338
 Exp. 6-30-15
 CIVIL
 STATE OF CALIFORNIA

October 28, 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.

CONTRACT No.	04-235624
PROJECT ID	0400000678

Attachment F

Other Plans/Permits/Agreements

Attachment BB Conceptual Water Pollution Control
Drawings

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans WATER QUALITY

WATER POLLUTION CONTROL BMP SYMOLS

SOIL STABILIZATION

- SS-2: PRESERVATION OF EXISTING VEGETATION
- SS-3: TEMPORARY HYDRAULIC MULCH (BONDED FIBER MATRIX)
- SS-4: HYDROSEEDING
- SS-5: SOIL BINDERS
- SS-6: STRAW MULCH
- SS-7: GEOTEXTILES, MATS, PLASTIC COVERS AND EROSION CONTROL BLANKETS
- SS-8: WOOD MULCHING
- SS-9: EARTH DIKES/DRAINAGE SWALES AND LINED DITCHES
- SS-10: OUTLET PROTECTION/VELOCITY DISSIPATION DEVICES
- SS-11: SLOPE DRAINS
- SS-12: STREAMBANK STABILIZATION

SEDIMENT CONTROL

- SC-1: SILT FENCE
- SC-2: SEDIMENT/DESILTING BASIN
- SC-3: SEDIMENT TRAP
- SC-4: CHECK DAMS
- SC-5: FIBER ROLLS
- SC-6: GRAVEL BAG BERM
- SC-7: STREET SWEEPING

WIND EROSION CONTROL

- WE-1: WIND EROSION CONTROL

TRACKING CONTROL

- TC-1 TEMPORARY CONSTRUCTION ENTRANCE
- TC-2 TEMPORARY CONSTRUCTION ROADWAY
- TC-3 ENTRANCE/OUTLET TIRE WASH

NON-STORM WATER MANAGEMENT

- NS-1 WATER CONSERVATION PRACTICES
- NS-2 DEWATERING OPERATION
- NS-3 PAVING AND GRINDING OPERATIONS
- NS-4 TEMPORARY STREAM CROSSING
- NS-5 CLEAR WATER DIVERSION
- NS-6: ILLICIT CONNECTION/ILLEGAL DISCHARGE
- NS-7: POTABLE WATER/IRRIGATION
- NS-8: VEHICLE AND EQUIPMENT CLEANING
- NS-9: VEHICLE AND EQUIPMENT FUELING
- NS-10: VEHICLE AND EQUIPMENT MAINTENANCE

WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL

- WM-1: MATERIAL DELIVERY AND STORAGE
- WM-2: MATERIAL USE
- WM-3: STOCKPILE MANAGEMENT
- WM-4: SPILL PREVENTION AND CONTROL
- WM-5: SOLID WASTE MANAGEMENT
- WM-6: HAZARDOUS WASTE MANAGEMENT
- WM-7: CONTAMINATED SOIL MANAGEMENT
- WM-8: CONCRETE WASTE MANAGEMENT
- WM-9: SANITARY/SEPTIC WASTE MANAGEMENT
- WM-10: LIQUID WASTE MANAGEMENT

SC-8: SANDBAG BARRIER

SC-9: STRAW BALE BARRIER

SC-10: TEMPORARY DRAIN INLET PROTECTION

NS-11: PILE DRIVING OPERATIONS

NS-12: CONCRETE CURING

NS-13: MATERIAL AND EQUIPMENT USE OVER WATER

NS-14: CONCRETE FINISHING

NS-15: STRUCTURE DEMOLITION OVER OR ADJACENT TO WATER

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI,SM	101	52.0/52.6, 0.0/0.6	1	5

REGISTERED CIVIL ENGINEER DATE 12/15/14

12-15-14 PLANS APPROVAL DATE

Jiangfan Chen No. 77248 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.

GENERAL WATER POLLUTION CONTROL NOTES

- 1 THE INFORMATION ON THESE DRAWINGS ARE ACCURATE FOR WATER POLLUTION CONTROL PURPOSES ONLY.
- 2 THE INFORMATION ON THIS PLAN IS INTENDED TO BE USED AS A GUIDELINE FOR THE CONTRACTOR AND SUBCONTRACTORS TO INSTALL WATER POLLUTION CONTROL DEVICES AT GENERAL LOCATIONS THROUGHOUT THE SITE. THESE DRAWINGS ARE TO BE USED IN CONJUNCTION WITH THE NARRATIVE SECTION OF THE CONCEPTUAL STORM WATER POLLUTION PREVENTION PLAN.
- 3 FIELD CONDITIONS MAY NECESSITATE MODIFICATIONS TO THESE DRAWINGS.
- 4 PERMANENT EROSION CONTROL WILL BE INSTALLED AS AREAS ARE DETERMINED TO BE SUBSTANTIALLY COMPLETE.

**WATER POLLUTION CONTROL DRAWING
 TITLE SHEET
 PRELIMINARY STAGE**

SCALE: NO SCALE **WPCD-1**

LAST REVISION: 12-12-14 DATE PLOTTED => 12/16/2014 TIME PLOTTED => 11:18:55 AM

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Water Quality
 FUNCTIONAL SUPERVISOR: KAMRAN NAKHJURI
 CALCULATED/DESIGNED BY: KAMRAN NAKHJURI
 CHECKED BY: KAMRAN NAKHJURI
 REVISOR: JENNIFER CHEN
 DATE: 12/15/14
 REVISED BY: JC
 DATE: 12/15/14

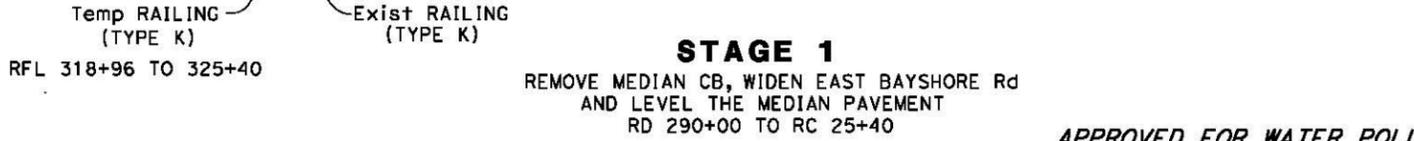
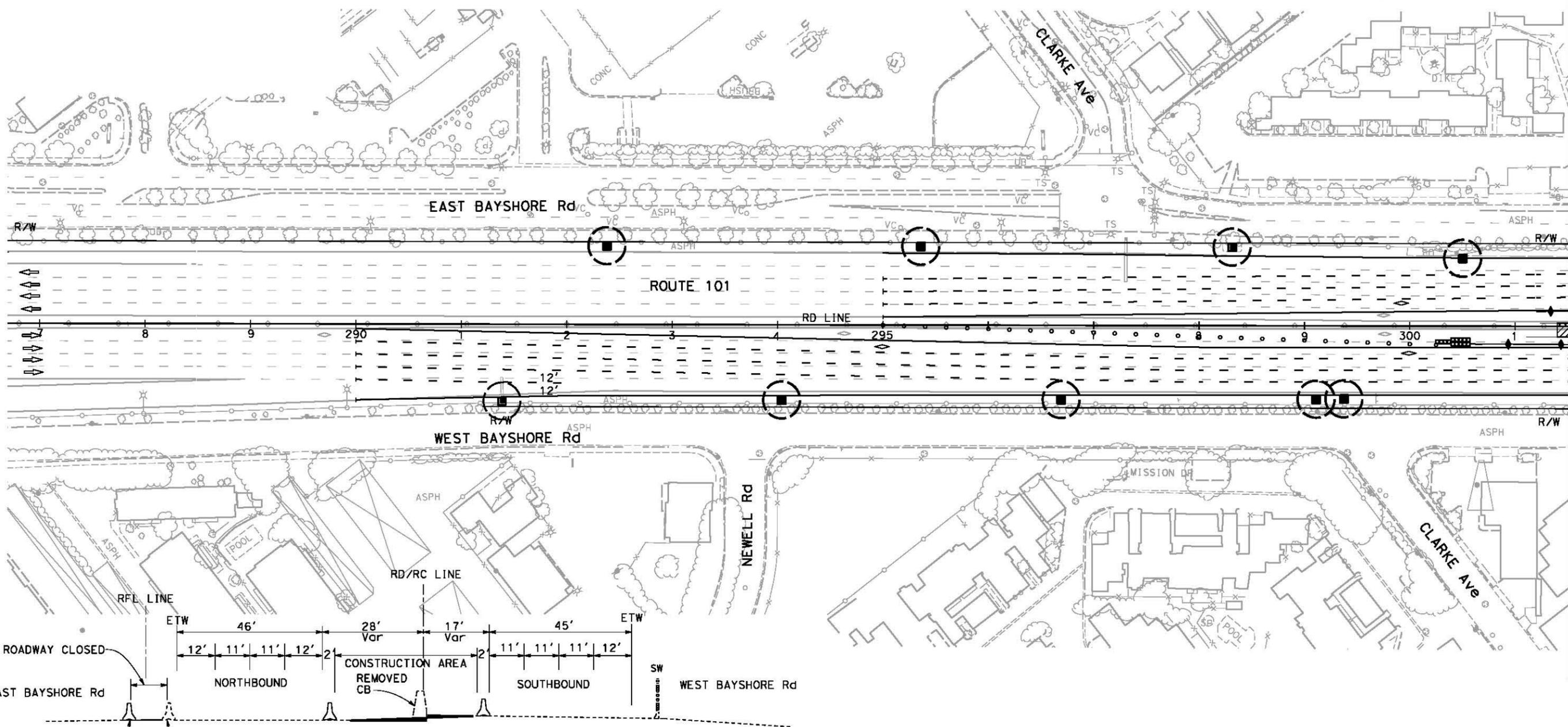
- NOTES**
- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
 - FOR MEDIAN RESURFACING DETAILS SEE SHEETS SCD-3 AND 4.
 - OFFSET TO Temp RAILING (TYPE K) IS TO ϕ OF RAILING.
 - CLOSURE OF THE WEST BAYSHORE ROAD BRIDGE IS ONLY ALLOWED DURING STAGE 4 CONSTRUCTION ACTIVITIES.

- LEGEND:**
- STRUCTURE CONSTRUCTION
 - HMA (A)
 - COLD PLANE AC PAVEMENT
 - ROADWAY EXCAVATION
 - TEMPORARY RAILING (TYPE K) (UON)
 - TEMPORARY CRASH CUSHION 'TS14' (UON)
 - CHANNELIZER (SURFACE MOUNTED)
 - STRIPING DETAIL NUMBER
 - ROADWAY STRUCTURAL SECTION TYPE
 - CHANGE OF PAVEMENT DELINEATION DETAILS
 - 16' Temp FENCE (TYPE CL-6)
 - TYPE III BARRICADE
 - STAGE CONSTRUCTION AREA SIGN (SEE TABLE IN SHEET CS-1 FOR DETAIL AND QUANTITY)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI,SM	101	52.0/52.6, 0.0/0.6	2	5

REGISTERED CIVIL ENGINEER: *J. Chen* 12/15/14
 DATE: 12-15-14
 PLANS APPROVAL DATE: 12-15-14
 No. 77248
 Exp 6-30-15
 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.



**WATER POLLUTION CONTROL DRAWING
 PRELIMINARY STAGE**

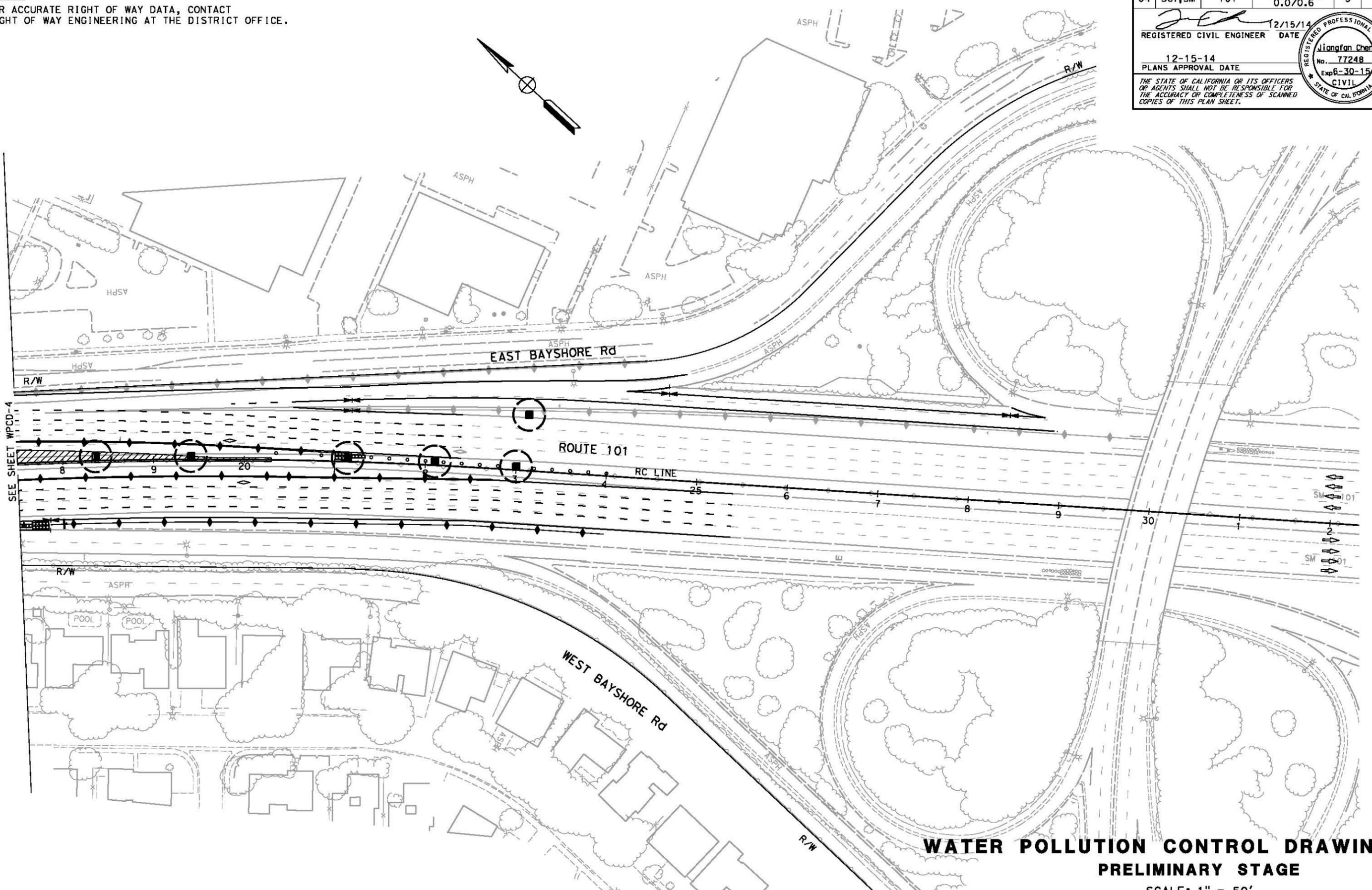
SCALE: 1" = 50'

WPCD-2

DATE PLOTTED => 12/16/2014
 TIME PLOTTED => 10:25:14 AM

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI,SM	101	52.0/52.6, 0.0/0.6	5	5
			12/15/14		
			REGISTERED CIVIL ENGINEER		
			12-15-14		
			PLANS APPROVAL DATE		
<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.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR	DATE
Water Quality	KAMRAN NAKHJURI	JENNIFER CHEN	JC	12/15/14
Water Quality	KAMRAN NAKHJURI	KAMRAN NAKHJURI		

**WATER POLLUTION CONTROL DRAWING
PRELIMINARY STAGE**

SCALE: 1" = 50'

APPROVED FOR WATER POLLUTION CONTROL WORK ONLY

WPCD-5

**Attachment CC Water Pollution Control Best Management
Practices List**

**ATTACHMENT CC WATER POLLUTION CONTROL
BEST MANAGEMENT PRACTICES LIST**

CEM-20CC (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS 101 San Francisquito Creek Bridge Replacement Santa Clara and San Mateo County	CONTRACT NUMBER/CO/RTE/PM 235624
CONTRACTOR NAME AND SITE ADDRESS To Be Determined	PROJECT IDENTIFIER NUMBER 04000006781
	PROJECT SITE RISK LEVEL <input type="checkbox"/> Risk Level 1 <input checked="" type="checkbox"/> Risk Level 2 <input type="checkbox"/> Risk Level 3

Water Pollution Control Best Management Practices List (WPCBMPL)

Project Phases included in WPCBMPL <input checked="" type="checkbox"/> Preliminary Phase <input type="checkbox"/> Grading Phase <input type="checkbox"/> Highway Construction Phase <input type="checkbox"/> Highway Planting / Erosion Control Phase	Projected Stages included in WPCBMPL <input type="checkbox"/> 1 Stage <input checked="" type="checkbox"/> 2 Stages <input type="checkbox"/> 3 Stages <input type="checkbox"/> 4 Stages
---	--

Project Required BMP	Best Management Practice (BMP)	BMP ID	Total Quantity Required
	TEMPORARY SOIL STABILIZATION		
<input type="checkbox"/>	Preservation of Existing Vegetation	SS-02	
<input type="checkbox"/>	Hydraulic Mulch	SS-03	
<input type="checkbox"/>	Hydroseeding	SS-04	
<input type="checkbox"/>	Soil Binders	SS-05	
<input type="checkbox"/>	Straw Mulch	SS-06	
<input checked="" type="checkbox"/>	Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets	SS-07	300 sqyd est
<input type="checkbox"/>	Wood Mulching	SS-08	
<input type="checkbox"/>	Earth Dikes/Drainage Swales, and Lined Ditches	SS-09	
<input type="checkbox"/>	Outlet Protection/Velocity Dissipation Devices	SS-10	
<input type="checkbox"/>	Slope Drains	SS-11	
<input type="checkbox"/>	Streambank Stabilization	SS-12	
	TEMPORARY SEDIMENT CONTROL		
<input checked="" type="checkbox"/>	Silt Fence	SC-01	350 lf est
<input type="checkbox"/>	Sediment/Distilling Basin	SC-02	
<input type="checkbox"/>	Sediment Trap	SC-03	
<input type="checkbox"/>	Check Dams	SC-04	
<input type="checkbox"/>	Fiber Rolls	SC-05	
<input type="checkbox"/>	Gravel Bad Berm	SC-06	
<input type="checkbox"/>	Sandbag Barrier	SC-07	
<input type="checkbox"/>	Straw Bale Barrier	SC-09	
<input checked="" type="checkbox"/>	Storm Drain Inlet Protection	SC-10	45 ea est

ADA Notice

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**ATTACHMENT CC WATER POLLUTION CONTROL
BEST MANAGEMENT PRACTICES LIST**

CEM-20CC (NEW 9/2012)

Page 2 of 5

PROJECT INFORMATION NAME AND SITE ADDRESS 101 San Francisquito Creek Bridge Replacement Santa Clara and San Mateo County	CONTRACT NUMBER/CO/RTE/PM 235624
	PROJECT IDENTIFIER NUMBER 04000006781

Water Pollution Control Best Management Practices List

Project Required BMP	Best Management Practice (BMP)	BMP ID	Total Quantity Required
	WIND EROSION CONTROL		
<input checked="" type="checkbox"/>	Wind Erosion Control	WE-01	as needed
	TRACKING CONTROLS		
<input type="checkbox"/>	Stabilized Construction Entrance/Exit	TC-01	
<input type="checkbox"/>	Stabilized Construction Roadway	TC-02	
<input type="checkbox"/>	Entrance/Exit Tire Wash	TC-03	
<input checked="" type="checkbox"/>	Street Sweeping	SC-07	as needed
	NON-STORMWATER MANAGEMENT		
<input checked="" type="checkbox"/>	Water Conservation Practices	NS-01	as needed
<input checked="" type="checkbox"/>	Dewatering Operations	NS-02	as needed
<input checked="" type="checkbox"/>	Paving and Grinding Operations	NS-03	as needed
<input type="checkbox"/>	Temporary Stream Crossing	NS-04	
<input type="checkbox"/>	Clear Water Diversion	NS-05	
<input checked="" type="checkbox"/>	Illicit Connection/Illegal Discharge Detection and Reporting	NS-06	as needed
<input checked="" type="checkbox"/>	Potable Water/Irrigation	NS-07	as needed
<input checked="" type="checkbox"/>	Vehicle and Equipment Cleaning	NS-08	as needed
<input checked="" type="checkbox"/>	Vehicle and Equipment Fueling	NS-09	as needed
<input checked="" type="checkbox"/>	Vehicle and Equipment Maintenance	NS-10	as needed
<input checked="" type="checkbox"/>	Pile Driving Operations	NS-11	as needed
<input checked="" type="checkbox"/>	Concrete Curing	NS-12	as needed
<input checked="" type="checkbox"/>	Material and Equipment Use Over Water	NS-13	as needed
<input checked="" type="checkbox"/>	Concrete Finishing	NS-14	as needed
<input checked="" type="checkbox"/>	Structure Demolition/Removal Over or Adjacent to Water	NS-15	as needed
	WASTE MANAGEMENT AND POLLUTION CONTROL		
<input checked="" type="checkbox"/>	Material Delivery and Storage	WM-01	as needed
<input checked="" type="checkbox"/>	Material Use	WM-02	as needed
<input checked="" type="checkbox"/>	Stockpile Management	WM-03	as needed
<input checked="" type="checkbox"/>	Spill Prevention and Control	WM-04	as needed
<input checked="" type="checkbox"/>	Solid Waste Management	WM-05	as needed
<input checked="" type="checkbox"/>	Hazardous Waste Management	WM-06	as needed
<input checked="" type="checkbox"/>	Contaminated Soil Management	WM-07	as needed
<input checked="" type="checkbox"/>	Concrete Waste Management	WM-08	as needed
<input checked="" type="checkbox"/>	Sanitary/Septic Waste Management	WM-09	as needed
<input checked="" type="checkbox"/>	Liquid Waste Management	WM-10	as needed

ATTACHMENT CC WATER POLLUTION CONTROL BEST MANAGEMENT PRACTICES LIST

CEM-20CC (NEW 9/2012)

Page 3 of 5

PROJECT INFORMATION NAME AND SITE ADDRESS 101 San Francisquito Creek Bridge Replacement Santa Clara and San Mateo County	CONTRACT NUMBER/CO/RTE/PM 235624
	PROJECT IDENTIFIER NUMBER 04000006781

No.	Water Pollution Control Best Management Practices List			
1	Location: SCL-101-PM 52.0-52.6, SM-101-PM 0.0 to 0.6	Project Phase: Preliminary Phase Stage: preliminary	Location shown on WPCD sheet number: 2 to 5	Disturbed Soil Area: <u>0.18</u> acres
	Best Management Practice (BMP)		BMP ID	Quantity Required
	Scheduling		SS-1	as needed
	Preservation and Property/Preservation of Existing Vegetation		SS-2	as needed
	Temporary Cover (Geotextiles and Mats)		SS-7	300 SQYD est
	Street Sweeping		SC-7	as needed
	Temporary Drain Inlet Protection		SC-10	45 EA est
	Temporary Silt Fence		SC-1	350 LF est
	Wind Erosion Control		WE-1	as needed
	Water Control and Conservation		NS-1	as needed
Comments:				
2	Location: SCL-101-PM 52.0-52.6, SM-101-PM 0.0 to 0.6	Project Phase: Preliminary Phase Stage: preliminary	Location shown on WPCD sheet number: 2 to 5	Disturbed Soil Area: <u>0.18</u> acres
	Best Management Practice (BMP)		BMP ID	Quantity Required
	Dewatering		NS-2	as needed
	Paving, Sealing, Sawcutting, and Grinding Operations		NS-3	as needed
	Illegal Connection and Illegal Discharge Detection Reporting		NS-6	as needed
	Portable Water/Irrigation		NS-7	as needed
	Vehicle and Equipment Cleaning		NS-8	as needed
	Vehicle and Equipment Fueling		NS-9	as needed
	Vehicle and Equipment Maintenance		NS-10	as needed
	Pile Driving Operations		NS-11	as needed
Comments:				

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**ATTACHMENT CC WATER POLLUTION CONTROL
BEST MANAGEMENT PRACTICES LIST**

CEM-20CC (NEW 9/2012)

Page 4 of 5

PROJECT INFORMATION NAME AND SITE ADDRESS 101 San Francisquito Creek Bridge Replacement Santa Clara and San Mateo County	CONTRACT NUMBER/CO/RTE/PM 235624
	PROJECT IDENTIFIER NUMBER 04000006781

No.	Water Pollution Control Best Management Practices List			
	Location: SCL-101-PM 52.0-52.6, SM-101-PM 0.0 to 0.6	Project Phase: Preliminary Phase Stage: preliminary	Location shown on WPCD sheet number: 2 to 5	Disturbed Soil Area: <u>0.18</u> acres
	Best Management Practice (BMP)	BMP ID	Quantity Required	
	Concrete Curing	NS-12	as needed	
	Material and Equipment Used Over Water	NS-13	as needed	
	Concrete Finishing	NS-14	as needed	
	Structure Demolition / Removal Over or Adjacent to Water	NS-15	as needed	
	Material Delivery and Storage	WM-1	as needed	
	Material Use	WM-2	as needed	
	Stockpile Management	WM-3	as needed	
	Spill Prevention and Control	WM-4	as needed	
	Comments:			
	Location: SCL-101-PM 52.0-52.6, SM-101-PM 0.0 to 0.6	Project Phase: Preliminary Phase Stage: preliminary	Location shown on WPCD sheet number: 2 to 5	Disturbed Soil Area: <u>0.18</u> acres
	Best Management Practice (BMP)	BMP ID	Quantity Required	
	Solid Waste Management	WM-5	as needed	
	Hazardous Waste Management	WM-6	as needed	
	Contaminated Soil Management	WM-7	as needed	
	Concrete Waste Management	WM-8	as needed	
	Sanitary/Septic Waste Management	WM-9	as needed	
	Liquid Waste Management	WM-10	as needed	
	Comments:			

**ATTACHMENT CC WATER POLLUTION CONTROL
BEST MANAGEMENT PRACTICES LIST**

CEM-20CC (NEW 9/2012)

PROJECT INFORMATION NAME AND SITE ADDRESS	CONTRACT NUMBER/CO/RTE/PM
	PROJECT IDENTIFIER NUMBER

No.	Water Pollution Control Best Management Practices List			
—	Location:	Project Phase:	Location shown on WPCD sheet number:	Disturbed Soil Area:
		Stage:		_____ acres
	Best Management Practice (BMP)		BMP ID	Quantity Required
Comments:				
—	Location:	Project Phase:	Location shown on WPCD sheet number:	Disturbed Soil Area:
		Stage:		_____ acres
	Best Management Practice (BMP)		BMP ID	Quantity Required
Comments:				
—	Location:	Project Phase:	Location shown on WPCD sheet number:	Disturbed Soil Area:
		Stage:		_____ acres
	Best Management Practice (BMP)		BMP ID	Quantity Required
Comments:				

Attachment DD Water Pollution Control Schedule

Attachment EE Stormwater Sampling Locations

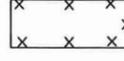
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 DESIGN
 FUNCTIONAL SUPERVISOR: DUAT NGUYEN
 CHECKED BY: STUART GOODSON
 DESIGNED BY: GERSY MODESTO
 REVISIONS:
 3/28/13 SG
 DATE REVISED: 3/28/13
 REVISIONS: 3/28/13 SG

NOTES:

- FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.
- RHMA-G SHALL BE PLACED BEFORE PLACING FINAL PAVEMENT DELINEATION.

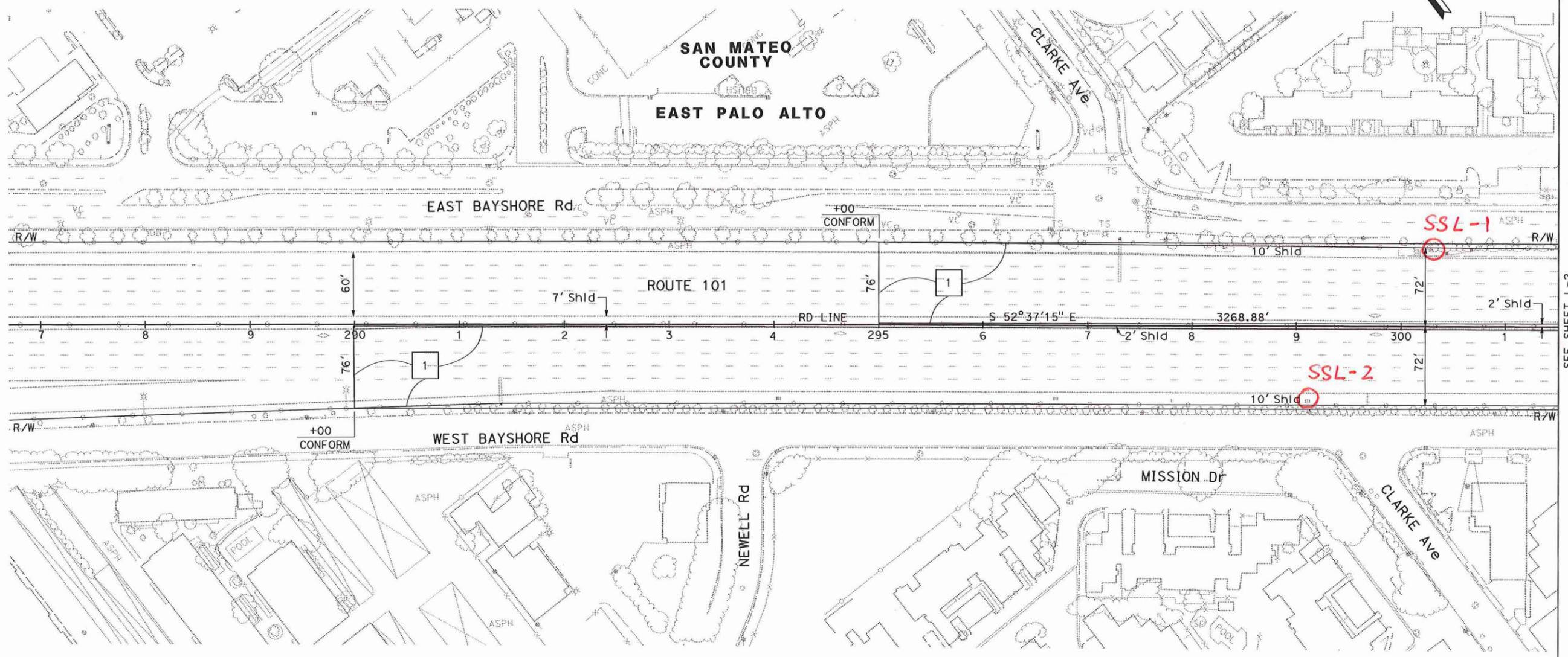
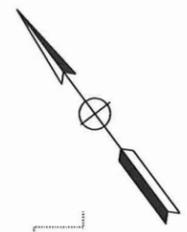
Stormwater Sampling Locations ○

LEGEND

-  TEMPORARY CONSTRUCTION EASEMENT
-  ROADWAY EXCAVATION
-  ESA
-  CURVE DATA NUMBER
-  STRUCTURE SECTION NUMBER

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI, SM	101	52.0/52.6, 0.0/0.6	6	182

REGISTERED CIVIL ENGINEER DATE: 3/28/13
 PLANS APPROVAL DATE: 10-28-13
 G.B. Modesto No. 50338 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.



SEE SHEET L-2

LAYOUT
 SCALE: 1" = 50'

L-1

LAST REVISION: 03-22-13 DATE PLOTTED => 01-NOV-2013 TIME PLOTTED => 11:03

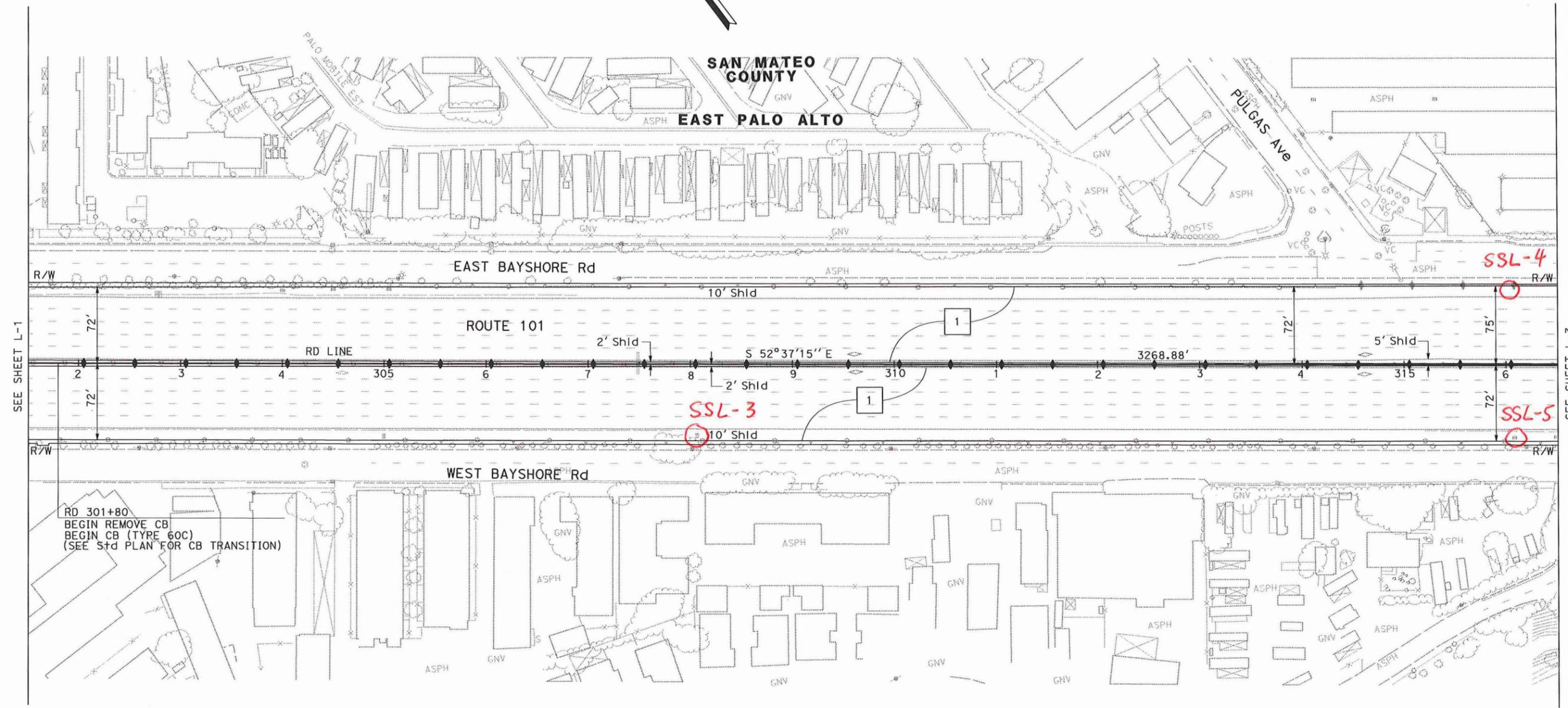
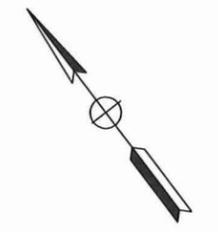
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI, SM	101	52.0/52.6, 0.0/0.6	7	182

<i>[Signature]</i>	3/28/13
REGISTERED CIVIL ENGINEER	DATE
10-28-13	
PLANS APPROVAL DATE	

G.B. Modesto
No. 50338
Exp 6-30-15
CIVIL

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



SEE SHEET L-1

SEE SHEET L-3

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 DESIGN
 FUNCTIONAL SUPERVISOR: DUAT NGUYEN
 CALCULATED/DESIGNED BY: GERSY MODESTO
 CHECKED BY: STUART GOODSON
 REVISED BY: SG
 DATE REVISED: 3/28/13

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

LAYOUT
 SCALE: 1" = 50'
L-2

LAST REVISION: DATE PLOTTED => 01-NOV-2013
 03-22-13 TIME PLOTTED => 11:03

NOTE:

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

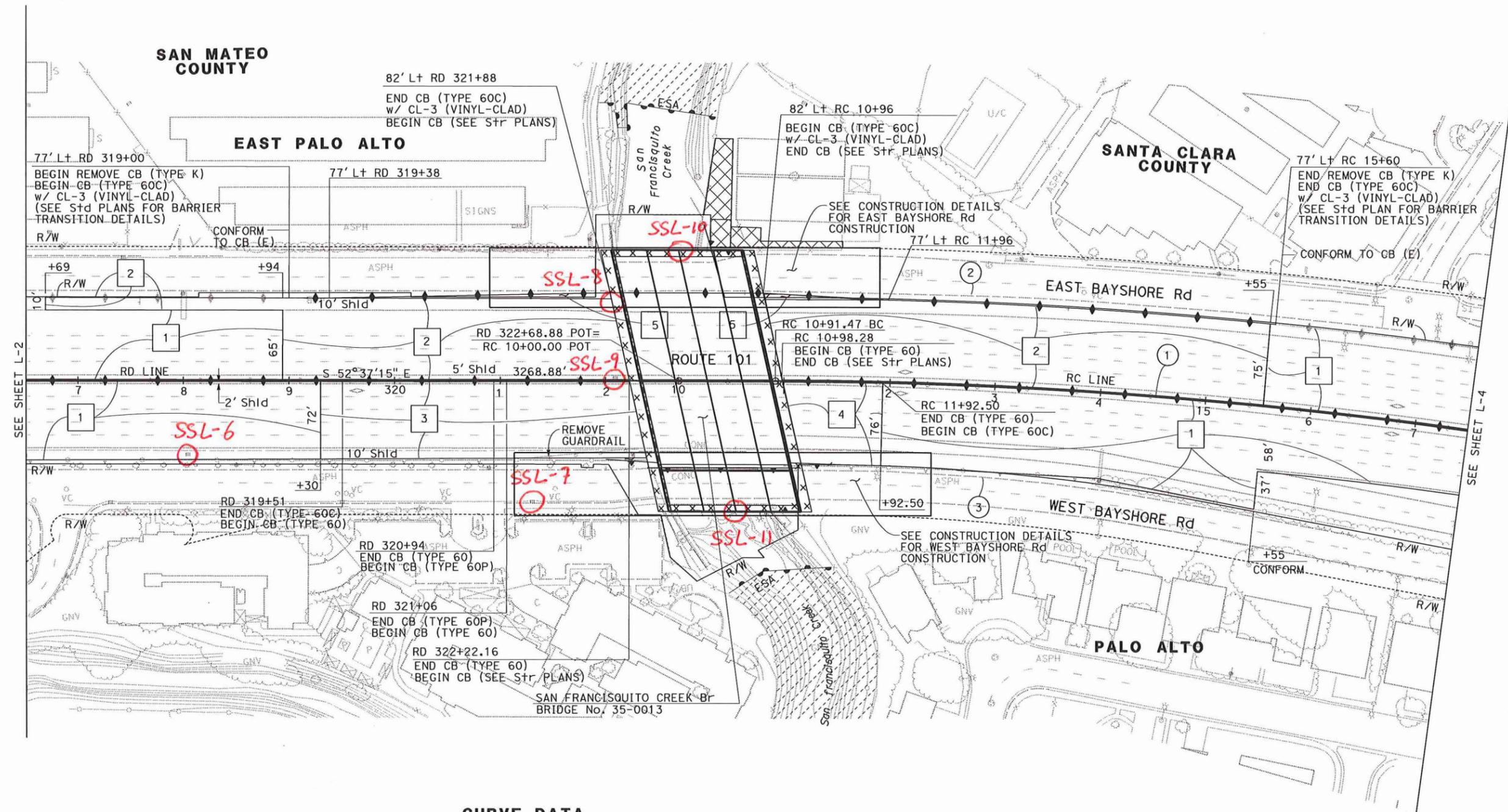
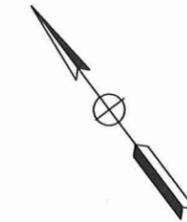
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI, SM	101	52.0/52.6, 0.0/0.6	8	182

REGISTERED CIVIL ENGINEER DATE 3/28/13

PLANS APPROVAL DATE 10-28-13

G.B. Modesto
No. 50338
Exp 6-30-15
CIVIL

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CURVE DATA

No. @	R	Δ	T	L	N-COORDINATE	E-COORDINATE
1	4984'	13° 41' 45"	598.53'	1191.36'	1987432.90	6086213.90
2	5000'	07° 10' 05"	313.17'	625.53'	1987483.42	6086259.78
3	2000'	10° 30' 32"	183.93'	366.83'	1989711.54	6088008.28

LAYOUT
SCALE: 1" = 50'

L-3

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

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
St. Gobans
 DESIGN
 FUNCTIONAL SUPERVISOR: DUAT NGUYEN
 CALCULATED/DESIGNED BY: GERSY MODESTO
 CHECKED BY: STUART GOODSON
 REVISED BY: SG
 DATE REVISED: 3/28/13

LAST REVISION: DATE PLOTTED => 01-NOV-2013
 03-22-13 TIME PLOTTED => 11:03

NOTE:

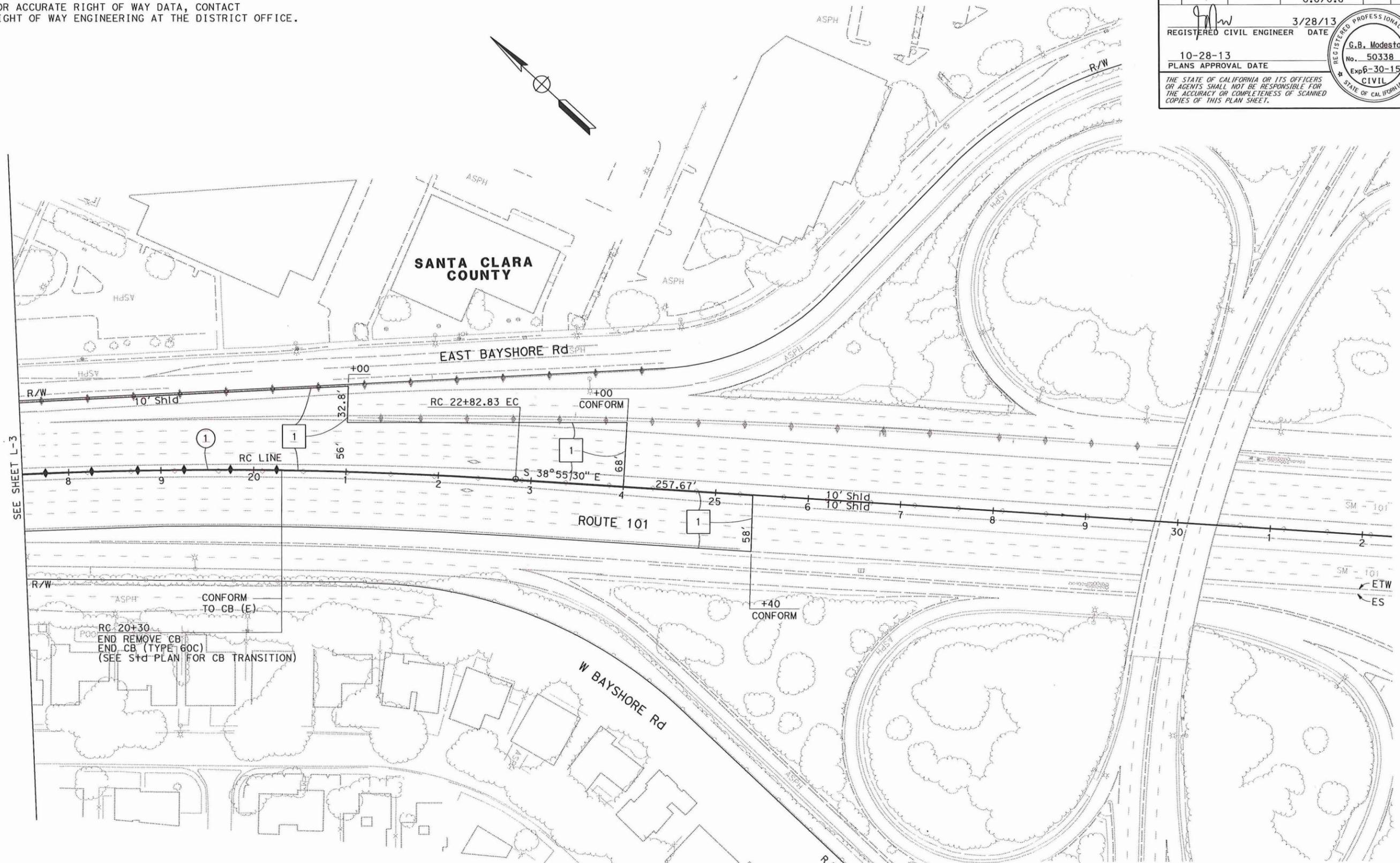
FOR ACCURATE RIGHT OF WAY DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	SCI, SM	101	52.0/52.6, 0.0/0.6	9	182

REGISTERED CIVIL ENGINEER DATE 3/28/13
 10-28-13
 PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
 G.B. Modesto
 No. 50338
 Exp 6-30-15
 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.



CURVE DATA

No. @	R	Δ	T	L	N-COORDINATE	E-COORDINATE
1	4984'	13° 41' 45"	598.53'	1191.36'	1987432.90	6086213.90

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

LAYOUT
SCALE: 1" = 50'

L-4

LAST REVISION DATE PLOTTED => 01-NOV-2013
 03-22-13 TIME PLOTTED => 11:03

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN
 FUNCTIONAL SUPERVISOR DUAT NGUYEN
 CHECKED BY
 CALCULATED/DESIGNED BY
 GERSY MODESTO
 STUART GOODSON
 REVISED BY DATE REVISED
 SG 3/28/13

Appendices

Download Forms from:

<http://www.dot.ca.gov/hq/construc/forms.htm>

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. MUTHANNA OMRAN
Senior Bridge Engineer
Division of Engineering Services
Office of Bridge Design-West
Bridge Design Branch 16

Date: April 02, 2013

Attention: John E. Peterson

File: 04-SCL/SM-101-PM 0.01
04-235621
San Francisquito Cr. Bridge
Replacement
Bridge No. 35-0348

From: TUNG NGUYEN
Transportation Engineer
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

MAHMOOD MOMENZADEH
Chief, Branch C
Office of Geotechnical Design-West
Geotechnical Services
Division of Engineering Services

Subject: Final Foundation Report (FR) for San Francisquito Creek Bridge Replacement Project

INTRODUCTION

This report provides our foundation recommendations for the San Francisquito Creek Bridge replacement project. The project site is located between the cities of Palo Alto and East Palo Alto, on the border of Santa Clara and San Mateo Counties (see Location Map of Appendix A).

This Foundation Report documents site geology and subsurface conditions, provides analyses of site conditions as they pertain to the project and recommends geotechnical input for the foundation design of San Francisquito Creek Bridge (Bridge No. 35-0348), retaining walls, soundwalls, and an overhead sign.

To accomplish the above stated purpose, the following works were conducted:

- Field reconnaissance to observe and document site conditions
- Review as-built foundation data, existing reports of geotechnical investigation for San Francisquito Creek Flood Protection Project
- Site subsurface investigation
- Engineering analyses and geotechnical recommendations for the foundation design

PROJECT DESCRIPTION

The existing 3-span, about 83-foot-long, 232-foot-wide bridge was built in 1931 and widened in 1957 on State Route 101 is to be replaced with a new reinforced concrete slab bridge for public safety enhancement. The new bridge will be a 4-span bridge, 14 ft wider, and 44 ft longer than the existing bridge. Furthermore, three retaining walls, two soundwalls on the top of barrier, and an overhead sign are proposed for the project. Retaining walls with maximum height of 15 ft are: RW A located on the southeast corner, RW B located on the east side, and RW C located on the west side of the bridge. Along the West Bayshore Road, soundwall SW1 is 14 ft high located to the north and SW2 is 16 ft high located to the south of the bridge as shown in the project plans provided by District 4 Design West Peninsula. The Overhead Sign (Truss, Butterfly) Type V is proposed on median at Station 308+40.

SITE GEOLOGY AND SEISMICITY

The site geology and seismicity described herein are based on memos provided by Our Office Branch B dated October 18, 2010 and August 31, 2012 and included in the Appendix A.

Site Geology

The project site is located at the southeastern margin of the San Francisco Peninsula, which is a part of northwest-trending California Coast Ranges. The eastern margin of the peninsula is influenced by the tidal action of San Francisco Bay, and underlain predominantly by Holocene and Pleistocene deposits of unconsolidated basin and alluvial deposits, and Bay Mud overlay older rocks the lower Cretaceous/ Jurassic Franciscan complex

The project area is entirely covered by Holocene floodplain deposits (See the attached Geology map shown in Appendix A). The floodplain deposits contains very medium to dark-grey, dense, sandy to silty clay. Lenses of coarser material (silt, sand, and pebbles) may be locally present (USGS, OFR 98-231). Natural Levee deposits to the west and Flood basin deposits to the east surround the project site. The Natural Levee deposits contain loose, moderate-to well-sorted sandy or clayey silt grading to sandy or silty clay. The Flood basin deposits contain organic-rich clay to very fine silty-clay deposits occupying the lowest topographic positions between Holocene Levee deposits or Holocene flood plain deposits.

The Franciscan complex forms the basement rock underlies the entire area east of the Pilarcitos Fault. The Franciscan complex is composed of weakly to strongly metamorphosed greywacke, argillite, limestone, basalt, serpentinite, chert, and other rocks. The Franciscan rocks in this area overlain by Upper Jurassic to Upper Cretaceous turbidites (USGS, OFR 98-348).

Seismicity

The project site is located 3.9 miles (6.3 km) north of the Cascade Fault, 6.4 miles (10.34 km) west of the Silver Creek Fault, and 7.4 miles (11.87 km) east of the San Andrea Fault (Peninsula section). San Andrea Fault, Silver Creek Fault, and Cascade Fault are active faults and capable of producing Maximum Moment Magnitude (MMax) of 7.9, 7.1, and 6.9 respectively.

SUBSURFACE CONDITIONS

Field Investigation

The Office of Geotechnical Design-West conducted a subsurface investigation in August 2010. The following table lists cone penetration tests (CPT) and borings, their approximate locations, existing ground elevations, and depths:

Boring	Station	Offset, ft	Direction	Elevation, ft	Depth, ft
CPT-10-001	321+19.5	68.9	SB	+15.0	101.0
CPT-10-002	10+97.2	67.9	SB	+15.0	101.0
R-10-001	321+91.8	65.1	NB	+14.5	106.5
R-10-002	10+64.3	66.6	NB	+15.1	101.5
R-10-003	10+97.2	67.3	SB	+15.0	101.5

The subsurface investigation consisted of two CPT and three borings. The CPT probe included 1.4-inch conical tip that was hydraulically pushed to depth to measure and record tip resistance and sleeve friction, which are shown in the Log of Test Borings (LOTB) of Appendix B. The borings were drilled by rotary method with slurry to depths shown on the above table. These borings were drilled with Mobile B47 drilled trucks with safety hammers to perform in-situ Standard Penetration Tests (SPT) at 5 ft intervals. The SPT involves driving of a hollow thick-walled tube into the ground by a 140 lbs safety hammer with a 30-inch drop, measuring number of blows "N" to achieve three successive increments 6 inch each. The N of the last two increments is counted as blow count per foot. Boring logs with N values are presented in the LOTB. Sampling was achieved by using a split spoon sampler as well as California sampler and continuous coring in all borings. Selected samples were collected and submitted for laboratory tests such as water content, Atterberg Limits, grain size analysis, corrosion analysis, consolidation and shear strength. The results of laboratory tests are presented in Appendix C.

Subsurface Conditions

The subsurface conditions described herein are based on the information from subsurface investigation of the site. From the original ground elevation to depths of 25 ft and 35 ft± is very loose to medium dense sand with silt and silty sand, soft to stiff silt with gravel and sand, sandy silt, lean clay with sand, lean clay, and fat clay. These soil materials have N value ranging from 1

to 17. Below these deposits to a depth of 45 ft \pm , loose to medium dense silt with sand, silty sand, silty sand with gravel, sand with silt and gravel, and gravel with N ranging from 9 to 43 were encountered in the exploration borings. From the depth of 45 ft to a depth of 90 ft \pm is soft to very stiff fat clay, lean clay, silt and interbedded with very loose to medium dense sand/silty sand with gravel and silty sand of N value ranging from 0 to 21. These deposits are underlain by 5 to 10 ft medium dense sand with silt, silt with sand, stiff sandy silty clay, sandy silt, and silt with N value ranging from 11 to 28. Below these deposits to the maximum exploration is stiff to very stiff lean clay with the N of 16 to 20. Clayey soils encountered have a various range of plasticity from non-plastic to high.

Groundwater Conditions

Groundwater was measured after the 1st day of drilling and it was recorded at a depth varying from 13.0 to 14.0 ft below the existing road surface. Groundwater level is expected to fluctuate and could be higher depending on the season and amount of rainfall.

SCOUR EVALUATION

Scour is not an issue for the bridge pile foundation since the bottom of bridge footing is proposed below the scour depth. The anticipated short term local scour depth is 6.3 ft, reaching an elevation of -3.3 ft (See Appendix A).

CORROSION EVALUATION

Soil samples were collected from this site during the geotechnical investigation and tested for corrosion potential in conformance with the Corrosion Guidelines for Foundation Investigations (Caltrans, 2003). Table 1 presents the results of corrosion tests. According to the corrosion lab data, the site is corrosive.

Table 1. Corrosion Test Data

Sample Location	SIC Number (TL-0101)	Resistivity, om-cm	pH	Chloride, ppm	Sulfate, ppm
R-10-001, Depth 1-5 ft	C708226	4572	7.60	-	-
R-10-001, Depth 16.5-20.0 ft	C708227	978	7.20	163	781
R-10-002, Depth 0.2-10.0 ft	C708228	2700	7.66	-	-
R-10-002, Depth 20-25 ft	C708248	394	5.14	778	6517
R-10-003 Depth 2-5 ft	C708268	2672	7.45	-	-
R-10-003 Depth 5-10 ft	C708269	1926	7.67	-	-

SEISMIC PARAMETERS AND LIQUEFACTION

The peak ground acceleration is estimated as 0.58g from the acceleration response spectrum (ARS) provided in the seismic design recommendation for this project by Hossain Salimi of the Office of Geotechnical Design-West. The seismic design recommendation is included in the Appendix D.

Liquefaction potential at the project site is high. Layers of very loose to medium dense sands which are present at the site to a depth of about 43 ft are subject to liquefaction during a design seismic event resulting in excessive settlement, which in turn causes downdrag load. The downdrag load varying from 80 to 135 kips is considered for design of pile foundation for the bridge. The range of anticipated seismically induced settlement due to liquefaction is about 3 to 4 inches.

AS-BUILT FOUNDATION DATA

The existing bridge is supported by Abutment 1, Piers 2 and 3, and Abutment 4. These supports are on 16"x16" concrete piles of 45 tons with tip elevation varying from -41 ft to -45 ft. Records of pile driving are not available to review.

FOUNDATION RECOMMENDATIONS FOR BRIDGE

Pile Type

Cast in Drilled Hole (CIDH) pile type was considered for this project to avoid the impact of ground vibration on the adjacent area associated with driven pile option. However, CIDH pile option was rejected due to use of pier walls in structure design scheme, difficulties of CIDH piles construction associated with caving potential of sand and very soft clayey deposits at the site, high groundwater, necessity of deep temporary casing, access conditions, and environmental impact with use of wet method.

The major drawback of the driven pile option is the vibration impact on the area adjacent to the project site. Driven pile option is feasible provided that vibration impact be minimized to a level acceptable to the adjacent facilities. Based on our past experienced, we recommend that vibration at the ground of the adjacent facilities do not exceed Peak Particle Velocity (PPV) of 0.2 in/sec (5 mm/sec). At this level, pile driving may not cause damage to the facilities by pre-drilling to the elevation of -21 ft. The pre-drill hole shall be at least 2/3 ft (200 mm) larger than the pile size to cut off the transmission of the surface waves generated due to driving energy to the surrounding soils. The need for temporary casing of all pre-drill holes shall be included in the project plans since the cohesionless materials present to the pre-drilling depth is subject to caving. The tip elevations of temporary casing are shown in Table 6. The plan should have a note that require temporary casing to be installed by rotation method to avoid vibration due to their driving impact. The annular space between the pile and temporary casing shall be filled with slurry concrete backfill when the temporary casing is withdrawn.

We recommend that District Design include the vibration monitoring special provisions for the project. The vibration provisions shall include inspection and documentation of the adjacent facility conditions and monitor and control the vibration PPV magnitude variation and maximum PPV values with the anticipated frequencies caused by the pile driving. We recommend adjacent area up to distance of 35 ft from the nearest pile driving location be considered for the vibration monitoring program.

Alternatively, vibration free pile option using Tubex method can be used. The recommendations below are provided for both options. We recommend that structural plans be prepared to allow use of either of these options.

Option 1- Driven Pile

We recommend Caltrans Class 200 Alternative “W” steel pipe pile with diameter of 16 inch, 0.5 inch minimum thick shell to support all Abutments and Piers of the 4-span bridge to be replaced. The general foundation information and design loads provided to us by the Structure Design West, Branch 16 are presented in Tables 2 and 3,

Table 2. General Foundation Information

Support No	Design Method	Pile Type	Finish Grade Elevation (ft)	Cut-off Elevation (ft)	Pile Cap Size (ft)		Permissible Settlement under Service Load (in)	No Piles Per Support
					B	L		
Abut. 1&5	WSD	Class 200-Alt "W"	16	-5.5	8.0	253	1	64
Piers 2&3	LRFD	Class 200-Alt "W"	0	-5.5	2.5	253	1	35
Pier 4	LRFD	Class 200-Alt "W"	0	-5.5	2.5	253	1	33

Table 3. Foundation Design Loads

Support No	Service-I Limit State (kips)			Strength Limit State (kips)				Extreme Event Limit State (kips)	
	Total Load		Permanent Load	Compression		Tension		Compression	Tension
	Per Support	Max. Per Pile		Per Support	Max. Per Pile	Per Support	Max. Per Pile		
Abut. 1	6300	150	4950	N/A	N/A	N/A	N/A	N/A	N/A
Pier 2	5450	N/A	3700	7800	260	0	0	270	50
Pier 3	4900	N/A	3250	7000	235	0	0	270	50
Pier 4	5300	N/A	3600	7700	250	0	0	270	50
Abut. 5	6200	125	4900	N/A	N/A	N/A	N/A	N/A	N/A

MR. MUTHANNA OMRAN
Attn: John E. Peterson
Date: April 02, 2013
Page 8

San Francisquito Creek
Bridge Replacement
EA: 04-235621

Based on the above information, we have performed axial and lateral load pile capacity analyses. Tables 4 and 5 present our foundation recommendations for Abutments and Piers, respectively. All specified pile tip elevations presented in Pile Data Table 6 are controlled by strength limit compression.

Table 4. Foundation Design Recommendations for Abutments

Support	Pile Type	Cut-off Elevation (ft)	LRFD Service-I Limit State Load (kips) Per Support		Total Permissible Support Settlement (inches)	LRFD Service-I Limit State Total Load (kips) Per Pile (Compression)	Nominal Resistance (kips)	Design Tip Elevations (ft)	Specified Tip Elevation (ft)	Nominal Driving Resistance Required (kips)
			Total	Permanent						
Abut. 1	Class 200 Alt. "W"	-5.5	6300	4950	1	150	300	-75.5 (a) -57.5 (c) -66.0 (d)	-75.5	400
Abut. 5	Class 200 Alt. "W"	-5.5	6200	4900	1	150	300	-81.0 (a) -65.5 (c) -81.0 (d)	-81.0	435

Notes:

1. Design tip elevations are controlled by: (a) Compression, (c) Settlement, and (d) Lateral Load.
2. The specified tip elevations shall not be raised.
3. The nominal driving resistance is equal to the nominal resistance plus driving resistance (downdrag) from the unsuitable penetrated soil layers (very soft clay and liquefiable medium dense sand).

Table 5. Foundation Design Recommendations for Piers

Support	Pile Type	Cut-off Elevation (ft)	LRFD Service-I Limit State Load (kips) Per Support		Total Permissible Support Settlement (inches)	Required Factored Nominal Resistance (kips)				Design Tip Elevations (ft)	Specified Tip Elevation (ft)	Nominal Driving Resistance Required (kips)
			Total	Permanent		Strength Limit		Extreme Event				
						Comp. ($\phi=0.7$)	Tension ($\phi=0.7$)	Comp. ($\phi=1.0$)	Tension ($\phi=1.0$)			
Pier 2	Class 200 Alt. "W"	-5.5	5450	3700	1	260	0	270	50	-83.5 (a-I) N/A (b-I) -83.5 (a-II) -45.0 (b-II) -71.0 (c) -83.5 (d)	-83.5	460
Pier 3	Class 200 Alt. "W"	-5.5	4900	3250	1	235	0	270	50	-83.5 (a-I) N/A (b-I) -83.5 (a-II) -45.0 (b-II) -71.0 (c) -83.5 (d)	-83.5	460
Pier 4	Class 200 Alt. "W"	-5.5	5300	3600	1	250	0	270	50	-83.5 (a-I) N/A (b-I) -83.5 (a-II) -45.0 (b-II) -71.0 (c) -83.5 (d)	-83.5	460

Notes:

1. Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (b-I) Tension (Strength Limit), (a-II) Compression (Extreme Event), (b-II) Tension (Extreme Event), (c) Settlement, and (d) Lateral Load.
2. The specified tip elevations shall not be raised.
3. The nominal driving resistance is equal to the nominal resistance plus driving resistance (downdrag) from the unsuitable penetrated soil layers (very soft clay and liquefiable medium dense sand).

Table 6: Pile Data Table

Support	Pile Type	Nominal Resistance (kips) Compression		Design Tip Elevations (ft)	Specified Tip Elevation (ft)	Nominal Driving Resistance (kips)	Tip Elevation of 24-inch Diameter Temporary Casing (ft)
		Strength Limit	Extreme Event				
Abut. 1	Class 200 Alt. "W"	300	N/A	-75.5 (a) -57.5 (c) -66.0 (d)	-75.5	400	-21
Pier 2	Class 200 Alt. "W"	380	270	-83.5 (a) -45.0 (b) -71.0 (c) -83.5 (d)	-83.5	460	-21
Pier 3	Class 200 Alt. "W"	340	270	-83.5 (a) -45.0 (b) -71.0 (c) -83.5 (d)	-83.5	460	-21
Pier 4	Class 200 Alt. "W"	360	270	-83.5 (a) -45.0 (b) -71.0 (c) -83.5 (d)	-83.5	460	-21
Abut 5	Class 200 Alt. "W"	300	N/A	-81.0 (a) -65.5 (c) -81.0 (d)	-81.0	435	-21

Notes:

1. Design tip elevations are controlled by: (a) Compression, (b) Tension, (c) Settlement, and (d) Lateral Load.
2. The specified tip elevations shall not be raised.
3. The nominal driving resistance is equal to the nominal resistance plus driving resistance (downdrag) from the unsuitable penetrated soil layers (very soft clay and liquefiable medium dense sand).

Pile lateral analyses were performed for the project by using L-Pile computer program to obtain “critical” pile lengths and lateral capacities based on the deflection criteria of 0.25 inch. Results of lateral analyses for this pile type to support Abutments and Piers are presented in Table 7.

Table 7. Results of Pile Lateral Analyses

Support No	Pile Length (ft)	Lateral Capacity (kips)
Abut. 1	60.5	20.9
Piers 2,3,4	78.0	16.6
Abut. 5	75.5	17.7

Option 2- Vibration Free “Tubex” Pile

If the risk associated with the expected impact of pile driving vibration and noise is not acceptable, alternative piling by Tubex grouted injection piles may be used for the support of this structure to comply with the “free vibration” pile installation method to protect the complex building from damage during and after construction.

Tubex piles should have the axial and lateral capacities similar to the axial (nominal driving resistance) and lateral capacities of Class 200 Alt “W” Pile which are shown in Tables 6 and 7. The center to center spacing of these piles of more than 3.5 times pile diameter should be kept to minimize the axial group effect of piles. Piles should be protected from corrosion problem. Two performance tests at selected locations (Abutment 1 and Pier 4) and ten proof tests (two of production piles at each abutment and piers) shall be conducted for Tubex grouted injection piles. The pile shall be tested in compression to the Nominal Resistance Required. We recommend that the reaction piles shall have the same type and length as a test pile. The structural capacity of the pile and the test frame load capacity sufficiently exceed the required geotechnical capacity. Contractor(s) shall propose this alternative piling according with the project specifications.

MR. MUTHANNA OMRAN
Attn: John E. Peterson
Date: April 02, 2013
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San Francisquito Creek
Bridge Replacement
EA: 04-235621

FOUNDATION RECOMMENDATIONS FOR RETAINING WALLS

Soldier pile walls consisted of 50 ksi steel grade piles W14x233 with lagging are recommended for all RW (A, B, and C) to retain maximum 15 ft of materials. Soldier pile walls are designed with 250 psf surcharge load, which can be placed at least 3 ft from the wall face. H-Piles should be at least 43 ft long (28 ft embedment). Piles shall be placed vertically in 2.5 ft diameter pre-drilled holes and spaced 6 ft from center to center. Temporary casing should be used to prevent caving. Concrete shall be used to fill the holes with piles inside. If rock rip raps (Rock Slope Protection - RSP) is used as a support berm to reduce the wall height to maximum 15 ft as indicated above, the RSP should be embedded at least 2 ft below the existing channel bed elevation. The side slope of the RSP berm should be 1.5H to 1.0V (minimum).

FOUNDATION RECOMMENDATIONS FOR SOUNDWALLS

Soundwalls on barrier can be supported on Class 200 Alternative "Y" precast piles. The minimum pile lengths are 32 ft for SW1 and 36 ft for SW2. Piles shall be spaced 6 ft and 5.75 ft from center to center for SW1 and SW2, respectively. Before driving piles, pre-drilling from the ground surface to a depth of 8 ft is required to minimize vibration impact on the existing facilities. The pre-drill hole shall be at least 2/3 ft (200 mm) larger than the pile size to cut off the transmission of the surface waves generated due to driving energy to the surrounding soils. If PPV obtained from vibration monitoring exceeds 0.2 in/sec, pre-drilling should be revised for deeper depth. Temporary casing should be used to prevent caving. The annular space between the pile and temporary casing shall be filled with lean concrete slurry when the temporary casing is withdrawn.

FOUNDATION RECOMMENDATIONS FOR OVERHEAD SIGN

The proposed Overhead Sign Type V on median at Station 308+40 shall be supported by CIDH pile according to the Standard Plan. However, we recommend that CIDH pile has the diameter of 5 ft and the embedment length of 30 ft.

TEMPORARY SHORING

Use of temporary shoring is anticipated for the project and is responsibility of Contractor(s). The idealized soil profile for temporary shoring is presented in the following Table.

Table 8. Idealized Soil Profile

Depth, ft	Unit Weight, pcf	Friction Angle, degree	Cohesion, psf
0 to 15	110	28	0
15 to 20	115	31	0
20 to 30	120	30	0
30 to 45	125	34	0
45 to 53	120	0	200

Temporary shoring system proposed by Contractors should be reviewed by engineers before its initiation.

CONSTRUCTION CONSIDERATIONS

The temporary cut slope should be 1.5 H to 1.0 V or flatter. Groundwater is anticipated within the cut. At Abutments 1 and 5, the first 20 to 21 ft below the original ground surface will be excavated. The excavation should follow the Cal/OSHA excavation requirements. Control measure of groundwater should be considered during the excavation and construction.

Compaction of backfill materials should be conformed with the Section 19 of Standard Specifications. Behind the abutment backwalls, control low strength material is proposed to use. This material should have the maximum unit weight of 120 pcf not to cause the settlement.

Difficult driving and pile installation are anticipated due to the presence of very soft/very loose materials over dense/very stiff and gravel materials, and existing pile foundation. The Contractor(s) should perform driveability study and choose driving equipment and hammer size that are suitable to penetrate through these dense/very stiff and gravel materials to reach the specified tip elevations without inducing excessive stresses over the piles. The bearing value of piles driven at least to the specified tip elevations should be checked with the pile-driving formula given in Section 49-2.01A(4)(b) of the Caltrans Standard Specifications (2010) using the normal driving resistance and/or with a pile driving analyzer (PDA). At least one PDA is required at each Bent and Abutment to check the pile integrity and design capacity. Soil plug is anticipated for Class 200 Alternative "W" pipe pile. For Tubex grouted injection piles, water jetting provided that it is not disturbing the soil surrounding the piles is acceptable through the pile tip to penetrate the dense/very stiff layers during drilling to the specified pile tip elevation. The piling construction method shall be suitable for high groundwater and caving conditions which are anticipated during installation of all piles. Furthermore, temporary casing and wet

MR. MUTHANNA OMRAN
Attn: John E. Peterson
Date: April 02, 2013
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San Francisquito Creek
Bridge Replacement
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method may be needed for CIDH pile installation. Contractors are responsible for these issues. Contractor(s) should refer to the LOTB and laboratory test data for soil types and properties.

DISCLAIMER AND CONTACT INFORMATION

The recommendations contained in this report are based on specific project information regarding structure, type and location. If any conceptual changes are made during final project design, the Office of Geotechnical Design – West, Design Branch C should review those changes to determine if these foundation recommendations are still applicable. Any questions regarding the above recommendations should be directed to the attention of Tung Nguyen, 510-622-1775 or Mahmood Momenzadeh, 510-286-5732, at the Office of Geotechnical Design-West, Branch C.

c: TPokrywka, MMomenzadeh, TNguyen, HSalimi, CRisden, RNashed, Daily File, Route File, Translab File, Reto Schaeferli, PCE-PPRM, Project Manager, District Design Chief

TNguyen/mm

APPENDIX A

SITE GEOLOGY

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. MAHMOOD MOMENZADEH
Chief, Branch C
Office of Geotechnical Design – West

Date: October 18, 2010

Attention: T. Nguyen

File: 04-SM-101 PM 0.0
04 – 235621
San Francisquito Creek Br.

From: RIFAAT NASHED *RN*
Engineering Geologist
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

GRANT WILCOX *GW*
Chief, Branch B
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject: Foundation Report (Geology & Subsurface Conditions)

This memo is in response to your request to provide the geology and subsurface conditions required to prepare the Foundation Report for the proposed bridge replacement (Structure No. 35-0013).

Site Geology and Subsurface Conditions

Topography

San Francisquito Creek drains from west to east towards San Francisco Bay. The approximate elevation of the project site ranges from 16 feet (at the west side) to 14 feet (at the east side).

Site Geology

The project site is located at the southeastern margin of the San Francisco Peninsula, which is a part of northwest-trending California Coast Ranges. The eastern margin of the peninsula is influenced by the tidal action of San Francisco Bay, and underlain predominantly by Holocene and Pleistocene deposits of unconsolidated basin and alluvial deposits, and Bay Mud overlay older rocks the lower Cretaceous/ Jurassic Franciscan complex

The project area is entirely covered by Holocene floodplain deposits (See the attached Geology map). The floodplain deposits contains very medium to dark-grey, dense, sandy

MR. MAHMOOD MOMENZADEH

Attn: T. Nguyen

October 18, 2010

Page 2

to silty clay. Lenses of coarser material (silt, sand, and pebbles) may be locally present (USGS, OFR 98-231). Natural Levee deposits to the west and Flood basin deposits to the east surround the project site. The Natural Levee deposits contain loose, moderate-to well-sorted sandy or clayey silt grading to sandy or silty clay. The Flood basin deposits contain organic-rich clay to very fine silty-clay deposits occupying the lowest topographic positions between Holocene Levee deposits or Holocene floodplain deposits.

The Franciscan complex forms the basement rock underlies the entire area east of the Pilarcitos Fault. The Franciscan complex is composed of weakly to strongly metamorphosed greywacke, argillite, limestone, basalt, serpentinite, chert, and other rocks. The Franciscan rocks in this area overlain by Upper Jurassic to Upper Cretaceous turbidites (USGS, OFR 98-348).

The project site is located 3.9 miles (6.3 km) north of the Cascade Fault, 6.4 miles (10.34 km) west of the Silver Creek Fault, and 7.4 miles (11.87 km) east of the San Andrea Fault (Peninsula section). San Andrea Fault, Silver Creek Fault, and Cascade Fault are active faults with Maximum Magnitude (MMax) of 7.9, 7.1, and 6.9 in order.

Subsurface Condition

Recent three boreholes, R-010-001 and R-010-002 (at the N/B) and R-010-003 (at the S/B) were drilled in August 2010, for the proposed bridge replacement . The maximum exploration depth reached to the depth of 100 ft. The foundation material encountered at eastern side (N/B shoulder) can be described as follows: 10 feet medium stiff sandy clay to clay, underlain by 65 feet of very loose to medium dense sand with silt and gravel, followed by 15 feet stiff clay and 10 feet stiff silt and silty sand. The foundation material encountered at western side (S/B shoulder) can be described as follows: 10 feet of very stiff to soft silty clay; 15 feet very soft clay, underlain by 20 ft medium dense sand and silty sand; 15 feet soft clay and silt; underlain by medium dense 15 feet of medium dense silty sand and stiff sandy clay; followed by 15 feet stiff to very stiff clay and silty clay and 10 feet of medium dense silty sand.

Groundwater elevation

Groundwater was encountered during the investigation and measured at depth ranging from 13.5 to 14.0 ft below the ground surface in August 2010.

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Attn: T. Nguyen

October 18, 2010

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If you have any questions or need additional information, please call Rifaat Nashed at (510) 622-1773 or Grant Wilcox at (510) 286-4835.

c: TPokrywka, GWilcox, Route File, Daily File

RNashed/mm

Memorandum

*Flex your power!
Be energy efficient!*

To: MR. MAHMOOD MOMENZADEH
Chief, Branch C
Office of Geotechnical Design – West

Date: August 31, 2012

Attention: T Nguyen

File: 04-SM-101 PM 0.0
04-235620
San Francisquito Creek
Earth Retaining Systems

From: RIFAAT NASHED *RN*
Engineering Geologist
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

CHRIS RISDEN *CR*
Acting Chief, Branch B
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

Subject: Geotechnical Design Report (Geology, Seismicity, Soils & Subsurface Condition Part)

This memo is in regards to your request to provide the Physical Setting, Geology, Seismicity, Soils and Subsurface conditions on the project area at Hwy 101, San Francisquito Creek Bridge (see the attached Location Map).

PHYSICAL SETTING

Climate

The climate in the project area is representative of the northern coast of California. Winters are mild and wet; summers are cool nearly rainless (USDA, 1961). The average annual rainfall is 19.95 inches. Temperatures are rather mild, the average January minimum temperature is 39.6°F, and the average July maximum temperature is 82.5°F (Northern California Climate Summaries)¹.

Topography and Drainage

San Francisquito Creek flows northeastward for 14 miles from its source below Searsville Lake to its terminus in San Francisco Bay². In its lower reaches, the creek courses through densely populated cities located in relatively flat-lying areas. The ground surface elevation at the west side of the project site, where the soldier pile wall SPW and the three sound walls SW1, SW2 & SW3 are proposed, is approximately 16 feet. The ground surface elevation at the east side of the project site, where the soldier pile walls RT and SPE are proposed, is approximately 14 feet³.

¹ <http://www.wrcc.dri.edu/summary/climsmnca.html>

² (http://geography.wr.usgs.gov/sfcreek/study_area.html)

³ (<http://pi.dot.ca.gov/upload/dist4-04-235621-6.26.2012-11.20>)

MR.MAHMOOD MOMENZADEH
Attn: T Nguyen
August 31, 2012
Page 2

Regional Geology and Seismicity

The San Francisquito Creek is the last riparian free-flowing urban creek on the southern Peninsula of San Francisco Bay. The creek begins as overflow from the Searsville Lake dam, located in the Santa Cruz Mountains, which are part of the larger Coast Ranges.

The project site lies on the alluvial plain on the southeastern margin of the San Francisco Peninsula, which is a part of northwest-trending California Coast Ranges. The eastern margin of the peninsula is influenced by the tidal action of San Francisco Bay, and is underlain predominately by Holocene and Pleistocene deposits of unconsolidated basin and alluvial deposits, and bay mud that overlay older rocks of the lower Cretaceous/ Jurassic Franciscan complex.

The Franciscan complex forms the basement rock and underlies the entire area east of the Pilarcitos Fault. The Franciscan complex is composed of weakly to strongly metamorphosed greywacke, argillite, limestone, basalt, serpentines, chert, and other rocks. The Franciscan rocks in this area are overlain by Upper Jurassic to Upper Cretaceous turbidities (USGS, OFR 98-348).

The Project area is surrounded by many active faults. The Silver Creek Fault is located east and the Cascade Fault is located south of the project area. The Monte Vista – Shannon Fault is situated southwest and the San Andreas Fault (peninsula section) west of the project area (see the attached Fault Map).

Site Geology

The project area is entirely covered by Holocene floodplain deposits (see the attached Geology Map). These flood plain deposits contain medium to dark- grey, dense, sandy to silty clay. Lenses of coarser material (silt, sand, and pebbles), may be locally present (USGS, OFR 98-231). Natural levee deposits to the west and flood basin deposits to the east surround the project site. The natural levee deposits contain loose, moderate-to well sorted sandy or clayey silt grading to sandy or silty clay. The flood basin deposits contain organic- rich clay to very fine silty-clay deposits occupying the lowest topographic positions between Holocene Levee deposits or Holocene Floodplain deposits.

Project Site Seismicity

The San Francisco Bay Area is highly seismically active, and several active faults lie within a few miles of the site. The Silver Creek Fault, with a maximum magnitude (MMax) = 7.1 is situated 6.9 miles east of the project site. The Cascade Fault with a maximum magnitude

MR.MAHMOOD MOMENZADEH

Attn: T Nguyen
August 31, 2012
Page 3

(MMax) = 6.9 is situated 6.4 miles south the project site. The Monte Vista – Shannon Fault with a maximum magnitude (MMax) = 6.7 is situated 5.6 miles southwest the project site. The San Andreas Fault (Peninsula Section) with a maximum magnitude (MMax) = 7.9 is situated 7.4 miles west the project site.

Following is a table listing of the distance from the project to nearby active faults, the Maximum Magnitude of these faults, estimated Deterministic Peak Bed Rock Acceleration (PBA), and probabilistic USGS 5% in 50 years hazard anticipated within the project area using the Caltrans ARS online (attached) using the Shake program:

Fault	Site To Source Distance (Mile)	Maximum Magnitude (M_{max})	Peak Bed Rock Acceleration (PBA)	USGS 5% in 50,years Probability Exceedance
Monte Vista – Shannon fault	5.6	6.7	0.36*	0.51
Cascade fault	6.4	6.9	0.36	
Silver Creek fault	6.9	7.1	0.35	
San Andreas fault	7.4	7.9	0.31	

(*) Attenuation curve by Mualchin and Jones (1992)

According to the Shake program there is no governing fault, because the probabilistic value is higher than the deterministic values.

It should be noted that a detailed seismic report will be prepared by Hossain Salimi, Senior Materials and Research Engineer of Geotechnical Design – West Office.

Ground Rupture

The project area is not intersected by any known active faults.

Ground Motions

According to the Association of Bay Area Governments (ABAG) 2003, the Shaking Intensity Map (see the attached Ground Shaking Map) indicates that the project site is classified as having “very strong level of shaking”.

Liquefaction: According to the Association of Bay Area Government (ABAG) 2003, the Liquefaction Hazard Level Map (see the attached Liquefaction Map) indicates that the project site is classified as having “high to moderate level of liquefaction”. Boreholes No. R-10-001 and R-10-002 indicate the presence of very loose to medium dense sand below the groundwater surface at relatively shallow depth.

MR.MAHMOOD MOMENZADEH

Attn: T Nguyen

August 31, 2012

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Soils

According to the *United States Department of Agriculture, Soil survey San Mateo Area County, Eastern Part and San Francisco County, California Report, 1991*. The northwestern part of the project area is covered by Urban land, where more than 85% of the surface is covered by asphalt, concrete, buildings, and other structures. Include in this soil are small area of Orthents, cut and fill.

The southwest part of the project area is covered by Urban land-Orthents, cut and fill complex, 0 to 5 percent slope. This soil is on coastal terrace and alluvial fans. This soil is 50% Urban land, and 45% Orthnets, and cut and fill. Urban land consists of areas that are covered by asphalt, concrete, building, and other structures. The material covered by these structures consists of soils that are similar to the Orthents. The Orthents consist of soils that have been cut and filled for urban development, such as the construction of roads and buildings. The Orthents soils dominantly are deep and are loam or clay loam. Included in this soil are small areas of Botella soils; Orthents, reclaimed; Sirdrak soils; and deep alluvial soils that are loam or fine sandy loam throughout. Also, included are small areas of deep, dark alluvial soils that are clay and clay loam throughout.

Surface water and erosion

The properties and characteristics of the Orthents are highly variable because of the differences in the kind and amount of fill material used. Run-off is slow, and the hazard of water erosion is slight. Excavation for roads and buildings increases the risk of erosion. Re-vegetating disturbed areas around construction sites as soon as possible helps to control erosion.

EXPLORATION

Drilling and sampling

Three wet rotary borings (R-10- 001, R-10 - 002 & R-10 - 003) and two CPT borings (CPT-10-001 & CPT-10-002) were drilled in August 2010 to a maximum depth of more than 100 ft for the purpose of replacing the existing San Francisquito Bridge. The wet rotary borings were drilled by using Mobile B47drill rig.

Boring numbers R-10-001 and R-10-002 are located at the northbound shoulder where the Soldier pile Walls RT and SPE are located. Borings number R-10-003, CPT-10-001 and CPT-10-002 are located at the southbound shoulder where the soldier pile Walls SPW and soundwalls SW1, SW2 and SW3 are located.

MR.MAHMOOD MOMENZADEH

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Page 5

Selected samples were obtained from 2.5 -inch I.D (modified California, MC) undisturbed samples and 1.4 inch I.D. (Standard Penetration Test, SPT) samples at various depths for mechanical, plasticity and moisture content analyses. The samplers were driven into subsurface soils under the impact of a semi- automatic, 140-pound hammer having a free fall of 30 inches. The blow counts are presented on the Log of Test Boring (LOTB). Also, five bulk samples were collected for the purpose of corrosion tests. A total of 47 samples for mechanical analysis, 38 samples for plasticity test, 55 samples for moist determination and 5 samples for corrosion test were sent to the lab.

As-built records show, four borings (B-1, B-2 B- 3 & B-4) were drilled in 1953 to a maximum depth of about 90 ft. These borings were drilled as part of the construction of the San Francisquito Bridge. Boring number B-3 located at the northbound shoulder where the soldier pile walls RT and SPE are located. Boring numbers B-1, B-2 and B-4 are located at the southern side of the bridge where the soldier pile walls SPW and soundwalls SW1, SW2 and SW3 are located. The groundwater in borehole number B-3 at 1.2 ft elevation was measured in February 1953.

Subsurface Conditions

Based on the recent borings R-10-001, R-10-002, and R-10-003, the foundation material encountered at eastern side (N/B shoulder), where walls RT and SPE are located, can be described as follows: 10 feet medium stiff sandy clay to clay, underlain by 65 feet of very loose to medium dense sand with silt and gravel, followed by 15 feet stiff clay and 10 feet stiff silt and silty sand. The foundation material encountered at the western side (S/B shoulder) where walls SPW a SW1, SW2 and SW3 are located, can be described as follows: 10 feet of very stiff to soft silty clay; 15 feet very soft clay, underlain by 20 ft medium dense sand and silty sand; 15 feet soft clay and silt; underlain by 15 feet of medium dense silty sand and stiff sandy clay; followed by 15 feet stiff to very stiff clay and silty clay and 10 feet of medium dense silty sand.

Groundwater

Groundwater was encountered during the investigation and identified by the driller at 1.5 ft and 1.1 ft elevations and depths ranging from 13.0 ft (at borehole # R-10-002) to 14.0 ft (at borehole # R-10-001) below the ground surface in August 2010.

Corrosion

Five bulk samples from the three boreholes (R-10-001, R-10-002 & R-10-003) at different depths were tested for corrosion, two of them are corrosive with their resistivity value ranges between 397 and 978 (< 1000 Ohm) and the pH-value of one these samples is 5.14 (< 5.5).

MR.MAHMOOD MOMENZADEH

Attn: T Nguyen
August 31, 2012
Page 6

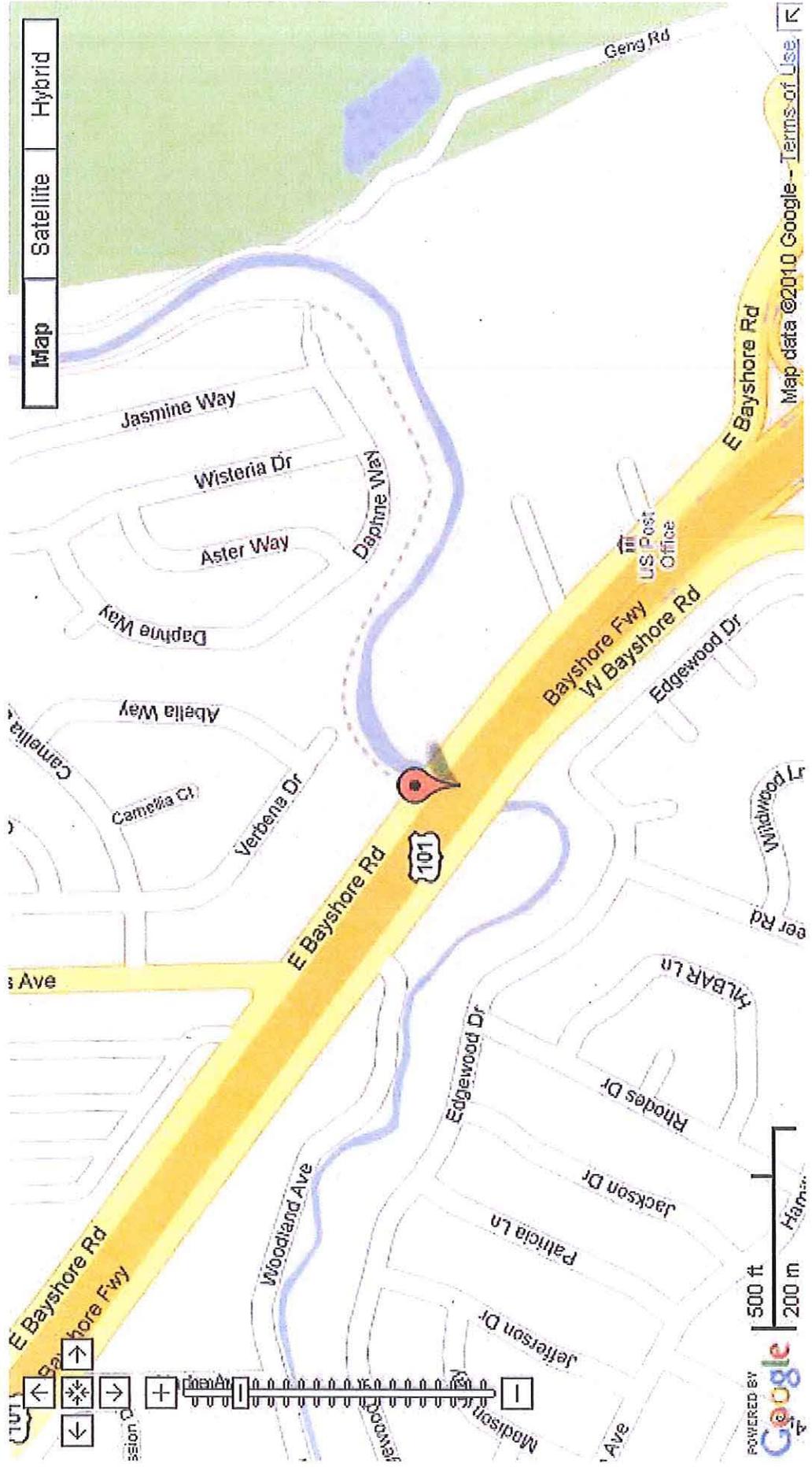
Scour

Based on the Structures Final Hydraulic Report for San Francisquito Creek, prepared on May31, 2012, the anticipated short term local scour depth at all substructure elements is 6.3 feet, reaching an elevation of -3.3 ft.

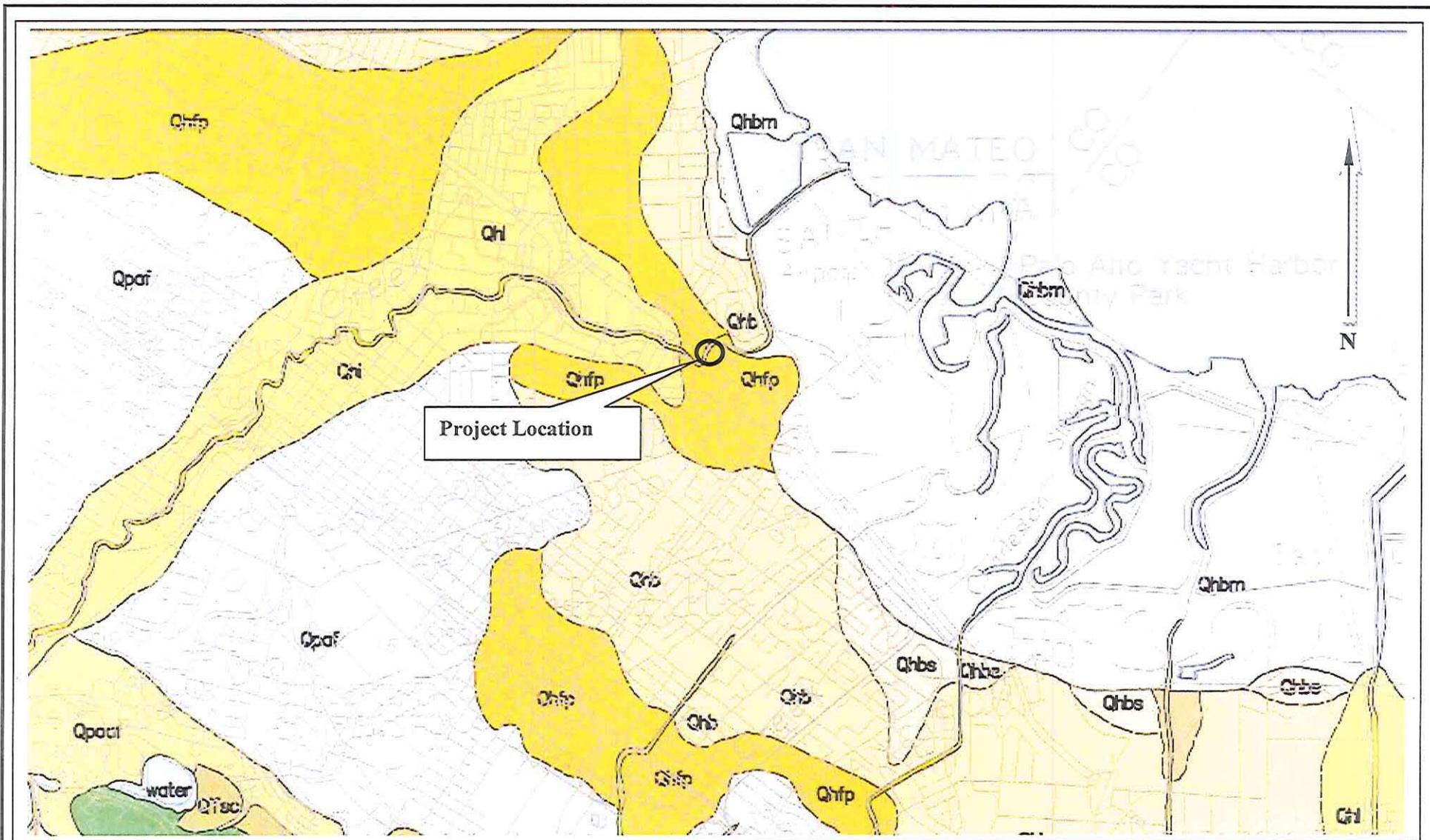
If you have any questions or need additional information, please call Rifaat at (510) 622-1773 or Chris Risdén at (510) 622-8757.

c: TPokrywka, CRisdén, Route File, Daily File.

RNashed/mm



	Location Map	
	04-SM-101 EA 235621	PM 0.0 August, 2012



Source:

“Quaternary Geology of Santa Clara Valley, Santa Clara, Alameda, and San Mateo Counties, California.”
 By E.J Helley, R.W. Graymer G.A., P.K. Showalter, and C. M. Wentworth, May 1994

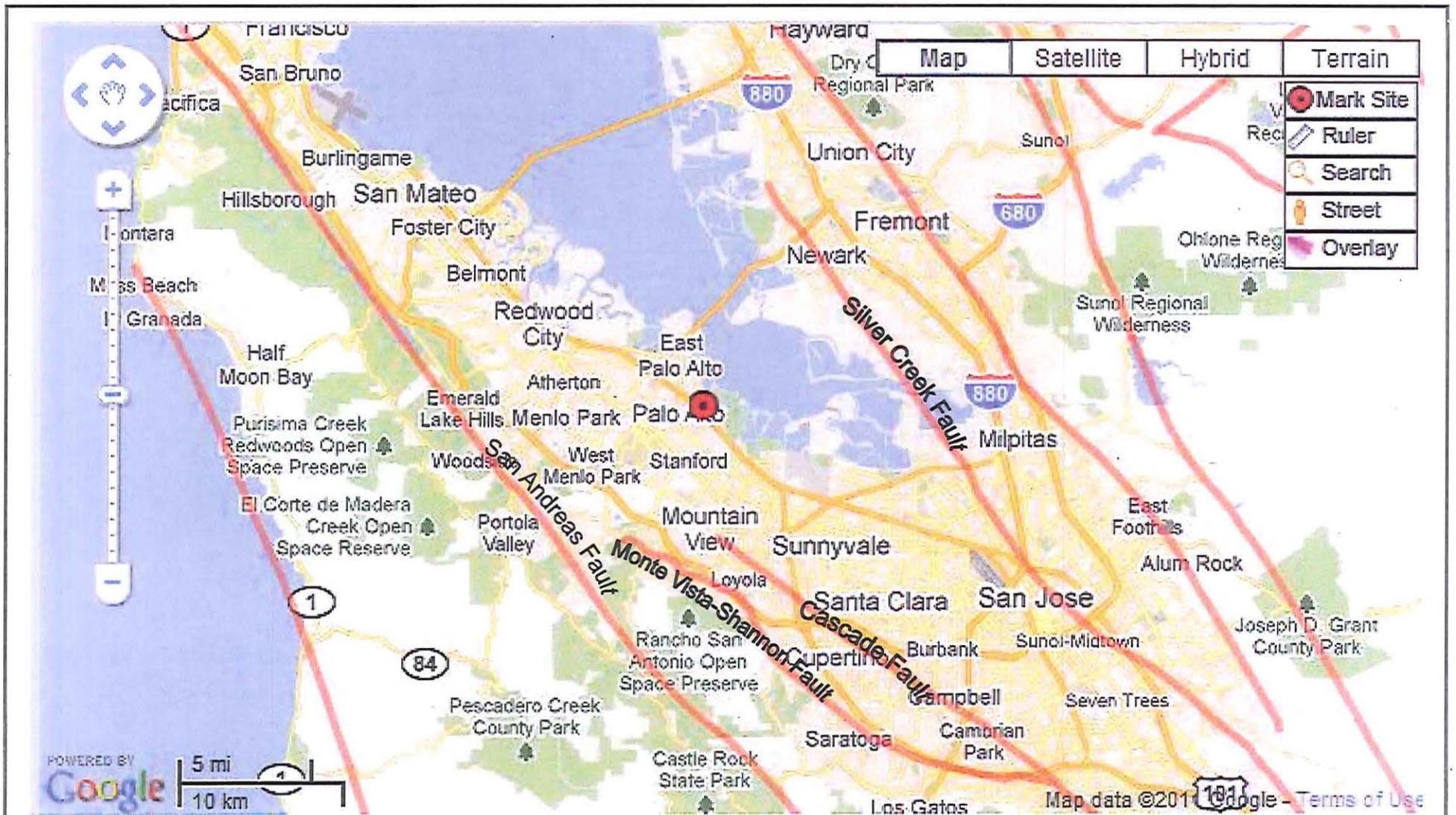
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Geology Map

04-SM-101
 EA 235621

PM 0.0
 August, 2012



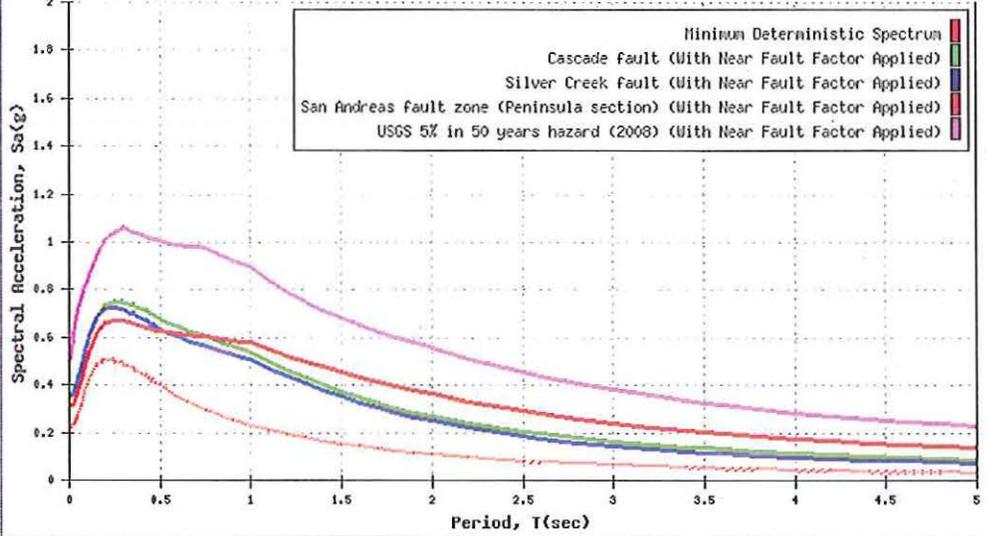
Fault Map

04-SM-101
EA 235621

PM 0.0
August, 2012

CALCULATED SPECTRA

Location; LAT=37,452790 LONG=-122,12786 Vs30=270m/s



- View Tabular Data
- Show Envelope Only
- Hide Near Fault Adjustment
- Axis Scale
- Printer Friendly View
- Show Basin Factor

Apply Near Fault Adjustment To:

NOTE: Caltrans SDC requires application of a Near Fault Adjustment factor for sites less than 25 km (Rrup) from the causative fault

Deterministic Spectrum Using

Km Cascade fault

Km Silver Creek fault

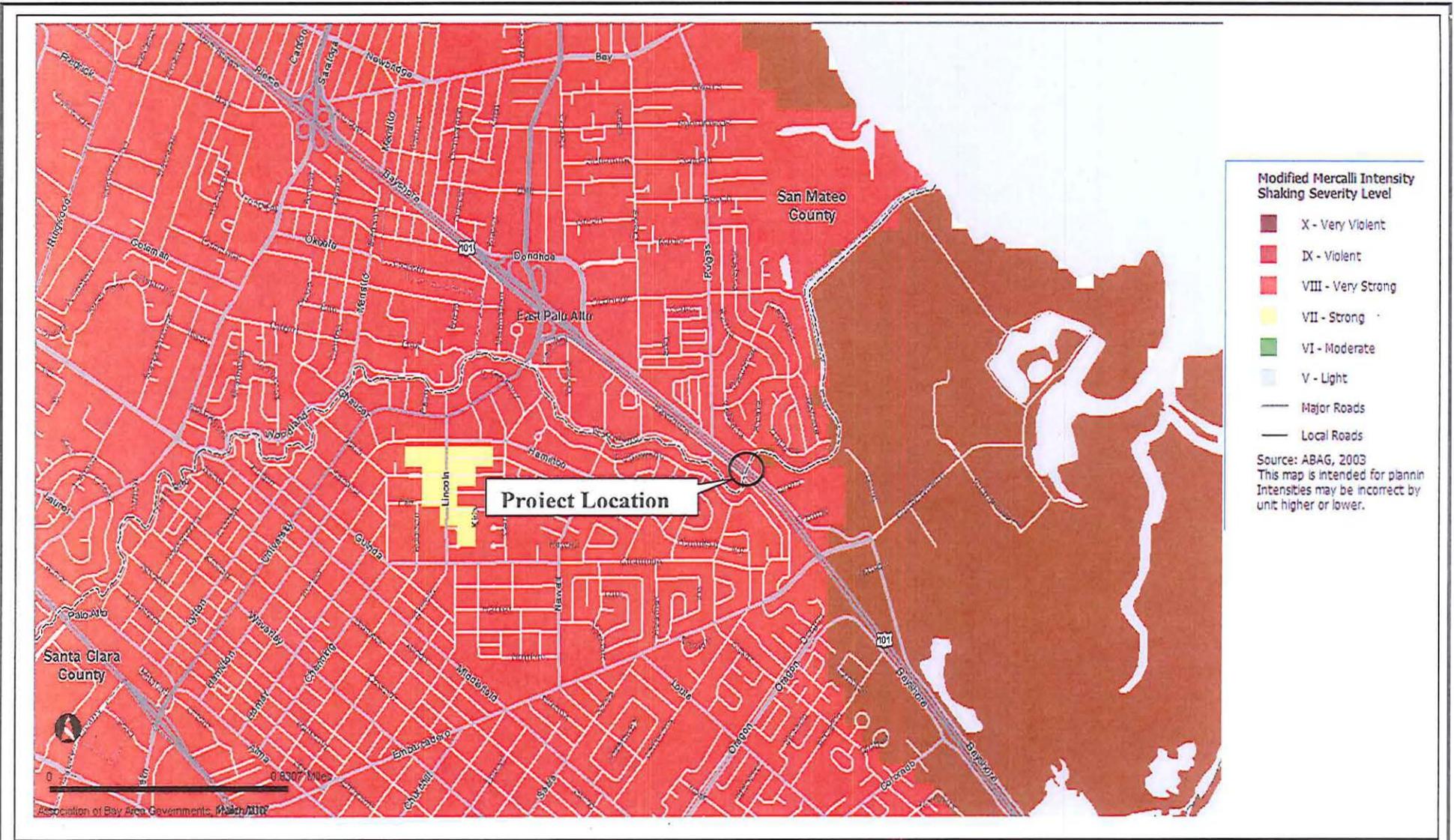
Km San Andreas fault zone (Peninsula section)

Probabilistic Spectrum Using

Km (Recommend Performing Deaggregation To Verify)

Show Spectrum with Adjustment Only

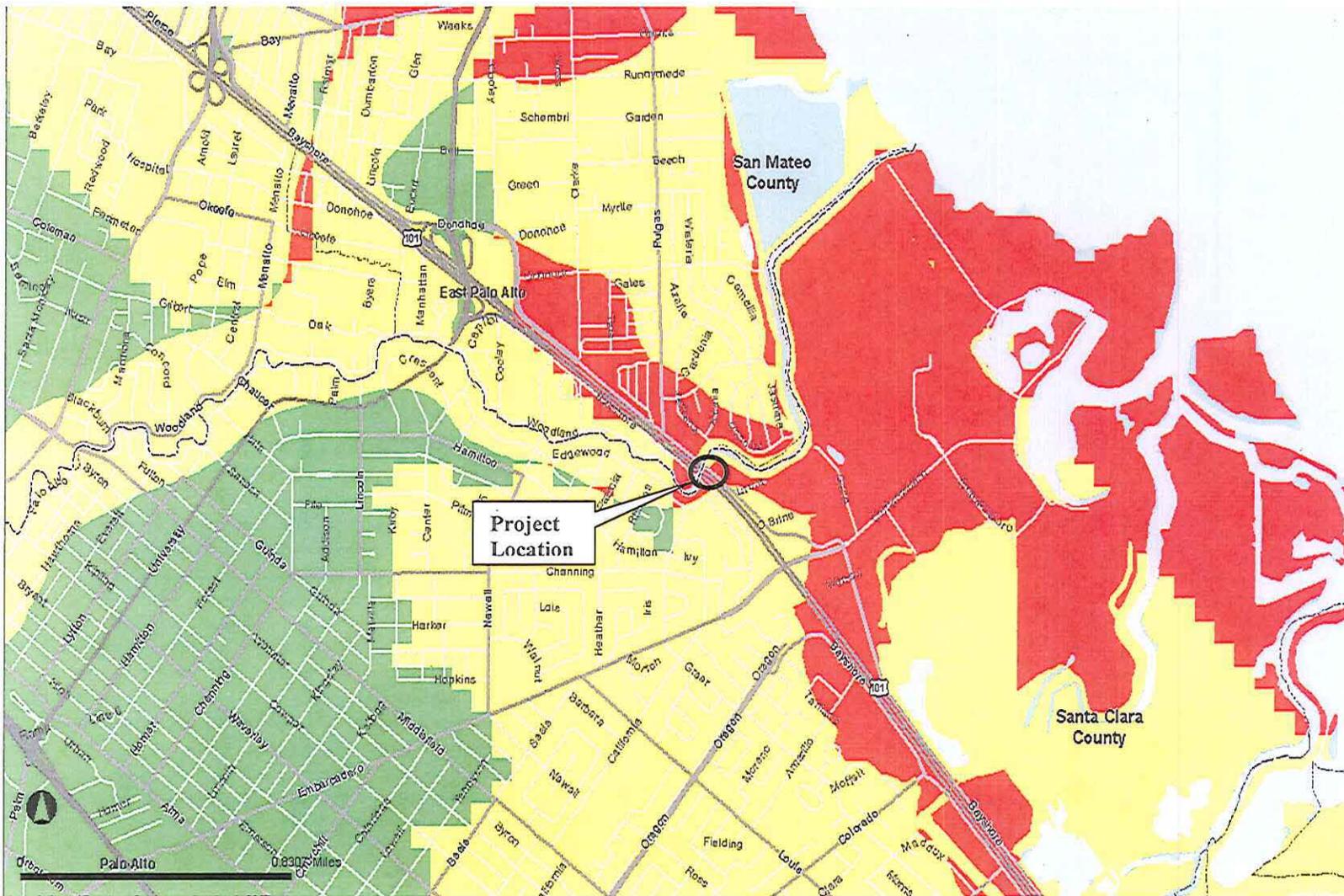
Show Spectrum with and without near fault Adjustment



Ground Shaking Map

04-SM-101
EA 235621

PM 0.0
August, 2012



Liquefaction Hazard Level

- High
- Moderate
- Low
- Very Low
- Major Roads
- Local Roads

This map is intended for planning only and is not intended to be site specific. Rather, it depicts the general hazard level of a neighborhood and relative hazard levels from community to community. Hazard levels are likely to be accurate if your neighborhood is on or near the border between two zones. This information is not a substitute for a site-specific investigation by a licensed professional.



Liquefaction Map

04-SM-101
EA 235621

PM 0.0
August, 2012

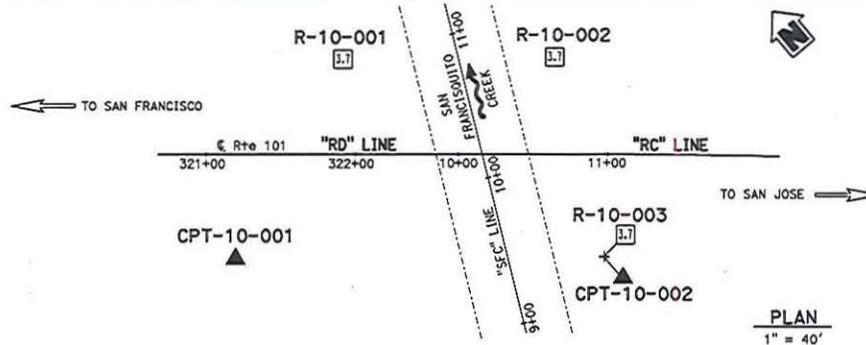
APPENDIX B

LOG OF TEST BORINGS

(FOR LEGENDS, SEE 2010 STANDARD PLANS A10F AND A10G)

BENCH MARK

PRHV-55X Elev 16.90'
 Fnd 1" Iron Pipe w/Caltrans Plug
 83.29' Rt "RD" Line Rte 101 Sta 322+13.33
 N 1,991,416.44
 E 6,089,072.23
 Vertical Datum NGVD29



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
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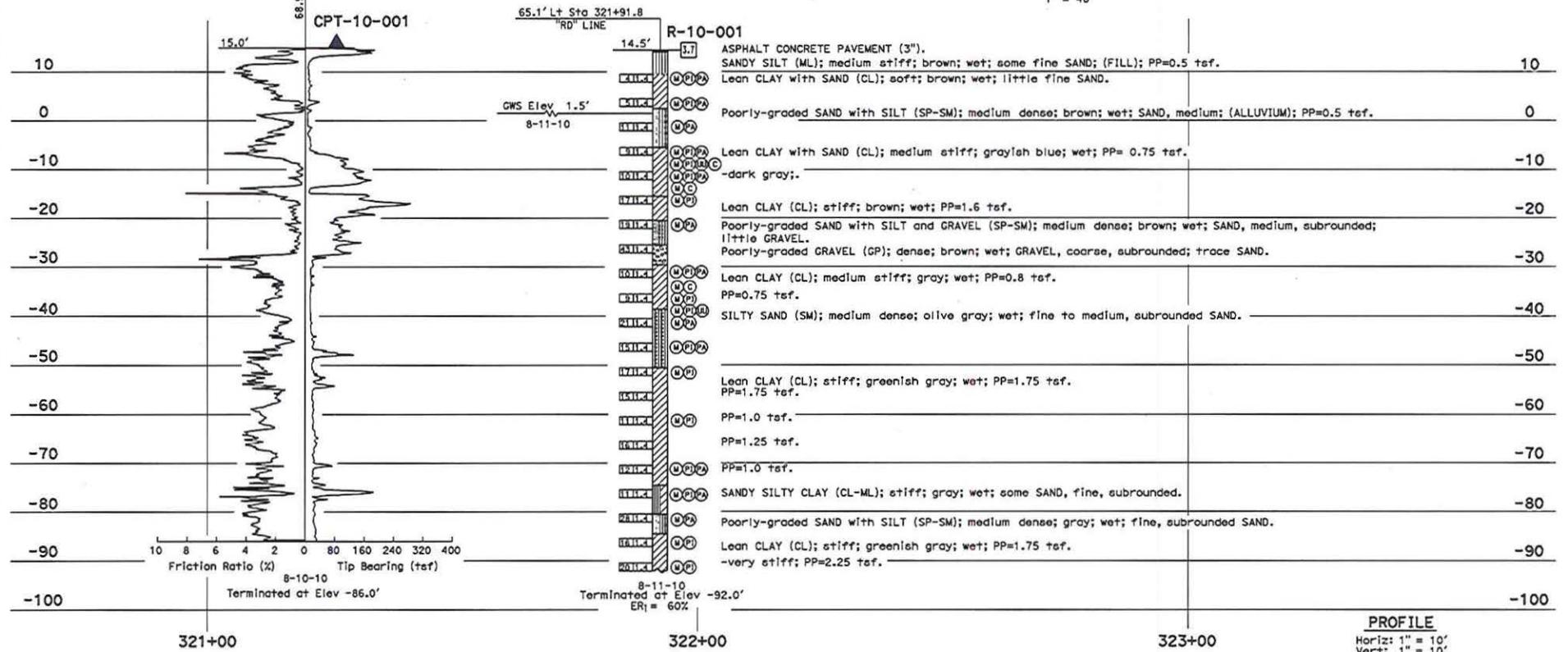
CERTIFIED ENGINEERING GEOLOGIST
 J-25-11
 PROFESSIONAL GEOLOGIST
 STATE OF CALIFORNIA
 No. 2300
 Exp. 4-30-12
 OFFICE OF PROFESSIONAL GEOLOGISTS
 STATE OF CALIFORNIA

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).

Note: Ground water encountered but not measured in Borings R-10-003, CPT-10-001, and CPT-10-002.

PLAN
 1" = 40'



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

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO. 35-0348		SAN FRANCISCO CREEK BRIDGE (REPLACE)	
FUNCTIONAL SUPERVISOR		DRAWN BY: C. Christian / W. Tang 01/11		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		POST MILES 0.01		LOG OF TEST BORINGS (1 OF 3)	
NAME: M. Momenzadeh		CHECKED BY: D. Neabitt		FIELD INVESTIGATION BY: T. Nguyen		DESIGN BRANCH		CU 04		REVISION DATA	
O&S GEOLOGIST LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		CU EA 235621 (0400000678)		DISSEMINATION PRINTS BEARING EARLIER REVISION DATA		31		33	

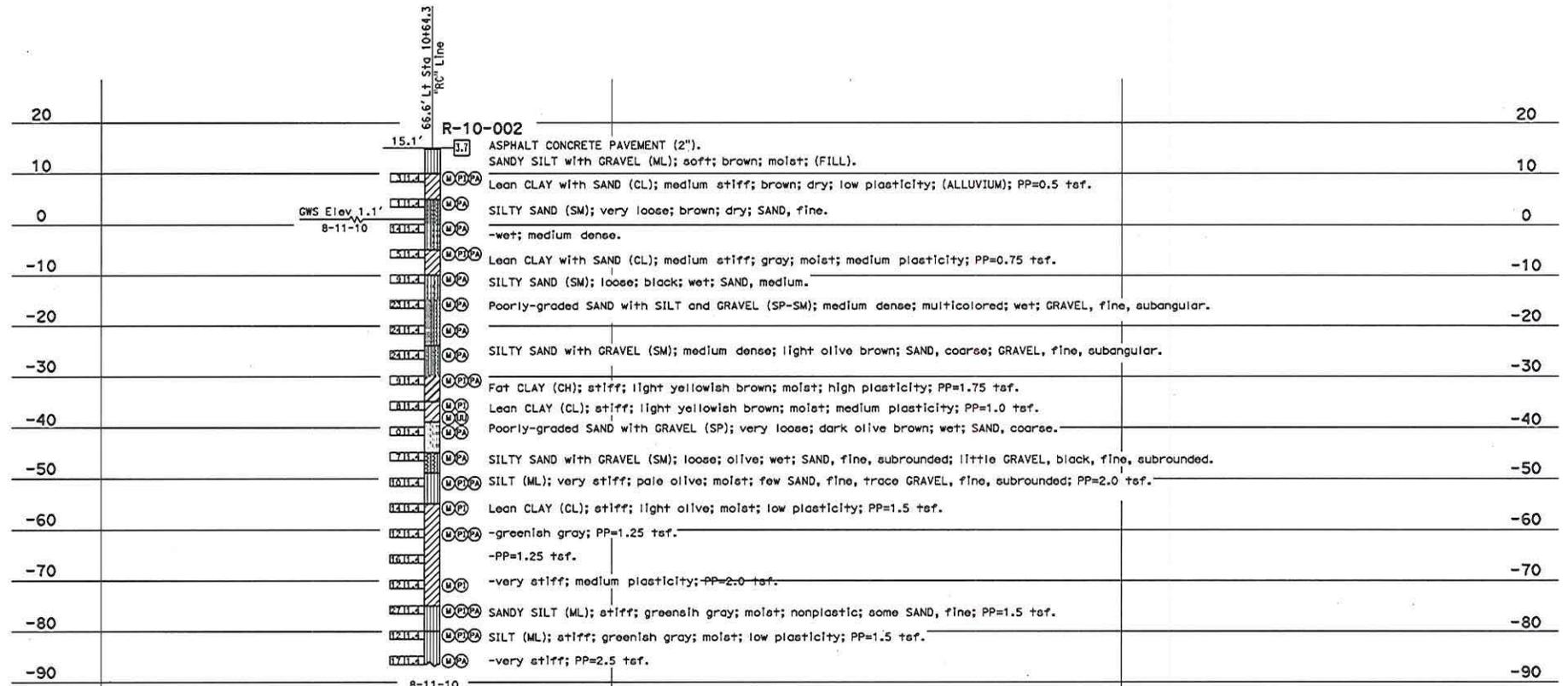
DATE PLOTTED => 11-05-2012 THE PLOTTED => TESTS

FOR PLAN VIEW, SEE
"LOG OF TEST BORINGS 1 OF 3"

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	SM	101			
CERTIFIED ENGINEERING GEOLOGIST			3-25-11	PROFESSIONAL REGISTRY	
PLANS APPROVAL DATE					

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This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).



PROFILE
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Vert: 1" = 10'

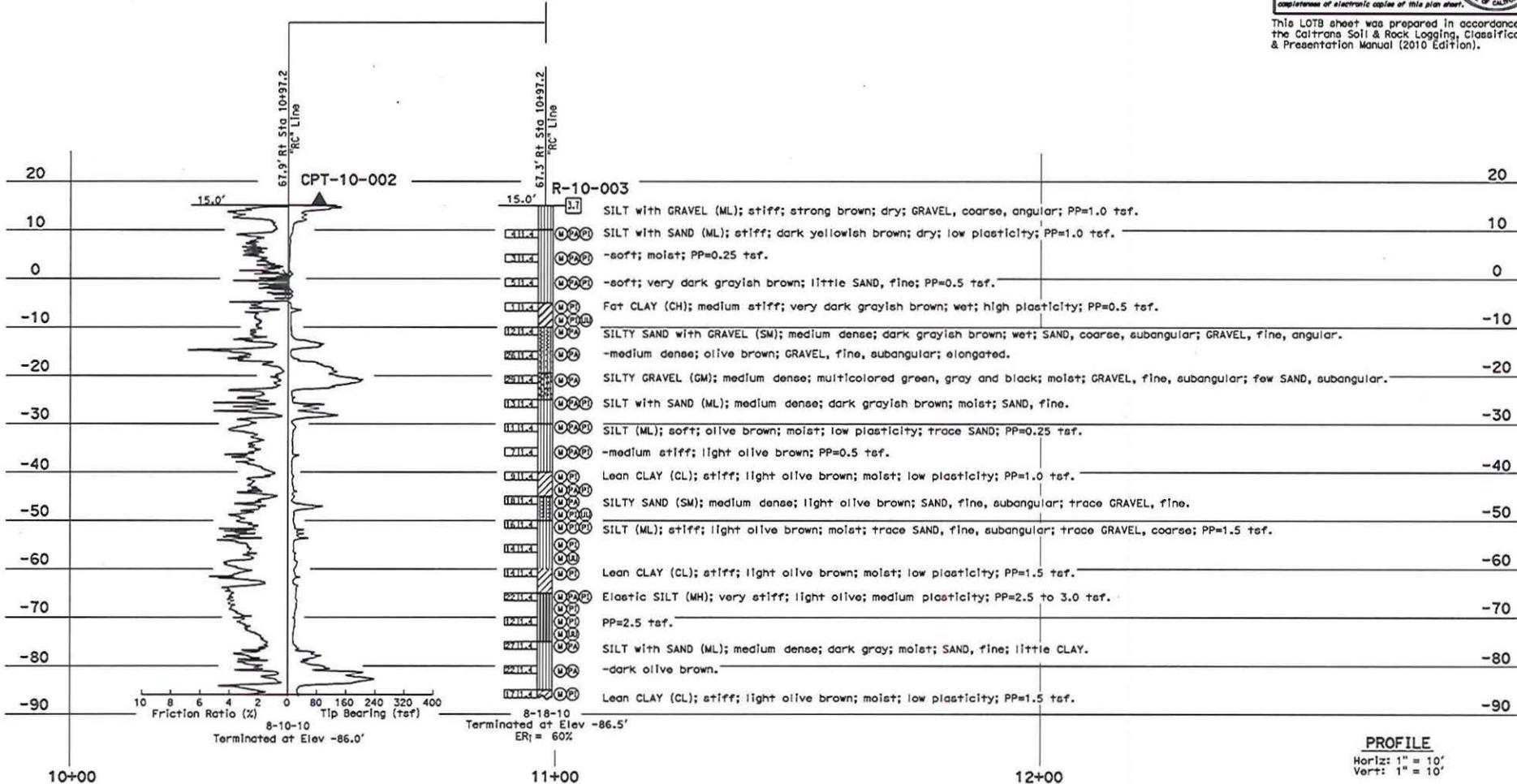
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FUNCTIONAL SUPERVISOR NAME: M. Momenzadeh	DRAWN BY: C. Christian / W. Tang 01/11	CHECKED BY: D. Nesbitt	FIELD INVESTIGATION BY: R. Nashed	CU 04	EA 235621 (0400000678)	DISPERSED PRINTS BEARING EARLIER REVISION DATES		REVISION DATA		SHEET 32	OF 33

DATE PLOTTED -> 31-08-2012 TIME PLOTTED -> 16:15

FOR PLAN VIEW, SEE
"LOG OF TEST BORINGS 1 OF 3"

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	SM	101			
CERTIFIED ENGINEERING GEOLOGIST <i>[Signature]</i> 3-25-11 PROFESSIONAL REGISTRY State of California No. 2200 Exp. 4-30-12 CIVIL ENGINEERING 100015				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).



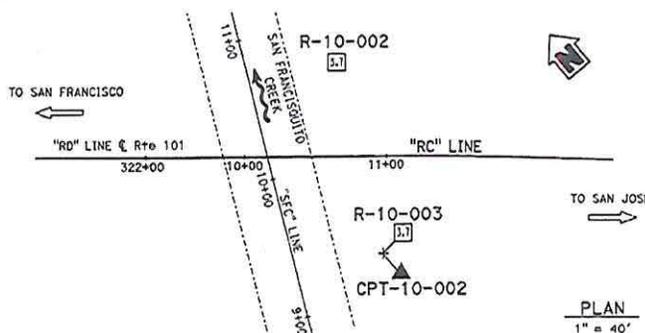
PROFILE
 Horiz: 1" = 10'
 Vert: 1" = 10'

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO. 35-0348		SAN FRANCISCO CREEK BRIDGE (REPLACE)	
FUNCTIONAL SUPERVISOR		DRAWN BY: C. Christian / W. Tang 01/11		FIELD INVESTIGATION BY: R. Nashed		STRUCTURE DESIGN		POINT MILES 0.01		LOG OF TEST BORINGS (3 OF 3)	
NAME: M. Momenzadeh		CHECKED BY: D. Neabitt		DEPARTMENT OF TRANSPORTATION		DESIGN BRANCH		CU 04		DISSEMINATION BEARING	
005 GEOLOGIST LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR REDUCED PLANS		EA 235621 (0400000678)		EARTHEN REVISION DATA		REVISION DATA		SHEET 33 OF 33	

DATE PLOTTED -> 11-08-2012 TIME PLOTTED -> 10:15

BENCH MARK

PRHV-55X Elev 16.90'
 Fnd 1" Iron Pipe w/Caltrans Plug
 83.29' Rt "RD" Line Rte 101 Sta 322+13.33
 N 1,991,416.44
 E 6,089,072.23
 Vertical Datum NGVD29

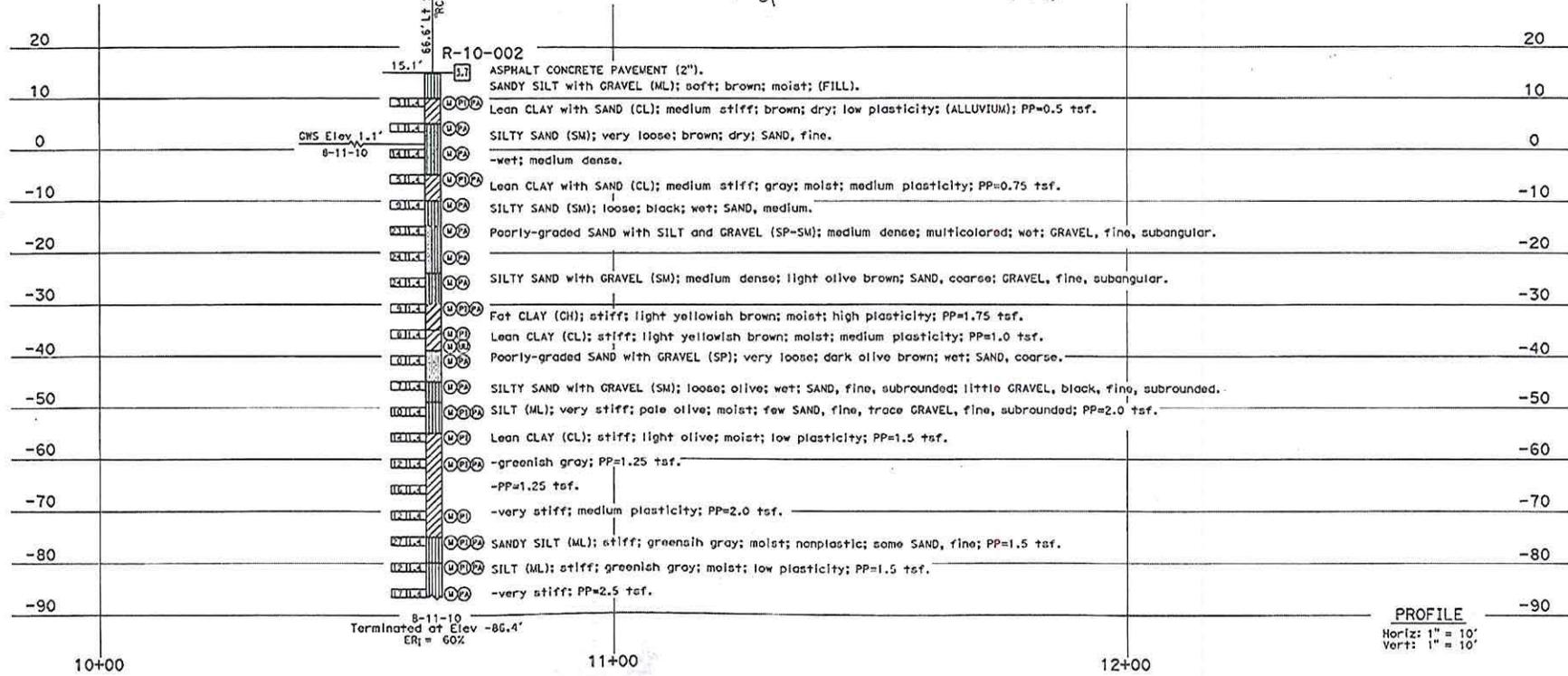


DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	SM	101			

10-5-12
 CERTIFIED ENGINEERING GEOLOGIST
 PROFESSIONAL SEAL
 Christopher Blum
 No. 2541
 Exp. 7-31-15
 State of California
 PLANS APPROVAL DATE

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.

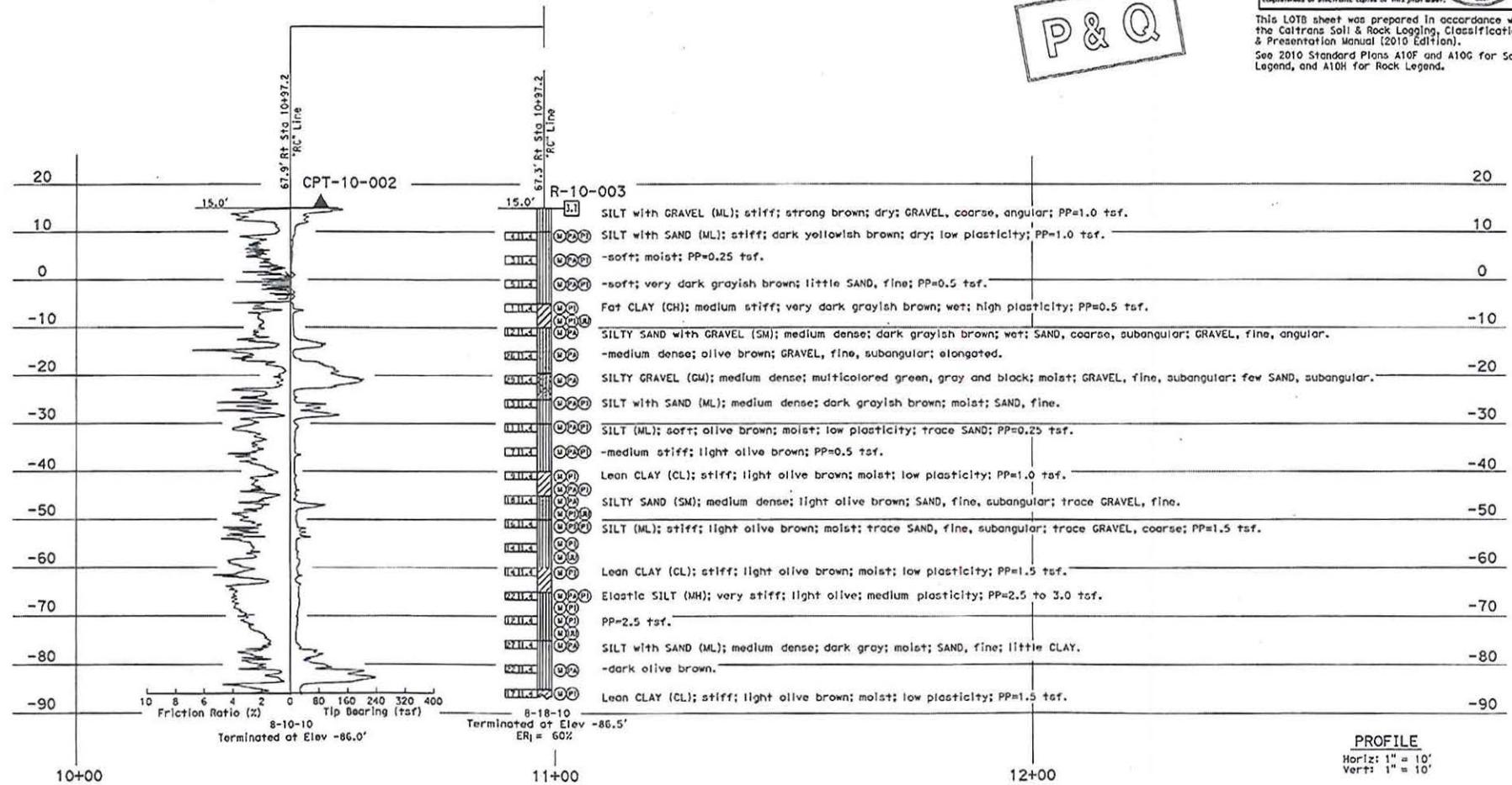
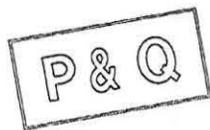
PLAN
 1" = 40'



ENGINEERING SERVICES		MATERIALS AND GEOTECHNICAL SERVICES		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 16		BRIDGE NO. RETM		RETAINING WALL A, B & C	
FUNCTIONAL SUPERVISOR NAME: M. Momenzadeh	DRAWN BY: J.C. Remman	FIELD INVESTIGATION BY: R. Noshad		DEPARTMENT OF TRANSPORTATION		PROJECT NUMBER & PHASE: 04000006781		CONTRACT NO.: 04-235621		LOG OF TEST BORINGS 1 OF 2	
ORIGINAL SCALE IN INCHES FOR REPRODUCED PLANS				UNITS 3643		REVISIONS		REVISIONS		DATE PLOTTED: 02-21-2012	
DATE PLOTTED: 02-21-2012				FILE: 04-235621-011-7-11001.dgn		REVISIONS		REVISIONS		DATE PLOTTED: 02-21-2012	

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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			10-5-12		
PLANS APPROVAL DATE					
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FOR PLAN VIEW, SEE
"LOG OF TEST BORINGS 1 OF 2"



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

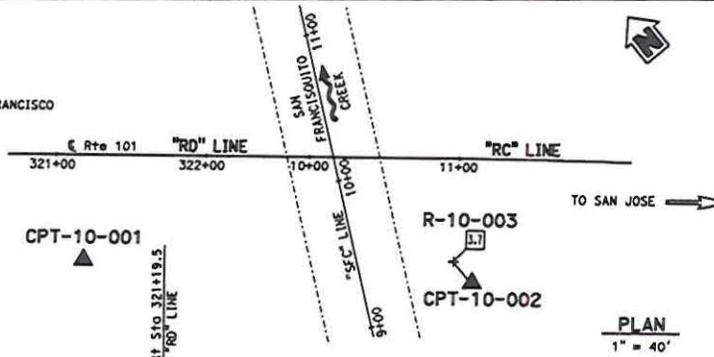
ENGINEERING SERVICES		MATERIALS AND GEOTECHNICAL SERVICES		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 16		RETAINING WALL A, B & C LOG OF TEST BORINGS 2 OF 2			
FUNCTIONAL SUPERVISOR NAME: N. Monorzodeh	DRAWN BY: J.G. Rimmien CHECKED BY: D. Nosbitt	FIELD INVESTIGATION BY: R. Nashed		UNIT: 3643 PROJECT NUMBER & PHASE: 04000006781		CONTRACT NO.: 04-235621		REVISION DATA			
001 CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IN INCHES FOR PLOTTING PLANS		FILE: 04-235-ret wall-2-11022-02n		DATE: 10-04-12		SHEET 8 OF 8			

DATE PLOTTED: 10-13-12

BENCH MARK

PRW-55X Elev 16.90'
 Fnd 1" Iron Pipe w/Caltrans Plug
 83.29' Rt "RD" Line Rte 101 Sta 322+13.33
 N 1,991,416.44
 E 6,089,072.23
 Vertical Datum NGVD29

← TO SAN FRANCISCO



DIST	COUNTY	ROUTE	POST MILE TOTAL	PROJECT	SHEET NO.	TOTAL SHEETS
04	SM	101				

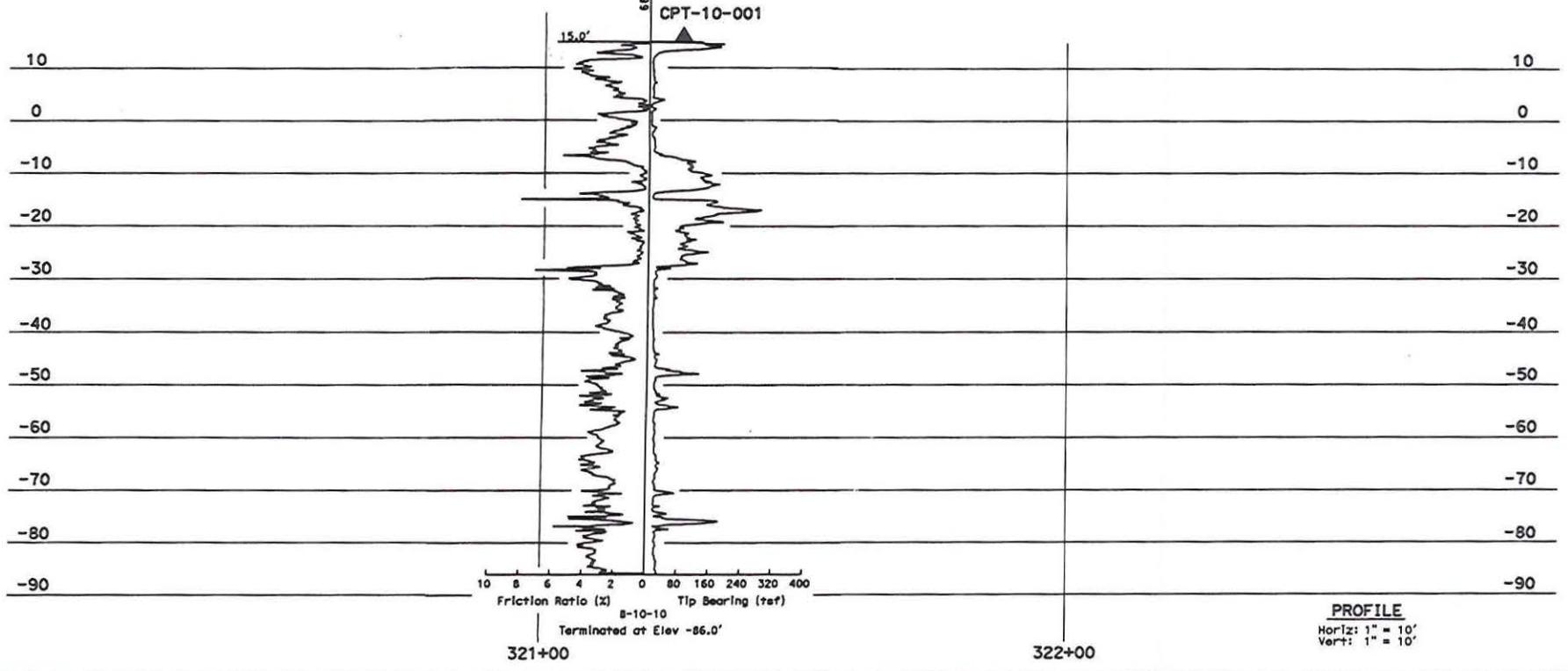
CERTIFIED ENGINEERING GEOLOGIST
 10-5-12
 PLANS APPROVAL DATE
 The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



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: Ground water encountered but not measured in Borings R-10-003, CPT-10-001, and CPT-10-002.

PLAN
 1" = 40'

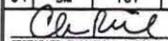


PROFILE
 Horiz: 1" = 10'
 Vert: 1" = 10'

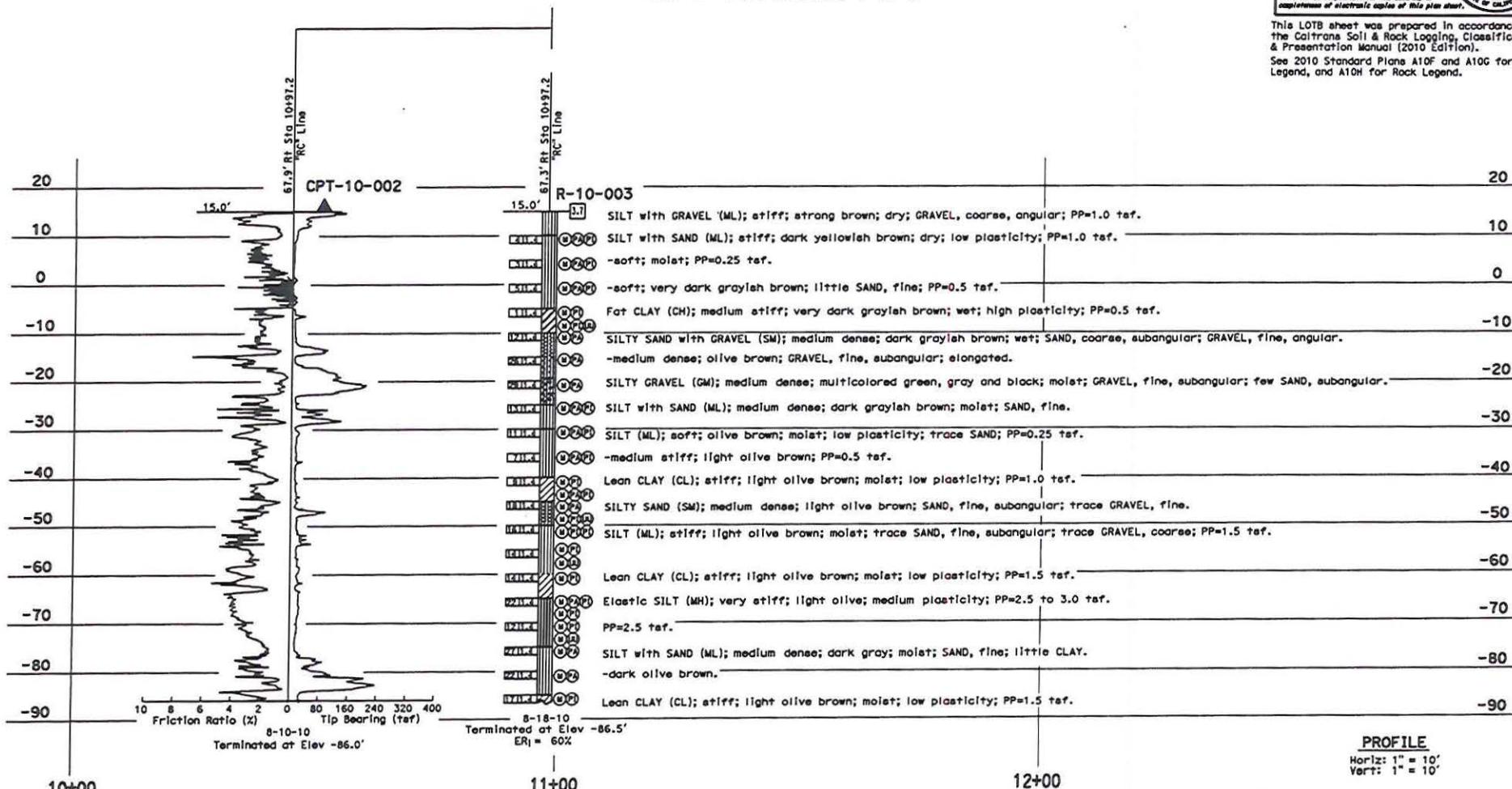
ENGINEERING SERVICES		MATERIALS AND GEOTECHNICAL SERVICES		STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION		DIVISION OF ENGINEERING SERVICES STRUCTURES DESIGN		DESIGN BRANCH X		SOUND WALLS LOG OF TEST BORINGS 1 OF 2	
FUNCTIONAL SUPERVISOR NAME: M. Momenzadeh	DRAWN BY: I.C. Remden CHECKED BY: D. Needit	FIELD INVESTIGATION BY: T. Nguyen		PROJECT NUMBER & PHASE: 04000006781		CONTRACT NO.: 04-235621		SHEET NO. 1 OF 2		DATE: 10-5-12	

DATE PLOTTED: 10-26-12 11:40:00 AM

FOR PLAN VIEW, SEE
"LOG OF TEST BORINGS 1 OF 2"

DIST	COUNTY	ROUTE	POST MILES	SHEET	TOTAL
04	SM	101	TOTAL PROJECT	No.	SHEETS
 CERTIFIED ENGINEERING GEOLOGIST			10-5-12		
PLANS APPROVAL DATE					
					

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" = 10'
Vert: 1" = 10'

ENGINEERING SERVICES		MATERIALS AND GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		SOUND WALLS	
FUNCTIONAL SUPERVISOR		DRAWN BY: J.G. RAYSON		DEPARTMENT OF TRANSPORTATION		STRUCTURE DESIGN		LOG OF TEST BORINGS 2 OF 2	
NAME: M. MORRISZOGH		CHECKED BY: D. Neeblitt		FIELD INVESTIGATION BY: R. Nashed		DESIGN BRANCH X			
ONE CIVIL LOG OF TEST BORINGS SHEET		ORIGINAL SCALE IS THREE FEET FOR REDUCED PLAN		UNIT: 3643 PROJECT NUMBER & PHASE: 0400006781		CONTRACT NO.: 04-235621		DISSEMINATION RECORD EARLIER REVISION DATES	
				FILE: >> soundw11a2.dgn				REVISION DATES SHEET OF	
								10-02 X X	

DATE PLOTTED: 05-02-12 TIME PLOTTED: 09:14:00

APPENDIX C

LABORATORY TEST DATA

**MOISTURE CONTENT DETERMINATION
(CTM 226)**

County : San Mateo Route : 101 P.M. : 52.6/0.0 E.A. : 04-235621 Job No. : 6787
 Limits : _____ R.E. : R. Nashed / TUNG NGUYEN
 Date Received : 09/14/10 Date Calculated : 09/21/10
 Date Reported : SEP 30 2010 By : AU PAGE : 1 of 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT		TARE Weight	NET WEIGHT		MOISTURE Weight	% Moisture
				Wet	Dry		Wet	Dry		
R-10-001-S1		5'-6.5'	MC/MA/PI	1478.8	1314.0	672.0	806.8	642.0	164.8	25.7%
R-10-001-S2		10'-11.5'	MC/MA/PI	1057.1	839.2	98.0	959.1	741.2	217.9	29.4%
R-10-001-S3		15'-16.5'	MC/MA	809.1	660.6	99.7	709.4	560.9	148.5	26.5%
R-10-001-S4		20'-21.5'	MC/MA/PI	1097.6	825.3	101.6	996.0	723.7	272.3	37.6%
R-10-001-S5		25'-26.5'	MC/MA/PI	849.4	651.9	100.1	749.3	551.8	197.5	35.8%
R-10-001-S6		30'-31.5'	MC/PI	707.9	576.6	99.8	608.1	476.8	131.3	27.5%
R-10-001-S7		35'-36.5'	MC/MA	737.1	627.1	98.9	638.2	528.2	110.0	20.8%
R-10-001-S9		45'-46.5'	MC/MA/PI	1138.7	899.8	99.9	1038.8	799.9	238.9	29.9%
R-10-001-S10		50'-51.5'	MC/PI	935.6	728.6	102.0	833.6	626.6	207.0	33.0%
R-10-001-S11		55'-56.5'	MC/MA	1402.8	1185.9	100.0	1302.8	1085.9	216.9	20.0%
R-10-001-S12		60'-61.5'	MC/MA/PI	1111.9	953.9	100.9	1011.0	853.0	158.0	18.5%
R-10-001-S13		65'-66.5'	MC/MA/PI	1240.2	976.3	98.4	1141.8	877.9	263.9	30.1%
R-10-001-S14		70'-71.5'	MC/MA/PI	1308.4	1005.4	99.4	1209.0	906.0	303.0	33.4%
R-10-001-S15		75'-76.5'	MC/MA/PI	916.3	758.9	100.9	815.4	658.0	157.4	23.9%
R-10-001-S16		85'-86.5'	MC/MA/PI	318.2	268.8	100.3	217.9	168.5	49.4	29.3%
R-10-001-S17		90'-91.5'	MC/MA/PI	1484.4	1187.2	101.4	1383.0	1085.8	297.2	27.4%
R-10-001-S18		95'-96.5'	MC/MA	663.7	558.3	99.2	564.5	459.1	105.4	23.0%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
 MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

**MOISTURE CONTENT DETERMINATION
(CTM 226)**

County : San Mateo Route : 101 P.M. : 52.6/0.0 E.A. : 04-235621 Job No. : 6787
 Limits : _____ R.E. : R. Nashed / Tull / Nguyen
 Date Received : 09/14/10 Date Calculated : 09/21/10
 Date Reported : SEP 30 2010 By : AU PAGE : 2 of 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT		TARE Weight	NET WEIGHT		MOISTURE Weight	% Moisture
				Wet	Dry		Wet	Dry		
R-10-001-S19		100'-101.5'	MC/MA/PI	1009.2	806.8	99.8	909.4	707.0	202.4	28.6%
R-10-001-S20		105'-106.5'	MC/MA/PI	1078.0	886.2	99.8	978.2	786.4	191.8	24.4%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
 MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

**MOISTURE CONTENT DETERMINATION
(CTM 226)**

County : San Mateo Route : 101 P.M. : 52.6/0.0 E.A. : 04-235621 Job No. : 6787
 Limits : _____ R.E. : R. Nashed/Tung Nguyen
 Date Received : 09/14/10 Date Calculated : 09/27/10
 Date Reported : SEP 30 2010 By : AU PAGE : 1 of 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT		TARE Weight	NET WEIGHT		MOISTURE Weight	% Moisture
				Wet	Dry		Wet	Dry		
R-10-002-S1		5'-6.5'	MC/MA/PI	468.7	416.1	99.4	369.3	316.7	52.6	16.6%
R-10-002-S2		10'-11.5'	MC/MA	826.8	702.5	101.9	724.9	600.6	124.3	20.7%
R-10-002-S3		15'-16.5'	MC/MA	712.9	593.0	101.7	611.2	491.3	119.9	24.4%
R-10-002-S4		20'-21.5'	MC/MA/PI	990.3	629.3	99.9	890.4	529.4	361.0	68.2%
R-10-002-S5		25'-26.5'	MC/MA	600.0	495.0	99.8	500.2	395.2	105.0	26.6%
R-10-002-S6		30'-31.5'	MC/MA	479.6	432.9	101.0	378.6	331.9	46.7	14.1%
R-10-002-S7		35'-36.5'	MC/MA	635.1	556.6	101.4	533.7	455.2	78.5	17.2%
R-10-002-S8		40'-41.5'	MC/MA	889.4	764.1	98.6	790.8	665.5	125.3	18.8%
R-10-002-S9		45'-46.5'	MC/MA/PI	938.1	723.2	100.2	837.9	623.0	214.9	34.5%
R-10-002-S10		50'-51.5'	MC/PI	828.6	670.4	101.1	727.5	569.3	158.2	27.8%
R-10-002-S11		55'-56.5'	MC/MA	1597.8	1330.3	102.0	1495.8	1228.3	267.5	21.8%
R-10-002-S12		60'-61.5'	MC/MA	822.1	701.4	99.7	722.4	601.7	120.7	20.1%
R-10-002-S13		65'-66.5'	MC/MA/PI	425.0	361.8	101.5	323.5	260.3	63.2	24.3%
R-10-002-S14		70'-71.5'	MC/PI	1394.9	1228.2	679.9	715.0	548.3	166.7	30.4%
R-10-002-S15		75'-76.5'	MC/MA/PI	1226.1	1115.1	681.7	544.4	433.4	111.0	25.6%
R-10-002-S17		85'-86.5'	MC/PI	939.9	880.2	686.7	253.2	193.5	59.7	30.9%
R-10-002-S18		90'-91.5'	MC/MA/PI	1608.7	1409.4	669.2	939.5	740.2	199.3	26.9%
R10-002-S19		95'-96.5'	MC/MA/PI	1721.2	1509.2	672.8	1048.4	836.4	212.0	25.3%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
 MC-Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC:Material - 100°F Oven

**MOISTURE CONTENT DETERMINATION
(CTM 226)**

County : San Mateo Route : 101 P.M. : 52.6/0.0 E.A. : 04-235621 Job No. : 6787
 Limits : _____ R.E. : R. Nashed/Tung Nguyen
 Date Received : 09/14/10 Date Calculated : 09/27/10
 Date Reported : SEP 30 2010 By : AU PAGE : 2 of 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT		TARE Weight	NET WEIGHT		MOISTURE Weight	% Moisture
				Wet	Dry		Wet	Dry		
R-10-002-S20		100'-101.5'	MC/MA	1806.0	1553.1	673.6	1132.4	879.5	252.9	28.8%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
 MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

**MOISTURE CONTENT DETERMINATION
(CTM 226)**

County : San Mateo Route : 101 P.M. : 52.6/0.0 E.A. : 04-235621 Job No. : 6787
 Limits : _____ R.E. : R. Nashed/Tung Nguyen
 Date Received : 09/14/10 Date Calculated : 09/27/10
 Date Reported : SEP 30 2010 By : AU PAGE : 1 of 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT		TARE Weight	NET WEIGHT		MOISTURE Weight	% Moisture
				Wet	Dry		Wet	Dry		
R-10-003-S1		5'-6.5'	MC/MA/PI	416.7	372.7	100.2	316.5	272.5	44.0	16.1%
R-10-003-S2		10'-11.5'	MC/MA/PI	472.4	400.0	101.1	371.3	298.9	72.4	24.2%
R-10-003-S3		15'-16.5'	MC/MA/PI	1281.3	1001.1	101.9	1179.4	899.2	280.2	31.2%
R-10-003-S4		20'-21.5'	MC/PI	1071.2	674.2	100.5	970.7	573.7	397.0	69.2%
R-10-003-S5		25'-26.5'	MC/MA	662.1	559.8	101.4	560.7	458.4	102.3	22.3%
R-10-003-S6		30'-31.5'	MC/MA	1373.6	1111.1	101.4	1272.2	1009.7	262.5	26.0%
R-10-003-S7		35'-36.5'	MC/MA	541.1	461.4	101.6	439.5	359.8	79.7	22.2%
R-10-003-S8		40'-41.5'	MC/MA/PI	1405.4	1260.4	673.2	732.2	587.2	145.0	24.7%
R-10-003-S9		45'-46.5'	MC/MA/PI	1014.7	928.3	669.9	344.8	258.4	86.4	33.4%
R-10-003-S10		50'-51.5'	MC/MA/PI	1019.5	922.6	680.9	338.6	241.7	96.9	40.1%
R-10-003-S11		55'-56.5'	MC/PI	844.1	663.3	157.4	686.7	505.9	180.8	35.7%
R-10-003-S12		60'-61.5'	MC/MA	964.1	819.6	157.6	806.5	662.0	144.5	21.8%
R-10-003-S13		65'-66.5'	MC/MA/PI	1083.9	854.3	157.3	926.6	697.0	229.6	32.9%
R-10-003-S15		75'-76.5'	MC/PI	769.2	623.7	159.0	610.2	464.7	145.5	31.3%
R-10-003-S16		80'-81.5'	MC/MA/PI	945.1	746.8	159.0	786.1	587.8	198.3	33.7%
R-10-003-S17		85'-86.5'	MC/PI	841.0	648.5	157.8	683.2	490.7	192.5	39.2%
R-10-003-S18		90'-91.5'	MC/MA	941.3	780.3	156.5	784.8	623.8	161.0	25.8%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
 MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven

**MOISTURE CONTENT DETERMINATION
(CTM 226)**

County : San Mateo Route : 101 P.M. : 52.6/0.0 E.A.: 04-235621 Job No. : 6787
 Limits : _____ R.E. : R. Nashed/Tung Nguyen
 Date Received : 09/14/10 Date Calculated : 09/27/10
 Date Reported : SEP 30 2010 By : AU PAGE : 2 of 2

HOLE	SAMPLE	DEPTH	TEST (MC/PI/MA/GRAD)	GROSS WEIGHT		TARE Weight	NET WEIGHT		MOISTURE Weight	% Moisture
				Wet	Dry		Wet	Dry		
S-10-003-S19		95'-96.5'	MC/MA	550.6	470.7	156.3	394.3	314.4	79.9	25.4%
S-10-003-S20		100'-101.5'	MC/PI	973.1	787.6	153.2	819.9	634.4	185.5	29.2%

MC - Moisture Content PI - Plasticity Index MA - Mechanical Analysis
 MC Test Only - 230°F Oven; w/ PI and/or MA Tests - 140°F Oven; w/ AC Material - 100°F Oven



CLASSIFICATION TEST SUMMARY

SAMPLE ID	% FINER THAN																ATTERBERG LIMITS		AS RECEIVED		Gs		
	3"	2 1/2"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200	5 μ	1 μ	LL	PI	yd (pcf)		%m	
R-10-001_P1																		45	19		40.7		
R-10-001_P2																						48.1	2.62
R-10-001_P3																						27.9	2.75
R-10-001_P4																						23.9	2.71
R-10-001_P5																		51	28			32.0	
R-10-002_09A																						34.4	
R-10-002_09B																						32.8	2.76
R-10-002_10B																						32.2	2.73
R-10-002_10C																						38.3	
R-10-003_04B																		57	29			53.3	
R-10-003_09B																		40	22	96.5		27.6	
R-10-003_09C																						27.8	2.73
R-10-003_09D																							
R-10-003_10A																		48	27			32.3	
R-10-003_10B																						29.1	2.72
R-10-003_11B									100	97	93	90	85	74	57	46	23	15	26	10		19.7	
R-10-003_11C																						23.0	2.73
R-10-003_12A																		43	21			26.5	
R-10-003_12B																						31.0	2.75
R-10-003_13A													100	99	96	60	32				91.4	31.9	
R-10-003_13B																		42	21			28.8	
R-10-003_13C																						27.7	2.79
R-10-003_14D																						24.4	
R-10-003_15A																						30.0	2.62
R-10-003_15B																		60	33	95.6		29.9	
R-10-003_16D																		79	48	78.1		43.1	
R-10-003_17B																		30	11	97.0		27.6	
R-10-003_17C																						32.9	2.84

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-001
 Sample No.: P2
 Test No.: 10-053-G1

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/7/10
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 24-24.5
 Elevation: 90 9/22

Soil Description: Moist, dark-brown, stiff, silt
 Remarks:

Measured Specific Gravity: 2.62
 Initial Void Ratio: 2.77
 Final Void Ratio: 2.09

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 1.00 in
 Specimen Diameter: 2.38 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	190.3	190.3	179.4	179.4
Wt. Container + Dry Soil, gm	140.4	140.4	140.4	140.4
Wt. Container, gm	90	90	90	90
Wt. Dry Soil, gm	50.4	50.4	50.4	50.4
Water Content, %	99.01	99.01	77.38	77.38
Void Ratio	---	2.77	2.09	---
Degree of Saturation, %	---	93.55	97.02	---
Dry Unit Weight, pcf	---	43.34	52.918	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-001
 Sample No.: P2
 Test No.: 10-053-G1

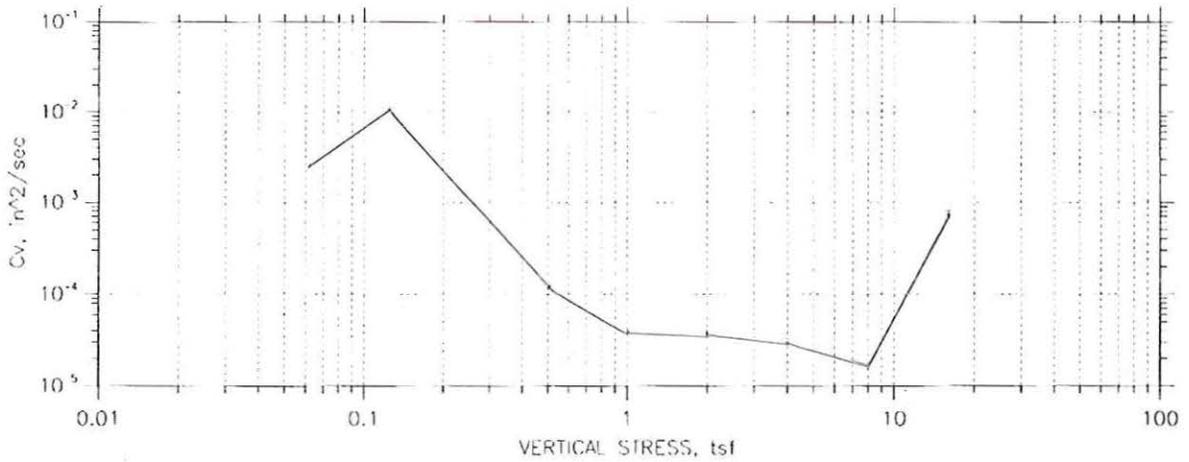
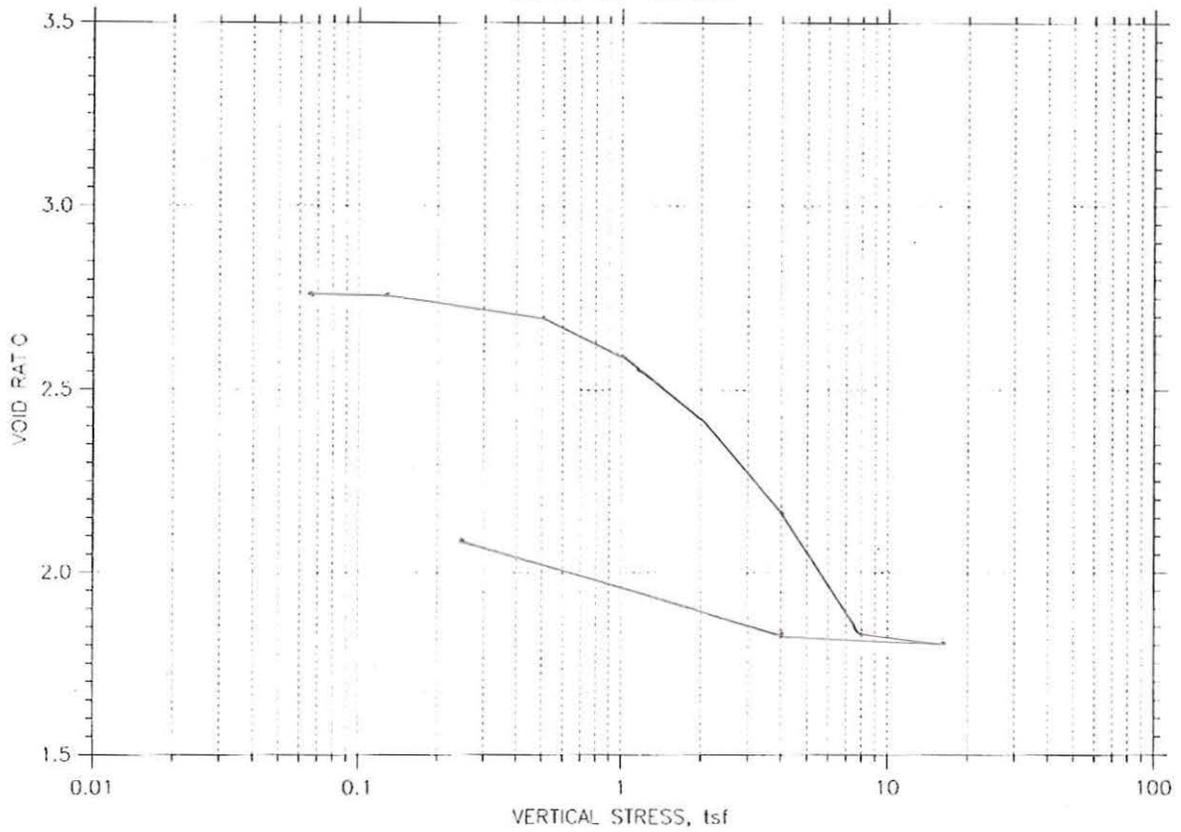
Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/7/10
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 24-24.5
 Elevation:

Soil Description: Moist, dark-brown, stiff, silt
 Remarks:

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.001904	2.762	0.19	0.4	0.2	1.87e-003	3.65e-003	2.48e-003
2	0.125	0.002663	2.760	0.27	0.1	0.0	1.01e-002	0.00e+000	1.01e-002
3	0.5	0.0185	2.700	1.85	7.0	0.0	1.15e-004	0.00e+000	1.15e-004
4	1	0.04652	2.594	4.65	20.8	0.0	3.70e-005	0.00e+000	3.70e-005
5	2	0.09239	2.421	9.24	18.9	0.0	3.76e-005	0.00e+000	3.76e-005
6	4	0.1601	2.166	16.01	21.4	0.0	2.94e-005	0.00e+000	2.94e-005
7	8	0.2494	1.829	24.94	29.7	0.0	1.75e-005	0.00e+000	1.75e-005
8	16	0.256	1.805	25.60	0.6	0.7	7.44e-004	7.02e-004	7.22e-004
9	4	0.25	1.827	25.00	1.3	0.0	3.45e-004	0.00e+000	3.45e-004
10	0.25	0.181	2.087	18.10	30.8	0.0	1.64e-005	0.00e+000	1.64e-005

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: San Francisquito Bg	Location: 04 SCI-101 52.6	Project No.: 04-235620
Boring No.: R10-001	Tested By: AZM	Checked By: GL # 10-062
Sample No.: P2	Test Date: 9/1/10	Depth: 24-24.5
Test No.: 10-055-C1	Sample Type: Tube	Elevation:
Description: Moist, dark brown, stiff, silt		
Remarks:		

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-001
 Sample No.: P3
 Test No.: 10-054-G3

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/7/2010
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL#10-062
 Depth: 29.5-30
 Elevation: *9/21*

Soil Description: Moist, olive, stiff, silt
 Remarks: Bridge # 35-0348

Measured Specific Gravity: 2.75
 Initial Void Ratio: 0.84
 Final Void Ratio: 0.66

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 1.00 in
 Specimen Diameter: 2.38 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	231.7	231.7	224.9	224.9
Wt. Container + Dry Soil, gm	198.8	198.8	198.8	198.8
Wt. Container, gm	90.4	90.4	90.4	90.4
Wt. Dry Soil, gm	108.4	108.4	108.4	108.4
Water Content, %	30.35	30.35	24.08	24.08
Void Ratio	---	0.84	0.66	---
Degree of Saturation, %	---	99.29	99.79	---
Dry Unit Weight, pcf	---	93.216	103.13	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-001
 Sample No.: P3
 Test No.: 10-054-G3

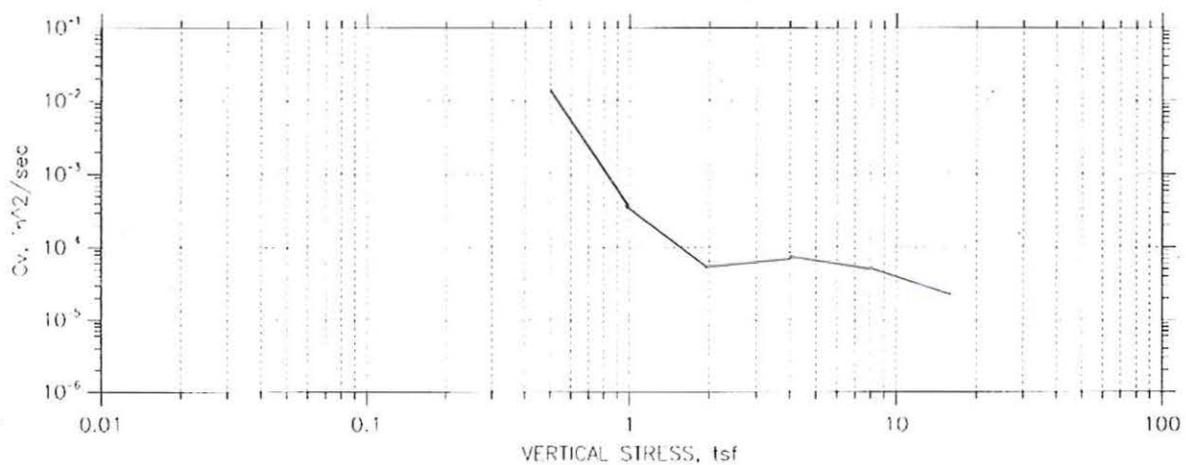
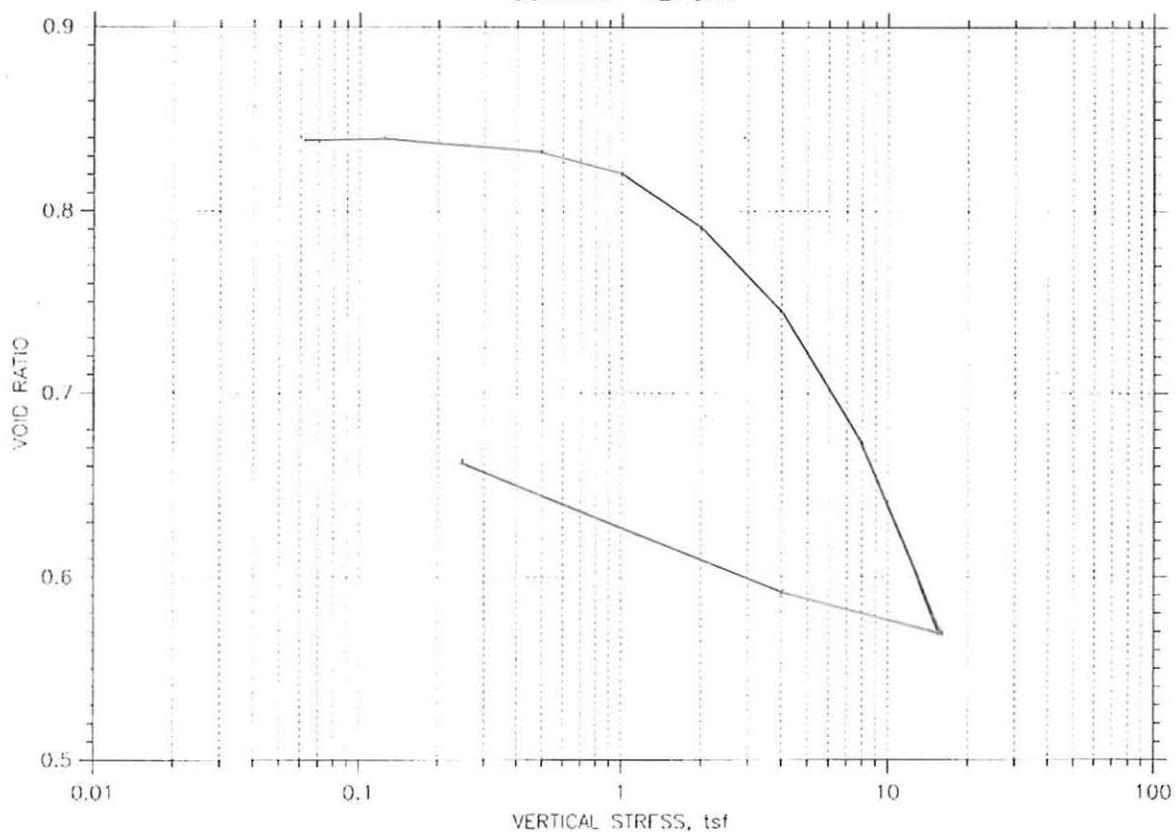
Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/7/2010
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL#10-062
 Depth: 29.5-30
 Elevation:

Soil Description: Moist, olive, stiff, silt
 Remarks: Bridge # 35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.0004394	0.839	0.04	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
2	0.125	-0.0001072	0.840	-0.01	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
3	0.5	0.003658	0.833	0.37	0.1	0.0	1.33e-002	0.00e+000	1.33e-002
4	1	0.009643	0.822	0.96	2.7	1.9	3.00e-004	4.34e-004	3.55e-004
5	2	0.02599	0.792	2.60	14.5	0.0	5.47e-005	0.00e+000	5.47e-005
6	4	0.05121	0.745	5.12	10.3	0.0	7.34e-005	0.00e+000	7.34e-005
7	8	0.09033	0.674	9.03	15.0	12.7	4.72e-005	5.58e-005	5.11e-005
8	16	0.1469	0.570	14.69	27.7	0.0	2.31e-005	0.00e+000	2.31e-005
9	4	0.1347	0.592	13.47	7.7	2.4	7.93e-005	2.49e-004	1.20e-004
10	0.25	0.09615	0.663	9.61	65.6	0.0	9.81e-006	0.00e+000	9.81e-006

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: San Francisquito Bg	Location: 04-SCL-101-52.6	Project No.: 04 235620
Boring No.: R10-001	Tested By: AZM	Checked By: GL #10 062
Sample No.: P3	Test Date: 9/7/2010	Depth: 29.5-30
Test No.: 10-054-G3	Sample Type: Tube	Elevation:
Description: Moist, olive, stiff, silt		
Remarks: Bridge # 35-0348		

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-001
 Sample No.: P4
 Test No.: 10-055-G1

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/13/10
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 49.5-50
 Elevation: *W 9/21*

Soil Description: Moist, brown, stiff, silt w/gravel
 Remarks:

Measured Specific Gravity: 2.71
 Initial Void Ratio: 0.65
 Final Void Ratio: 0.53

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 1.00 in
 Specimen Diameter: 2.38 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	239.2	239.2	233.8	233.8
Wt. Container + Dry Soil, gm	210.7	210.7	210.7	210.7
Wt. Container, gm	91.1	91.1	91.1	91.1
Wt. Dry Soil, gm	119.6	119.6	119.6	119.6
Water Content, %	23.83	23.83	19.31	19.31
Void Ratio	---	0.65	0.53	---
Degree of Saturation, %	---	99.90	99.70	---
Dry Unit Weight, pcf	---	102.85	111.04	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-001
 Sample No.: P4
 Test No.: 10-055-G1

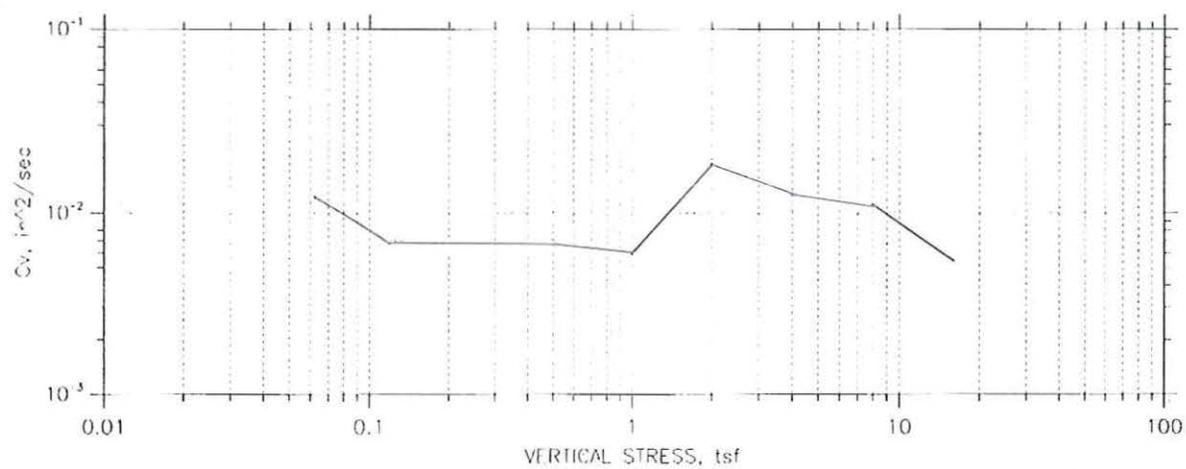
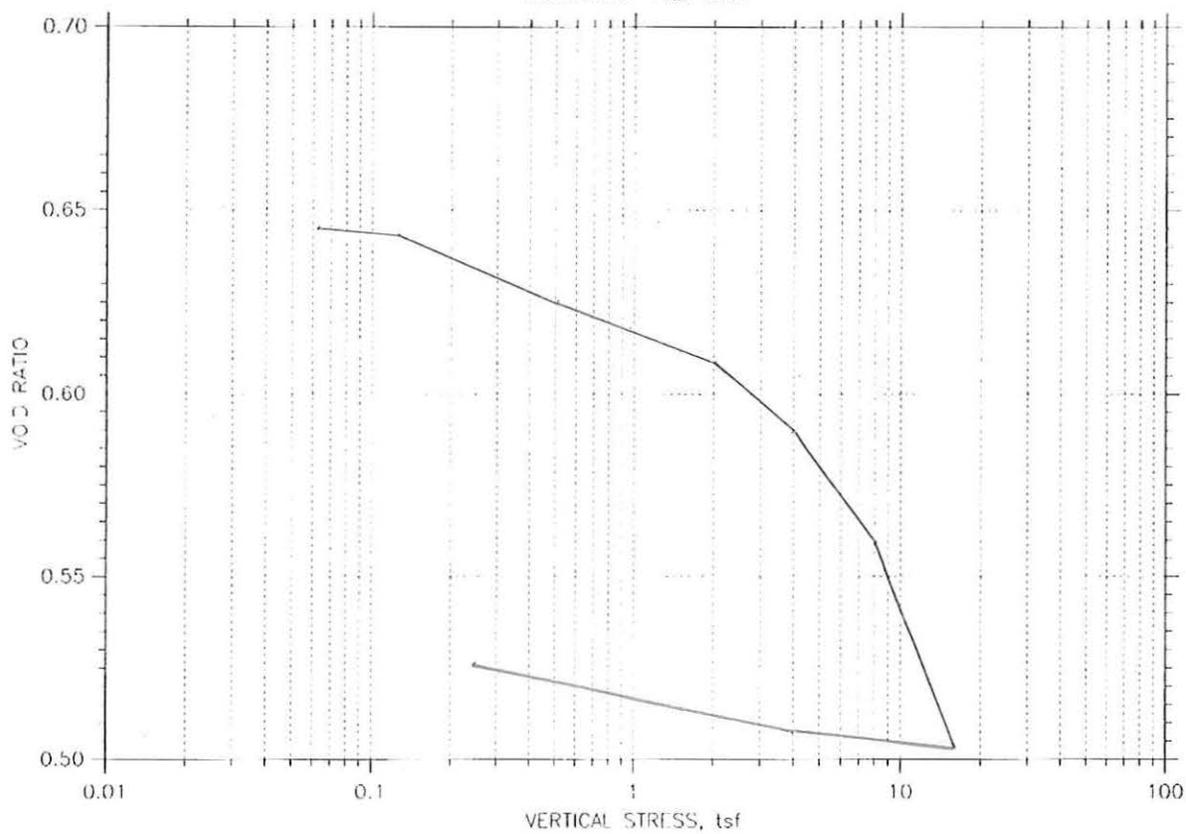
Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/13/10
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 49.5-50
 Elevation:

Soil Description: Moist, brown, stiff, silt w/gravel
 Remarks:

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.001452	0.645	0.15	0.1	0.0	1.22e-002	0.00e+000	1.22e-002
2	0.125	0.002613	0.643	0.26	0.1	0.0	6.73e-003	0.00e+000	6.73e-003
3	0.5	0.01378	0.625	1.38	0.1	0.1	6.91e-003	6.50e-003	6.70e-003
4	1	0.01815	0.617	1.82	0.1	0.1	6.35e-003	5.62e-003	5.96e-003
5	2	0.02338	0.609	2.34	0.1	0.0	1.53e-002	2.36e-002	1.86e-002
6	4	0.0348	0.590	3.48	0.1	0.1	1.32e-002	1.18e-002	1.25e-002
7	8	0.05311	0.560	5.31	0.1	0.1	1.02e-002	1.21e-002	1.11e-002
8	16	0.08741	0.503	8.74	0.2	0.1	4.31e-003	7.61e-003	5.50e-003
9	4	0.08484	0.508	8.48	0.0	0.0	6.35e-002	0.00e+000	6.35e-002
10	0.25	0.07382	0.526	7.38	0.1	0.0	4.72e-003	1.97e-002	7.62e-003

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: San Francisquito Bg	Location: 04-SCL-101-52.6	Project No.: 04-235620
Boring No.: R10 001	Tested By: AZM	Checked By: CL# 10-062
Sample No.: P4	Test Date: 9/13/10	Depth: 49.5-50
Test No.: 10-055-G1	Sample Type: Tube	Elevation:
Description: Moist, brown, stiff, silt w/gravel		
Remarks:		

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-002
 Sample No.: 09B
 Test No.: 10-056-G3

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/14/2010
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL#10-062
 Depth: 48.5-49
 Elevation: 1180.21

Soil Description: Moist, brown, stiff, silt
 Remarks: Bridge #35-0348

Measured Specific Gravity: 2.76
 Initial Void Ratio: 1.03
 Final Void Ratio: 0.71

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	90.3	90.3	84.8	84.8
Wt. Container + Dry Soil, gm	72.1	72.1	72.1	72.1
Wt. Container, gm	22.5	22.5	22.5	22.5
Wt. Dry Soil, gm	49.6	49.6	49.6	49.6
Water Content, %	36.69	36.69	25.60	25.60
Void Ratio	---	1.03	0.71	---
Degree of Saturation, %	---	98.34	99.76	---
Dry Unit Weight, pcf	---	84.882	100.85	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-002
 Sample No.: 09B
 Test No.: 10-056-G3

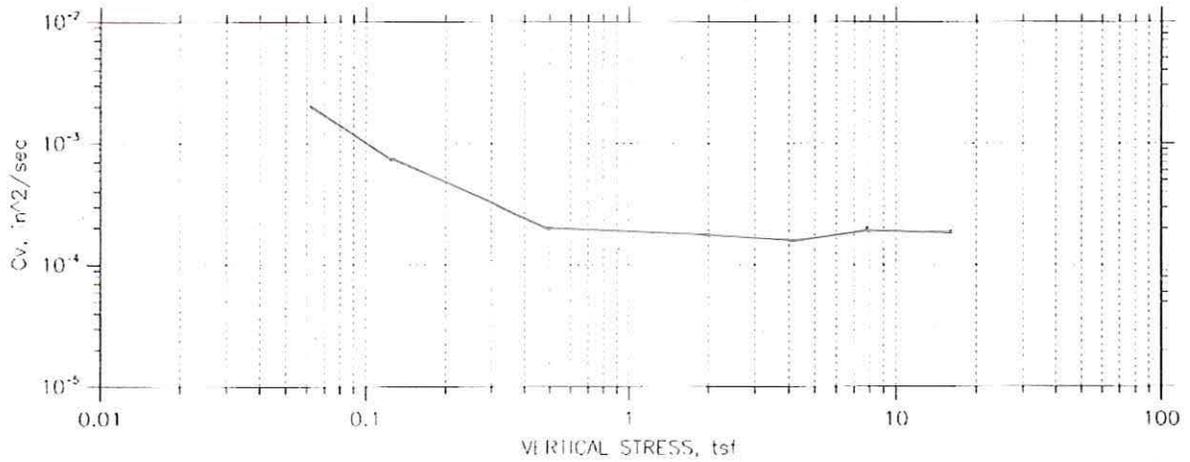
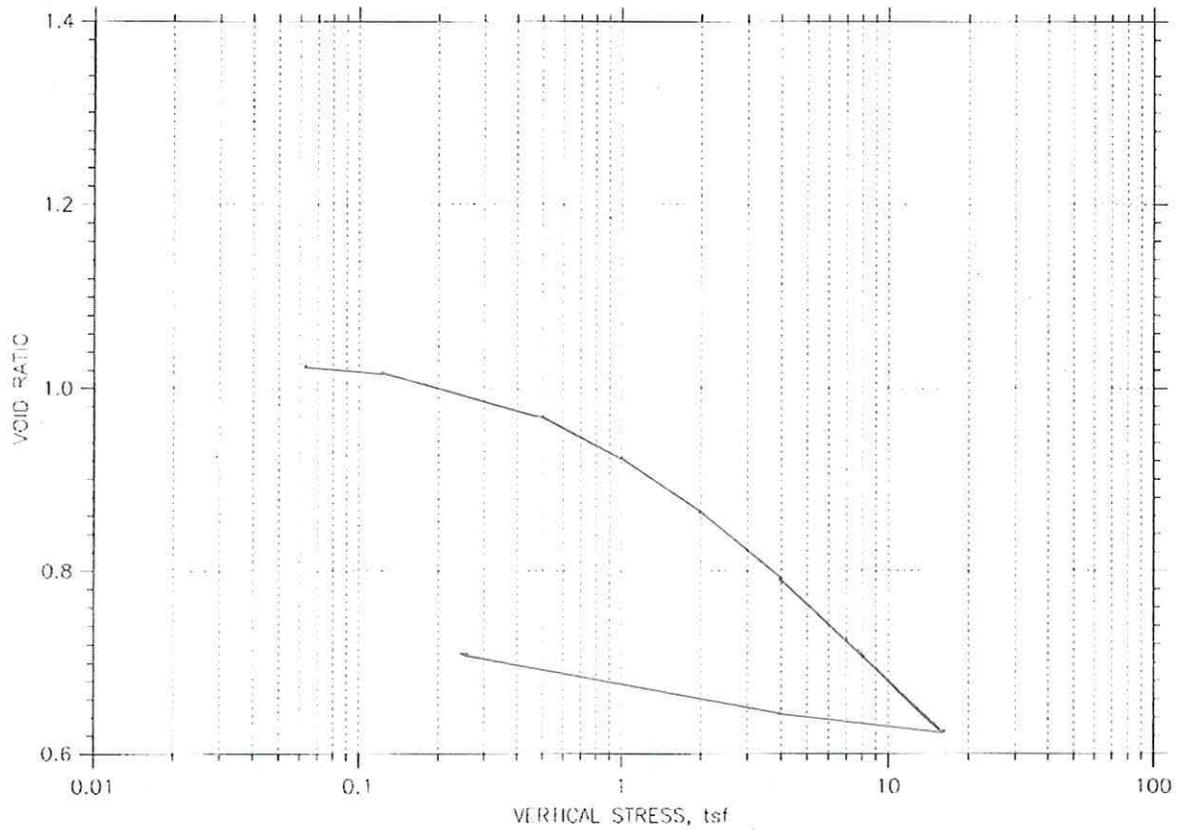
Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/14/2010
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL#10-062
 Depth: 48.5-49
 Elevation:

Soil Description: Moist, brown, stiff, silt
 Remarks: Bridge #35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.001817	1.025	0.24	0.2	0.3	2.47e-003	1.66e-003	1.98e-003
2	0.125	0.005108	1.016	0.68	0.8	0.4	5.49e-004	1.14e-003	7.42e-004
3	0.5	0.02255	0.969	3.01	2.3	0.0	1.98e-004	0.00e+000	1.98e-004
4	1	0.03926	0.924	5.23	2.4	2.8	1.81e-004	1.52e-004	1.65e-004
5	2	0.06102	0.865	8.14	2.0	2.6	1.99e-004	1.55e-004	1.74e-004
6	4	0.0883	0.791	11.77	2.2	2.5	1.73e-004	1.51e-004	1.61e-004
7	8	0.1182	0.710	15.76	1.9	1.4	1.77e-004	2.39e-004	2.04e-004
8	16	0.1495	0.625	19.93	1.7	0.0	1.87e-004	0.00e+000	1.87e-004
9	4	0.1427	0.644	19.02	2.1	0.0	1.43e-004	0.00e+000	1.43e-004
10	0.25	0.1188	0.708	15.84	3.5	4.5	8.99e-005	7.00e-005	7.87e-005

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: San Francisquito Bg	Location: 04-SCL 101-52.6	Project No.: 04-235620
Boring No.: R10-002	Tested By: AZM	Checked By: CL#10-062
Sample No.: 09B	Test Date: 9/14/2010	Depth: 48.5-49
Test No.: 10 056-G3	Sample Type: Tube	Elevation:
Description: Moist, brown, stiff, silt		
Remarks: Bridge #35-0348		

CONSOLIDATION TEST DATA

Project: SAN FRANCISQUINTO
 Boring No.: R10-002
 Sample No.: 10B
 Test No.: 10-057-G4

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/14/2010
 Sample Type: TUBE

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 52.5-53
 Elevation: 112.9/21

Soil Description: Moist, brown, med-soft, silt w/gravel
 Remarks: Bridge 35-0348

Measured Specific Gravity: 2.73
 Initial Void Ratio: 0.87
 Final Void Ratio: 0.62

Liquid Limit: ---
 Plastic Limit: ---
 Plasticity Index: ---

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	92.9	92.9	88.1	88.1
Wt. Container + Dry Soil, gm	76	76	76	76
Wt. Container, gm	22.8	22.8	22.8	22.8
Wt. Dry Soil, gm	53.2	53.2	53.2	53.2
Water Content, %	31.77	31.77	22.74	22.74
Void Ratio	---	0.87	0.62	---
Degree of Saturation, %	---	99.63	99.67	---
Dry Unit Weight, pcf	---	91.043	104.91	---

CONSOLIDATION TEST DATA

Project: SAN FRANCISQUINTO
 Boring No.: R10-002
 Sample No.: 10B
 Test No.: 10-057-G4

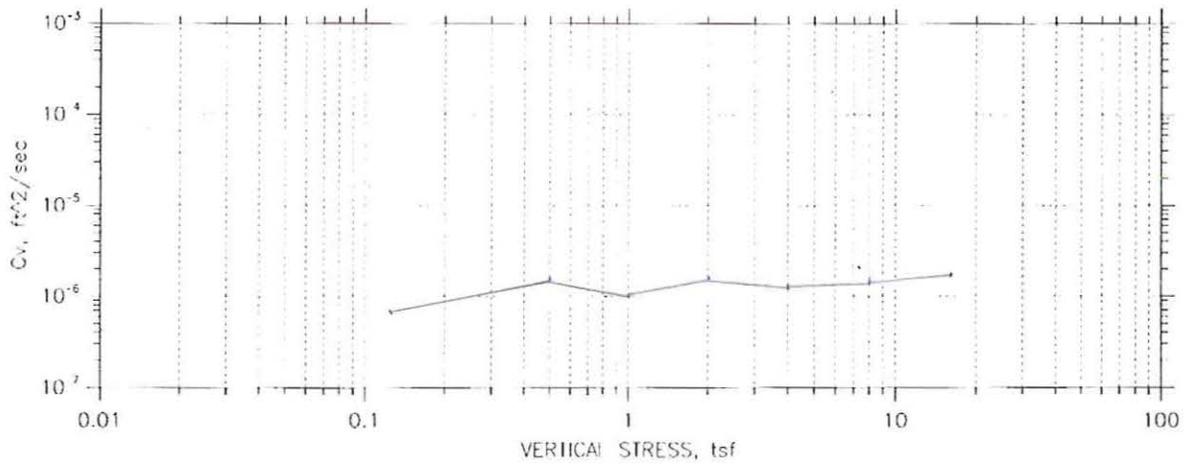
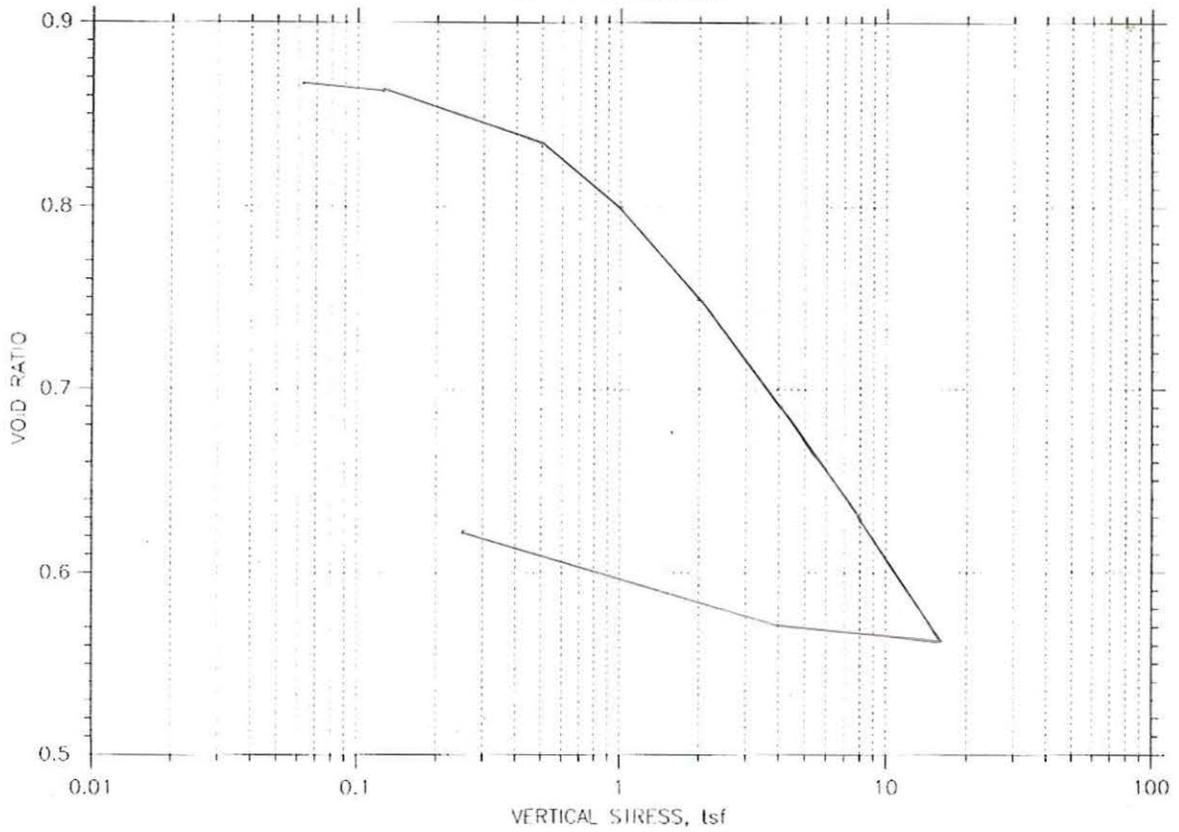
Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/14/2010
 Sample Type: TUBE

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 52.5-53
 Elevation:

Soil Description: Moist, brown, med-soft, silty w/gravel
 Remarks: Bridge 35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. ft ² /sec	Log ft ² /sec	Ave. ft ² /sec
1	0.0625	0.001073	0.867	0.14	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
2	0.125	0.002384	0.863	0.32	5.2	4.7	6.11e-007	6.81e-007	6.44e-007
3	0.5	0.01356	0.835	1.81	2.1	0.0	1.48e-006	0.00e+000	1.48e-006
4	1	0.02802	0.799	3.74	3.1	0.0	9.75e-007	0.00e+000	9.75e-007
5	2	0.04777	0.750	6.37	1.9	0.0	1.49e-006	0.00e+000	1.49e-006
6	4	0.07147	0.691	9.53	1.8	2.7	1.52e-006	1.02e-006	1.22e-006
7	8	0.09631	0.629	12.84	1.4	2.3	1.84e-006	1.12e-006	1.39e-006
8	16	0.1229	0.563	16.39	1.2	1.5	1.95e-006	1.51e-006	1.70e-006
9	4	0.1197	0.571	15.96	0.3	0.0	8.35e-006	1.20e-004	1.56e-005
10	0.25	0.09917	0.622	13.22	2.6	3.2	8.87e-007	7.36e-007	8.05e-007

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: SAN FRANCISQUITO	Location: 04-SCL-101-52.6	Project No.: 04-235620
Boring No.: R10-002	Tested By: AZM	Checked By: GL# 10-062
Sample No.: 10B	Test Date: 9/14/2010	Depth: 52.5-53
Test No.: 10-057 G4	Sample Type: TUBE	Elevation:
Description: Moist, brown, med-soft, silty w/gravel		
Remarks: Bridge 35-0348		

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-003
 Sample No.: 09C
 Test No.: 10-058-G1

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/15/10
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 48.5-49
 Elevation: *no 4/22*

Soil Description: MOIST, OLIVE, VERY STIFF, SILT
 Remarks: BRIDGE# 35-0348

Measured Specific Gravity: 2.73
 Initial Void Ratio: 0.77
 Final Void Ratio: 0.51

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	95.4	95.4	90.1	90.1
Wt. Container + Dry Soil, gm	79.6	79.6	79.6	79.6
Wt. Container, gm	23.3	23.3	23.3	23.3
Wt. Dry Soil, gm	56.3	56.3	56.3	56.3
Water Content, %	28.06	28.06	18.65	18.65
Void Ratio	---	0.77	0.51	---
Degree of Saturation, %	---	99.74	99.50	---
Dry Unit Weight, pcf	---	96.348	112.68	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bq
 Boring No.: R10-003
 Sample No.: 09C
 Test No.: 10-058-G1

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/15/10
 Sample Type: Tube

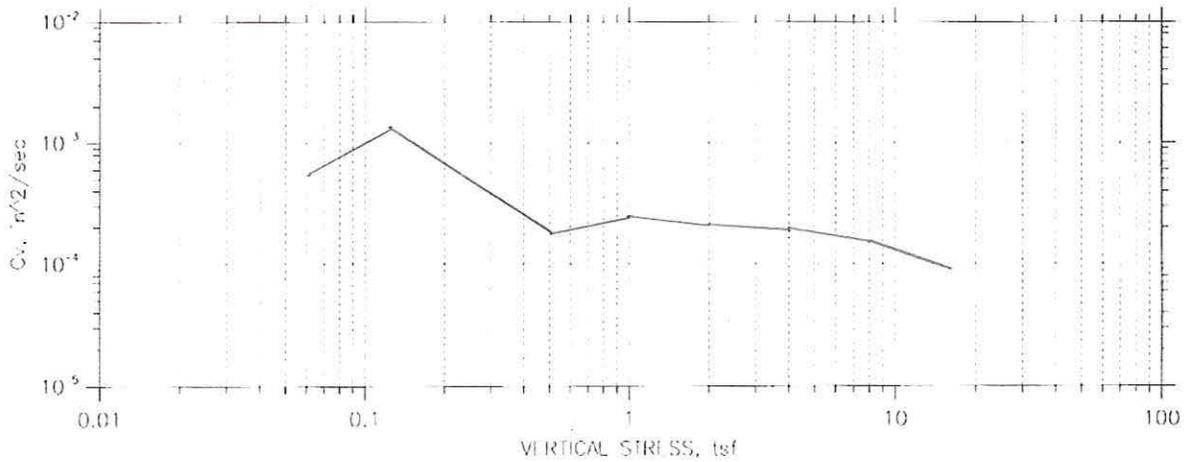
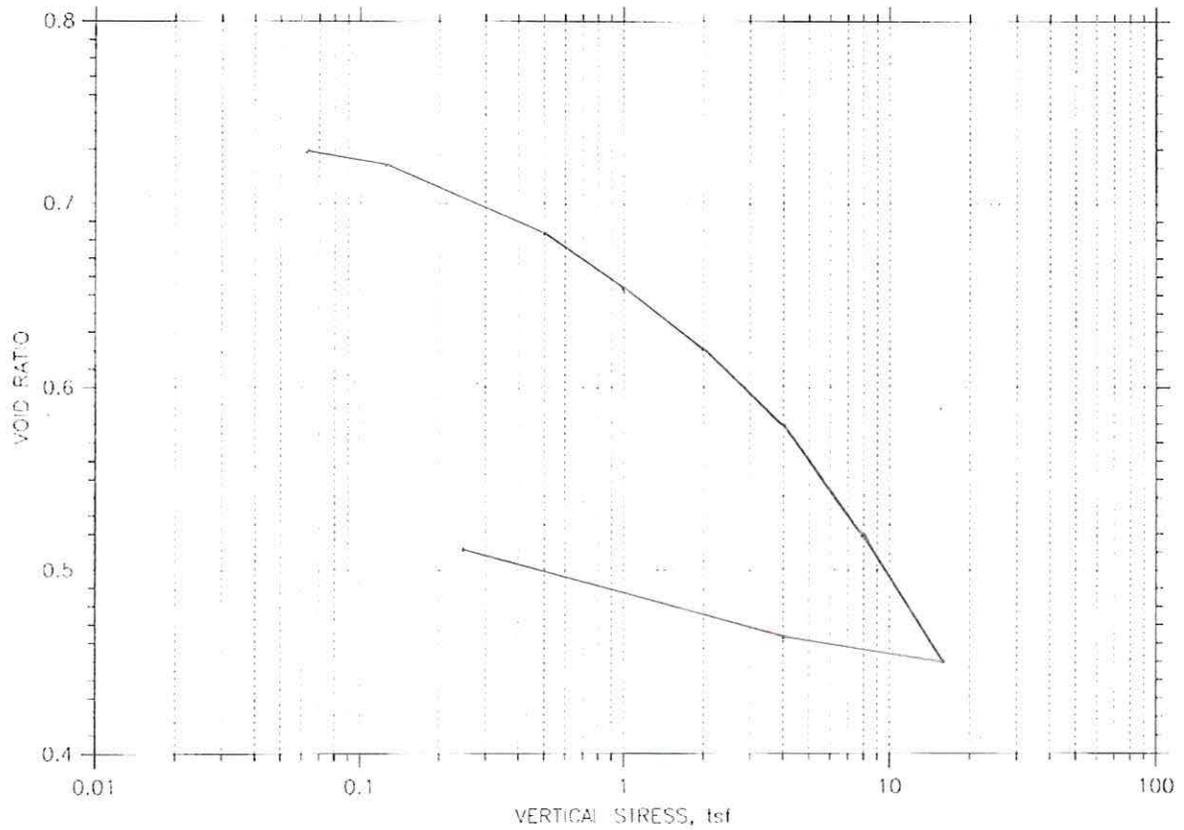
Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 48.5-49
 Elevation:

Soil Description: MOIST, OLIVE, VERY STIFF, SILT
 Remarks: BRIDGE# 35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.01624	0.729	2.17	0.9	0.8	5.10e-004	5.98e-004	5.50e-004
2	0.125	0.01971	0.721	2.63	0.4	0.3	1.18e-003	1.54e-003	1.34e-003
3	0.5	0.03575	0.683	4.77	2.3	0.0	1.83e-004	0.00e+000	1.83e-004
4	1	0.04813	0.654	6.42	2.1	1.3	1.98e-004	3.17e-004	2.44e-004
5	2	0.06176	0.622	8.23	1.8	2.0	2.25e-004	1.95e-004	2.09e-004
6	4	0.07936	0.581	10.58	2.5	1.4	1.51e-004	2.64e-004	1.92e-004
7	8	0.1052	0.520	14.02	2.1	2.5	1.68e-004	1.45e-004	1.56e-004
8	16	0.1348	0.450	17.97	3.6	3.5	8.98e-005	9.22e-005	9.10e-005
9	4	0.1293	0.463	17.23	0.7	0.0	4.75e-004	0.00e+000	4.75e-004
10	0.25	0.1087	0.511	14.50	7.1	2.8	4.64e-005	1.17e-004	6.64e-005

CONSOLIDATION TEST DATA

SUMMARY REPORT



Project: San Francisco Bg	Location: 04-SCI-101 52.6	Project No.: 04-235620
Boring No.: R10-003	Tested By: AZM	Checked By: GL# 10-062
Sample No.: 09C	Test Date: 9/15/10	Depth: 48.5-49
Test No.: 10-058-G1	Sample Type: Tube	Elevation:
Description: MOIST, OLIVE, VERY STIFF, SILT		
Remarks: BRIDGE# 35 0.548		

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-003
 Sample No.: 10B
 Test No.: 10-059-G3

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/14/2010
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL#10-062
 Depth: 54-54.5
 Elevation: *hp 9/22*

Soil Description: Moist, olive, stiff, silt
 Remarks: Bridge #35-0348

Measured Specific Gravity: 2.73
 Initial Void Ratio: 0.63
 Final Void Ratio: 0.41

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	101.7	101.7	96.8	96.8
Wt. Container + Dry Soil, gm	87.7	87.7	87.7	87.7
Wt. Container, gm	26.6	26.6	26.6	26.6
Wt. Dry Soil, gm	61.1	61.1	61.1	61.1
Water Content, %	22.91	22.91	14.89	14.89
Void Ratio	---	0.63	0.41	---
Degree of Saturation, %	---	99.59	99.65	---
Dry Unit Weight, pcf	---	104.56	120.88	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-003
 Sample No.: 10B
 Test No.: 10-059-G3

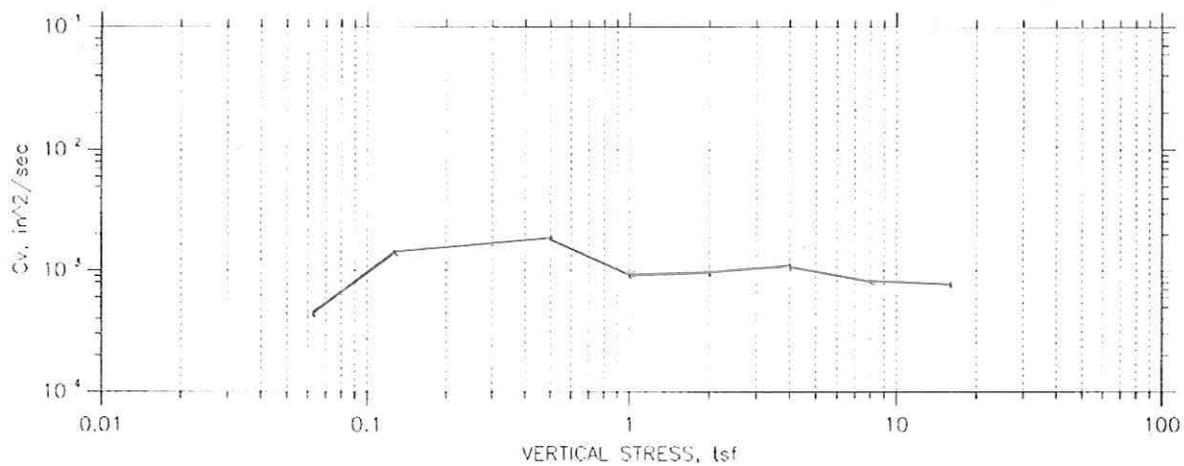
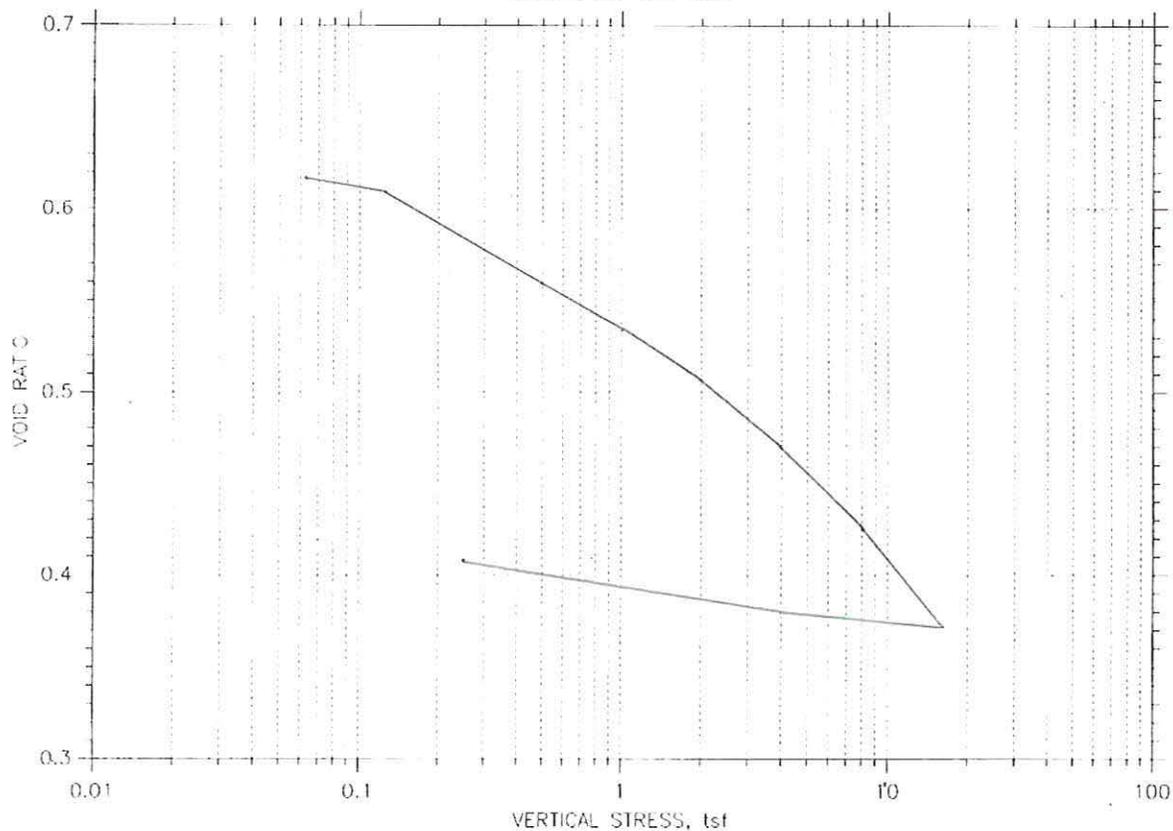
Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/14/2010
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL#10-062
 Depth: 54-54.5
 Elevation:

Soil Description: Moist, olive, stiff, silt
 Remarks: Bridge #35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.00467	0.617	0.62	1.1	0.0	4.19e-004	0.00e+000	4.19e-004
2	0.125	0.007961	0.610	1.06	0.4	0.3	1.23e-003	1.42e-003	1.32e-003
3	0.5	0.03111	0.559	4.15	0.3	0.2	1.52e-003	2.24e-003	1.81e-003
4	1	0.04221	0.535	5.63	0.5	0.0	8.90e-004	0.00e+000	8.90e-004
5	2	0.05531	0.507	7.38	0.5	0.4	8.27e-004	1.09e-003	9.40e-004
6	4	0.07216	0.470	9.62	0.5	0.2	7.96e-004	1.84e-003	1.11e-003
7	8	0.0927	0.426	12.36	0.6	0.3	5.80e-004	1.20e-003	7.82e-004
8	16	0.1175	0.372	15.67	0.5	0.4	7.07e-004	8.02e-004	7.51e-004
9	4	0.1138	0.380	15.18	0.0	0.0	1.61e-002	2.12e-002	1.83e-002
10	0.25	0.1013	0.407	13.50	1.9	0.5	1.82e-004	6.43e-004	2.84e-004

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: San Francisquito Bg	Location: 04-SCL-101-52.6	Project No.: 04-235620
Boring No.: R10-003	Tested By: A/M	Checked By: GI #10-062
Sample No.: 10B	Test Date: 9/14/2010	Depth: 54-54.5
Test No.: 10-059-C3	Sample Type: Tube	Elevation:
Description: Moist, olive, stiff, silt		
Remarks: Bridge #35-0348		

CONSOLIDATION TEST DATA

Project: SAN FRANCISQUINTO
 Boring No.: R10-003
 Sample No.: 11C
 Test No.: 10-060-G4

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/15/2010
 Sample Type: TUBE

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 58.5-59
 Elevation: *W 9/22*

Soil Description: Moist, olive, very stiff, silt w/gravel
 Remarks: Bridge 35-0348

Measured Specific Gravity: 2.73
 Initial Void Ratio: 0.73
 Final Void Ratio: 0.53

Liquid Limit: ---
 Plastic Limit: ---
 Plasticity Index: ---

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	100.3	100.3	96	96
Wt. Container + Dry Soil, gm	84.9	84.9	84.9	84.9
Wt. Container, gm	27.5	27.5	27.5	27.5
Wt. Dry Soil, gm	57.4	57.4	57.4	57.4
Water Content, %	26.83	26.83	19.34	19.34
Void Ratio	---	0.73	0.53	---
Degree of Saturation, %	---	99.65	99.82	---
Dry Unit Weight, pcf	---	98.23	111.47	---

CONSOLIDATION TEST DATA

Project: SAN FRANCISQUINTO
 Boring No.: R10-003
 Sample No.: 11C
 Test No.: 10-060-G4

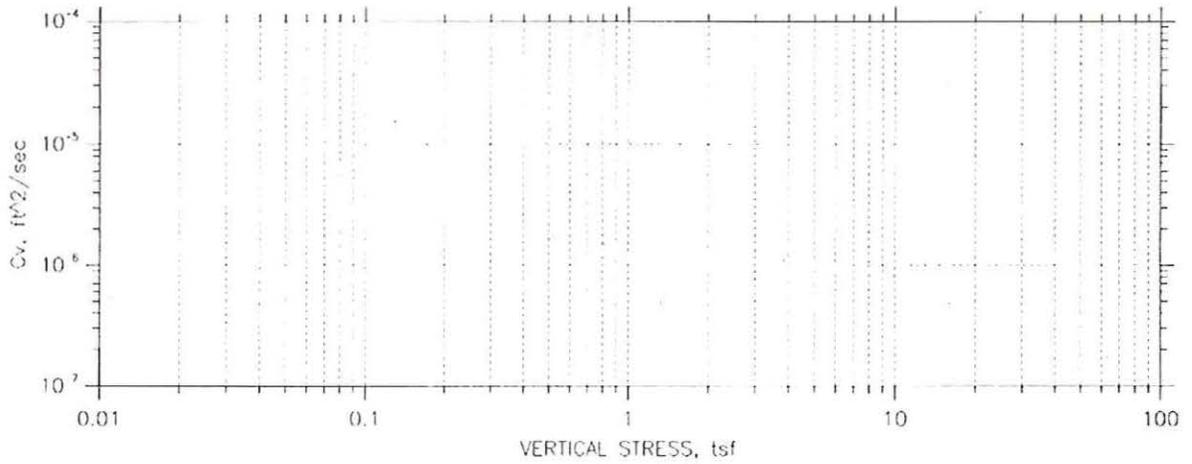
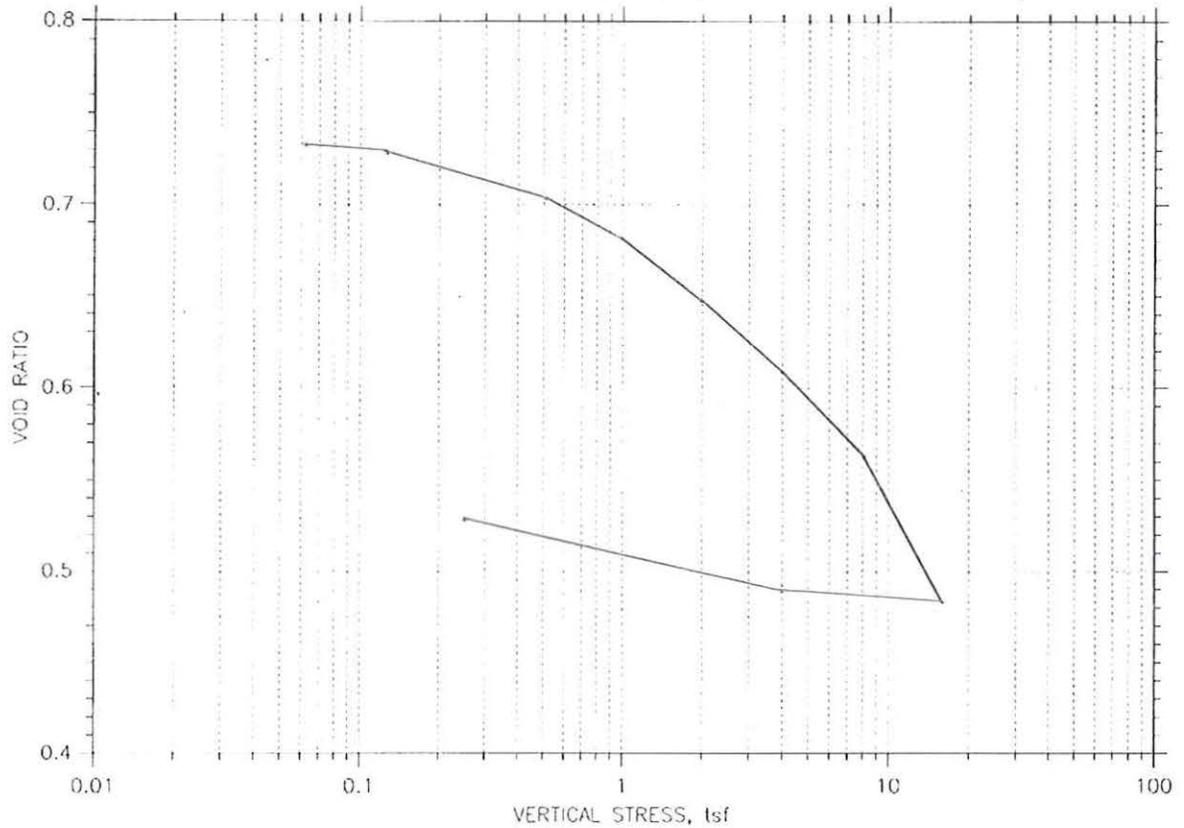
Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/15/2010
 Sample Type: TUBE

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 58.5-59
 Elevation:

Soil Description: Moist, olive, very stiff, silt w/gravel
 Remarks: Bridge 35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. ft ² /sec	Log ft ² /sec	Ave. ft ² /sec
1	0.0625	0.001015	0.733	0.14	0.3	0.0	9.18e-006	0.00e+000	9.18e-006
2	0.125	0.002384	0.729	0.32	0.2	0.2	1.56e-005	1.66e-005	1.61e-005
3	0.5	0.01347	0.704	1.80	1.8	0.0	1.78e-006	0.00e+000	1.78e-006
4	1	0.02321	0.681	3.09	2.2	0.0	1.38e-006	0.00e+000	1.38e-006
5	2	0.03761	0.648	5.01	2.4	2.6	1.24e-006	1.13e-006	1.18e-006
6	4	0.05433	0.609	7.24	2.3	2.8	1.21e-006	1.00e-006	1.10e-006
7	8	0.07357	0.565	9.81	1.9	3.1	1.41e-006	8.69e-007	1.08e-006
8	16	0.1088	0.483	14.51	5.2	6.0	4.78e-007	4.10e-007	4.42e-007
9	4	0.1062	0.489	14.16	0.9	0.0	2.60e-006	0.00e+000	2.60e-006
10	0.25	0.0891	0.529	11.88	5.1	0.0	4.73e-007	0.00e+000	4.73e-007

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: SAN FRANCISQUITO	Location: 04-SCL-101-52.6	Project No.: 04-235620
Boring No.: R10-003	Tested By: AZM	Checked By: GL# 10-062
Sample No.: 11C	Test Date: 9/15/2010	Depth: 58.5-59
Test No.: 10 060-G4	Sample Type: TUBF	Elevation:
Description: Moist, olive, very stiff, silt w/gravel		
Remarks: Bridge .35-0.348		

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-003
 Sample No.: 12B
 Test No.: 10-061-G1

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/16/10
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 64-64.5
 Elevation: *VP 47/22*

Soil Description: MOIST, OLIVE, VERY STIFF, SILT
 Remarks: BRIDGE# 35-0348

Measured Specific Gravity: 2.75
 Initial Void Ratio: 0.88
 Final Void Ratio: 0.61

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	97.2	97.2	92.5	92.5
Wt. Container + Dry Soil, gm	80.7	80.7	80.7	80.7
Wt. Container, gm	27.5	27.5	27.5	27.5
Wt. Dry Soil, gm	53.2	53.2	53.2	53.2
Water Content, %	31.02	31.02	22.18	22.18
Void Ratio	---	0.88	0.61	---
Degree of Saturation, %	---	96.42	99.30	---
Dry Unit Weight, pcf	---	91.043	106.28	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-003
 Sample No.: 12B
 Test No.: 10-061-G1

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/16/10
 Sample Type: Tube

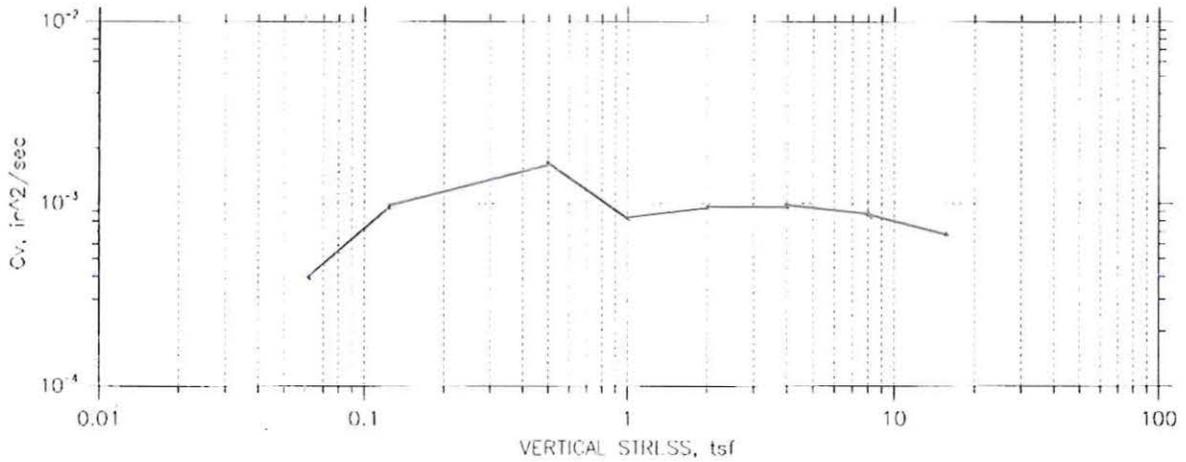
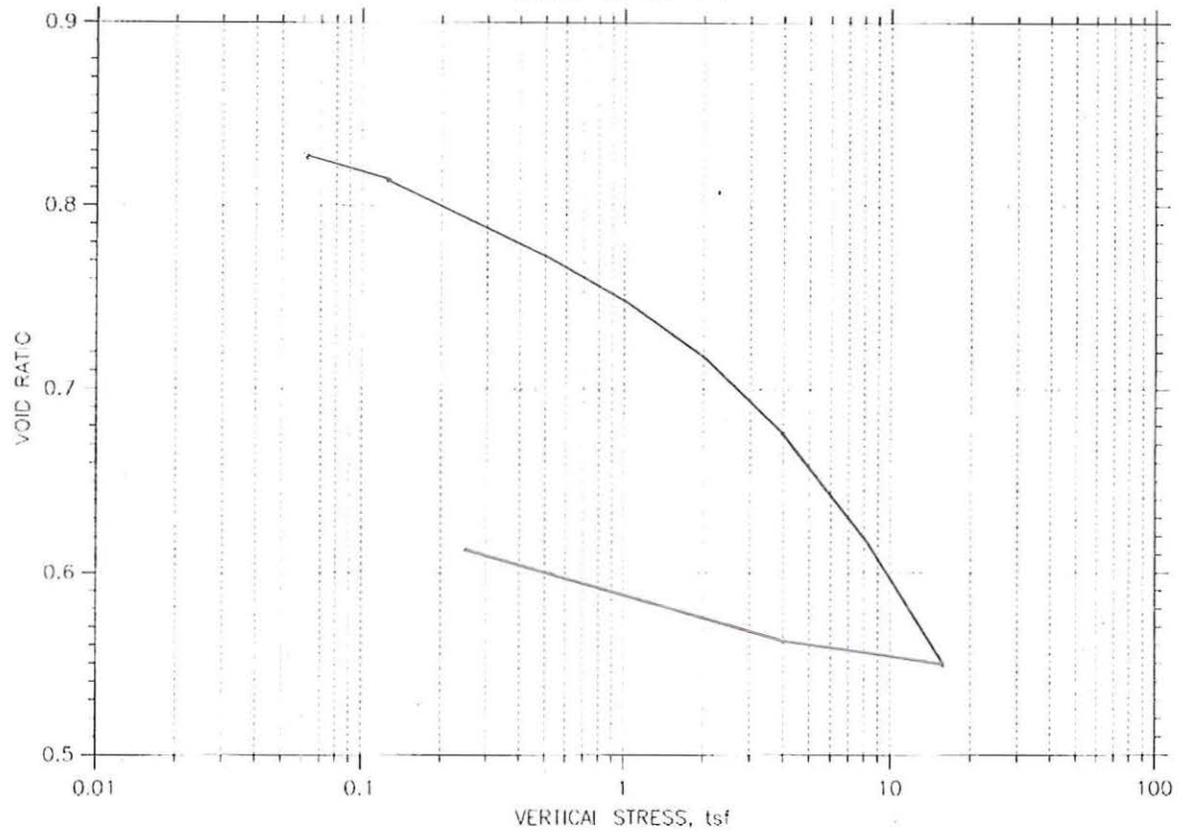
Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 64-64.5
 Elevation:

Soil Description: MOIST, OLIVE, VERY STIFF, SILT
 Remarks: BRIDGE# 35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.02247	0.827	3.00	1.3	1.0	3.36e-004	4.49e-004	3.85e-004
2	0.125	0.02766	0.814	3.69	0.5	0.4	7.98e-004	1.11e-003	9.29e-004
3	0.5	0.0442	0.773	5.89	0.4	0.1	1.18e-003	2.87e-003	1.67e-003
4	1	0.05376	0.749	7.17	0.6	0.4	7.25e-004	9.39e-004	8.18e-004
5	2	0.06578	0.718	8.77	0.6	0.2	6.44e-004	1.64e-003	9.26e-004
6	4	0.08228	0.677	10.97	0.5	0.3	8.00e-004	1.16e-003	9.48e-004
7	8	0.105	0.620	14.00	0.4	0.4	7.88e-004	9.41e-004	8.58e-004
8	16	0.1333	0.549	17.78	0.6	0.4	5.84e-004	7.85e-004	6.69e-004
9	4	0.1281	0.562	17.09	0.1	0.0	4.53e-003	0.00e+000	4.53e-003
10	0.25	0.1075	0.614	14.34	0.9	0.0	3.72e-004	0.00e+000	3.72e-004

CONSOLIDATION TEST DATA

SUMMARY REPORT



Project: San Francisquito Bg	Location: 04 SCL-101-52.6	Project No.: 04-235620
Boring No.: R10-003	Tested By: A7M	Checked By: GL# 10-062
Sample No.: 12B	Test Date: 9/16/10	Depth: 64-64.5
Test No.: 10 061-G1	Sample Type: Tube	Elevation:
Description: MOIST, OILY, VERY STIFF, SILT		
Remarks: BRIDGE# 35 0.548		

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-003
 Sample No.: 13C
 Test No.: 10-062-G3

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/14/2010
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL#10-062
 Depth: 68.5-69
 Elevation: 110 51/23

Soil Description: Moist, olive, very stiff, silt
 Remarks: Bridge #35-0348

Measured Specific Gravity: 2.79
 Initial Void Ratio: 0.80
 Final Void Ratio: 0.65

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	100.3	100.3	97.1	97.1
Wt. Container + Dry Soil, gm	84.1	84.1	84.1	84.1
Wt. Container, gm	27.6	27.6	27.6	27.6
Wt. Dry Soil, gm	56.5	56.5	56.5	56.5
Water Content, %	28.67	28.67	23.01	23.01
Void Ratio	---	0.80	0.65	---
Degree of Saturation, %	---	99.74	99.47	---
Dry Unit Weight, pcf	---	96.69	105.9	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-003
 Sample No.: 13C
 Test No.: 10-062-G3

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/14/2010
 Sample Type: Tube

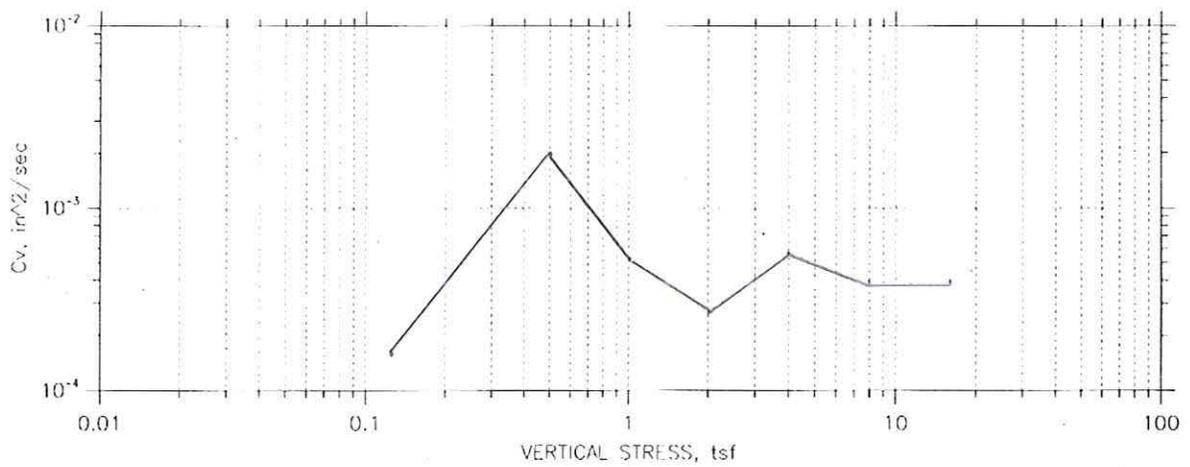
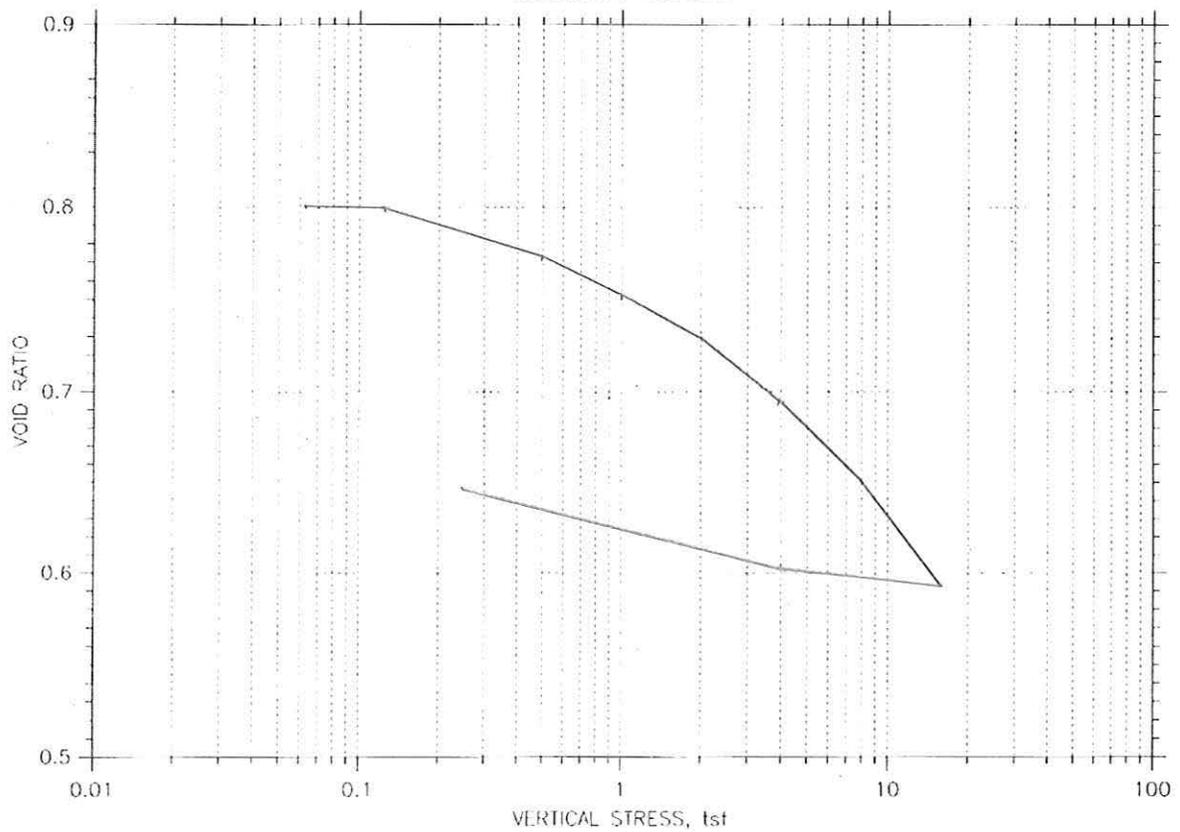
Project No.: 04-235620
 Checked By: GL#10-062
 Depth: 68.5-69
 Elevation:

Soil Description: Moist, olive, very stiff, silt
 Remarks: Bridge #35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.001128	0.800	0.15	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
2	0.125	0.001861	0.798	0.25	2.9	0.0	1.58e-004	0.00e+000	1.58e-004
3	0.5	0.01212	0.774	1.62	0.3	0.2	1.64e-003	2.40e-003	1.95e-003
4	1	0.02096	0.752	2.79	0.9	0.9	5.13e-004	5.18e-004	5.15e-004
5	2	0.03042	0.730	4.06	1.6	0.0	2.70e-004	0.00e+000	2.70e-004
6	4	0.04432	0.696	5.91	0.8	0.7	4.95e-004	6.22e-004	5.51e-004
7	8	0.06308	0.651	8.41	0.9	1.2	4.34e-004	3.27e-004	3.73e-004
8	16	0.08753	0.592	11.67	0.9	1.0	3.95e-004	3.70e-004	3.82e-004
9	4	0.08381	0.601	11.18	0.3	0.0	1.24e-003	0.00e+000	1.24e-003
10	0.25	0.06525	0.646	8.70	1.4	1.2	2.76e-004	3.12e-004	2.93e-004

CONSOLIDATION TEST DATA

SUMMARY REPORT



Project: San Francisquito Bg	Location: 04 SCL-101-52.6	Project No.: 04-235620
Boring No.: R10 003	Tested By: AZM	Checked By: GI #10-062
Sample No.: 13C	Test Date: 9/14/2010	Depth: 68.5-69
Test No.: 10-062-G3	Sample Type: Tube	Elevation:
Description: Moist, olive, very stiff, silt		
Remarks: Bridge #35-0348		

CONSOLIDATION TEST DATA

Project: SAN FRANCISQUINTO
 Boring No.: R10-003
 Sample No.: 15A
 Test No.: 10-063-G4

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/16/2010
 Sample Type: TUBE

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 79.5-80 *pp 9/23*
 Elevation:

Soil Description: Moist, olive, very stiff, silt
 Remarks: Bridge 35-0348

Measured Specific Gravity: 2.62
 Initial Void Ratio: 0.74
 Final Void Ratio: 0.66

Liquid Limit: ---
 Plastic Limit: ---
 Plasticity Index: ---

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	97.8	97.8	96.1	96.1
Wt. Container + Dry Soil, gm	82.3	82.3	82.3	82.3
Wt. Container, gm	27.5	27.5	27.5	27.5
Wt. Dry Soil, gm	54.8	54.8	54.8	54.8
Water Content, %	28.28	28.28	25.18	25.18
Void Ratio	---	0.74	0.66	---
Degree of Saturation, %	---	99.80	99.92	---
Dry Unit Weight, pcf	---	93.781	98.423	---

CONSOLIDATION TEST DATA

Project: SAN FRANCISQUITO
 Boring No.: R10-003
 Sample No.: 15A
 Test No.: 10-063-G4

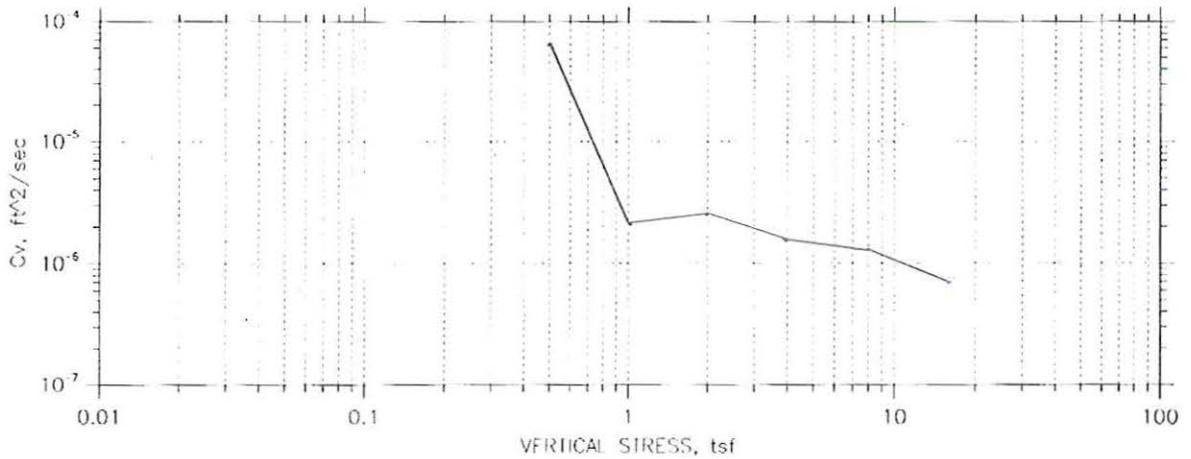
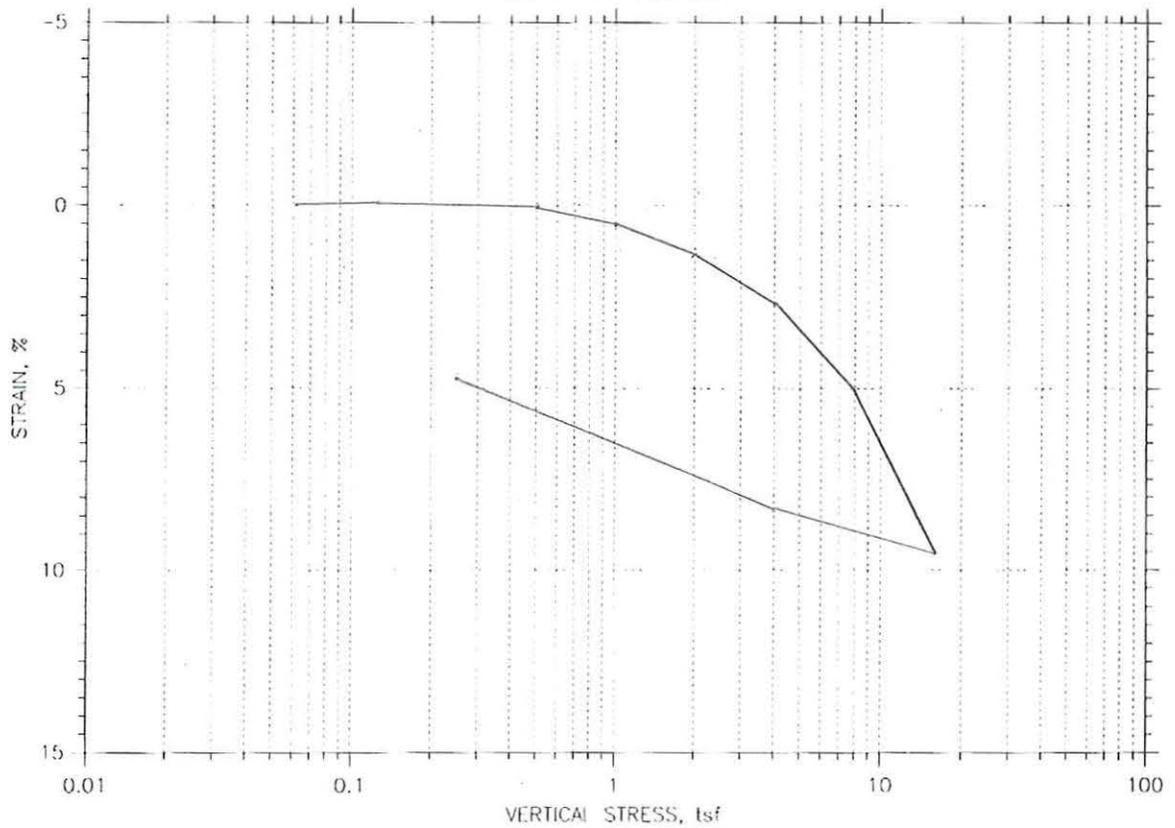
Location: 04-SCI-101-52.6
 Tested By: AZM
 Test Date: 9/16/2010
 Sample Type: TUBE

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 79.5-80
 Elevation:

Soil Description: Moist, olive, very stiff, silt
 Remarks: Bridge 35-0348

	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. ft ² /sec	Log ft ² /sec	Ave. ft ² /sec
1	0.0625	-0.0002274	0.742	-0.03	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
2	0.125	-0.0007688	0.743	-0.10	0.0	0.0	0.00e+000	0.00e+000	0.00e+000
3	0.5	0.0005357	0.740	0.07	0.1	0.0	6.42e-005	0.00e+000	6.42e-005
4	1	0.003881	0.732	0.52	1.5	0.0	2.10e-006	0.00e+000	2.10e-006
5	2	0.00987	0.718	1.32	1.2	0.0	2.57e-006	0.00e+000	2.57e-006
6	4	0.01971	0.696	2.63	2.0	2.0	1.54e-006	1.52e-006	1.53e-006
7	8	0.03799	0.653	5.07	2.1	2.6	1.44e-006	1.15e-006	1.28e-006
8	16	0.0715	0.575	9.53	4.0	0.0	6.96e-007	0.00e+000	6.96e-007
9	4	0.0622	0.597	8.29	1.6	0.0	1.70e-006	0.00e+000	1.70e-006
10	0.25	0.03538	0.659	4.72	7.6	9.1	3.71e-007	3.07e-007	3.36e-007

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: SAN FRANCISQUITO	Location: 04 - SCL - 101 - 52.6	Project No.: 04 - 235620
Boring No.: R10 - 003	Tested By: AZM	Checked By: GL# 10-062
Sample No.: 15A	Test Date: 9/16/2010	Depth: 79.5-80
Test No.: 10-063 G4	Sample Type: TUBE	Elevation:
Description: Moist, olive, very stiff, silt		
Remarks: Bridge 35-0348		

CONSOLIDATION TEST DATA

Project: San Francisquito Bq
 Boring No.: R10-003
 Sample No.: 17C
 Test No.: 10-064-G1

Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/20/10
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 88.5-89
 Elevation: 1091.23

Soil Description: MOIST, OLIVE, VERY STIFF, SILT
 Remarks: BRIDGE# 35-0348

Measured Specific Gravity: 2.84
 Initial Void Ratio: 1.16
 Final Void Ratio: 0.88

Liquid Limit: 0
 Plastic Limit: 0
 Plasticity Index: 0

Initial Height: 0.75 in
 Specimen Diameter: 1.94 in

Container ID	Before Consolidation		After Consolidation	
	Trimmings	Specimen+Ring	Specimen+Ring	Trimmings
		RING		
Wt. Container + Wet Soil, gm	94	94	90	90
Wt. Container + Dry Soil, gm	75.3	75.3	75.3	75.3
Wt. Container, gm	27.4	27.4	27.4	27.4
Wt. Dry Soil, gm	47.9	47.9	47.9	47.9
Water Content, %	39.04	39.04	30.69	30.69
Void Ratio	---	1.16	0.88	---
Degree of Saturation, %	---	95.37	98.68	---
Dry Unit Weight, pcf	---	81.973	94.129	---

CONSOLIDATION TEST DATA

Project: San Francisquito Bg
 Boring No.: R10-003
 Sample No.: 17C
 Test No.: 10-064-G1

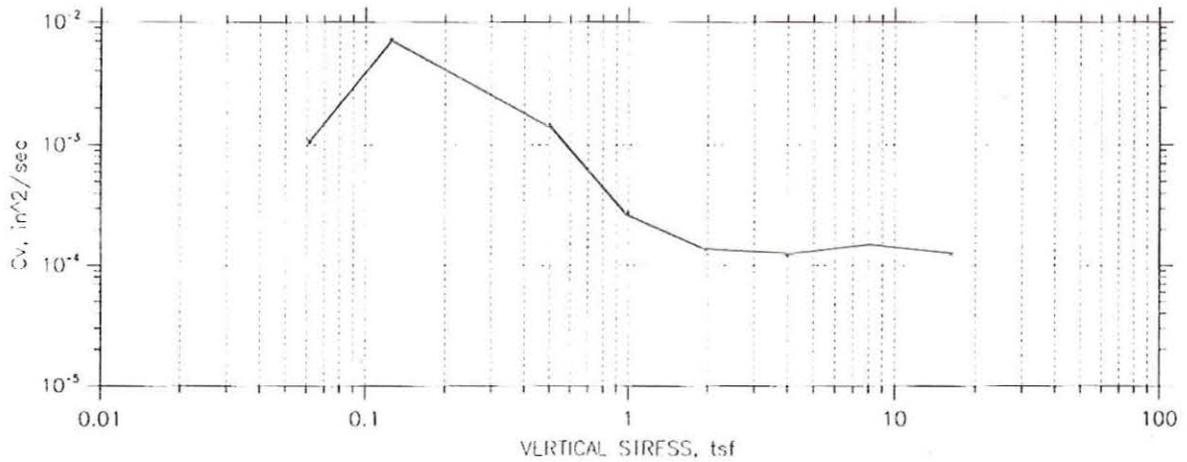
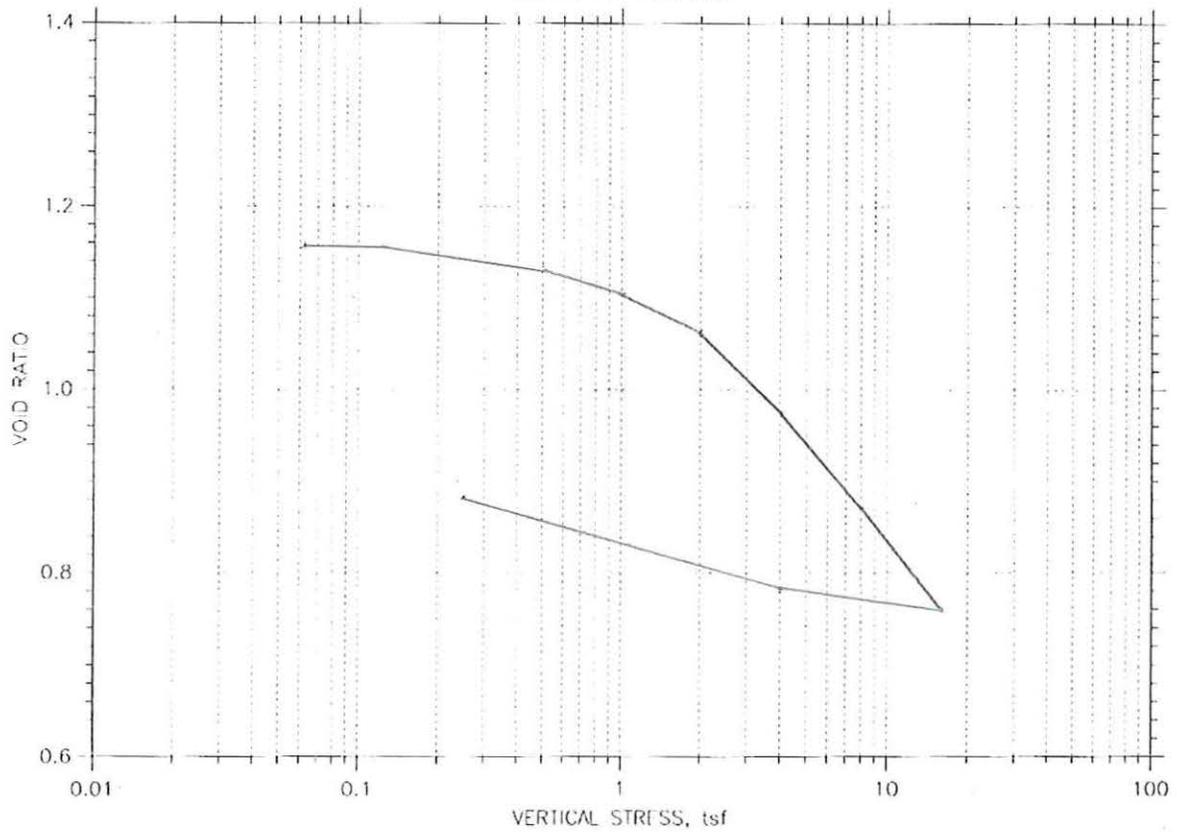
Location: 04-SCL-101-52.6
 Tested By: AZM
 Test Date: 9/20/10
 Sample Type: Tube

Project No.: 04-235620
 Checked By: GL# 10-062
 Depth: 88.5-89
 Elevation:

Soil Description: MOIST, OLIVE, VERY STIFF, SILT
 Remarks: BRIDGE# 35-0348

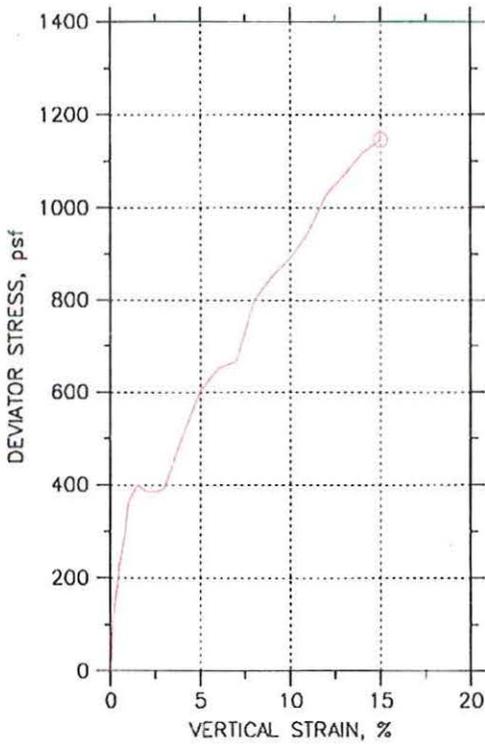
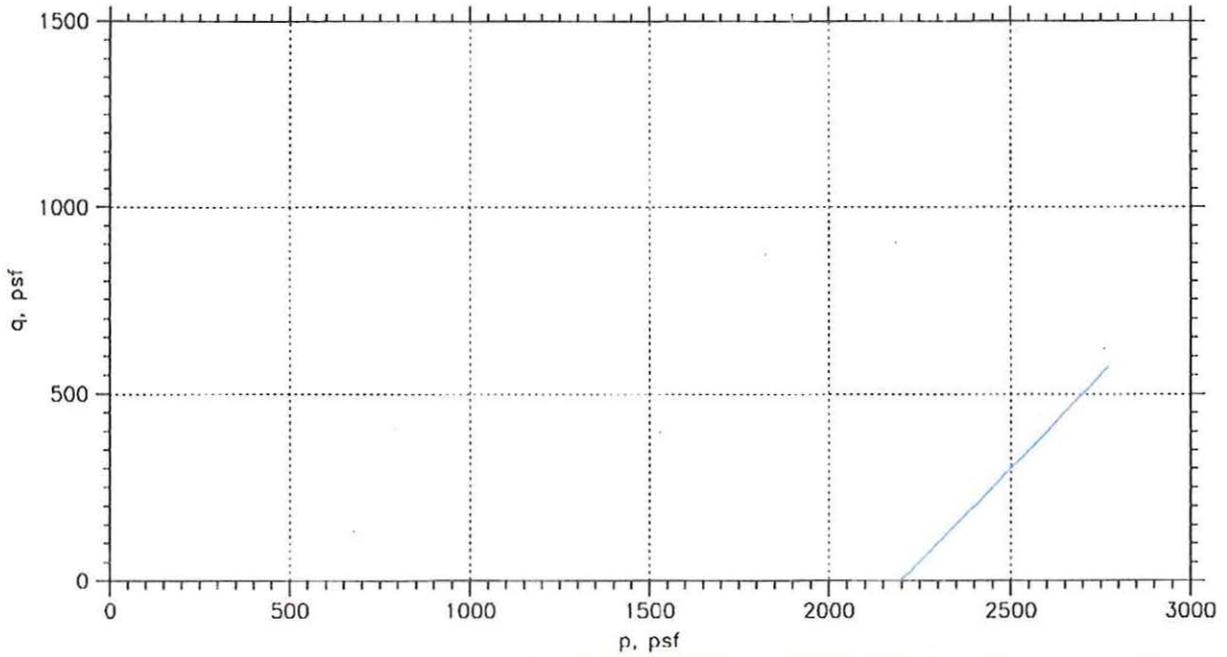
	Applied Stress tsf	Final Displacement in	Void Ratio	Strain at End %	T50 Fitting		Coefficient of Consolidation		
					Sq.Rt. min	Log min	Sq.Rt. in ² /sec	Log in ² /sec	Ave. in ² /sec
1	0.0625	0.001904	1.157	0.25	0.5	0.4	9.67e-004	1.17e-003	1.06e-003
2	0.125	0.002211	1.156	0.29	0.1	0.0	7.03e-003	0.00e+000	7.03e-003
3	0.5	0.01131	1.129	1.51	0.5	0.1	9.42e-004	3.18e-003	1.45e-003
4	1	0.02021	1.104	2.70	1.7	0.0	2.61e-004	0.00e+000	2.61e-004
5	2	0.03415	1.064	4.55	3.4	3.0	1.27e-004	1.45e-004	1.35e-004
6	4	0.06478	0.975	8.64	3.5	3.1	1.14e-004	1.29e-004	1.21e-004
7	8	0.1011	0.871	13.48	2.0	2.9	1.81e-004	1.27e-004	1.50e-004
8	16	0.1407	0.757	18.76	2.4	2.7	1.34e-004	1.20e-004	1.26e-004
9	4	0.1314	0.783	17.52	1.6	0.0	1.93e-004	0.00e+000	1.93e-004
10	0.25	0.09686	0.883	12.91	7.1	3.7	4.65e-005	9.06e-005	6.15e-005

CONSOLIDATION TEST DATA SUMMARY REPORT



Project: San Francisquito Bg	Location: 04-SCL-101 52.6	Project No.: 04-235620
Boring No.: R10-003	Tested By: AZM	Checked By: GI # 10-062
Sample No.: 17C	Test Date: 9/20/10	Depth: 88.5-89
Test No.: 10-064-G1	Sample type: Tube	Elevation:
Description: MOIST, OLIVE, VERY STIFF, SILT		
Remarks: BRIDGE # 35-0348		

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST



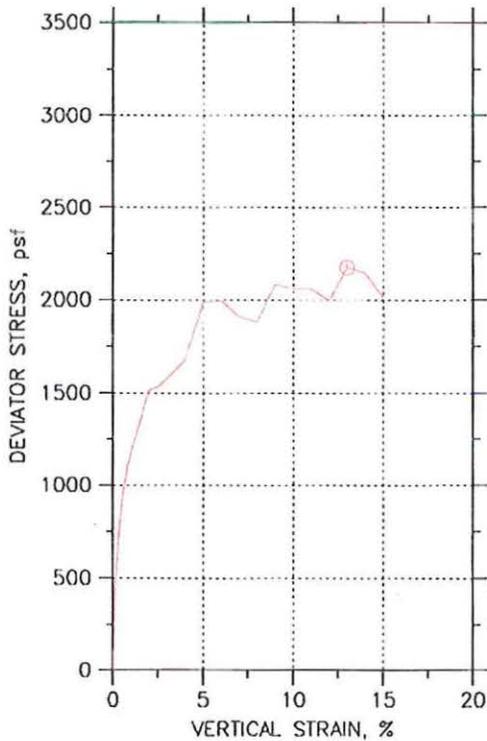
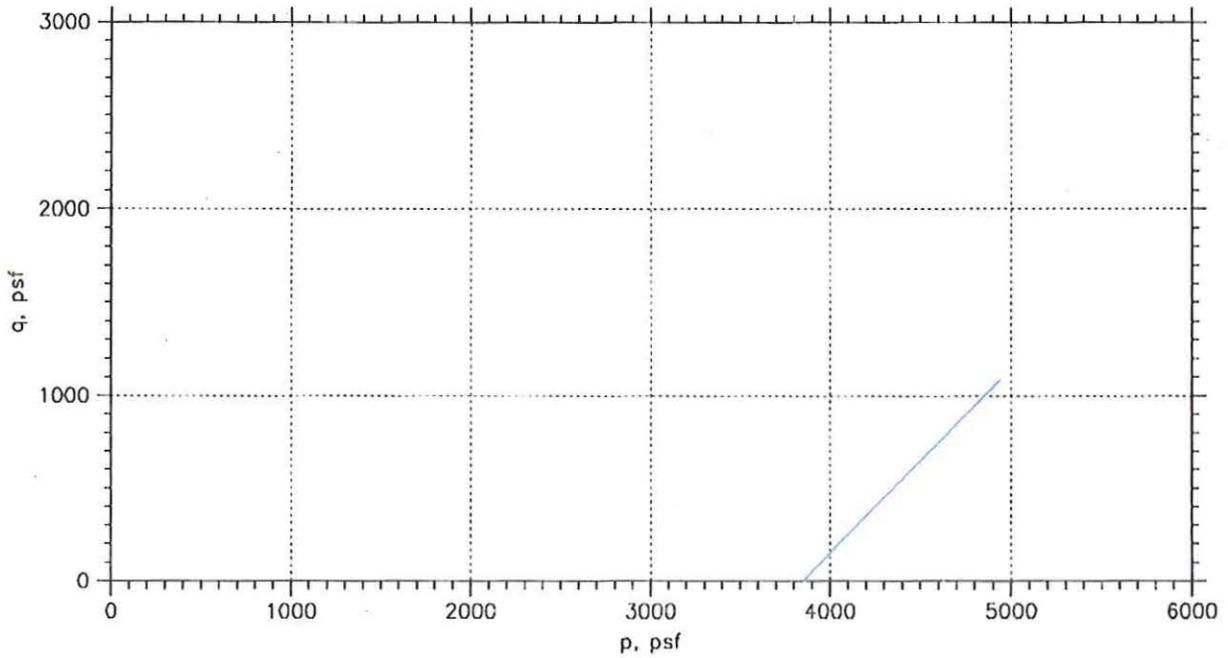
Symbol	Ø	
Sample No.	P1	
Test No.	U10-019	
Depth	24-24.5	
Initial	Diameter, in	2.375
	Height, in	5.95
	Water Content, %	40.7
	Dry Density, pcf	80.08
	Saturation, %	98.0
Before Shear	Void Ratio	1.14
	Water Content, %	
	Dry Density, pcf	
	Saturation*, %	
	Void Ratio	
	Back Press., psf	
	Ver. Eff. Cons. Stress, psf	2196
	Shear Strength, psf	573.3
	Strain at Failure, %	15
	Strain Rate, %/min	1
	B-Value	---
	Implied Specific Gravity	2.75
	Liquid Limit	---
	Plastic Limit	---



Project: San Francisquito Creek Br
 Location: 04-SCL-101-52.6
 Project No.: 04-235620
 Boring No.: R-10-001
 Sample Type: ASTM D2850
 Description: Moist, Firm, Brownish Dark Grey, Silty Clay w/Organics.
 Remarks:

MP 9/21

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

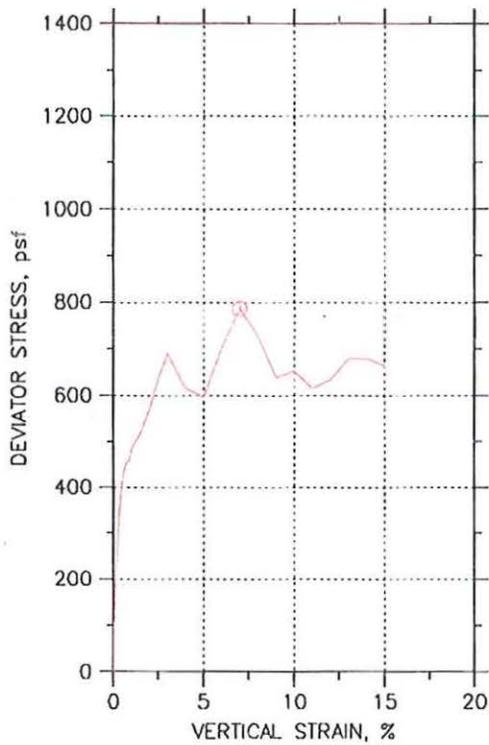
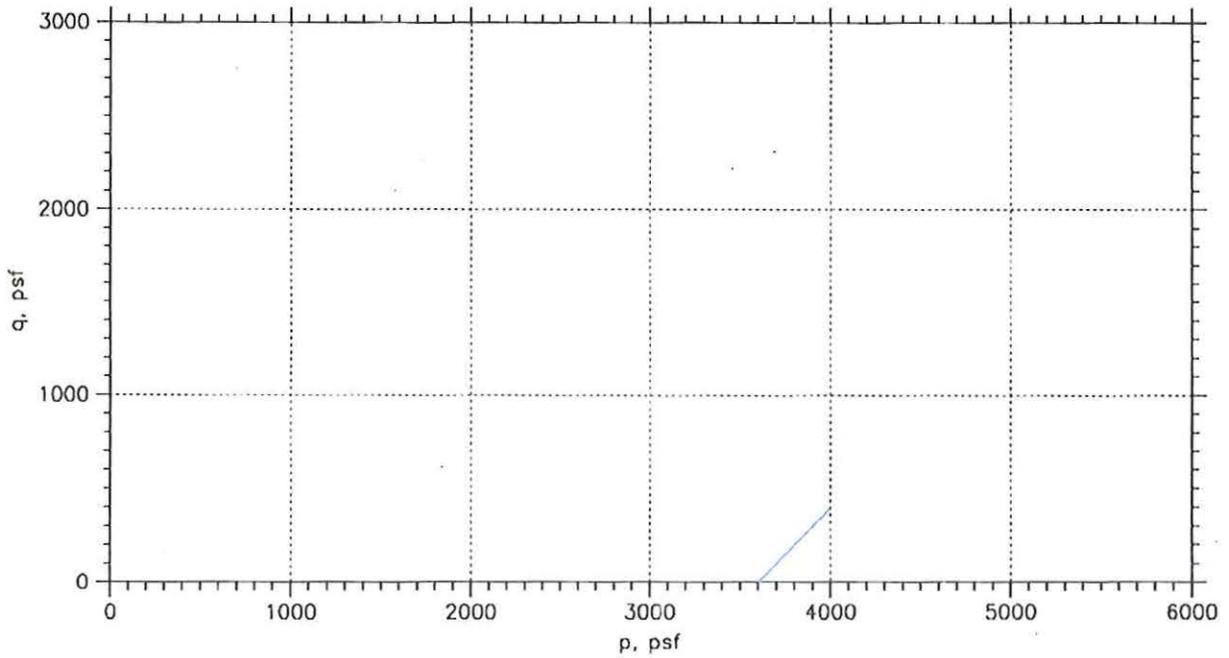


Symbol	Ø	
Sample No.	P5	
Test No.	U10-020	
Depth	52.5-53	
Initial	Diameter, in	2.375
	Height, in	5.96
	Water Content, %	32.0
	Dry Density, pcf	90.69
	Saturation, %	98.6
Before Shear	Void Ratio	0.893
	Water Content, %	
	Dry Density, pcf	
	Saturation*, %	
	Void Ratio	
	Back Press., psf	
	Ver. Eff. Cons. Stress, psf	3848
	Shear Strength, psf	1088
	Strain at Failure, %	13
	Strain Rate, %/min	1
	B-Value	---
	Implied Specific Gravity	2.75
	Liquid Limit	---
	Plastic Limit	---



	Project: San Francisquito Creek Br	
	Location: 04-SCL-101-52.6	
	Project No.: 04-235620	
	Boring No.: R-10-001	
	Sample Type: ASTM D2850	
	Description: Moist, Stiff, Greyish Tan, Clay with few Voids.	
Remarks:	1/21	

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

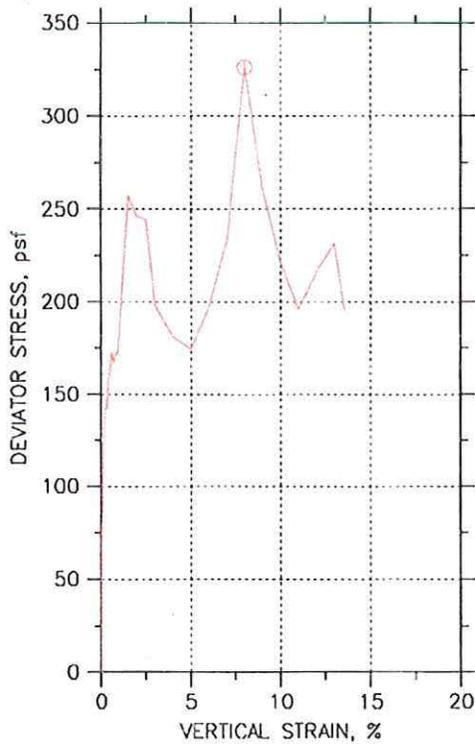
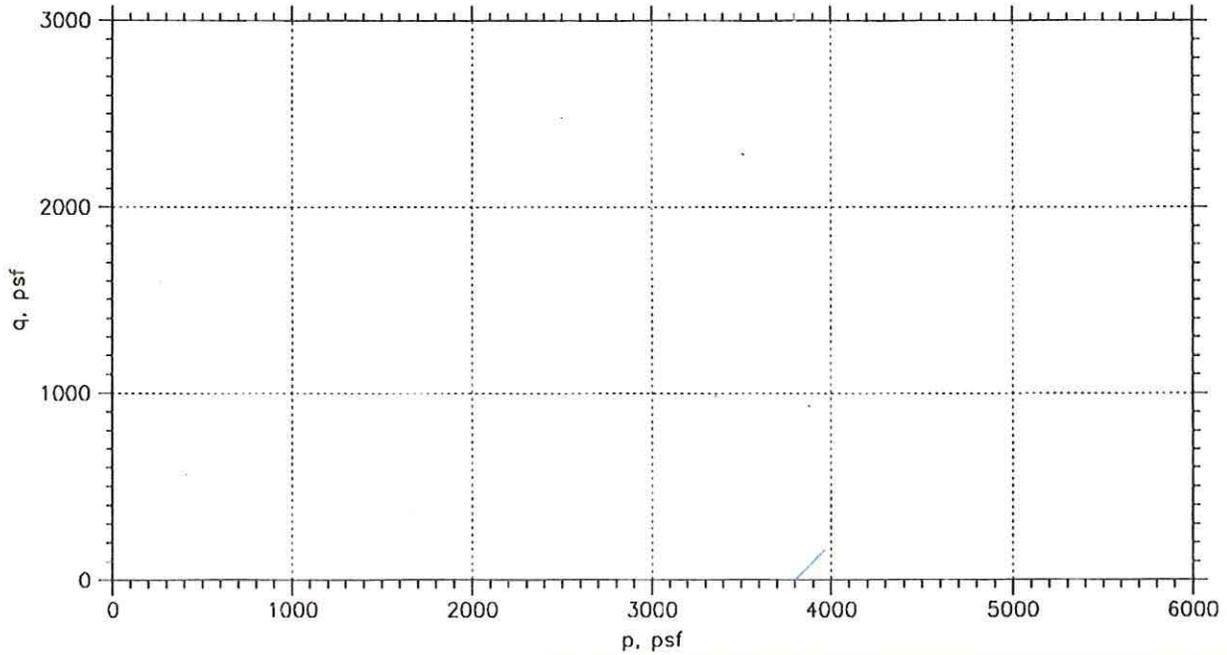


Symbol	⊙	
Sample No.	09A	
Test No.	U10-021	
Depth	49-49.5	
Initial	Diameter, in	1.94
	Height, in	3.83
	Water Content, %	34.4
	Dry Density, pcf	89.05
	Saturation, %	100.0
	Void Ratio	0.928
Before Shear	Water Content, %	
	Dry Density, pcf	
	Saturation*, %	
	Void Ratio	
Back Press., psf		
Ver. Eff. Cons. Stress, psf	3599	
Shear Strength, psf	392.9	
Strain at Failure, %	7	
Strain Rate, %/min	1	
B-Value	---	
Implied Specific Gravity	2.75	
Liquid Limit	---	
Plastic Limit	---	



	Project: San Francisquito Creek Br	
	Location: 04-SCL-101-52.6	
	Project No.: 04-235620	
	Boring No.: R-10-002	
	Sample Type: ASTM D2850	
	Description: Moist, Firm, Light Tan, Clay with few Voids.	
Remarks:	10/9/21	

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

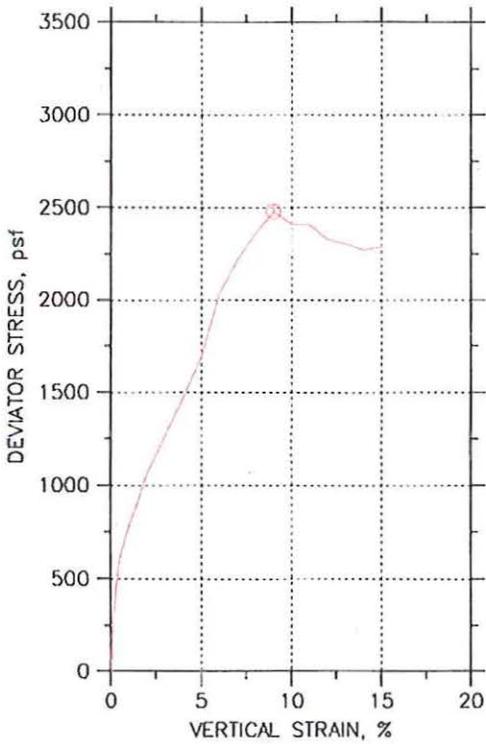
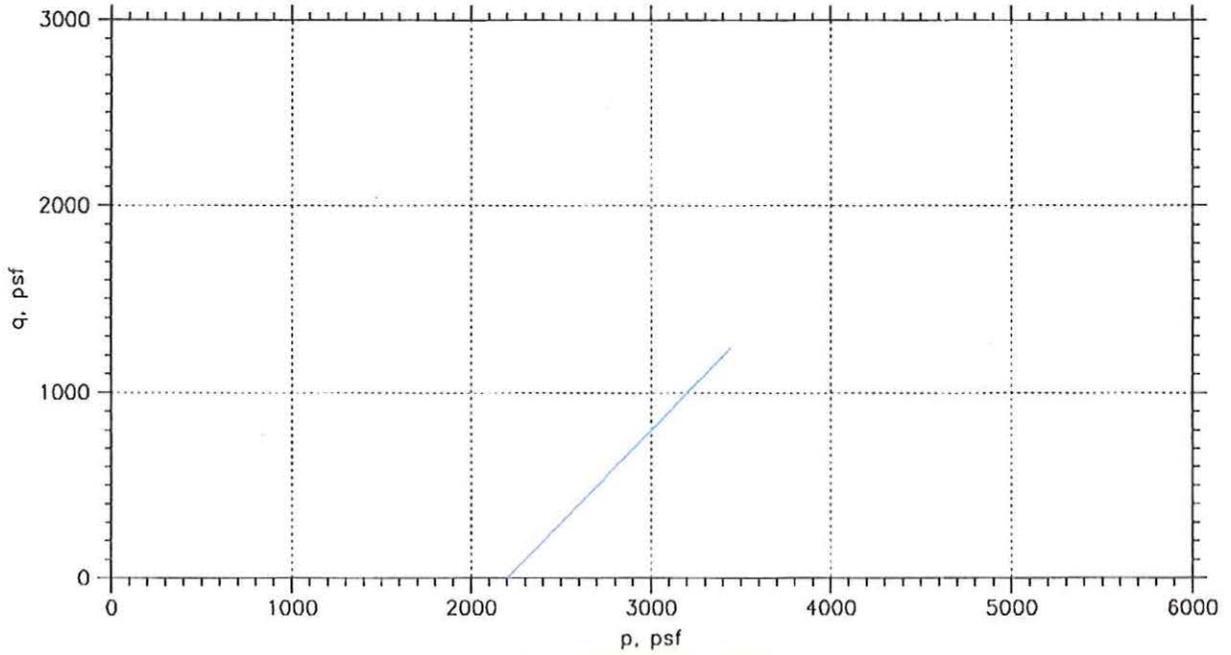


Symbol	Ø	
Sample No.	10C	
Test No.	U10-022	
Depth	52-52.5	
Initial	Diameter, in	1.9
	Height, in	3.75
	Water Content, %	38.3
	Dry Density, pcf	73.52
	Saturation, %	78.8
Before Shear	Void Ratio	1.33
	Water Content, %	
	Dry Density, pcf	
	Saturation*, %	
	Void Ratio	
	Back Press., psf	
Ver. Eff. Cons. Stress, psf	3801	
Shear Strength, psf	163.1	
Strain at Failure, %	8	
Strain Rate, %/min	1	
B-Value	---	
Implied Specific Gravity	2.75	
Liquid Limit	---	
Plastic Limit	---	



	Project: San Francisquito Creek Br	
	Location: 04-SCL-101-52.6	
	Project No.: 04-235620	
	Boring No.: R-10-002	
	Sample Type: ASTM D2850	
	Description: Moist, Soft, Tan Clay with Voids	
Remarks:	10 9/21	

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST



Symbol	⊙	
Sample No.	48	
Test No.	U10-023	
Depth	24-24.5	
Initial	Diameter, in	1.94
	Height, in	3.76
	Water Content, %	53.3
	Dry Density, pcf	67.75
	Saturation, %	95.6
	Void Ratio	1.53
Before Shear	Water Content, %	
	Dry Density, pcf	
	Saturation*, %	
	Void Ratio	
Back Press., psf		
Ver. Eff. Cons. Stress, psf	2200	
Shear Strength, psf	1240	
Strain at Failure, %	9	
Strain Rate, %/min	1	
B-Value	---	
Implied Specific Gravity	2.75	
Liquid Limit	---	
Plastic Limit	---	

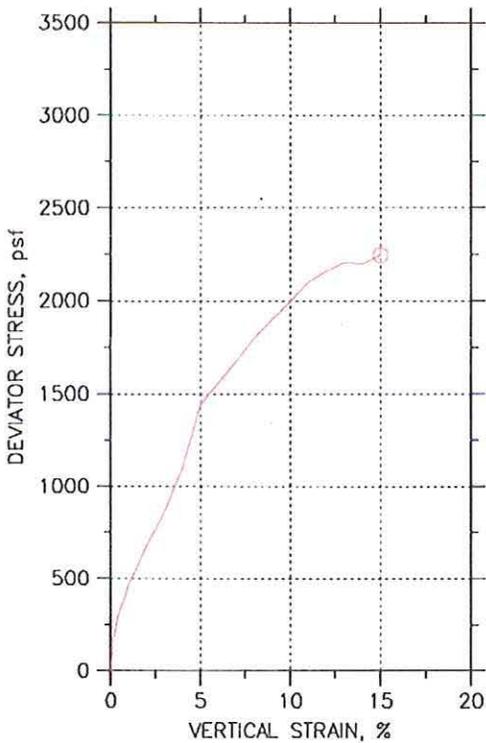
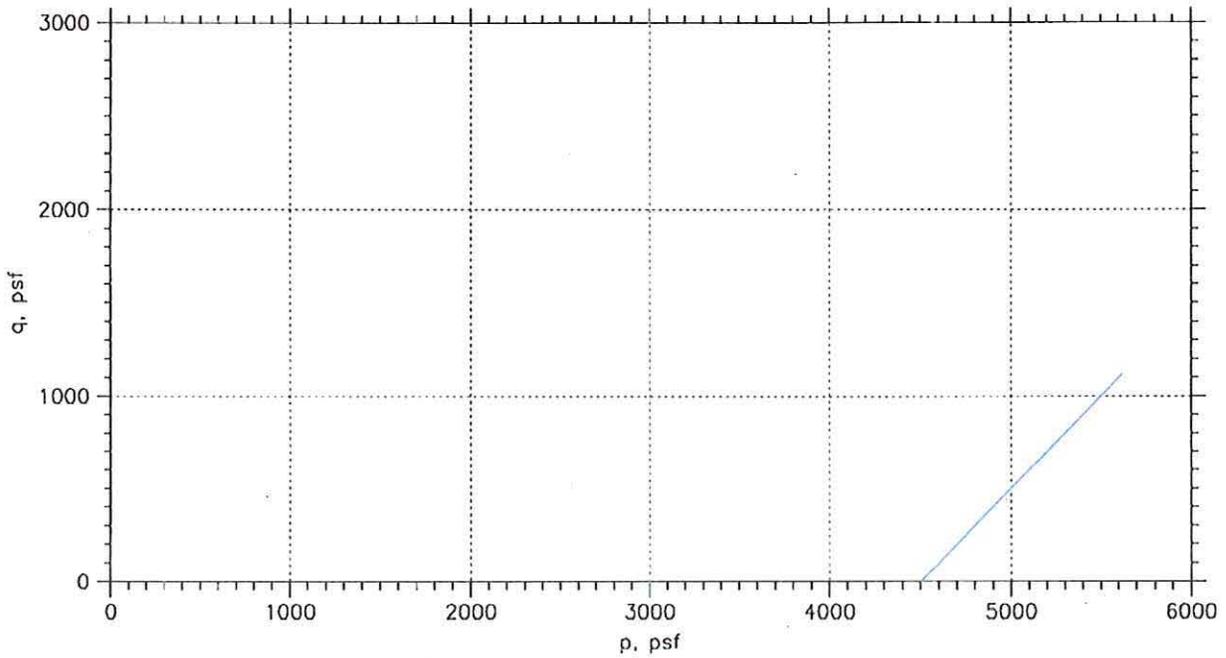


Project: San Francisquito Creek Br
 Location: 04-SCL-101-52.6
 Project No.: 04-235620
 Boring No.: R-10-00.3
 Sample Type: ASTM D2850
 Description: Moist, Stiff, Grey Clay.
 Remarks: 4022.0



10/9/21

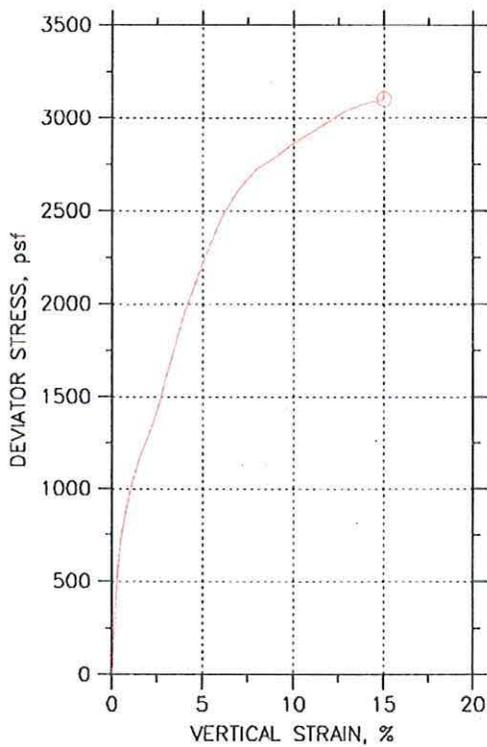
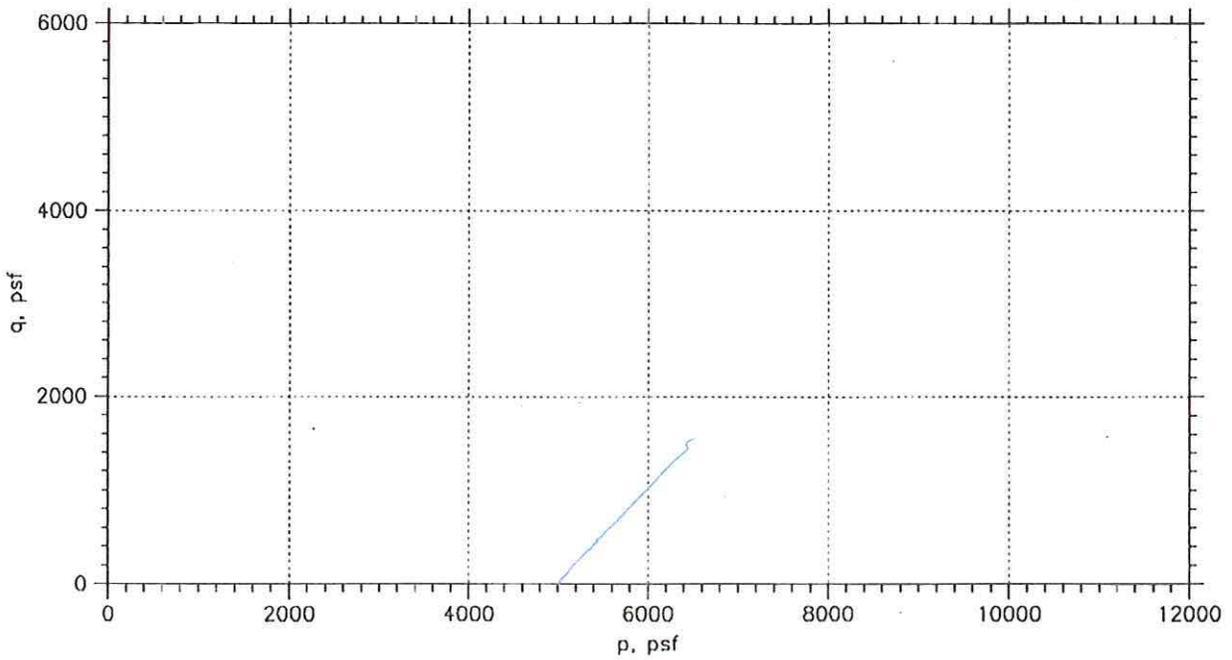
UNCONSOLIDATED UNDRAINED TRIAXIAL TEST



Symbol	⊙		
Sample No.	12A		
Test No.	U10-024		
Depth	64.5-65		
Initial	Diameter, in		1.94
	Height, in		3.98
	Water Content, %		26.5
	Dry Density, pcf		94.53
	Saturation, %		89.3
	Void Ratio	0.816	
Before Shear	Water Content, %		
	Dry Density, pcf		
	Saturation, %		
	Void Ratio		
	Back Press., psf		
Ver. Eff. Cons. Stress, psf	4500		
Shear Strength, psf	1123		
Strain at Failure, %	15		
Strain Rate, %/min	1		
B-Value	---		
Implied Specific Gravity	2.75		
Liquid Limit	---		
Plastic Limit	---		

	Project: San Francisquito Creek Br	
	Location: 04-SCL-101-52.6	
	Project No.: 04-235620	
	Boring No.: R-10-03	
	Sample Type: ASTM D2850	
	Description: Moist, Very Firm to Soft, Tan with Grey Clay, with Voids and a Hard Clod in Center	
Remarks:	1/29/21	

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST

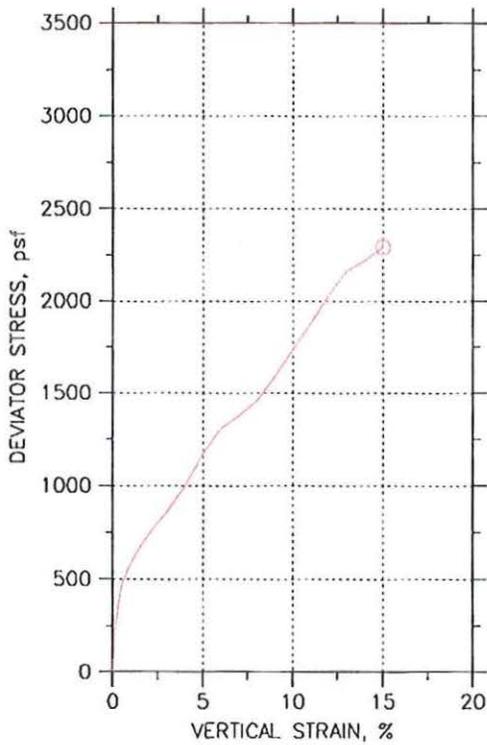
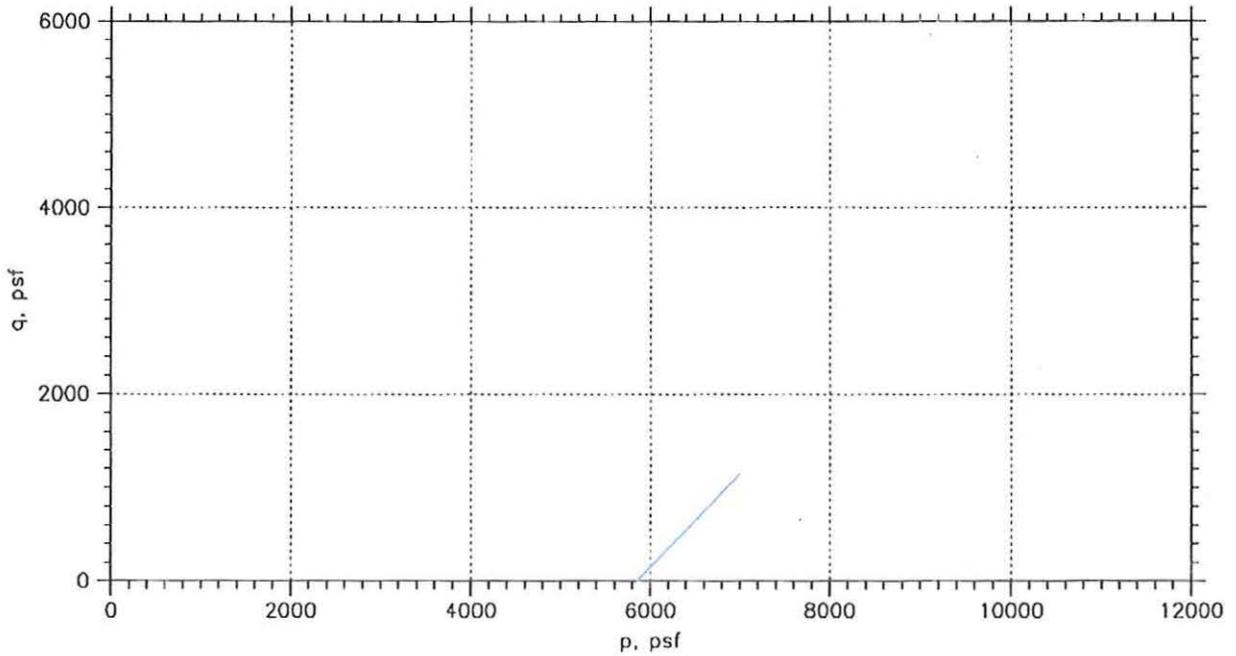


Symbol	⊙	
Sample No.	140	
Test No.	U10-025	
Depth	73-73.5	
Initial	Diameter, in	1.94
	Height, in	3.9
	Water Content, %	24.4
	Dry Density, pcf	101.7
	Saturation, %	97.3
	Void Ratio	0.689
Before Shear	Water Content, %	
	Dry Density, pcf	
	Saturation*, %	
	Void Ratio	
	Back Press., psf	
Ver. Eff. Cons. Stress, psf	4997	
Shear Strength, psf	1551	
Strain at Failure, %	15	
Strain Rate, %/min	1	
B-Value	---	
Implied Specific Gravity	2.75	
Liquid Limit	---	
Plastic Limit	---	



	Project: San Francisquito Creek Br	
	Location: 04-SCL-101-52.6	
	Project No.: 04-235620	
	Boring No.: R-10-003	
	Sample Type: ASTM D2850	
	Description: Moist, Stiff, Greenish Brownish Grey, Clay	
Remarks: Chamber leak during testing.	10/9/21	

UNCONSOLIDATED UNDRAINED TRIAXIAL TEST



Symbol	⊙	
Sample No.	17D	
Test No.	U10-026	
Depth	88-88.5	
Initial	Diameter, in	1.94
	Height, in	4
	Water Content, %	33.6
	Dry Density, pcf	88.54
	Saturation, %	98.5
	Void Ratio	0.939
Before Shear	Water Content, %	
	Dry Density, pcf	
	Saturation*, %	
	Void Ratio	
Back Press., psf		
Ver. Eff. Cons. Stress, psf	5849	
Shear Strength, psf	1146	
Strain at Failure, %	15	
Strain Rate, %/min	1	
B-Value	---	
Implied Specific Gravity	2.75	
Liquid Limit	---	
Plastic Limit	---	



Project: San Francisquito Creek Br
Location: 04-SCL-101-52.6
Project No.: 04-235620
Boring No.: R-10-003
Sample Type: ASTM D2850
Description: Moist, Stiff, Grey, Clay.
Remarks:



110 9/21

TEST NO. **6787-25P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **JAN 21 2011**
 DISTRICT DIRECTOR TRANS. L.
 DIS. MAT. L.S. PAV'T. SE.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD NUMBER **C708250**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON							
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL							
3						IF CONTRACT, USE CONTRACT ITEM							
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION					
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT				
1 1/2						TEST SPECIMEN							
1									A	B	C	D	
3/4						DATE TESTED							
1/2						COMPACTOR FOOT PRESSURE P.S.I.							
3/8						INITIAL MOISTURE %							
4	100					SOAK WATER ML							
8	100					WATER ADDED-ML (TOTAL)							
16	100					WATER ADDED %							
30	100					MOISTURE AT COMPACTION %							
50	99					WET WT. OF BRIQUETTE-GMS							
100	94					HEIGHT OF BRIQUETTE-INCHES							
200	76					DRY DENSITY OF BRIQ. - 4 CU. FT.							
5 1/4	25					STABILOMETER P _s AT 2000 LBS.							
1 1/4	16					DISPLACEMENT							
GRADING AS USED WAS OBTAINED AS FOLLOWS:						R-VALUE BY STABILOMETER							
% BY WT. % BY VOL. TEST NO. DESCRIPTION						EXUDATION PRES. P.S.I.							
1/6 Moisture = 21.4%						THICK. BY STAB. FEET							
						EXPANSION DIAL READING							
						THICK. BY EXP. PRESS. FEET							
						R-VALUE BY EXPANSION							
REMARKS:						TEST RESULTS			SPEC.	SP. GR.	BULK (O.V.E.)	BULK (S.S.D.)	APPARENT
						LL. 33	P.L. 18	P.I. 15					
						CV							
SURFACE						S.E.	AS REC'D.		AS REC'D.				
BASE							CRUSHED		CRUSHED				
SUBBASE							COMBINED		REL. COMPACTION				
						L.A.T.	GRADE	100 REV.					
								500 REV.					
						DUR.	D _f		DENSITY				
							D _r		MOISTURE				
GRAVEL EQUIVALENT FACTOR						% CRUSHED PARTICLES				% REL. COMP.			
TRAFFIC INDEX						SPEC.							
R-VALUE						EXUDATION PRESSURE			RICHARD CHAN				
						EXPANSION PRESSURE			DISTRICT MATERIALS ENGINEER				
						AT EQUILIBRIUM			BRANCH CHIEF, MATERIALS B				
						SPEC.							
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)													

AUG 16 2010 **6787-25P**

PRELIMINARY TESTS PROCESS TESTS HDQTRS. LAB FIELD NO. _____
 DIST. LAB NO. **734**
 INDEPENDENT TESTS DIST. _____ **7-25P**
 AS SHIPPED TESTS DIST. _____
 TRAIL TESTS AUTHORIZED _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-001**
 DEPTH **10-11.5**
 LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK BR.**

THIS SAMPLER **10-001-S2** AND IS ONE OF A GROUP OF _____
 IS SHIPPED IN _____
 (NO. CONTAINERS) _____
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____
 TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**

REMARKS
(MA) PARTICLE-SIZE ANALYSIS, PT. WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM
04-SM-101-0.0

LIMITS _____
 CONT. NO. **235620** PROJECT **04-00000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

EXUDATION PRESSURE (PSI)

TEST NO. **6787-26P** DATE RECEIVED **AUG 16 2010**
 CALC. BY **APPROVED BY** DISTRICT DIRECTOR TRANS.
 DIS. MAT'L ENGR. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION
 DATE REPORTED **FEB 07 2011**

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NUMBER **C708251**

GRADING ANALYSIS						REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL					
3						IF CONTRACT, USE CONTRACT ITEM					
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT		
1 1/2						TEST SPECIMEN		A	B	C	D
1						DATE TESTED					
3/4						COMPACTOR FOOT PRESSURE P.S.I.					
1/2						INITIAL MOISTURE %					
3/8						SOAK WATER ML					
4	100					WATER ADDED-ML (TOTAL)					
8	98					WATER ADDED %					
16	90					MOISTURE AT COMPACTION %					
30	66					WET WT. OF BRIQUETTE-GMS					
50	27					HEIGHT OF BRIQUETTE-INCHES					
100	18					DRY DENSITY OF BRIQ. - 4 CU. FT.					
200	11					STABILOMETER P _H AT 2000 LBS.					
5/4	8					DISPLACEMENT					
1/4	5					R-VALUE BY STABILOMETER					

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO:
 FIELD TESTS HDQTRS. LAB
 ACCEPTANCE TESTS BRANCH LAB
 DEPENDENT TESTS DIST. LAB
 SPECIAL TESTS AUTHORITY

FIELD NO. _____
 DIST. LAB NO. **7234**
6787-26P
 REQ. NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-001**

DEPTH **15-16.5**
 LOCATION OF SOURCE **SAN FRANCISCO WILCO CREEK**

THIS SAMPLE **R-10-001-3** IS ONE OF _____ GROUP OF _____
 IS SHIPPED IN _____ (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 SAMPLES REPRESENTING (TONS, GALS, DBLS, STA, ETC.)

TOTAL QUANTITY AVAILABLE _____
 TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**

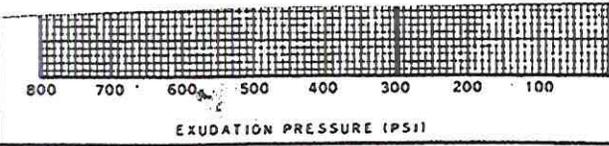
REMARKS
PARTICLE-SIZE ANALYSIS, (MA)
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM

04-SM-101-0,0
 LIMITS

CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. **91** % BY VOL. **26.5%** TEST NO. **91** DESCRIPTION **Moisture - 26.5%**

REMARKS:	TEST RESULTS			SPEC.	SP. GR.	BULK (OVL) BULK (SD) APPAREN
	LL.	P.L.	P.I.			
	CV					FINE
	S.E.	AS REC'D.			AS REC'D.	
		CRUSHED			CRUSHED	
		COMBINED			REL. COMPACTION	
SURFACE	L.A.R.T.	GRADE	100 REV.			IN PLACE
BASE			500 REV.		DENSITY	
SUBBASE	DUR.	D _f			MOISTURE	
		D _r			% REL. COMP.	

GRAVEL EQUIVALENT FACTOR _____
 TRAFFIC INDEX _____
 R-VALUE
 EXUDATION PRESSURE _____
 EXPANSION PRESSURE _____
 AT EQUILIBRIUM SPEC. _____
 INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET) _____

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

TEST NO. 6787-27P	DATE RECEIVED AUG 16 2010	<input type="checkbox"/> DISTRICT DIR. <input type="checkbox"/> TRANS. L.
CALC. BY _____ APPROVED BY _____	DATE REPORTED JAN 21 2011	<input type="checkbox"/> DIS. MAT. L.S. <input type="checkbox"/> PAV'T. SE.
BILLED		<input type="checkbox"/> RESIDENT ENGINEER <input type="checkbox"/> ACCOUNTI
		<input type="checkbox"/> CONSTRUCTION <input type="checkbox"/>

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708252**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2					
3/8	100				
4	99				
8	99				
16	98				
30	98				
50	98				
100	97				
200	84				
5 1/4	28				
1 1/4	16				

REPORT OF TESTS ON		
SOIL		
IF CONTRACT, USE CONTRACT ITEM		
SOURCE	CHARGE	EXPENDITURE AUTHORIZATION
SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIQ. - 4 CU. FT.				
STABILOMETER P _H AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				
EXUDATION PRES. P.S.I.				
THICK. BY STAB. FEET				
EXPANSION DIAL READING				
THICK. BY EXP. PRESS. FEET				
R-VALUE BY EXPANSION				

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
Moisture - 37.4%

REMARKS:	TEST RESULTS	SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVEN)
	LL. 37 P.L. 23 P.I. 14			<input type="checkbox"/> BULK (SSD)
	CV			<input type="checkbox"/> APPARENT
				FINE CO
SURFACE	S.E.	AS REC'D.	AS REC'D.	CRUSHED
BASE		CRUSHED		
SUBBASE		COMBINED		REL. COMPACTION D
	LART	GRADE	100 REV.	IN PLACE OPT
			500 REV.	DENSITY
GRAVEL EQUIVALENT FACTOR	OUR	D _r		MOISTURE
TRAFFIC INDEX		D _t		% REL. COMP.
		% CRUSHED PARTICLES		SPEC.

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

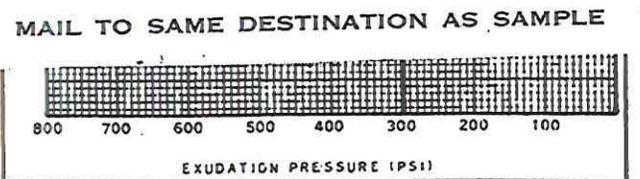
<input type="checkbox"/> PRELIMINARY TESTS	SAMPLE SENT TO:	FIELD NO.
<input checked="" type="checkbox"/> PROCESS TESTS	<input type="checkbox"/> HQQTRS. LAB	DIST. LAB NO. 7934
<input type="checkbox"/> INDEPENDENT SUBMITTAL	<input type="checkbox"/> BRANCH LAB	TEST NO. 6787-27P
<input type="checkbox"/> SPECIAL TESTS	<input type="checkbox"/> DIS. LAB	NO. OR REQ. NO.
SAMPLE OF SOIL	AUTHOR. NO.	
FOR USE IN BRIDGE FOUNDATION DESIGN		

SAMPLE FROM **BORING R-10-001**
 DEPTH **20-21.5'**
 LOCATION OF SOURCE **SAN FRANCISCO LITO CEMENT**

THIS SAMPLE R-10-001-54 IS SHIPPED IN (NO. CONTAINERS)	AND IS ONE OF A GROUP OF	SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)
OWNER OR MANUFACTURER CALTRANS		
TOTAL QUANTITY AVAILABLE	TEST RESULTS DESIRED <input checked="" type="checkbox"/> NORMAL <input type="checkbox"/> PRIORITY	DATE NEEDED 09/24/10
REMARKS	PARTICLE-SIZE ANALYSIS, P.I., WATER CONTENT. (MA)	

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS	CONT. NO. 235620 Project 0400000678
	FED. NO. SUB OBJECT 160
	RES. ENGR. OR SUPT. TUNG NGUYEN
	ADDRESS 11 GRAND AVE, MS16, 8TH FL OAKLAND
	CONTRACTOR CA94612
	PHONE 510-622-1775 FAX 510-286-4839



TEST NO. 6787-28P	DATE RECEIVED AUG 16 2010	<input type="checkbox"/> DISTRICT DIR. OR <input type="checkbox"/> DIS. MAT. L. OR <input type="checkbox"/> RESIDENT ENGINEER <input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> TRANS. <input type="checkbox"/> PAV'T. S. <input type="checkbox"/> ACCOUNT <input type="checkbox"/>
BILLED	DATE REPORTED JAN 21 2011	CALC. BY _____ APPROVED BY _____	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708253**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL					
IF CONTRACT, USE CONTRACT ITEM						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
SPECIAL DESIGNATION (USE WHEN APPLICABLE)						ACTIVITY OR OBJECT		AMOUNT			
3											
2 1/2											
2											
1 1/2											
1	100					TEST SPECIMEN	A	B	C	D	
3/4	96					DATE TESTED					
1/2	85					COMPACTOR FOOT PRESSURE P.S.I.					
3/8	94					INITIAL MOISTURE %					
4	90					SOAK WATER ML					
8	86					WATER ADDED-ML (TOTAL)					
16	81					WATER ADDED %					
30	75					MOISTURE AT COMPACTION %					
50	68					WET WT. OF BRIQUETTE-GMS					
100	59					HEIGHT OF BRIQUETTE-INCHES					
200	50					DRY DENSITY OF BRIQ. - 7 CU. FT.					
5 1/4	24					STABILOMETER P _H AT 2000 LBS.					
1 1/4	15					DISPLACEMENT					
GRADING AS USED WAS OBTAINED AS FOLLOWS:						R-VALUE BY STABILOMETER					
% BY WT. % BY VOL. TEST NO. DESCRIPTION						EXUDATION PRES. P.S.I.					
0% Moisture = 35.8%						THICK. BY STAB. FEET					
						EXPANSION DIAL READING					
						THICK. BY EXP. PRESS. FEET					
						R-VALUE BY EXPANSION					
REMARKS:						TEST RESULTS		SPEC.	SP. GR.	BULK (O.V.E.) BULK (SSD) APPARENT	
						LL. 38 P.L. 22 P.I. 16				FINE C	
						CV				AS REC'D. CRUSHED	
SURFACE						S.E.				REL. COMPACTION D	
BASE						COMBINED				100 REV. IN PLACE OPT	
SUBBASE						GRADE				500 REV.	
GRAVEL EQUIVALENT FACTOR						D _f				DENSITY	
TRAFFIC INDEX						D _r				MOISTURE	
R VALUE						EXUDATION PRESSURE				% REL. COMP.	
						EXPANSION PRESSURE				SPEC. ?	
						AT EQUILIBRIUM					
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B					

AUG 16 2010

<input type="checkbox"/> PRELIMINARY TESTS	SAMPLE SENT TO:	FIELD NO.
<input checked="" type="checkbox"/> ACCEPT	BRANCH LAB	LAB NO. 7934
<input type="checkbox"/>	DIST. LAB	6787-28P
<input type="checkbox"/>	DEPT. LAB	OR REQ. NO.

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-001**

DEPTH **25-26.5**
 LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

THIS SAMPLE **R-10-001-S5** AND IS ONE OF A GROUP OF
 IS SHIPPED IN (NO. CONTAINERS) **S5**
 OWNER OR MANUFACTURER **CALTRANS**
 SAMPLES REPRESENTING (TONS, GALS, DBLS, STA, ETC.)

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**

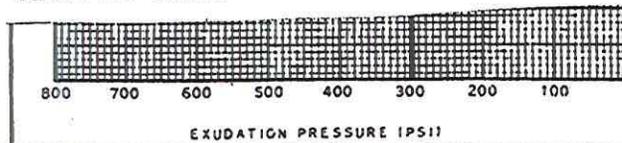
REMARKS
PARTICLE-SIZE ANALYSIS, P.I., WATER CONTENT (MA)

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM

LIMITS **04-SM-101-0,0**

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



TEST NO. 6787-29P	DATE RECEIVED AUG 16 2010	<input type="checkbox"/> DISTRICT DIP. <input type="checkbox"/> DIS. MAT. L.S. <input type="checkbox"/> RESIDENT ENGINEER <input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> TRANS. <input type="checkbox"/> PAV'T. <input type="checkbox"/> ACCOUNT
BILLED	CALC. BY _____ APPROVED BY _____ FEB 07 2011	DATE REPORTED	

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2						TEST SPECIMEN			
1						DATE TESTED			
3/4						COMPACTOR FOOT PRESSURE P.S.I.			
3/8						INITIAL MOISTURE %			
4						SOAK WATER ML			
8						WATER ADDED-ML (TOTAL)			
16						WATER ADDED %			
30						MOISTURE AT COMPACTION %			
50						WET WT. OF BRIQUETTE-GMS			
100						HEIGHT OF BRIQUETTE-INCHES			
200						DRY DENSITY OF BRIQ. - 4 CU. FT.			
5μ						STABILOMETER P _H AT 2000 LBS.			
.1μ						DISPLACEMENT			
						R-VALUE BY STABILOMETER			

GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.			
% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION	THICK. BY STAB. FEET	EXPANSION DIAL READING	THICK. BY EXP. PRESS. FEET	R-VALUE BY EXPANSION		
0			Moisture = 27.5%						

REMARKS:						TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OV BULK (SS APPEAR
						LL. 35 P.L. 18 P.I. 17				<input type="checkbox"/> FINE
						CV				
SURFACE						S.E.	AS REC'D.		AS REC'D.	
							CRUSHED		CRUSHED	
BASE						LART	COMBINED		REL. COMPACTION	
SUBBASE							GRADE	100 REV.		IN PLACE
							500 REV.		DENSITY	
GRAVEL EQUIVALENT FACTOR						OUR	D _f		MOISTURE	
TRAFFIC INDEX							D _c		% REL. COMP.	
						% CRUSHED PARTICLES			SPEC.	

R VALUE	EXUDATION PRESSURE	SPEC.
	EXPANSION PRESSURE	
	AT EQUILIBRIUM	
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)		

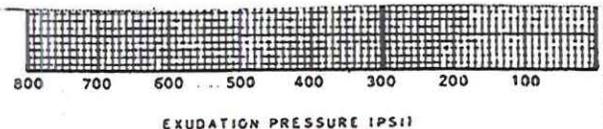
RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
TL-0101 (REV. 10/97)
CARD NUMBER
C708254

<input type="checkbox"/> PRELIMINARY TESTS	SAMPLE SENT TO:	FIELD NO.
<input type="checkbox"/> ACCEPTANCE TESTS	HQTRS. LAB	DIST. LAB NO. 793#
<input type="checkbox"/> SPECIAL TESTS	BRANCH	6787-29P
	DIST. LAB	
	SHIPMENT	OR REQ. NO.
	AUTHORIZATION NO.	
SAMPLE OF SOIL		
FOR USE IN BRIDGE FOUNDATION DESIGN		
SAMPLE FROM BORING R-10-001		
DEPTH 30-31.5'		
LOCATION OF SOURCE SAN FRANCISCO LITO CREEK		
THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) R-10-001 S6	AND IS ONE OF A GROUP OF	SAMPLES REPRESENTING (TONS, CUBS, BBL'S, STA, ETC.)
OWNER OR MANUFACTURER CALTRANS	TOTAL QUANTITY AVAILABLE	TEST RESULTS DESIRED <input checked="" type="checkbox"/> NORMAL <input type="checkbox"/> PRIORITY
REMARKS	DATE NEEDED 09/24/10	
PI, WATER CONTENT		

COVER ADDITIONAL INFORMATION WITH LETTER	
DATE SAMPLED	08/10/2010
BY TUNG NGUYEN	TITLE T.E. (CIVIL)
DIST, CO, RTE, PM	04-SM-101-0,0
LIMITS	
CONT. NO. 235620	Project 0400000678
FED. NO.	SUB OBJECT 160
RES. ENGR. OR SUPT.	TUNG NGUYEN
ADDRESS 111 GRAND AVE, MS16, 8TH FL OAKLAND	
CONTRACTOR CA94612	
PHONE 510-622-1775	FAX 510-286-4839

MAIL TO SAME DESTINATION AS SAMPLE



TEST NO. **6787-30P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

DISTRICT DIRECTOR TRANS.
 DIS. MAT. LS. ENGR. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NUMBER **C708255**

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						IF CONTRACT, USE CONTRACT ITEM				
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT		
1 1/2						TEST SPECIMEN				
1	100					DATE TESTED				
3/4	95					COMPACTOR FOOT PRESSURE P.S.I.				
1/2	92					INITIAL MOISTURE %				
3/8	88					SOAK WATER ML				
4	72					WATER ADDED-ML (TOTAL)				
8	59					WATER ADDED %				
16	48					MOISTURE AT COMPACTION %				
30	35					WET WT. OF BRIQUETTE-GMS				
50	21					HEIGHT OF BRIQUETTE-INCHES				
100	15					DRY DENSITY OF BRIQ. - 4 CU. FT.				
200	12					STABILOMETER P _H AT 2000 LBS.				
5 1/4	8					DISPLACEMENT				
1 1/4	6					R-VALUE BY STABILOMETER				
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.				
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET				
Moisture = 20.8%						EXPANSION DIAL READING				
						THICK. BY EXP. PRESS. FEET				
						R-VALUE BY EXPANSION				
REMARKS:						TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVS) <input type="checkbox"/> BULK (SSS) <input type="checkbox"/> APPAREN
						LL.	P.L.	P.I.		FINE
						CV				
						S.E.	AS REC'D.		AS REC'D.	
							CRUSHED		CRUSHED	
SURFACE						L.A.R.T.	COMBINED		REL. COMPACTION	
BASE							GRADE	100 REV.		IN PLACE	0
SUBBASE							500 REV.		DENSITY	
						DUR.	D _f		MOISTURE	
							D _c		% REL. COMP.	
GRAVEL EQUIVALENT FACTOR						% CRUSHED PARTICLES			SPEC.	
TRAFFIC INDEX						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B				
R VALUE										
EXUDATION PRESSURE										
EXPANSION PRESSURE										
AT EQUILIBRIUM SPEC.						EXUDATION PRESSURE (PSI)				
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)										

6787-30P
 AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: HQ/TEST LAB
 ACCENT TESTS BR/TEST LAB
 DIST. LAB NO. ~~7737~~
 DIST. **6787-30P**
 INSTRUMENT NO. **6787-30P**
 AUTHORITY NO.

FIELD NO. _____
 DIST. LAB NO. ~~7737~~
 INSTRUMENT NO. **6787-30P**
 AUTHORITY NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-002**

DEPTH **35-36.5'**

LOCATION OF SOURCE **ST. FRANCISquito CREEK**

THIS SAMPLE **R-10-001** AND IS ONE OF A GROUP OF _____
 IS SHIPPED IN (NO. CONTAINERS) **57** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.) _____

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS
PARTICLE-SIZE ANALYSIS, (MA)
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM
04-SM-101-0.0

LIMITS _____

CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

TEST NO. 6787-31P	DATE RECEIVED AUG 16 2010	<input type="checkbox"/> DISTRICT DIRECTOR <input type="checkbox"/> DIS. MAT LS. R. <input type="checkbox"/> RESIDENT ENGINEER <input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> TRANS. <input type="checkbox"/> PAV'T. S. <input type="checkbox"/> ACCOUNT
BILLED	CALC. BY _____ APPROVED BY _____ JAN 21 2011	DATE REPORTED	

GRADING ANALYSIS						REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL					
3					<input type="checkbox"/>	IF CONTRACT, USE CONTRACT ITEM					
2 1/2					<input type="checkbox"/>	SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
2					<input type="checkbox"/>	SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT		
1 1/2					<input type="checkbox"/>	TEST SPECIMEN		A	B	C	D
1					<input type="checkbox"/>	DATE TESTED					
3/4					<input type="checkbox"/>	COMPACTOR FOOT PRESSURE P.S.I.					
1/2					<input type="checkbox"/>	INITIAL MOISTURE %					
3/8					<input type="checkbox"/>	SOAK WATER ML					
4	100				<input type="checkbox"/>	WATER ADDED-ML (TOTAL)					
8	99				<input type="checkbox"/>	WATER ADDED %					
16	98				<input type="checkbox"/>	MOISTURE AT COMPACTION %					
30	98				<input type="checkbox"/>	WET WT. OF BRIQUETTE-GMS					
50	97				<input type="checkbox"/>	HEIGHT OF BRIQUETTE-INCHES					
100	96				<input type="checkbox"/>	DRY DENSITY OF BRIQ. - 7 CU. FT.					
200	91				<input type="checkbox"/>	STABILOMETER P _n AT 2000 LBS.					
5µ	50				<input type="checkbox"/>	DISPLACEMENT					
1µ	31				<input type="checkbox"/>	R-VALUE BY STABILOMETER					
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.					
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET					
Moisture = 29.2%						EXPANSION DIAL READING					
						THICK. BY EXP. PRESS. FEET					
						R-VALUE BY EXPANSION					
REMARKS:						TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVE) <input type="checkbox"/> BULK (SSD) <input type="checkbox"/> APPARENT	
						LL 43 P.L 19 P.I. 24				FINE	
						CV					
SURFACE						S.E.	AS REC'D.		AS REC'D.		
BASE							CRUSHED		CRUSHED		
SUBBASE							COMBINED		REL. COMPACTION		
						LART	GRADE	100 REV.		IN PLACE OR	
								500 REV.		DENSITY	
GRAVEL EQUIVALENT FACTOR						DUR	D _f			MOISTURE	
TRAFFIC INDEX								D _f		% REL. COMP.	
R-VALUE						% CRUSHED PARTICLES			SPEC. ?		
EXUDATION PRESSURE						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B					
EXPANSION PRESSURE											
AT EQUILIBRIUM SPEC.											
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)											

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708256**

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PROCESS TESTS HDQTRS. LAB DIST. LAB NO. **7934**
 ACCEPTANCE TESTS BRANCH DIST. LAB **6787-31P**
 INDEPENDENT TESTS DIST. LAB NO. OR REQ. NO.
 DIS. MAT. L.S. R. DIST. LAB NO. OR REQ. NO.
 TRANS. DIST. LAB NO. OR REQ. NO.
 ACCOUNT DIST. LAB NO. OR REQ. NO.
 CONSTRUCTION DIST. LAB NO. OR REQ. NO.

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-001**

DEPTH **45-46.5'**

LOCATION OF SOURCE **SAN FRANCISCO WILDO CREEK**

THIS SAMPLE **R-10-001** AND IS ONE OF A GROUP OF **S9** SAMPLES REPRESENTING (IONS, GALS, BLS, STA, ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS
(MA) PARTICLE-SIZE ANALYSIS, PI WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/10/2010**

BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0.0**

LIMITS

CONT. NO. **235620** PROJECT **0400000678**

FED. NO. **SUBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE: **910-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

EXUDATION PRESSURE (PSI)

800 700 600 500 400 300 200 100

TEST NO. **6787-32P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
FEB 07 2011

DISTRICT DIRECTOR TRANS. L.
 DIS. MAT. LS. PAV'T. SE.
 RESIDENT ENGINEER ACCOUNT.
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708257**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						IF CONTRACT, USE CONTRACT ITEM				
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
1 1/2										
1						TEST SPECIMEN	A	B	C	D
3/4						DATE TESTED				
1/2						COMPACTOR FOOT PRESSURE P.S.I.				
3/8						INITIAL MOISTURE %				
4						SOAK WATER ML				
8						WATER ADDED-ML (TOTAL)				
16						WATER ADDED %				
30						MOISTURE AT COMPACTION %				
50						WET WT. OF BRIQUETTE-GMS				
100						HEIGHT OF BRIQUETTE-INCHES				
200						DRY DENSITY OF BRIQ. - 7 CU. FT.				
5µ						STABILOMETER P _H AT 2000 LBS.				
1µ						DISPLACEMENT				

6787-32P

PRELIMINARY TESTS SAMPLE SENT TO: **SOIL** FIELD NO. _____
 PROCESSING HDQTR. _____ DIST. LAB NO. **734**
 ACCEPTABLE TESTS BRANCH LAB. _____
 INDEPENDENT DIST. LAB. NO. **734-32P**
 EQUIPMENT NO. _____
 TRAILER B THORIZ. NO. _____
 SPECIAL TESTS _____

AUG 16 2010

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-001**

DEPTH **50-51.5'**

LOCATION OF SOURCE **SAN FRANCISQUITO CREEK BR.**

THIS SAMPLE **R-10-001** AND IS ONE OF _____ SAMPLES REPRESENTING
 IS SHIPPED IN **S10** A GROUP OF _____ (TONS, GALS, BBLs, STA, ETC.)
 (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PI, WATER CONTENT**

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION	THICK. BY STAB. FEET	EXPANSION DIAL READING	THICK. BY EXP. PRESS. FEET	R-VALUE BY EXPANSION
81			Moisture = 83.9%				

REMARKS:

TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVE)	<input type="checkbox"/> BULK (SSD)	<input type="checkbox"/> APPAREN
LL.44	P.L. 22	P.I. 22				
CV						
SURFACE	AS REC'D.		AS REC'D.			
	CRUSHED		CRUSHED			
	COMBINED		REL. COMPACTION			
BASE	GRADE	100 REV.				
		500 REV.		DENSITY		
SUBBASE	GRADE					
				MOISTURE		
GRAVEL EQUIVALENT FACTOR	GRADE					
				% REL. COMP.		
TRAFFIC INDEX	2% CRUSHED PARTICLES					SPEC.

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/10/2010**

BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**

DIST. CO, RTE, PM **04-SM-101-0, 0**

LIMITS

CONT. NO. **235620** PROJECT **0400000678**

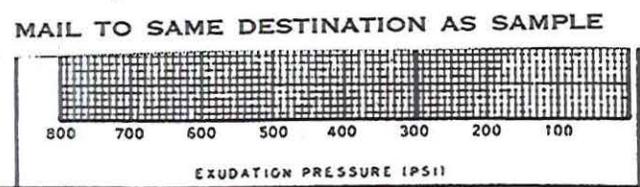
FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**

CONTRACTOR **CA94612**

PHONE **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-33P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
JAN 21 2011
 BILLED _____ DATE REPORTED _____

DISTRICT DIRECTOR TRANS.
 DIS. MAT. LS. R. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT.
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708258**

GRADING ANALYSIS
 SIEVE AS RECEIVED RET. CR. ADJ. OR COMB. GRADE AS USED SPECIF. LIMITS SOUGHT

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION				
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT				
2						IF CONTRACT, USE CONTRACT ITEM				
1 1/2						SPECIAL TESTS				
1	100					TEST SPECIMEN	A	B	C	D
3/4	99					DATE TESTED				
3/8	96					COMPACTOR FOOT PRESSURE P.S.I.				
3/16	95					INITIAL MOISTURE %				
4	90					SOAK WATER ML				
8	83					WATER ADDED-ML (TOTAL)				
16	77					WATER ADDED %				
30	66					MOISTURE AT COMPACTION %				
50	41					WET WT. OF BRIQUETTE-GMS				
100	24					HEIGHT OF BRIQUETTE-INCHES				
200	17					DRY DENSITY OF BRIQ. - # CU. FT.				
5#	9					STABILOMETER P _n AT 2000 LBS.				
1#	6					DISPLACEMENT				
						R-VALUE BY STABILOMETER				

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
 1/2 Moisture = 20.9%
 THICK, BY STAB. FEET
 EXPANSION DIAL READING
 THICK, BY EXP. PRESS. FEET
 R-VALUE BY EXPANSION

REMARKS:
 SURFACE
 BASE
 SUBBASE
 GRAVEL EQUIVALENT FACTOR
 TRAFFIC INDEX

R-VALUE
 EXUDATION PRESSURE
 EXPANSION PRESSURE
 AT EQUILIBRIUM SPEC.
 INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST RESULTS	SPEC.	SP. GR.	BULK TOV BULK (SS) APPARE
LL. P.L. P.I.			
CV			FINE
S.E. AS REC'D. CRUSHED			AS REC'D. CRUSHED
LART COMBINED GRADE			REL. COMPACTION
100 REV.			DENSITY IN PLACE
500 REV.			MOISTURE
D _f			% REL. COMP.
D _r			
% CRUSHED PARTICLES			SPEC.

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

PRELIMINARY TESTS
 SAMPLE SENT TO:
 FIELD NO.
 DIST. LAB NO. **7934**
 SHIPMENT NO.
 P.O. OR REQ. NO.
6787-33P

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-001**

DEPTH **55-56.5**
 LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

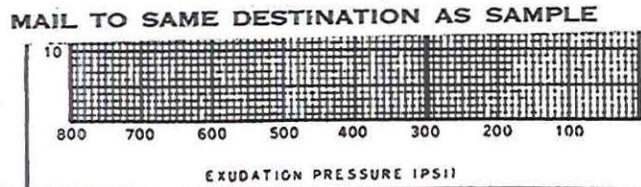
THIS SAMPLE **R-10-001** AND IS ONE OF A GROUP OF
 IS SHIPPED IN **511** (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)

TOTAL QUANTITY AVAILABLE
 TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**

REMARKS
PARTICLE-SIZE ANALYSIS (10A)
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/1/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM
04-SM-101-0.0

LIMITS
 CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**



TEST NO. **6787-34P**
 BILLED

DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

DISTRICT DIR. TRANS. S.
 DIS. MAT L. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708255**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT <input type="checkbox"/>
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2	100				
3/8	98				
4	96				
8	92				
16	87				
30	82				
50	71				
100	55				
200	42				
5µ	20				
1µ	10				

REPORT OF TESTS ON				
SOIL				
IF CONTRACT, USE CONTRACT ITEM				
SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT		
TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIQ. - # CU. FT.				
STABILOMETER P _H AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
 0% Moisture = 18.5%

REMARKS:	EXUDATION PRES. P.S.I.
	THICK. BY STAB. FEET
	EXPANSION DIAL READING
	THICK. BY EXP. PRESS. FEET
	R-VALUE BY EXPANSION
	TEST RESULTS
	LL 22 P.L 14 P.I. 8
	CV
	AS REC'D.
	CRUSHED
	COMBINED
	REL. COMPACTION
	GRADE
	100 REV.
	500 REV.
	DENSITY
	IN PLACE OR
	D _r
	D _t
	MOISTURE
	% REL. COMP.
	% CRUSHED PARTICLES
	SPEC.
	EXUDATION PRESSURE
	EXPANSION PRESSURE
	AT EQUILIBRIUM SPEC.
	INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST RESULTS SPEC. SP. GR. BULK (OVE) BULK (S&S) APPAREN
 FINE
 AS REC'D.
 CRUSHED
 REL. COMPACTION
 DENSITY
 IN PLACE OR
 MOISTURE
 % REL. COMP.
 % CRUSHED PARTICLES SPEC.

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

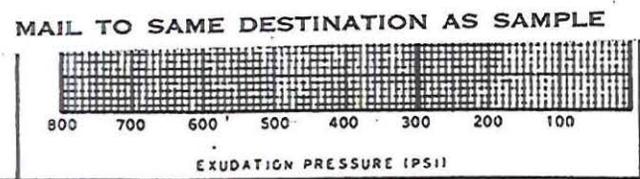
AUG 16 2010
 PRELIMINARY TESTS SAMPLE SENT TO:
 PRODUCTION TESTS HDOT'S LAB
 ACCEPTANCE TESTS BRIDGE LAB
 EXPENDITURE AUTHORITY DIST.
 SPECIAL TESTS AUTHORITY NO.

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-001**
 DEPTH **60-61.5'**
 LOCATION OF SOURCE **SAN FRANCISQUITO CREEK BR.**

THIS SAMPLE **R-10-001-S12** AND IS ONE OF A GROUP OF
 IS SHIPPED IN (NO. CONTAINERS) **S12** SAMPLES REPRESENTING (TONS, GALS, BBL'S, STA, ETC.)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **PARTICLE-SIZE ANALYSIS, P.I., WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0, 0**
 LIMITS

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-35P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

DISTRICT DIR OR TRANS.
 DIS. MAT LS R. PAY'T. S
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708260**

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	Soil			
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION			
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT			
2						TEST SPECIMEN A B C D			
1 1/2						DATE TESTED			
1						COMPACTOR FOOT PRESSURE P.S.I.			
3/4						INITIAL MOISTURE %			
1/2						SOAK WATER ML			
3/8						WATER ADDED-ML (TOTAL)			
4	100					WATER ADDED %			
8	98					MOISTURE AT COMPACTION %			
16	96					WET WT. OF BRIQUETTE-GMS			
30	95					HEIGHT OF BRIQUETTE-INCHES			
50	94					DRY DENSITY OF BRIQ. - 7 CU. FT.			
100	92					STABILOMETER P _n AT 2000 LBS.			
200	86					DISPLACEMENT			
5μ	44					R-VALUE BY STABILOMETER			
1μ	23					EXUDATION PRES. P.S.I.			
GRADING AS USED WAS OBTAINED AS FOLLOWS:						THICK. BY STAB. FEET			
% BY WT. % BY VOL. TEST NO. DESCRIPTION						EXPANSION DIAL READING			
0% Moisture - 80.1%						THICK. BY EXP. PRESS. FEET			
REMARKS:						R-VALUE BY EXPANSION			
SURFACE						TEST RESULTS SPEC. SP. GR. BULK (OY) BULK (SS) APPARENT FINE			
BASE						LL. 38 P.L. 20 P.I. 18			
SUBBASE						CV			
GRAVEL EQUIVALENT FACTOR						S.E. AS REC'D. AS REC'D. CRUSHED CRUSHED			
TRAFFIC INDEX						COMBINED REL. COMPACTION			
R-VALUE						GRADE 100 REV. IN PLACE			
EXUDATION PRESSURE						500 REV. DENSITY			
EXPANSION PRESSURE						D _f MOISTURE			
AT EQUILIBRIUM SPEC.						D _i % REL. COMP.			
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)						% CRUSHED PARTICLES SPEC.			

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 ACCEPTANCE TEST HDQRS LAB DIST. LAB NO. **7934**
 SPECIAL TESTS AUTHORITY INSTRUMENT NO. **87-35P**
 SPECIAL TESTS AUTHORITY INSTRUMENT NO. **87-35P**

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-001**
 DEPTH **65-66.5**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK**

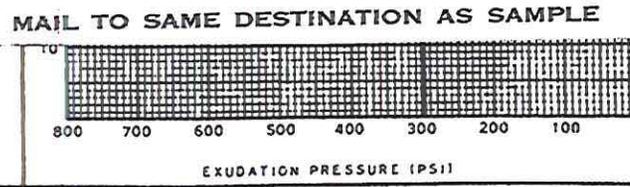
THIS SAMPLE **R-10-001-S13** AND IS ONE OF A GROUP OF
 IS SHIPPED IN **S13** (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA. ETC.)

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS: **(MA) PARTICLE-SIZE ANALYSIS, P.I. WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0.0**

LIMITS
 CONT. NO. **235620** PROJECT **040000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX: **510-286-4839**



RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

TEST NO. **6787-36P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

DISTRICT DIRECTOR TRANS. I
 DIS. MAT. A. PAV'T. S
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708261**

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION			
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT			
2						TEST SPECIMEN A B C D			
1 1/2						DATE TESTED			
1						COMPACTOR FOOT PRESSURE P.S.I.			
3/4						INITIAL MOISTURE %			
1/2						SOAK WATER ML			
3/8						WATER ADDED-ML (TOTAL)			
4	100					WATER ADDED %			
8	100					MOISTURE AT COMPACTION %			
16	100					WET WT. OF BRIQUETTE-GMS			
30	100					HEIGHT OF BRIQUETTE-INCHES			
50	100					DRY DENSITY OF BRIQ. - 4 CU. FT.			
100	99					STABILOMETER P _n AT 2000 LBS.			
200	96					DISPLACEMENT			
5 1/4	55					R-VALUE BY STABILOMETER			
1 1/4	33					EXUDATION PRES. P.S.I.			
GRADING AS USED WAS OBTAINED AS FOLLOWS:						THICK. BY STAB. FEET			
% BY WT. % BY VOL. TEST NO. DESCRIPTION						EXPANSION DIAL READING			
Moisture = 39.4%						THICK. BY EXP. PRESS. FEET			
REMARKS:						R-VALUE BY EXPANSION			
TEST RESULTS						SPEC. SP. GR. BULK (OVS) BULK (SSD) APPAREN			
LL 39 P.L 20 P.I. 19						FINE			
CV						AS REC'D. CRUSHED			
SURFACE						REL. COMPACTION			
BASE						GRADE 100 REV. 500 REV. IN PLACE			
SUBBASE						DENSITY MOISTURE			
GRAVEL EQUIVALENT FACTOR						% REL. COMP.			
TRAFFIC INDEX						% CRUSHED PARTICLES SPEC. ?			
R-VALUE						EXUDATION PRESSURE			
EXPANSION PRESSURE						AT EQUILIBRIUM SPEC.			
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B			

6787-36P
 AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: HQ/TRS LAB
 ACCEPTANCE TESTS BRANCH LAB
 DEPENDENT TESTS DIST. LAB
 SPECIAL TESTS AUTHORITY

FIELD NO. _____
 DIST. LAB NO. ~~7834~~
 FILE NO. ~~15~~ **6787-36P**
 FOR REQ. NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-001**

DEPTH **70-71.5**

LOCATION OF SOURCE **SAN FRANCISCO CREEK**

THIS SAMPLE **R-10-001-514** AND IS ONE OF A GROUP OF _____
 (NO. CONTAINERS) **514** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA. ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE SIZE ANALYSIS, PI, WATER CONTENT. (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS _____

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

EXUDATION PRESSURE (PSI)

TEST NO. **6787-37P** DATE RECEIVED **AUG 16 2010**
 CALC. BY **JAN 21 2011** APPROVED BY _____
 DISTRICT DIR. TRAN. PAV'T
 DIS. MAT L. ACCO
 RESIDENT ENGINEER CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708262**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION			
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT			
2						TEST SPECIMEN A B C D			
1 1/2						DATE TESTED			
1						COMPACTOR FOOT PRESSURE P.S.I.			
3/4						INITIAL MOISTURE %			
3/8						SOAK WATER ML			
3/16						WATER ADDED-ML (TOTAL)			
4	100					WATER ADDED %			
8	100					MOISTURE AT COMPACTION %			
16	100					WET WT. OF BRIQUETTE-GMS			
30	100					HEIGHT OF BRIQUETTE-INCHES			
50	100					DRY DENSITY OF BRIQ. - 4 CU. FT.			
100	98					STABILOMETER P _n AT 2000 LBS.			
200	90					DISPLACEMENT			
5 1/4	49					R-VALUE BY STABILOMETER			
1 1/4	34					EXUDATION PRES. P.S.I.			

6787-37P
 AUG 16 2010
 PRELIMINARY TESTS SAMPLE SENT TO: _____ FIELD NO. _____
 ACCEPTED TESTS _____ DIST. NO. **754**
 _____ BRANCH L. _____
 _____ DIST. L. _____
 _____ SHIPMENT NO. _____
 _____ AUTHORIZATION NO. _____
 SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-001**
 DEPTH **75-76.5'**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK**
 THIS SAMPLE **R-10-001-** AND IS ONE OF _____ SAMPLES REPRESENTING (TONS, GALS, BBLs, STA. ETC.)
 IS SHIPPED IN **S15** (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **(MA) PARTICLE-SIZE ANALYSIS, PI WATER CONTENT**

GRADING AS USED WAS OBTAINED AS FOLLOWS:

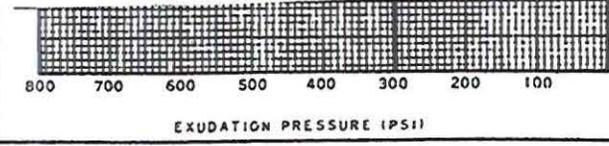
% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
			Moisture - 23.9%

REMARKS:	TEST RESULTS		SPEC.	SP. GR.	BULK (G) BULK (G) APPAR
	LL. 35 P.L. 17 P.I. 18	CV			
SURFACE	AS REC'D.	AS REC'D.			
BASE	CRUSHED	CRUSHED			
SUBBASE	COMBINED	REL. COMPACTION			
	GRADE	100 REV.			
		500 REV.			
	D _r	DENSITY			
	D _r	MOISTURE			
		% REL. COMP.			

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM
04-SM-101-0.0
 LIMITS
 CONT. NO. **235620** PROJECT **04-00000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B



TEST NO. **6787-38P**
 DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

- DISTRICT DIRECTOR
- DIS. MAT L. ENGR.
- RESIDENT ENGINEER
- CONSTRUCTION
- TRANS.
- PAV'T.
- ACCOU.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NUMBER **C708263**

GRADING ANALYSIS						REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL					
3						IF CONTRACT, USE CONTRACT ITEM					
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT		
1 1/2											
1						TEST SPECIMEN	A	B	C	D	
3/4						DATE TESTED					
1/2						COMPACTOR FOOT PRESSURE P.S.I.					
3/8						INITIAL MOISTURE %					
4	100					SOAK WATER ML					
8	180					WATER ADDED-ML (TOTAL)					
16	100					WATER ADDED %					
30	99					MOISTURE AT COMPACTION %					
50	98					WET WT. OF BRIQUETTE-GMS					
100	97					HEIGHT OF BRIQUETTE-INCHES					
200	91					DRY DENSITY OF BRIQ. - # CU. FT.					
5 1/4	36					STABILOMETER P _H AT 2000 LBS.					
1 1/4	24					DISPLACEMENT					
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.					
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET					
Moisture - 29.2%						EXPANSION DIAL READING					
						THICK. BY EXP. PRESS. FEET					
						R-VALUE BY EXPANSION					
REMARKS: NOT ENOUGH TO RUN CPM-204 (PLASTICITY INDEX)						TEST RESULTS					
						LL.	P.L.	P.I.	SPEC.	SP. GR.	BULK (10) BULK (5) APPARE
						CV				AS REC'D.	FINE
SURFACE						AS REC'D.				CRUSHED	REL. COMPACTION
BASE						COMBINED				IN PLACE	
SUBBASE						GRADE				DENSITY	
						100 REV.				MOISTURE	
						500 REV.				% REL. COMP.	
GRAVEL EQUIVALENT FACTOR						D _f				SPEC.	
TRAFFIC INDEX						D _s					
EXUDATION PRESSURE						% CRUSHED PARTICLES					
EXPANSION PRESSURE											
AT EQUILIBRIUM SPEC.											
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)											

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: _____

ACCEPTANCE TESTS HDB LAB NO. _____

INDEPENDENT ANALYSES DIST. LAB NO. **7934**

SHIPMENT NO. **6787-38P** P.O. OR REQ. NO. _____

SAMPLE OF **SOIL**

FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-001**

DEPTH **85-86.5'**

LOCATION OF SOURCE **SAN FRANCISCO CREEK**

THIS SAMPLE **R-10-001-516** AND IS ONE OF A GROUP OF _____

NO. CONTAINERS **516** OWNER OR MANUFACTURER **CALTRANS**

SAMPLES REPRESENTING (CONS, GALS, BOLS, STA, ETC.) _____

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE SIZE ANALYSIS, PI, WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/11/2010**

BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS _____

CONT. NO. **235620** PROJECT **0400000678**

FED. NO. **SUBJECT .160**

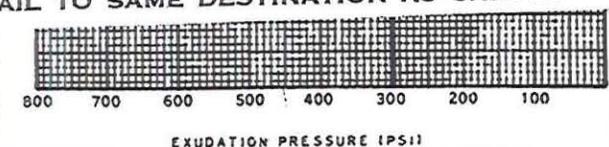
RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



800 700 600 500 400 300 200 100 EXUDATION PRESSURE (PSI)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

TEST NO. **6787-39P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

DISTRICT DIRECTOR TRANS.
 DIS. MATERIALS ENGINEER PAV'T. S.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708264**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2						TEST SPECIMEN			
1						DATE TESTED			
3/4						COMPACTOR FOOT PRESSURE P.S.I.			
1/2						INITIAL MOISTURE %			
3/8						SOAK WATER ML			
4	100					WATER ADDED-ML (TOTAL)			
8	100					WATER ADDED %			
16	100					MOISTURE AT COMPACTION %			
30	99					WET WT. OF BRIQUETTE-GMS			
50	96					HEIGHT OF BRIQUETTE-INCHES			
100	78					DRY DENSITY OF BRIQ. - R CU. FT.			
200	55					STABILOMETER P _w AT 2000 LBS.			
5μ	26					DISPLACEMENT			
1μ	17					R-VALUE BY STABILOMETER			

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: _____ FIELD NO. _____
 PROCESSED HDQTR. _____ DIST. LAB NO. _____
 ACCEPTED BRANCH _____
 INVENTORY _____ DIST. L. _____
 AS SHIPPED _____ SHIPMENT NO. _____
 SPECIAL _____ AUTHORITY NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-001**
 DEPTH **90-91.5'**
 LOCATION OF SOURCE **SAN FRANCISCO WILTO CREEK**

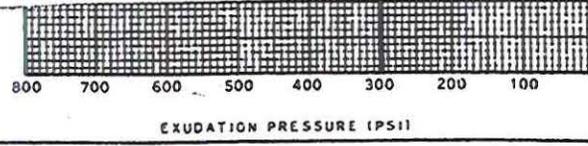
THIS SAMPLE **R-10-001-** AND IS ONE OF _____ SAMPLES REPRESENTING (TONS, GALS, BBLs, STA. ETC.)
 IS SHIPPED IN **517** (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS
(MA) PARTICLE-SIZE ANALYSIS, PI WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM
04-SM-101-0.0

LIMITS
 CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
10			Moisture = 27.4%

REMARKS:

TEST RESULTS	SPEC.	SP. GR.	BULK (OVI)	BULK (SS)	APPAREN
LL 23 P.L 17 P.I. 6					
CV					
SURFACE	AS REC'D.		AS REC'D.		
	CRUSHED		CRUSHED		
	COMBINED		REL. COMPACTION		
BASE	GRADE	100 REV.		IN PLACE	
		500 REV.			
SUBBASE	D ₁		DENSITY		
	D ₂		MOISTURE		
GRAVEL EQUIVALENT FACTOR			% REL. COMP.		
TRAFFIC INDEX	% CRUSHED PARTICLES		SPEC.		

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST NO. 6787-40P	DATE RECEIVED AUG 16 2010	<input type="checkbox"/> DISTRICT DIR. OR <input type="checkbox"/> DIS. MAT L. JR. <input type="checkbox"/> RESIDENT ENGINEER <input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> TRANS. <input type="checkbox"/> PAY'T. S <input type="checkbox"/> ACCOUNT
BILLED	DATE REPORTED JAN 21 2011	APPROVED BY	

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
IF CONTRACT, USE CONTRACT ITEM						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
SPECIAL DESIGNATION (USE WHEN APPLICABLE)						ACTIVITY OR OBJECT	AMOUNT		
3									
2 1/2									
2									
1 1/2									
1						TEST SPECIMEN	A	B	C
3/4						DATE TESTED			
3/2						COMPACTOR FOOT PRESSURE P.S.I.			
3/8	100					INITIAL MOISTURE %			
4	99					SOAK WATER ML			
8	96					WATER ADDED-ML (TOTAL)			
16	92					WATER ADDED %			
30	87					MOISTURE AT COMPACTION %			
50	73					WET WT. OF BRIQUETTE-GMS			
100	49					HEIGHT OF BRIQUETTE-INCHES			
200	33					DRY DENSITY OF BRIQ. - 4 CU. FT.			
5 1/4	18					STABILOMETER P _H AT 2000 LBS.			
1 1/4	12					DISPLACEMENT			

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
100			Moisture = 23.2%

REMARKS:	TEST RESULTS	SPEC.	SP. GR.	<input type="checkbox"/> BULK (OV BULK (SS) <input type="checkbox"/> APPARE
	LL. P.L. P.I.			FINE
	CV			AS REC'D. CRUSHED
	S.E. AS REC'D. CRUSHED			REL. COMPACTION
	COMBINED			
SURFACE	GRADE	100 REV.		IN PLACE
BASE		500 REV.	DENSITY	
SUBBASE			MOISTURE	
	D _r		% REL. COMP.	
GRAVEL EQUIVALENT FACTOR	D _t			
TRAFFIC INDEX	% CRUSHED PARTICLES		SPEC.	

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
TL-0101 (REV. 10/97) **C708265**

AUG 16 2010

6787-40P

PRELIMINARY TESTS ACCESS ACCEPTANCE INDEPENDENT SURVEY DIST. LAB. CENTRAL LOCAL

SAMPLE SENT TO: HQTRS. LAB. BRANCH LAB. DIST. LAB. FIELD NO. DIST. LAB NO. **7934**

SAMPLE OF **SOIL**

FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-001**

DEPTH **95-96.5'**

LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK**

THIS SAMPLE **R-10-001** AND IS ONE OF A GROUP OF **S18** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE-SIZE ANALYSIS (100) WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/11/2010**

BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0.0**

LIMITS

CONT. NO. **235620** PROJECT **0400000678**

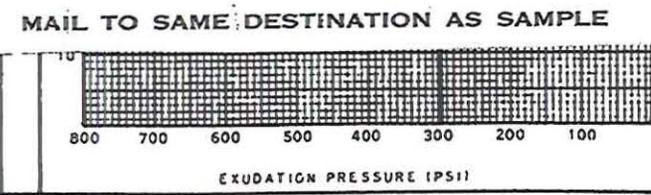
FED. NO. **SUBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775** FAX: **510-286-4839**



TEST NO. **6787-41P**

DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

- DISTRICT DIRECTOR
- DIS. MATERIALS ENGINEER
- RESIDENT ENGINEER
- CONSTRUCTION
- TRANS. L. PAV'T. SE.
- ACCOUNTANT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708266**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2					
3/8					
4	100				
8	100				
16	100				
30	100				
50	100				
100	100				
200	98				
5#	63				
1#	40				

REPORT OF TESTS ON				
SOIL				
IF CONTRACT, USE CONTRACT ITEM				
SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT		
TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIO. - # CU. FT.				
STABILOMETER P _n AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				
EXUDATION PRES. P.S.I.				
THICK. BY STAB. FEET				
EXPANSION DIAL READING				
THICK. BY EXP. PRESS. FEET				
R-VALUE BY EXPANSION				

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
 0% Moisture = 28.5%

REMARKS:	
SURFACE	
BASE	
SUBBASE	
GRAVEL EQUIVALENT FACTOR	
TRAFFIC INDEX	
R VALUE	EXUDATION PRESSURE
	EXPANSION PRESSURE
	AT EQUILIBRIUM SPEC.
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)	

TEST RESULTS		SPEC.	SP. GR.	BULK (OVR)
LL. 48	P.L. 22	P.I. 26		BULK (350)
CV				APPAREN
S.E.	AS REC'D.			FINE
	CRUSHED			
	COMBINED			
L.ART	GRADE			REL. COMPACTION
	100 REV.			DENSITY
	500 REV.			MOISTURE
OUR	D _r			% REL. COMP.
	D _w			
	% CRUSHED PARTICLES			SPEC.

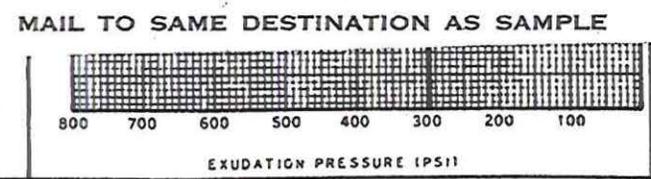
RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: _____ FIELD NO. _____
 ACCEPT TESTS HDQTRS. LAB DIST. LAB NO. **793#**
 DIST. LAB BRANCH **793#**
 SPECIAL TESTS AUTHORIZATION NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-001**
 DEPTH **190-101.5'**
 LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**
 THIS SAMPLE **R-10-001-519** IS SHIPPED IN (NO. CONTAINERS) **519** AND IS ONE OF A GROUP OF _____ SAMPLES REPRESENTING (TONS, GALS, BBLG, STA, ETC.)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **PARTICLE SIZE ANALYSIS, P.I., WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0, 0**
 LIMITS _____
 CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160** PHASE: **(0)**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-4P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **DEC 17 2010**

DISTRICT DIRECTOR TRANS.
 DIS. MATERIALS ENGINEER PAV'T. S.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708229**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE USED	SPECIF. LIMITS SOUGHT	SOIL				
3				<input type="checkbox"/>	IF CONTRACT, USE CONTRACT ITEM				
2 1/2				<input type="checkbox"/>	SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2				<input type="checkbox"/>	SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
1 1/2				<input type="checkbox"/>	TEST SPECIMEN				
1				<input type="checkbox"/>	DATE TESTED				
3/4				<input type="checkbox"/>	COMPACTOR FOOT PRESSURE P.S.I.				
1/2				<input type="checkbox"/>	INITIAL MOISTURE %				
3/8				<input type="checkbox"/>	SOAK WATER ML				
4	100			<input type="checkbox"/>	WATER ADDED-ML (TOTAL)				
8	100			<input type="checkbox"/>	WATER ADDED %				
16	99			<input type="checkbox"/>	MOISTURE AT COMPACTION %				
30	99			<input type="checkbox"/>	WET WT. OF BRIQUETTE-GMS				
50	95			<input type="checkbox"/>	HEIGHT OF BRIQUETTE-INCHES				
100	88			<input type="checkbox"/>	DRY DENSITY OF BRIQ. - # CU. FT.				
200	71			<input type="checkbox"/>	STABILOMETER P _H AT 2000 LBS.				
5 1/4	26			<input type="checkbox"/>	DISPLACEMENT				
1 1/4	11			<input type="checkbox"/>	R-VALUE BY STABILOMETER				
GRADING AS USED WAS OBTAINED AS FOLLOWS:					EXUDATION PRES. P.S.I.				
% BY WT. % BY VOL. TEST NO. DESCRIPTION					THICK. BY STAB. FEET				
0% Moisture = 16.6%					EXPANSION DIAL READING				
					THICK. BY EXP. PRESS. FEET				
					R-VALUE BY EXPANSION				
REMARKS:					TEST RESULTS		SPEC.	SP. GR.	BULK (OVE BULK (95D APPAREN
					LL. 29 P.L. 17 P.I. 12				FINE
					CV				AS REC'D. CRUSHED
SURFACE					S.E.	AS REC'D.		REL. COMPACTION	IN PLACE OR
BASE						CRUSHED			
SUBBASE					LART	COMBINED GRADE		DENSITY	MOISTURE
						100 REV.			
GRAVEL EQUIVALENT FACTOR					DUR	500 REV.		% REL. COMP.	SPEC.
TRAFFIC INDEX						D _f			
EXUDATION PRESSURE					D _i		% CRUSHED PARTICLES		
EXPANSION PRESSURE					RICHARD CHAN				
AT EQUILIBRIUM SPEC.					DISTRICT MATERIALS ENGINEER				
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET).					BRANCH CHIEF, MATERIALS B				

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO. _____
 HDQTRS. LAB. DIST. LAB NO. **7934**
 BRANCH LAB. DIST. LAB. **6787-4P**
 IND. ENDR. TESTS SHIPMENT NO. _____ P.O. OR REQ. NO. _____
 ASS. (RA) TESTS AUTHORIZATION NO. _____
 SPECIAL TESTS

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-002**

DEPTH **5-6.5'**

LOCATION OF SOURCE **SAN FRANCISQUITO CREEK RR.**

THIS SAMPLE **R-10-002-** AND IS ONE OF _____ SAMPLES REPRESENTING (TONS, GALS, BBL'S, STA, ETC.)
 IS SHIPPED IN **S1** A GROUP OF _____
 OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE-SIZE ANALYSIS, P.I., WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0.0**

LIMITS _____

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

800 700 600 500 400 300 200 100
 EXUDATION PRESSURE (PSI)

TEST NO. **6787-5P** DATE RECEIVED **AUG 16 2010**
 CALC. BY **BP** APPROVED BY _____
 DATE REPORTED **DEC 17 2010**

DISTRICT DIRECTOR TRANS. L.
 DIS. MAT. L.S. PAV'T. SE.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708230**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	Sal				
IF CONTRACT, USE CONTRACT ITEM										
					SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
					SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT		
					TEST SPECIMEN	A	B	C	D	
3										
2 1/2										
2										
1 1/2										
1										
3/4										
3/8										
3/16										
3/32										
4	100									
8	100									
16	100									
30	99									
50	92									
100	62									
200	37									
500	13									
1000	7									

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PROCESS TESTS HDQTRS. LAB DIST. LAB NO. **7937**
 ACCEPTANCE TESTS BRANCH DIST. LAB NO. **107-5P**
 INDEPENDENT ASSURANCE TEST DIST. LAB NO. OR REQ. NO.
 SPECIAL TESTS AUTHORIZATION NO.

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-002**
 DEPTH **10-11.5'**
 LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK**
 THIS SAMPLE **R-10-002** AND IS ONE OF SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)
 IS SHIPPED IN **S2** A GROUP OF
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS

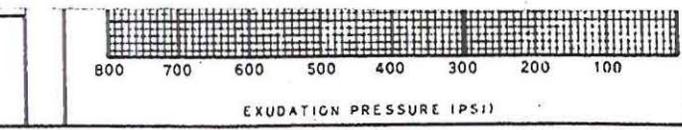
PARTICLE-SIZE ANALYSIS, (MA)
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM

04-SM-101-0.0
 LIMITS:

CONT. NO. **235620** PROJECT **04-00009678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
Moisture = 20.3%

REMARKS:		TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVE)	<input type="checkbox"/> BULK (SSD)	<input type="checkbox"/> APPAREN
LL.	P.L.	P.I.						
SURFACE		CV						
BASE		AS REC'D.						
SUBBASE		CRUSHED						
		COMBINED						
		GRADE						
		100 REV.						
		500 REV.						
		REL. COMPACTION						
		IN PLACE						
		DENSITY						
		MOISTURE						
		% REL. COMP.						
		% CRUSHED PARTICLES						
		SPEC.						

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST NO. **6787-6P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **DEC 17 2010**

DISTRICT DIRECTOR TRANS. I
 DIS. MAT. LS. IN. CH. PAV'T. S. I.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708231**

GRADING ANALYSIS					REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION			
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT			
2						TEST SPECIMEN A B C D			
1 1/2						DATE TESTED			
1						COMPACTOR FOOT PRESSURE P.S.I.			
3/4						INITIAL MOISTURE %			
1/2						SOAK WATER ML			
3/8	100					WATER ADDED-ML (TOTAL)			
4	97					WATER ADDED %			
8	94					MOISTURE AT COMPACTION %			
16	92					WET WT. OF BRIQUETTE-GMS			
30	87					HEIGHT OF BRIQUETTE-INCHES			
50	52					DRY DENSITY OF BRIQ. - # CU. FT.			
100	30					STABILOMETER P _H AT 2000 LBS.			
200	20					DISPLACEMENT			
5 1/4	10					R-VALUE BY STABILOMETER			
1 1/4	5					EXUDATION PRES. P.S.I.			

PRELIMINARY TESTS SAMPLE SENT TO:
 PROCESS TESTS HDQTRS. LAB
 LOCAL TESTS BRANCH LAB
 INDEPENDENT DIST. LAB
 SPECIAL TESTS THORIZA

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-002**

DEPTH **15-16.5**

LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK**

AUG 16 2010

THIS SAMPLE **R-10-002** AND IS ONE OF A GROUP OF **53** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE-SIZE ANALYSIS (MA)**
WATER CONTENT

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
Moisture = 24.3%			

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/10/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0.0**

LIMITS

CONT. NO. **235620** PROJECT **0400000678**

FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**

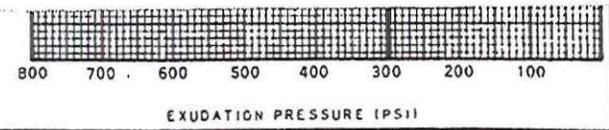
CONTRACTOR **CA94612**

PHONE: **510-622-1775** FAX: **510-286-4839**

TEST RESULTS			SPEC.	SP. GR.	BULK 100% BULK (SSD) APPARENT
LL.	P.L.	P.I.			
CV					FINE
S.E.	AS REC'D.			AS REC'D.	
	CRUSHED			CRUSHED	
L.A.R.T.	COMBINED			REL. COMPACTION	
	GRADE	100 REV.		IN PLACE	OP
DUR.	500 REV.			DENSITY	
	D _f			MOISTURE	
	D _r			% REL. COMP.	
	% CRUSHED PARTICLES			SPEC.	

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)



TEST NO. **6787 7P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **DEC 17 2010**

DISTRICT DIRECTOR TRANS.
 DIS. MAT. L. ENGR. PAV'T. S.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NUMBER **C708232**

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
						IF CONTRACT, USE CONTRACT ITEM			
						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
						TEST SPECIMEN			
						DATE TESTED			
						COMPACTOR FOOT PRESSURE P.S.I.			
						INITIAL MOISTURE %			
						SOAK WATER ML			
						WATER ADDED-ML (TOTAL)			
						WATER ADDED %			
						MOISTURE AT COMPACTION %			
						WET WT. OF BRIQUETTE-GMS			
						HEIGHT OF BRIQUETTE-INCHES			
						DRY DENSITY OF BRIQ. - # CU. FT.			
						STABILOMETER P _H AT 2000 LBS.			
						DISPLACEMENT			
						R-VALUE BY STABILOMETER			
						EXUDATION PRES. P.S.I.			
						THICK. BY STAB. FEET			
						EXPANSION DIAL READING			
						THICK. BY EXP. PRESS. FEET			
						R-VALUE BY EXPANSION			
GRADING AS USED WAS OBTAINED AS FOLLOWS:						TEST RESULTS			
% BY WT. % BY VOL. TEST NO. DESCRIPTION						LL. 54 P.L. 29 P.U. 25	SPEC.	SP. OR.	BULK (OV) BULK (SS) APPARENT
% Moisture = 68.3%						CV			FINE
REMARKS:						S.E.		REL. COMPACTION	
						AS REC'D.		AS REC'D.	
SURFACE						CRUSHED		CRUSHED	
BASE						COMBINED			
SUBBASE						GRADE		IN PLACE	
						100 REV.		DENSITY	
						500 REV.		MOISTURE	
GRAVEL EQUIVALENT FACTOR						D _f		% REL. COMP.	
TRAFFIC INDEX						D _i			
						% CRUSHED PARTICLES		SPEC. %	
R-VALUE						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B			
EXUDATION PRESSURE									
EXPANSION PRESSURE AT EQUILIBRIUM SPEC.									
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)									

AUG 16 2010

6787-7P

PRELIMINARY TESTS PROCESS TESTS ACCOUNTABLE TESTS
 INDEPENDENT ASSURANCE TESTS SPECIAL TESTS

SAMPLE SENT TO: _____ FIELD NO. _____
 HDQTRS. LAB BRANCH LAB DIST. LAB
 DIST. LAB NO. **7934**
 AUTH. NO. **6787-7P**
 AUTHORIZATION NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-002**

DEPTH **20-21.5'**

LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

THIS SAMPLE **R-10-002-54** IS SHIPPED IN **54** NO. CONTAINERS
 AND IS ONE OF A GROUP OF _____
 OWNER OR MANUFACTURER **CALTRANS**
 SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.) _____

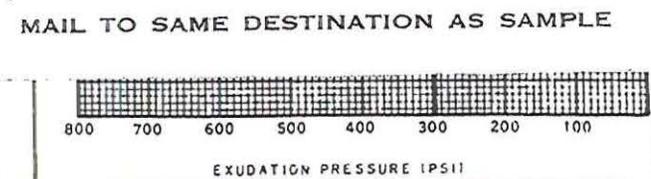
TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**

REMARKS
PARTICLE-SIZE ANALYSIS, P.I., WATER CONTENT (LMA)

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS _____

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-8P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **DEC 17 2010**

DISTRICT DIRECTOR TRANS. L
 DIS. MAT. L. PAV'T. SE.
 RESIDENT ENGINEER ACCOUNTI
 CONSTRUCTION

GRADING ANALYSIS					REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						IF CONTRACT, USE CONTRACT ITEM				
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
1 1/2						TEST SPECIMEN				
1						DATE TESTED				
3/4	100					COMPACTOR FOOT PRESSURE P.S.I.				
3/8	98					INITIAL MOISTURE %				
3/16	95					SOAK WATER ML				
4	91					WATER ADDED-ML (TOTAL)				
8	87					WATER ADDED %				
16	81					MOISTURE AT COMPACTION %				
30	73					WET WT. OF BRIQUETTE-GMS				
50	58					HEIGHT OF BRIQUETTE-INCHES				
100	41					DRY DENSITY OF BRIQ. - # CU. FT.				
200	29					STABILOMETER P _H AT 2000 LBS.				
5μ	14					DISPLACEMENT				
1μ	7					R-VALUE BY STABILOMETER.				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
9			Moisture = 26.4%

EXUDATION PRES. P.S.I.
 THICK, BY STAB. FEET
 EXPANSION DIAL READING
 THICK, BY EXP. PRESS. FEET
 R-VALUE BY EXPANSION

REMARKS:

SURFACE	BASE	SUBBASE	GRAVEL EQUIVALENT FACTOR	TRAFFIC INDEX	TEST RESULTS		SPEC.	SP. GR.	BULK (OVEN)	BULK (SSD)	APPARENT
					LL.	P.L.						P.I.
					CV						
					S.E.	AS REC'D.					
				CRUSHED							
					L.A.R.T.	COMBINED					
				GRADE		100 REV.					
						500 REV.					
					DUR.	D _f					
						D _c					
						% CRUSHED PARTICLES					

EXUDATION PRESSURE
 EXPANSION PRESSURE
 AT EQUILIBRIUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD NUMBER **C 708233**
 TL-0101 (REV. 10/97)

PRELIMINARY TESTS SAMPLE SENT TO:
 PRODUCTION TESTS HQTRS. LAB
 ACCEPTANCE TESTS BRANCH LAB
 INDEPENDENT TESTS TEST. LAB
 AS SUPPLEMENTARY TESTS SHIPMENT NO.
 TRANS. B AUTHORIZATION NO.
 SPECIAL TESTS

FIELD NO. _____
 DIST. LAB NO. **7734**
 OF **87-8P**
 OR REQ. NO. _____

6787-8P

AUG 16 2010

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-002**
 DEPTH **25-26.5'**
 LOCATION OF SOURCE **SAN FRANCISCO WILD CREEK**

THIS SAMPLE **R-10-002** AND IS ONE OF _____
 IS SHIPPED IN _____ A GROUP OF _____
 (NO. CONTAINERS) **55** SAMPLES REPRESENTING
 OWNER OR MANUFACTURER **CALTRANS** (TONS, GALS, BBLs, STA, ETC.)

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **PARTICLE-SIZE ANALYSIS, (MA)**
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER

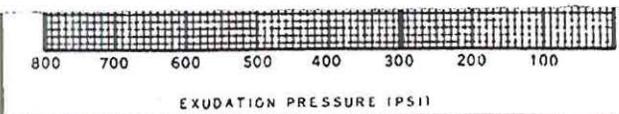
DATE SAMPLED **08/1/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM _____

04-SM-101-0.0

LIMITS _____

CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



TEST NO. 6787-9P	DATE RECEIVED AUG 16 2010	<input type="checkbox"/> DISTRICT DIR. OR <input type="checkbox"/> DIS. MAT LS. OR <input type="checkbox"/> RESIDENT ENGINEER <input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> TRANS. L. <input type="checkbox"/> PAV'T. SE. <input type="checkbox"/> ACCOUNTI. <input type="checkbox"/>
CALC. BY	APPROVED BY	DATE REPORTED DEC 17 2010	

GRADING ANALYSIS					REPORT OF TESTS ON						
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL					
3						IF CONTRACT, USE CONTRACT ITEM					
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT		
1 1/2											
1	100					TEST SPECIMEN		A	B	C	D
3/4	90					DATE TESTED					
1/2	80					COMPACTOR FOOT PRESSURE P.S.I.					
3/8	71					INITIAL MOISTURE %					
4	53					SOAK WATER ML					
8	37					WATER ADDED-ML (TOTAL)					
16	26					WATER ADDED %					
30	22					MOISTURE AT COMPACTION %					
50	19					WET WT. OF BRIQUETTE-GMS					
100	15					HEIGHT OF BRIQUETTE-INCHES					
200	12					DRY DENSITY OF BRIQ. - 4 CU. FT.					
5 1/4	6					STABILOMETER P _h AT 2000 LBS.					
1 1/4	3					DISPLACEMENT					

GRADING AS USED WAS OBTAINED AS FOLLOWS:				EXUDATION PRES. P.S.I.			
% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION	THICK, BY STAB. FEET			
4			Morgue - 14.1%	EXPANSION DIAL READING			
				THICK, BY EXP. PRESS. FEET			
				R-VALUE BY EXPANSION			

REMARKS:		TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVER BULK (350)) <input type="checkbox"/> APPARENT
		LL.	P.L.	P.I.		<input type="checkbox"/> FINE <input type="checkbox"/> CO
		CV				
SURFACE		S.E.	AS REC'D.		AS REC'D.	
BASE			CRUSHED		CRUSHED	
SUBBASE		LART	COMBINED		REL. COMPACTION D	
			GRADE	100 REV.		IN PLACE	OPT
			500 REV.		DENSITY	
GRAVEL EQUIVALENT FACTOR		DUR	D _f		MOISTURE	
TRAFFIC INDEX			D _i		% REL. COMP.	
R VALUE		% CRUSHED PARTICLES			SPEC.	
EXUDATION PRESSURE		RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B				
EXPANSION PRESSURE						
AT EQUILIBRIUM SPEC.						

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708234**

<input type="checkbox"/> PRELIMINARY TESTS	SAMPLE SENT TO:	FIELD NO.
<input checked="" type="checkbox"/> PROCESS TESTS	<input type="checkbox"/> HDQTRS. LAB	DIST. LAB NO. 7934
<input type="checkbox"/> ACCEPTANCE TESTS	<input type="checkbox"/> BRANCH LAB	
<input type="checkbox"/> INDEPENDENT ASSURANCE TESTS	<input checked="" type="checkbox"/> DIST. LAB	LAB NO. 6787-9P
<input type="checkbox"/> MEANS. L.	SHIPMENT NO.	NO. OR REQ. NO.
<input type="checkbox"/> SPECIAL TESTS	AUTHORIZATION NO.	

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-002**

DEPTH **30-31.5'**

LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK BR.**

AUG 16 2010

THIS SAMPLE **R-10-002-56** AND IS ONE OF A GROUP OF

SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE

TEST RESULTS DESIRED NORMAL PRIORITY

DATE NEEDED **09/24/10**

REMARKS **PARTICLE-SIZE ANALYSIS (MA) WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/10/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST. CO, RTE, PM

04-SM-101-0.0

LIMITS

CONT. NO. **235620** PROJECT **0400000678**

FED. NO. **SUBJECT 160**

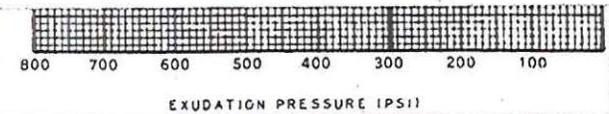
RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



TEST NO. 6787-10P	DATE RECEIVED AUG 16 2010	<input type="checkbox"/> DISTRICT DIR. OR <input type="checkbox"/> DIS. MAT L. GR. <input type="checkbox"/> RESIDENT ENGINEER <input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> TRANS. L. <input type="checkbox"/> PAV'T. SE <input type="checkbox"/> ACCOUNTI
BILLED	DATE REPORTED DEC 17 2010	CALC. BY _____ APPROVED BY _____	

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
CARD NUMBER
SAMPLE IDENTIFICATION CARD **C708235**
TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2									

1	100					TEST SPECIMEN	A	B	C	D
3/4	97					DATE TESTED				
3/8	91					COMPACTOR FOOT PRESSURE P.S.I.				
3/8	84					INITIAL MOISTURE %				
4	66					SOAK WATER ML				
8	49					WATER ADDED-ML (TOTAL)				
16	38					WATER ADDED %				
30	29					MOISTURE AT COMPACTION %				
50	22					WET WT. OF BRIQUETTE-GMS				
100	16					HEIGHT OF BRIQUETTE-INCHES				
200	12					DRY DENSITY OF BRIQ. - 4 CU. FT.				
5µ	6					STABILOMETER P _H AT 2000 LBS.				
1µ	4					DISPLACEMENT				
						R-VALUE BY STABILOMETER				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
			EXUDATION PRES. P.S.I.
			THICK. BY STAB FEET
			EXPANSION DIAL READING
			THICK. BY EXP. PRESS. FEET
			R-VALUE BY EXPANSION

REMARKS:

Moisture = 17.3%

TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVER BULK (SSD))	<input type="checkbox"/> APPARENT
LL.	P.L.	P.I.			
CV					
S.E.	AS REC'D		AS REC'D.		
	CRUSHED		CRUSHED		
LART	COMBINED		REL. COMPACTION DA		
	GRADE				
OUR	100 REV.		DENSITY		
	500 REV.		MOISTURE		
	D _f		% REL. COMP.		
	D _f				
	% CRUSHED PARTICLES		SPEC.		

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

<input type="checkbox"/> PRELIMINARY TESTS	SAMPLE SENT TO:	FIELD NO.
<input checked="" type="checkbox"/> PROCESS TESTS	<input type="checkbox"/> HDQTRS. LAB	DIST. LAB NO. 7734
<input type="checkbox"/> ACCEPTANCE TESTS	<input type="checkbox"/> BRANCH LAB	
<input type="checkbox"/> INDEPENDENT	<input type="checkbox"/> DIST. LAB	6787-10P
<input type="checkbox"/> AS USED IN TESTS	<input type="checkbox"/> DIST. LAB	
<input type="checkbox"/> TRANSPORTATION	<input type="checkbox"/> AUTHORIZATION NO.	
<input type="checkbox"/> SPECIAL TESTS	<input type="checkbox"/> AUTHORIZATION NO.	

AUG 16 2010

SAMPLE OF **SOIL**

FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-002**

DEPTH **35-36.5'**

LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK**

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) R-10-002 S7	AND IS ONE OF A GROUP OF	SAMPLES REPRESENTING (TONS, GALS, BOLS, STA, ETC.)
OWNER OR MANUFACTURER CA-LTRANS	TEST RESULTS DESIRED <input checked="" type="checkbox"/> NORMAL <input type="checkbox"/> PRIORITY	DATE NEEDED 09/24/10
TOTAL QUANTITY AVAILABLE	REMARKS	

PARTICLE-SIZE ANALYSIS (MA)

WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/10/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-00**

LIMITS

CONT. NO. **235620** PROJECT **0400000678**

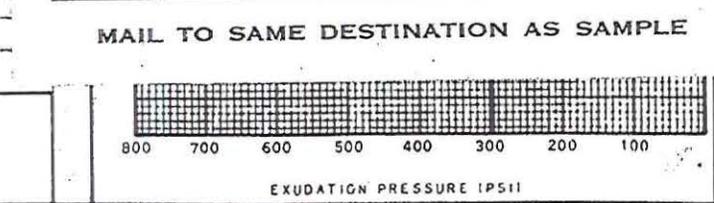
FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775**, FAX: **510-286-4839**



TEST NO. **6787-11P**

DATE RECEIVED **AUG 16 2010**

DATE REPORTED **DEC 17 2010**

CALC. BY _____ APPROVED BY _____

DISTRICT DIR. JR. TRANS.
 DIS. MAT. L. JR. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

GRADING ANALYSIS					REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION			
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT			
2						TEST SPECIMEN A B C D			
1 1/2						DATE TESTED			
1	100					COMPACTOR FOOT PRESSURE P.S.I.			
3/4	94					INITIAL MOISTURE %			
1/2	93					SOAK WATER ML			
3/8	89					WATER ADDED-ML (TOTAL)			
4	75					WATER ADDED %			
8	52					MOISTURE AT COMPACTION %			
16	45					WET WT. OF BRIQUETTE-GMS			
30	34					HEIGHT OF BRIQUETTE-INCHES			
50	22					DRY DENSITY OF BRIO. - 4 CU. FT.			
100	19					STABILOMETER P _H AT 2000 LBS.			
200	16					DISPLACEMENT			
5μ	7					R-VALUE BY STABILOMETER			
1μ	4					EXUDATION PRES. P.S.I.			

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
			Moisture = 18.8%

EXUDATION PRES. P.S.I. THICK, BY STAB. FEET EXPANSION DIAL READING THICK, BY EXP. PRESS. FEET R-VALUE BY EXPANSION

REMARKS:

TEST RESULTS	SPEC.	SP. OR.	BULK TOY
LL. P.L. P.I.			BULK (SS)
CV			APPEAR
S.E. AS REC'D. CRUSHED COMBINED			FINE
LART GRADE 100 REV. 500 REV.			REL. COMPACTION
DUR D _f D _c			DENSITY IN PLACE
% CRUSHED PARTICLES			MOISTURE
			% REL. COMP.
			SPEC.

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
TL-0101 (REV. 10/97) CARD NUMBER **C708236**

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PROCESS TESTS HDQTRS. LAB DIST. LAB NO. **7934**
 CERTIFIED TESTS BRANCH LAB
 INDEPENDENT DIST. LAB **6787-11P**
 AS FOR DIST. LAB
 TRANSPORTATION AUTHORIZATION NO. OR REQ. NO.

SAMPLE OF **SOIL**
FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-002**

DEPTH **40-41.5'**

LOCATION OF SOURCE **SAN FRANCISCO WILD CREEK 188**

THIS SAMPLE **R-10-002** AND IS ONE OF A GROUP OF
IS SHIPPED IN **58** (NO. CONTAINERS)
OWNER OR MANUFACTURER **CALTRANS**
SAMPLER REPRESENTING (TONS, GALS, BELLS, STA, ETC.)

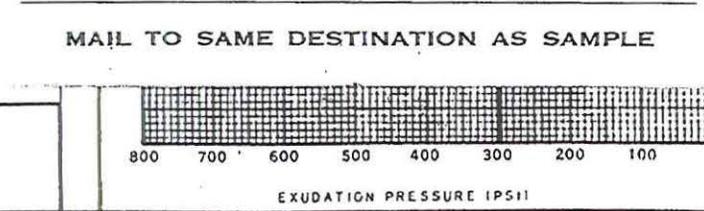
TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS
PARTICLE-SIZE ANALYSIS (MA)
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
DATE SAMPLED **08/10/2010**
BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
DIST, CO, RTE, PM
04-SM-101-0.0

LIMITS

CONT. NO. **235620** PROJECT **04-00000678**
FED. NO. **SUBJECT 160**
RES. ENGR. OR SUPT. **TUNG NGUYEN**
ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**
CONTRACTOR **CA94612**
PHONE: **510-622-1775** FAX: **510-286-4839**



TEST NO. **6787-12P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **JAN 21 2011**

DISTRICT DIP. OR TRANS.
 DIS. MAT. L. OR PAVT.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708237**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						IF CONTRACT, USE CONTRACT ITEM				
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
1 1/2										
1						TEST SPECIMEN	A	B	C	D
3/4						DATE TESTED				
3/8						COMPACTOR FOOT PRESSURE P.S.I.				
3/16	100					INITIAL MOISTURE %				
4	99					SOAK WATER ML				
8	98					WATER ADDED-ML (TOTAL)				
16	98					WATER ADDED %				
30	98					MOISTURE AT COMPACTION %				
50	97					WET WT. OF BRIQUETTE-GMS				
100	97					HEIGHT OF BRIQUETTE-INCHES				
200	94					DRY DENSITY OF BRIQ. - # CU. FT.				
5 1/4	53					STABILOMETER P _H AT 2000 LBS.				
1 1/4	39					DISPLACEMENT				
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.				
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET				
Moisture = 34.5%						EXPANSION DIAL READING				
						THICK. BY EXP. PRESS. FEET				
						R-VALUE BY EXPANSION				
REMARKS:						TEST RESULTS		SPEC.	SP. GR.	BULK (OV BULK (S) APPARE
						LL 53 P.L. 20 P.I. 33				FINE
						CV				
SURFACE						S.E.	AS REC'D.			
BASE							CRUSHED			
SUBBASE						LARY	COMBINED			REL. COMPACTION
							GRADE	100 REV.		IN PLACE
						DUR		500 REV.		DENSITY
GRAVEL EQUIVALENT FACTOR							D _f			MOISTURE
TRAFFIC INDEX							D ₁₀			% REL. COMP.
R-VALUE						% CRUSHED PARTICLES				SPEC. %
EXUDATION PRESSURE						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B				
EXPANSION PRESSURE										
AT EQUILIBRIUM SPEC.										
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)										

6787-12P

AUG 16 2010

PRELIMINARY TESTS PROCESS TESTS
 A. E. P. TESTS H. Q. TRS. LAB
 INDEPENDENT ASSURANCE TESTS DIST. LAB
 SPECIAL TESTS AUTHORIZATION NO.

SAMPLE SENT TO: _____ FIELD NO. _____
 DIST. LAB NO. **708237**
 BRANCH LAB NO. **6787-12P**
 DIST. LAB NO. **6787-12P**
 SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-002**

DEPTH **45-46.5'**

LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

THIS SAMPLE **R-10-002-S9** AND IS ONE OF A GROUP OF _____
 IS SHIPPED IN (NO. CONTAINERS) **S9** SAMPLES REPRESENTING (TONS, CUB. YDS, STA. ETC.) _____

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE SIZE ANALYSIS, PI, WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/10/2010**

BY **RIFAAT MASHED** TITLE **T.E. (CIVIL)**

DIST. CO, RTE, PM **04-SM-101-0.0**

LIMITS _____

CONT. NO. **235620** Project **0400000678**

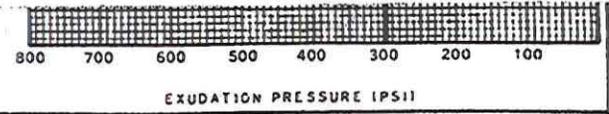
FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS 16, 8TH FL, OAKLAND**

CONTRACTOR **CA94612**

PHONE **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-13P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **DEC 17 2010**

DISTRICT DIR. OR TRANS. L.
 DIS. MAT. L.S. OR PAV'T. SE.
 RESIDENT ENGINEER ACCOUNT.
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NUMBER **C708238**

GRADING ANALYSIS					REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION			
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT			
2						TEST SPECIMEN A B C D			
1 1/2						DATE TESTED			
1						COMPACTOR FOOT PRESSURE P.S.I.			
3/4						INITIAL MOISTURE %			
1/2						SOAK WATER ML			
3/8						WATER ADDED-ML (TOTAL)			
4						WATER ADDED %			
8						MOISTURE AT COMPACTION %			
16						WET WT. OF BRIQUETTE-GMS			
30						HEIGHT OF BRIQUETTE-INCHES			
50						DRY DENSITY OF BRIQ. - # CU. FT.			
100						STABILOMETER P _H AT 2000 LBS.			
200						DISPLACEMENT			
5µ						R-VALUE BY STABILOMETER			
1µ						EXUDATION PRES. P.S.I.			

AUG 16 2010

6787-13P

PRELIMINARY TESTS PROCESS TESTS
 ACCEPTANCE TESTS BRANCH LAB
 INDEPENDENT TEST LAB
 ASSIGNED TEST LAB
 SPECIAL TESTS

SAMPLE SENT TO: FIELD NO. _____
 HDQTRS. LAB _____
 DIST. LAB NO. **7934**
 AUTHORIZATION NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-002**

DEPTH **50-51.5'**

LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

THIS SAMPLE **R-10-002-S10** IS ONE OF _____ SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)
 IS SHIPPED IN A GROUP OF _____
 (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PI, WATER CONTENT**

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
			EXUDATION PRES. P.S.I.
			THICK, BY STAB. FEET
			EXPANSION DIAL READING
			THICK, BY EXP. PRESS. FEET
			R-VALUE BY EXPANSION

REMARKS:

TEST RESULTS		SPEC.	SP. GR.	BULK (OVI)	BULK (SS)	APPAREN
LL	38	P.L.	17	P.I.	21	
CV						
S.E.	AS REC'D.		AS REC'D.			
	CRUSHED		CRUSHED			
	COMBINED		REL. COMPACTION			
LART	GRADE	100 REV.		IN PLACE		
		500 REV.				
DUR	D _f		DENSITY			
	D _i		MOISTURE			
			% REL. COMP.			
		% CRUSHED PARTICLES	SPEC.			

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/10/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS:

CONT. NO. **235620** Project **0400000678**

FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

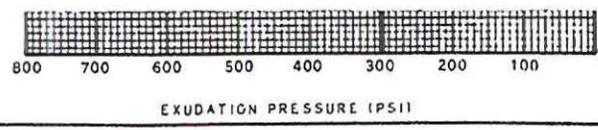
ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**

CONTRACTOR **CA94612**

PHONE **510-622-1775** FAX **510-286-4839**

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)



TEST NO. **6787-14P**
 BILLED

DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

DISTRICT DIRECTOR
 DIS. MAT. L. _____
 RESIDENT ENGINEER
 CONSTRUCTION

TRANS. I
 PAV'T. S
 ACCOUNT

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT <input type="checkbox"/>
3					
2 1/2					
2					
1 1/2					
1	100				
3/4	99				
1/2	96				
3/8	94				
4	84				
8	71				
16	56				
30	41				
50	20				
100	7				
200	6				
5μ	5				
.1μ	4				

REPORT OF TESTS ON					
SOIL					
IF CONTRACT, USE CONTRACT ITEM					
SOURCE		CHARGE		EXPENDITURE AUTHORIZATION	
SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT		AMOUNT	
TEST SPECIMEN		A	B	C	D
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ. - # CU. FT.					
STABILOMETER P _H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
Moisture = 21.8%

REMARKS:	
EXUDATION PRESS. P.S.I.	
THICK. BY STAB. FEET	
EXPANSION DIAL READING	
THICK. BY EXP. PRESS. FEET	
R-VALUE BY EXPANSION	
TEST RESULTS	SPEC.
LL. P.L. P.I.	
CV	
AS REC'D.	
CRUSHED	
COMBINED	
GRADE	
100 REV.	
500 REV.	
D _f	
D _c	
% CRUSHED PARTICLES	
EXUDATION PRESSURE	
EXPANSION PRESSURE	
AT EQUILIBRIUM	SPEC.
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)	

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97)
 CARD NUMBER **C708239**

PRELIMINARY TESTS
 OCCASIONAL TESTS
 ACCEPTANCE TESTS
 INDEPENDENT ANALYSIS
 DISCREPANCY TESTS
 SOCIAL TESTS

SAMPLE SENT TO:
 HQTRS. LAB
 BRANCH _____
 DIST. LAB _____
 STATEMENT NO. _____
 AUTHORIZATION NO. _____

FIELD NO. _____
 DIST. LAB NO. **775**
6787-14P
 REQ. NO. _____

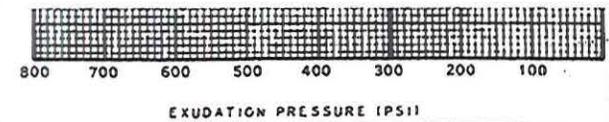
AUG 16 2010
 SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-002**
 DEPTH **55-56.5'**
 LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK**

THIS SAMPLE **R-10-002-S11** AND IS ONE OF A GROUP OF _____
 IS SHIPPED IN _____ (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**
 REMARKS **PARTICLE-SIZE ANALYSIS, (100%)**
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM
04-SM-101-0.0

LIMITS _____
 CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



TEST NO. **6787** **5P**

DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

- DISTRICT DIRECTOR
- DIS. MAT'L ENGR.
- RESIDENT ENGINEER
- CONSTRUCTION
- TRANS.
- PAV'T. ENGR.
- ACCOUNT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708240**

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4	100				
1/2	99				
3/8	97				
4	90				
8	84				
16	79				
30	74				
50	64				
100	48				
200	36				
5µ	17				
.1µ	11				

REPORT OF TESTS ON			
Soil			
IF CONTRACT, USE CONTRACT ITEM			
SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT	
TEST SPECIMEN	A	B	C
DATE TESTED			
COMPACTOR FOOT PRESSURE P.S.I.			
INITIAL MOISTURE %			
SOAK WATER ML			
WATER ADDED-ML (TOTAL)			
WATER ADDED %			
MOISTURE AT COMPACTION %			
WET WT. OF BRIQUETTE-GMS			
HEIGHT OF BRIQUETTE-INCHES			
DRY DENSITY OF BRIQ. - 4 CU. FT.			
STABILOMETER P _H AT 2000 LBS.			
DISPLACEMENT			
R-VALUE BY STABILOMETER			

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
 Moisture = 20.1%

REMARKS: **UNABLE TO RUN CTM 104 BECAUSE MATERIAL IS SANDY NON-PLASTIC.**

SURFACE	
BASE	
SUBBASE	
GRAVEL EQUIVALENT FACTOR	
TRAFFIC INDEX	
R-VALUE	
EXUDATION PRESSURE	
EXPANSION PRESSURE	
AT EQUILIBRIUM	SPEC.

TEST RESULTS		SPEC.	SP. GR.	BULK (OV BULK (33 APPARE
LL	N/P	P.L	N/P	P.I.
CV				
S.E	AS REC'D.			
	CRUSHED			
	COMBINED			
LART	GRADE	100 REV.		IN PLACE
		500 REV.		
DUR	D _f		DENSITY	
	D _s		MOISTURE	
			% REL. COMP.	
	% CRUSHED PARTICLES		SPEC.	

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

6787-15P

AUG 16 2010

PRELIMINARY TESTS ACCEPTANCE TESTS INDEPENDENT ANALYSIS SPECIAL TESTS

SAMPLE SENT TO: HQQTRS. LAB BRANCH LAB DIST. LAB SHIP. NO. AUTHORIZATION NO.

FIELD NO. _____
 DIST. LAB NO. **7934**
 REQ. NO. **15P**

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-002**

DEPTH **60-61.5'**

LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

THIS SAMPLE **R-10-002-S12** AND IS ONE OF A GROUP OF _____
 IS SHIPPED IN _____
 (NO. CONTAINERS) _____

SAMPLES REPRESENTING (TONS, GALS, BBLs, STA. ETC.) _____

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____
 TEST RESULTS DESIRED NORMAL PRIORITY

DATE NEEDED **09/24/10**

REMARKS **PARTICLE-SIZE ANALYSIS, PI, WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/11/2010**

BY **RIFANT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM _____

LIMITS **04-SM-101-0,0**

CONT. NO. **235620** Project **0400000678**

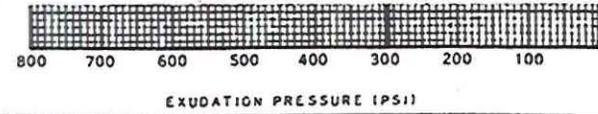
FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-16P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
JAN 21 2011
 BILLED _____ DATE REPORTED _____

DISTRICT DIRECTOR TRANS. DIV.
 DIS. MAT. L. ENGR. PAY'T. SEC.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708241**

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
						IF CONTRACT, USE CONTRACT ITEM				
						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
3						TEST SPECIMEN				
2 1/2						DATE TESTED				
2						COMPACTOR FOOT PRESSURE P.S.I.				
1 1/2						INITIAL MOISTURE %				
1						SOAK WATER ML				
3/4						WATER ADDED-ML (TOTAL)				
1/2	100					WATER ADDED %				
3/8	99					MOISTURE AT COMPACTION %				
4	99					WET WT. OF BRIQUETTE-GMS				
8	98					HEIGHT OF BRIQUETTE-INCHES				
16	97					DRY DENSITY OF BRIO. - 4 CU. FT.				
30	96					STABILOMETER P _H AT 2000 LBS.				
50	84					DISPLACEMENT				
100	51					R-VALUE BY STABILOMETER				
200	36					EXUDATION PRES. P.S.I.				
5μ						THICK. BY STAB. FEET				
1μ						EXPANSION DIAL READING				
						THICK. BY EXP. PRESS. FEET				
						R-VALUE BY EXPANSION				
GRADING AS USED WAS OBTAINED AS FOLLOWS:						TEST RESULTS				
% BY WT. % BY VOL. TEST NO. DESCRIPTION						LL. 41	P.L. 17	P.I. 24	SPEC.	
Moisture - 24.2%						CV		SP. GR.		BULK (O.V.E.)
REMARKS:						SURFACE		AS REC'D.		BULK (300)
						BASE		CRUSHED		APPAREN
						SUBBASE		COMBINED		FINE
						GRAVEL EQUIVALENT FACTOR		REL. COMPACTION		
						TRAFFIC INDEX		GRADE		
						R VALUE		100 REV.		IN PLACE OF
						EXUDATION PRESSURE		500 REV.		DENSITY
						EXPANSION PRESSURE		OUR		MOISTURE
						AT EQUILIBRIUM		D _r		% REL. COMP.
						SPEC.		D _s		SPEC.
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B				

AUG 16 2010 **6787-16P**

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO. _____
 PROCESS TESTS HDQTRS. LAB DIST. LAB NO. **7234**
 DEFERRED TESTS BRANCH LAB
 INDEPENDENT DIST. LAB **6787-16P**
 AS RECEIVED DIST. LAB **6787-16P**
 TRANS. DIV. DIST. LAB **6787-16P**
 SPECIAL TESTS AUTHORIZATION

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-002**

DEPTH **65-66.5'**

LOCATION OF SOURCE **SAN FRANCISQUITO CREEK BR.**

THIS SAMPLE **R-10-002-512** IS ONE OF _____ SAMPLES REPRESENTING
 IS SHIPPED IN _____ A GROUP OF _____ (TONS, GALS, BBL'S, STA, ETC.)
 (NO. CONTAINERS) _____
 OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED _____ DATE NEEDED **09/24/10**
 NORMAL PRIORITY

REMARKS
PARTICLE-SIZE ANALYSIS, P.I., WATER CONTENT (MA)

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM
04-SM-101-0, 0

LIMITS _____

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

800 700 600 500 400 300 200 100
 EXUDATION PRESSURE (PSI)

TEST NO. **6787-17P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **DEC 21 2010**

DISTRICT DIRECTOR TRANS. L.
 DIS. MAT LS. PAV'T. SE.
 RESIDENT ENGINEER ACCOUNT.
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708242**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						IF CONTRACT, USE CONTRACT ITEM				
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
1 1/2						TEST SPECIMEN				
1							A	B	C	D
3/4						DATE TESTED				
1/2						COMPACTOR FOOT PRESSURE P.S.I.				
3/8						INITIAL MOISTURE %				
4	100					SOAK WATER ML				
8						WATER ADDED-ML (TOTAL)				
16						WATER ADDED %				
30						MOISTURE AT COMPACTION %				
50						WET WT. OF BRIQUETTE-GMS				
100						HEIGHT OF BRIQUETTE-INCHES				
200						DRY DENSITY OF BRIQ. - # CU. FT.				
5µ						STABILOMETER P _H AT 2000 LBS.				
1µ						DISPLACEMENT				
GRADING AS USED WAS OBTAINED AS FOLLOWS:						R-VALUE BY STABILOMETER				
% BY WT. % BY VOL. TEST NO. DESCRIPTION						EXUDATION PRES. P.S.I.				
0 Moisture = 30.4%						THICK. BY STAB. FEET				
						EXPANSION DIAL READING				
						THICK. BY EXP. PRESS. FEET				
						R-VALUE BY EXPANSION				
REMARKS:						TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OV) <input type="checkbox"/> BULK (SS) <input type="checkbox"/> APPARENT
						LL. 45 P.L. 20 P.I. 25				FINE
						CV				
SURFACE						S.E.	AS REC'D.		REL. COMPACTION	
BASE							CRUSHED		IN PLACE	
SUBBASE							COMBINED			
						L.A.T.	GRADE			
							100 REV.		DENSITY	
						500 REV.		MOISTURE		
GRAVEL EQUIVALENT FACTOR						DUR.	D _r		% REL. COMP.	
TRAFFIC INDEX							D _r			
R-VALUE						EXUDATION PRESSURE		SPEC.		
						EXPANSION PRESSURE				
						AT EQUILIBRIUM				
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)										

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PROCESS TESTS HDQTRS. LAB DIST. LAB NO. **7934**
 ACCEPTANCE TESTS BRANCH LAB
 INDEPENDENT ASSURANCE DIST. LAB **6787-17P**
 SPECIAL TESTS AUTHORIZATION NO. **101-17P**

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-002**

DEPTH **70-71.5'**

LOCATION OF SOURCE **SAN FRANCISCO CREEK BR.**

THIS SAMPLE **R-10-002** IS SHIPPED IN **514** (NO. CONTAINERS) AND IS ONE OF A GROUP OF _____ SAMPLES REPRESENTING (TONS, GALS, BBLs, STA. ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PI, WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM _____

LIMITS: **04-SM-101-0,0**

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

800 700 600 500 400 300 200 100
 EXUDATION PRESSURE (PSI)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

TEST NO. **6787-18P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

DISTRICT DIR. TRANS. L.
 DIS. MAT. L. PAV'T. SE.
 RESIDENT ENGINEER ACCOUNT.
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708243**

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
						IF CONTRACT, USE CONTRACT ITEM				
						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
3										
2 1/2										
2										
1 1/2										
1						TEST SPECIMEN	A	B	C	D
3/4						DATE TESTED				
3/8						COMPACTOR FOOT PRESSURE P.S.I.				
4	100					INITIAL MOISTURE %				
8	99					SOAK WATER ML				
16	99					WATER ADDED-ML (TOTAL)				
30	99					WATER ADDED %				
50	99					MOISTURE AT COMPACTION %				
100	97					WET WT. OF BRIQUETTE-GMS				
200	90					HEIGHT OF BRIQUETTE-INCHES				
5µ	44					DRY DENSITY OF BRIQ. - # CU. FT.				
1µ	28					STABILOMETER P _n AT 2000 LBS.				
						DISPLACEMENT				
						R-VALUE BY STABILOMETER				
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.				
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET				
Moisture - 25.6%						EXPANSION DIAL READING				
						THICK. BY EXP. PRESS. FEET				
						R-VALUE BY EXPANSION				
REMARKS:						TEST RESULTS		SPEC.	SP. GR.	BULK (OVER BULK (SSD) APPARENT
						LL. 34 P.L. 16 P.I. 18				FINE CO
						CV				
SURFACE						S.E.	AS REC'D.	REL. COMPACTION D _r	AS REC'D.	
BASE							CRUSHED		CRUSHED	
SUBBASE						L.A.T.	COMBINED	REL. COMPACTION D _r	REL. COMPACTION D _r	
							GRADE		100 REV.	IN PLACE	OPT.
						D _r	500 REV.	DENSITY		
GRAVEL EQUIVALENT FACTOR							D _r		MOISTURE	
TRAFFIC INDEX						D _r		% REL. COMP.		
EXUDATION PRESSURE						% CRUSHED PARTICLES		SPEC.		
EXPANSION PRESSURE						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B				
AT EQUILIBRIUM SPEC.										
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)										

6787-18P

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: _____ FIELD NO. _____
 PROCESS TESTS HQTRS. LAB _____
 ACCEPTANCE TESTS BRANCH LAB _____
 INDEPENDENT TESTS DIST. LAB _____
 ASSURANCE TESTS DIST. LAB _____
 TRANSPORTATION TESTS DIST. LAB _____
 LABORATORY TESTS DIST. LAB _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-002**
 DEPTH **75-76.5'**
 LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

THIS SAMPLE **R-10-002-815** AND IS ONE OF _____ SAMPLES REPRESENTING (NO. CONTAINERS) _____ (TONS, GALS, BBLs, STA, ETC.) _____
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/21/10**
 REMARKS **PARTICLE-SIZE ANALYSIS, PI, WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM **04-SM-101-0,0**

LIMITS _____
 CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

EXUDATION PRESSURE (PSI)

TEST NO. **6787-22P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **DEC 23 2010**

DISTRICT DIRECTOR TRANS. L.
 DIS. MAT. LS. PAV'T. SE.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708247**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2						TEST SPECIMEN			
1						DATE TESTED			
3/4						COMPACTOR FOOT PRESSURE P.S.I.			
1/2						INITIAL MOISTURE %			
3/8						SOAK WATER ML			
4						WATER ADDED - ML (TOTAL)			
8						WATER ADDED %			
16						MOISTURE AT COMPACTION %			
30						WET WT. OF BRIQUETTE - GMS			
50						HEIGHT OF BRIQUETTE - INCHES			
100						DRY DENSITY OF BRIO. - # CU. FT.			
200						STABILOMETER P _H AT 2000 LBS.			
5μ						DISPLACEMENT			
1μ						R - VALUE BY STABILOMETER			
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.			
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET			
0% Moisture - 30.9%						EXPANSION DIAL READING			
						THICK. BY EXP. PRESS. FEET			
						R - VALUE BY EXPANSION			
REMARKS:						TEST RESULTS			
						LL. 56 P.L. 21 P.U. 35	SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVER)
						CV			<input type="checkbox"/> BULK (SSD)
									<input type="checkbox"/> APPARENT
									FINE C
SURFACE						S.E.	AS REC'D.	CRUSHED	
BASE							CRUSHED		
SUBBASE							COMBINED	REL. COMPACTION	D
						LART	GRADE	100 REV.	IN PLACE
								500 REV.	DP
GRAVEL EQUIVALENT FACTOR						DUR	D _f	DENSITY	
TRAFFIC INDEX							D _c	MOISTURE	
								% REL. COMP.	
							% CRUSHED PARTICLES	SPEC.	

6787-22P

PRELIMINARY TESTS DISTRICT TEST HDQTRS. LAB TEST LAB NO. **7934**
 ACCEPTANCE TEST BRANCH DIST. LAB DIST. LAB NO. **7934-22P**
 INDEPENDENT DIST. LAB DIST. LAB NO. **7934-22P**
 AS SUPPLEMENTARY SHIPMENT NO. SHIPMENT NO. **7934-22P**
 TRANSPORTATION AUTHORIZATION AUTHORIZATION NO.

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-002**
 DEPTH: **8.5-86.5'**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK BR.**

THIS SAMPLE **R-10-002** - AND IS ONE OF A GROUP OF
 IS SHIPPED IN **S17** (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 SAMPLES REPRESENTING (TONS, GALS, BOLS, STA, ETC.)

TOTAL QUANTITY AVAILABLE TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **PI, WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/1/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM **04-SM-101-0,0**

LIMITS **04-SM-101-0,0**

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

800 700 600 500 400 300 200 100
 EXUDATION PRESSURE (PSI)

TEST NO. **6787-19P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
JAN 21 2011
 BILLED _____ DATE REPORTED _____

DISTRICT DIRECTOR TRANSPORTATION
 DIST. MATERIALS ENGINEER PAV'T.
 RESIDENT ENGINEER ACCOUMTS
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NO. **C708244**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2						TEST SPECIMEN			
1						DATE TESTED			
3/4						COMPACTOR FOOT PRESSURE P.S.I.			
3/8						INITIAL MOISTURE %			
4	100					SOAK WATER ML			
8	100					WATER ADDED-ML (TOTAL)			
16	100					WATER ADDED %			
30	100					MOISTURE AT COMPACTION %			
50	99					WET WT. OF BRIQUETTE-GMS			
100	86					HEIGHT OF BRIQUETTE-INCHES			
200	55					DRY DENSITY OF BRIQ. - 4 CU. FT.			
5 1/4	21					STABILOMETER P _n AT 2000 LBS.			
1/4	13					DISPLACEMENT			
GRADING AS USED WAS OBTAINED AS FOLLOWS:						R-VALUE BY STABILOMETER			
% BY WT. % BY VOL. TEST NO. DESCRIPTION						EXUDATION PRES. P.S.I.			
91 Moisture - 26.9%						THICK. BY STAB. FEET			
						EXPANSION DIAL READING			
						THICK. BY EXP. PRESS. FEET			
						R-VALUE BY EXPANSION			

6787-19P
 AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 ACCEPTANCE TESTS HDQTRS. LAB DIST. LAB NO. **7934**
 INDEPENDENT TESTS BRANCH LAB TEST LAB
 HIST. LAB AUTHORIZATION NO.
 TRAN. LAB AUTHORIZATION NO.
 SPECIAL TESTS

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-002**

DEPTH **90-91.5'**

LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK CR.**

THIS SAMPLE **R-10-00-518** AND IS ONE OF A GROUP OF _____
 IS SHIPPED IN _____ (NO. CONTAINERS) SAMPLES REPRESENTING (TONS, GALS, BBL'S, STA. ETC.)
 OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS
(MA) PARTICLE-SIZE ANALYSIS, PL WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM
04-SM-101-0.0

LIMITS _____

CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUAN NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**

TEST RESULTS		SPEC.	SP. GR.	BULK (OV BULK (SS APPARE
LL	N/A	N/A	N/A	N/A
CV				FINE
S.E.	AS REC'D.			
	CRUSHED			
LART	COMBINED			REL. COMPACTION
	GRADE	100 REV.		IN PLACE
DUR		500 REV.		DENSITY
	D _r			MOISTURE
	D _r			% REL. COMP.
	% CRUSHED PARTICLES			SPEC.

REMARKS: **UNABLE TO RUN CTM 204 BECAUSE MATERIAL IS SANDY NON-PLASTIC.**

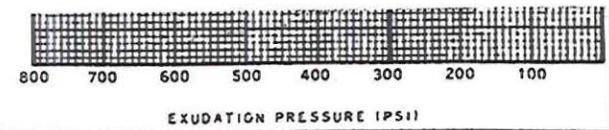
SURFACE _____
 BASE _____
 SUBBASE _____

GRAVEL EQUIVALENT FACTOR _____
 TRAFFIC INDEX _____

R-VALUE
 EXUDATION PRESSURE _____
 EXPANSION PRESSURE _____
 AT EQUILIBRIUM SPEC. _____

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET) _____

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B



TEST NO. **6787-20P**
 DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **JAN 21 2011**

DISTRICT DIRECTOR
 DIS. MATERIALS ENGINEER
 RESIDENT ENGINEER
 CONSTRUCTION

TRANS. DIVISION
 PAV'T. SURF. DIV.
 ACCOUNTS DIV.

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708245**

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	Soil				
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION				
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT				
2										
1 1/2										
1						TEST SPECIMEN	A	B	C	D
3/4						DATE TESTED				
1/2						COMPACTOR FOOT PRESSURE P.S.I.				
3/8						INITIAL MOISTURE %				
4	100					SOAK WATER ML				
8	100					WATER ADDED-ML (TOTAL)				
16	100					WATER ADDED %				
30	99					MOISTURE AT COMPACTION %				
50	98					WET WT. OF BRIQUETTE-GMS				
100	90					HEIGHT OF BRIQUETTE-INCHES				
200	71					DRY DENSITY OF BRIO. - 4 CU. FT.				
54	36					STABILOMETER P _H AT 2000 LBS.				
14	23					DISPLACEMENT				
						R-VALUE BY STABILOMETER				
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.				
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET				
Moisture = 25.2%						EXPANSION DIAL READING				
						THICK. BY EXP. PRESS. FEET				
						R-VALUE BY EXPANSION				
REMARKS:						TEST RESULTS SPEC. SP. GR. BULK (OVE) BULK (SSD) APPARENT FINE				
						LL. 29 P.L. 14 P.I. 15				
						CV				
						AS REC'D. CRUSHED				
SURFACE						REL. COMPACTION				
BASE						GRADE 100 REV. IN PLACE OR 500 REV. DENSITY				
SUBBASE						D _r MOISTURE				
						D _r % REL. COMP. SPEC.				
GRAVEL EQUIVALENT FACTOR						RICHARD CHAN				
TRAFFIC INDEX						DISTRICT MATERIALS ENGINEER				
EXUDATION PRESSURE						BRANCH CHIEF, MATERIALS B				
EXPANSION PRESSURE										
AT EQUILIBRIUM SPEC.										
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)										

AUG 16 2010

PRELIMINARY TESTS
 PROCESS TESTS
 ACCEPTANCE TESTS
 INDEPENDENT TESTS
 DIST. LAB NO. 7934
 SPECIAL TESTS

SAMPLE SENT TO:
 HDQTRS. LAB
 BRANCH
 DIST.
 FIELD NO. 6787-20P
 PROJECT NO.
 AUTHORIZED

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-002**
 DEPTH **95-96.5'**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK BR.**

THIS SAMPLE **R-10-002-519** IS SHIPPED IN (NO. CONTAINERS)
 AND IS ONE OF A GROUP OF
 SAMPLES REPRESENTING (CONS. GALS. BBL. STA. ETC.)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE
 TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**
 REMARKS
PARTICLE-SIZE ANALYSIS, P.I., WATER CONTENT (MA)

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM
04-SM-101-0,0

LIMITS
 CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

800 700 600 500 400 300 200 100
 EXUDATION PRESSURE (PSI)

TEST NO. **6787-21P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **JAN 21 2011**
 DISTRICT DIP. ENGR. TRANS. ENGR.
 DIS. MATERIALS ENGR. PAV'T. ENGR.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2					
3/8					
4	100				
8	100				
16	100				
30	100				
50	100				
100	100				
200	98				
5 1/4	67				
1 1/4	46				

REPORT OF TESTS ON **SOIL**

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIQ. - 4 CU. FT.				
STABILOMETER P _n AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				
EXUDATION PRES. P.S.I.				
THICK. BY STAB. FEET				
EXPANSION DIAL READING				
THICK. BY EXP. PRESS. FEET				
R-VALUE BY EXPANSION				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
0%			Moisture = 28.9%

REMARKS:

SURFACE _____

BASE _____

SUBBASE _____

GRAVEL EQUIVALENT FACTOR _____

TRAFFIC INDEX _____

R VALUE	EXUDATION PRESSURE	EXPANSION PRESSURE	AT EQUILIBRIUM	SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST RESULTS			SPEC.	SP. GR.	BULK (OVER BULK (SSD)) APPARENT
LL.	P.L.	P.I.			
CV					FINE G
S.E.	AS REC'D.			AS REC'D.	
	CRUSHED			CRUSHED	
LART	COMBINED			REL. COMPACTION D	
	GRADE	100 REV.			IN PLACE OPT
DUR		500 REV.		DENSITY	
	D _f			MOISTURE	
	D _c			% REL. COMP.	
	% CRUSHED PARTICLES			SPEC.	

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NUMBER **C708246**

PRELIMINARY TESTS SAMPLE SENT TO: _____ FIELD NO. _____
 PROCESS TESTS HDQTRS. LAB. _____
 ACCEPTANCE TESTS BRANCH LAB. _____
 INDEPENDENT ASSURANCE DIST. LAB. _____
 DIST. LAB. _____ SHIPMENT NO. _____
 TRANS. AUTHORIZATION NO. _____
 DIST. LAB. NO. **7934**
 DIST. LAB. NO. **6787-21P**
 DIST. OR REQ. NO. _____

AUG 16 2010

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-002**

DEPTH **100-101.5'**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK**

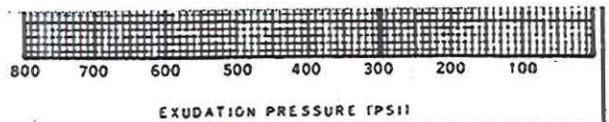
THIS SAMPLE **R-10-002** IS SHIPPED IN **20** NO. CONTAINERS AND IS ONE OF A GROUP OF _____ SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **PARTICLE-SIZE ANALYSIS (MA)**
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/11/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM **04-SM-101-0.0**

LIMITS _____

CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



TEST NO. **6787-45P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **FEB 07 2011**

DISTRICT DIR. TRANS.
 DIS. MAT. L. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT.
 CONSTRUCTION

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2					
3/8	100				
4	99				
8	98				
16	97				
30	96				
50	93				
100	85				
200	68				
5 1/4	29				
1 1/4	18				

REPORT OF TESTS ON **SOIL**

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)

ACTIVITY OR OBJECT

AMOUNT

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIQ. - # CU. FT.				
STABILOMETER P _n AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
100			100% Moisture = 16.1%

REMARKS:

EXUDATION PRES. P.S.I.

THICK. BY STAB. FEET

EXPANSION DIAL READING

THICK. BY EXP. PRESS. FEET

R-VALUE BY EXPANSION

TEST RESULTS

LL	P.L	18	P.I.	12

CV

S.E	AS REC'D.	AS REC'D.

REL. COMPACTION

LART	GRADE	100 REV.	500 REV.	IN PLACE

DENSITY

MOISTURE

% REL. COMP.

% CRUSHED PARTICLES

SPEC.

EXUDATION PRESSURE

EXPANSION PRESSURE

AT EQUILIBRIUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708270**

PRELIMINARY TESTS SAMPLE SENT TO: HDQTRS. LAB FIELD NO.
 ACCEPTING AGENCY BRANCH DIST. LAB NO. **7934**
 DEPENDENT TESTS DIST. SHIPMENT REC. NO. **6787-45P**
 SPECIAL TESTS AUTHORIZATION

SAMPLE OF **SOIL**

FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-003**

DEPTH **5-6.5'**

LOCATION OF SOURCE **SAN FRANCISCO CREEK**

THIS SAMPLE **R-10-003-** AND IS ONE OF SAMPLES REPRESENTING (TONS, GALS, BBL, STA, ETC.)
 IS SHIPPED IN **51** (NO. CONTAINERS) A GROUP OF

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY TEST RESULTS DESIRED DATE NEEDED **09/24/10**

REMARKS **PARTICLE ANALYSIS, PI, WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/17/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS

CONT. NO. **235620** Project **0400000678**

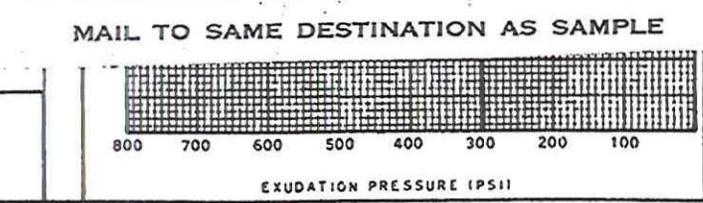
FED. NO. **SUBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS 16, 8TH FL OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-40P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **FEB 07 2011**

DISTRICT DIR. OR TRANS. S
 DIS. MAT. L. OR PAV'T. S
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD CAR NUMBER
 TL-0101 (REV. 10/97) **C708271**

GRADING ANALYSIS						REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL					
IF CONTRACT, USE CONTRACT ITEM						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
SPECIAL DESIGNATION (USE WHEN APPLICABLE)						ACTIVITY OR OBJECT		AMOUNT			
3						TEST SPECIMEN		A	B	C	D
2 1/2						DATE TESTED					
2						COMPACTOR FOOT PRESSURE P.S.I.					
1 1/2						INITIAL MOISTURE %					
1						SOAK WATER ML					
3/4						WATER ADDED-ML (TOTAL)					
1/2						WATER ADDED %					
3/8	100					MOISTURE AT COMPACTION %					
4	99					WET WT. OF BRIQUETTE-GMS					
8	98					HEIGHT OF BRIQUETTE-INCHES					
16	97					DRY DENSITY OF BRIO. - # CU. FT.					
30	97					STABILOMETER P _H AT 2000 LBS.					
50	96					DISPLACEMENT					
100	90					R-VALUE BY STABILOMETER					
200	72					EXUDATION PRES. P.S.I.					
5µ	19					THICK. BY STAB. FEET					
1µ	13					EXPANSION DIAL READING					
GRADING AS USED WAS OBTAINED AS FOLLOWS:						THICK. BY EXP. PRESS. FEET					
% BY WT. % BY VOL. TEST NO. DESCRIPTION						R-VALUE BY EXPANSION					
Moisture = 24.2%						TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVE)	<input type="checkbox"/> BULK (SSD)
						LL 31 P.L 20 P.I. 11				<input type="checkbox"/> APPAREN	
REMARKS:						CV					
						SIEVE		AS REC'D.	CRUSHED		
SURFACE						COMBINED		REL. COMPACTION			
BASE						GRADE		100 REV.		IN PLACE	0
SUBBASE								500 REV.	DENSITY		
						D ₁		MOISTURE			
GRAVEL EQUIVALENT FACTOR						D ₂		% REL. COMP.			
TRAFFIC INDEX						% CRUSHED PARTICLES		SPEC. †			
R-VALUE						EXUDATION PRESSURE		RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B			
						EXPANSION PRESSURE					
						AT EQUILIBRIUM SPEC.					
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)											

AUG 30 2010

PRIMARY TESTS PROCESSED TESTS ACCEPTANCE TESTS INDEPENDENT TESTS SURVEY TESTS SPECIAL TESTS

SAMPLE SENT TO: HDQTRS. LAB, BRANCH LAB, SHIPMENT, AUTHORIZATION NO.

FIELD NO. LAB NO. 7937 TEST NO. 6787-40P D. OR REQ. NO.

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-003**
 DEPTH **10-11.5'**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK**

THIS SAMPLE **R-10-003-52** AND IS ONE OF A GROUP OF **52** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA. ETC.)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE **52** TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **(MA) PARTICLE-SIZE ANALYSIS, PI WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/17/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-00**
 LIMITS

CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE. MS 16, 8TH FL. ORKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

TEST NO. **6787-47P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
FEB 07 2011
 BILLED _____ DATE REPORTED _____

DISTRICT DIR. OR TRANS. LA
 DIS. MAT. L. OR PAV'T. SEC.
 RESIDENT ENGINEER ACCOUNTING
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORT.
 SAMPLE IDENTIFICATION CARD CAL# NUMBER **C708272**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2						TEST SPECIMEN			
1						DATE TESTED			
3/4						COMPACTOR FOOT PRESSURE P.S.I.			
1/2						INITIAL MOISTURE %			
3/8	100					SOAK WATER ML			
4	99					WATER ADDED-ML (TOTAL)			
8	96					WATER ADDED %			
16	96					MOISTURE AT COMPACTION %			
30	95					WET WT. OF BRIQUETTE-GMS			
50	93					HEIGHT OF BRIQUETTE-INCHES			
100	76					DRY DENSITY OF BRIQ. - # CU. FT.			
200	49					STABILOMETER P _H AT 2000 LBS.			
5μ	19					DISPLACEMENT			
1μ	13					R-VALUE BY STABILOMETER			
GRADING AS USED WAS OBTAINED AS FOLLOWS:					EXUDATION PRES. P.S.I.				
% BY WT. % BY VOL. TEST NO. DESCRIPTION					THICK. BY STAB. FEET				
Moisture 31.2%					EXPANSION DIAL READING				
					THICK. BY EXP. PRESS. FEET				
					R-VALUE BY EXPANSION				
REMARKS:					TEST RESULTS				
					SPEC. SP. GR. <input type="checkbox"/> BULK (OVER BULK (SSD) APPARENT				
					LL. 27 P.L. 19 P.I. 8				
					CV				
SURFACE					S.E. AS REC'D. CRUSHED				
BASE					COMBINED				
SUBBASE					L.ART. GRADE 100 REV. 500 REV.				
GRAVEL EQUIVALENT FACTOR					DUR. D _f D _f				
TRAFFIC INDEX					% CRUSHED PARTICLES				
R VALUE					EXUDATION PRESSURE				
					EXPANSION PRESSURE				
					AT EQUILIBRIUM SPEC.				
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)					RICHARD CHAN				
					DISTRICT MATERIALS ENGINEER				
					BRANCH CHIEF, MATERIALS B				

AUG 30 2010 **6787-47P**

PRELIMINARY TESTS SAMPLE SENT TO: QTRS. LAB FIELD NO.
 ACCEPTANCE TESTS BRANCH LAB LAB NO. 7434
 SPECIAL TESTS SHIPMENT NO. P.O. OR FILE NO.
 SPECIAL TESTS AUTHORIZATION NO.

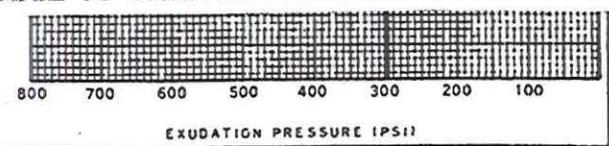
SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-003**
 DEPTH **15-16.5'**
 LOCATION OF SOURCE **SAN FRANCISCO TO CRUISE BR.**

THIS SAMPLE **R-10-003** AND IS ONE OF **S3** A GROUP OF **SAMPLES REPRESENTING (TONS, GALS, DBLS, STA, ETC)**
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE _____ TEST/RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **PARTICLE ANALYSIS PI, WATER CONTENT (MA)**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/17/2010**
 BY **RIFAAT NASHLED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0, 0**

LIMITS _____
 CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



800 700 600 500 400 300 200 100
 EXUDATION PRESSURE (PSI)

TEST NO. **6787-48P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **FEB 07 2011**

DISTRICT DIR. OR TRANS. L.A.
 DIS. MAT LS. OR PAV'T. SECT.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708273**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						IF CONTRACT, USE CONTRACT ITEM				
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
1 1/2										
1						TEST SPECIMEN	A	B	C	D
3/4						DATE TESTED				
1/2						COMPACTOR FOOT PRESSURE P.S.I.				
3/8						INITIAL MOISTURE %				
4						SOAK WATER ML				
8						WATER ADDED-ML (TOTAL)				
16						WATER ADDED %				
30						MOISTURE AT COMPACTION %				
50						WET WT. OF BRIQUETTE-GMS				
100						HEIGHT OF BRIQUETTE-INCHES				
200						DRY DENSITY OF BRIQ. - # CU. FT.				
5 1/4						STABILOMETER P _H AT 2000 LBS.				
1 1/4						DISPLACEMENT				
						R-VALUE BY STABILOMETER				
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.				
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET				
1/8 Moisture = 69.3%						EXPANSION DIAL READING				
						THICK. BY EXP. PRESS. FEET				
						R-VALUE BY EXPANSION				
REMARKS:						TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVER BULK (SSD)) <input type="checkbox"/> APPARENT
						LL. 53 P.L. 27 P.I. 26				
						CV			FINE	CO
SURFACE						S.E.	AS REC'D.		AS REC'D.	
							CRUSHED		CRUSHED	
BASE						LART	COMBINED		REL. COMPACTION D.	
SUBBASE							GRADE	100 REV.		IN PLACE	OPT
							500 REV.		DENSITY	
GRAVEL EQUIVALENT FACTOR						DUR	D _f		MOISTURE	
TRAFFIC INDEX							D ₁		% REL. COMP.	
R VALUE						% CRUSHED PARTICLES		SPEC.		
EXUDATION PRESSURE						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B				
EXPANSION PRESSURE										
AT EQUILIBRIUM SPEC.										
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)										

6787-48P

AUG 30 2010

PRELIMINARY TESTS ACCEPTANCE TESTS

SAMPLE SENT TO: HDQTRS. L.A. DIST. NO. **784**
 BRANCH DIST. L.A. DIST. NO. **48P**
 AUTHORIZATION NO. **48P**

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-003**
 DEPTH **20-21.5**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK BR.**

THIS SAMPLE **R-10-003-54** AND IS ONE OF A GROUP OF **54**
 IS SHIPPED IN (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 SAMPLES REPRESENTING (TONS, GALS, BLS, STA, ETC.)

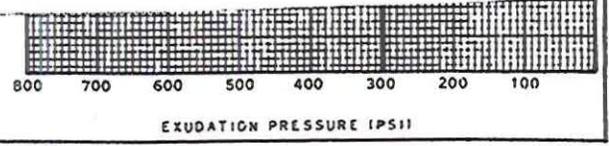
TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PI, WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/17/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0.0**

LIMITS

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **11 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-49P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **FEB 07 2011**

DISTRICT DIR. OR TRANS. I
 DIS. MAT LS .R. PAV'T. S
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708274**

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2									
1						TEST SPECIMEN			
3/4	100					DATE TESTED			
1/2	95					COMPACTOR FOOT PRESSURE P.S.I.			
3/8	93					INITIAL MOISTURE %			
4	79					SOAK WATER ML			
8	67					WATER ADDED-ML (TOTAL)			
16	56					WATER ADDED %			
30	49					MOISTURE AT COMPACTION %			
50	42					WET WT. OF BRIQUETTE-GMS			
100	34					HEIGHT OF BRIQUETTE-INCHES			
200	27					DRY DENSITY OF BRIQ. - 7 CU. FT.			
5 1/4	14					STABILOMETER P _n AT 2000 LBS.			
1 1/4	8					DISPLACEMENT			
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.			
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET			
1/6 Moisture = 22.3%						EXPANSION DIAL READING			
						THICK. BY EXP. PRESS. FEET			
						R-VALUE BY EXPANSION			
REMARKS:						TEST RESULTS			
						LL.	P.L.	P.I.	SPEC.
						CV			
SURFACE						S.E.	AS REC'D.		REL. COMPACTION
BASE							CRUSHED		
SUBBASE							COMBINED		
						LART	GRADE	100 REV.	IN PLACE
								500 REV.	
GRAVEL EQUIVALENT FACTOR						DUR	D _f	DENSITY	MOISTURE
TRAFFIC INDEX							D _f	% REL. COMP.	
R-VALUE						% CRUSHED PARTICLES			
EXUDATION PRESSURE						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B			
EXPANSION PRESSURE									
AT EQUILIBRIUM SPEC.									
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)									

AUG 30 2010

6787-49P

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.

ACCEPTANCE TESTS HDQTRS. LAB DIST. LAB NO.

SPECIAL TESTS BRANCH LAB DIST. LAB

SAMPLE OF **SOIL**

FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-003**

DEPTH **25-26.5'**

LOCATION OF SOURCE **SAN FRANCISCO WILD CREEK**

THIS SAMPLE **R-10-003-55** AND IS ONE OF A GROUP OF

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY

DATE NEEDED **09/24/10**

REMARKS **PARTICLE-SIZE ANALYSIS (MA)
WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/17/2010**

BY **RIFAAT NASHED** TITLE **T.I.E. (CIVIL)**

DIST. CO, RTE, PM **04-SM-101-0.0**

LIMITS

CONT. NO. **235620** PROJECT **0400000679**

FED. NO. **SUBJECT 160**

RES. ENGR. OR SUPT. **TUNG-NGUYEN**

ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775**, FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

800 700 600 500 400 300 200 100

EXUDATION PRESSURE (PSI)

TEST NO. **6787 50P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **FEB 07 2011**

DISTRICT DIRECTOR TRANS. I
 DIS. MAT L E R. PAV'T. S
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						SOURCE CHARGE EXPENDITURE AUTHORIZATION			
2 1/2						SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT			
2									
1 1/2									
1	100					TEST SPECIMEN A B C D			
3/4	97					DATE TESTED			
1/2	96					COMPACTOR FOOT PRESSURE P.S.I.			
3/8	94					INITIAL MOISTURE %			
4	88					SOAK WATER ML			
8	80					WATER ADDED-ML (TOTAL)			
16	71					WATER ADDED %			
30	61					MOISTURE AT COMPACTION %			
50	43					WET WT. OF BRIQUETTE-GMS			
100	32					HEIGHT OF BRIQUETTE-INCHES			
200	25					DRY DENSITY OF BRIQ. - 4 CU. FT.			
5/4	15					STABILOMETER P _H AT 2000 LBS.			
1/4	10					DISPLACEMENT			

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
 Moisture = 26.0%

REMARKS:		TEST RESULTS		SPEC.	SP. GR.	BULK (OVS)	BULK (SSD)	APPAREN
		LL.	P.L.	P.I.				FINE
		CV				AS REC'D.	CRUSHED	
		S.E.				REL. COMPACTION		
		COMBINED						
		GRADE						
		100 REV.				IN PLACE		
		500 REV.				DENSITY		
		D _f				MOISTURE		
		D _r				% REL. COMP.		

EXUDATION PRESSURE
 EXPANSION PRESSURE
 AT EQUILIBRIUM SPEC.
 INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NUMBER **C708275**

6787-50P
 AUG 30 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 ACCEPTANCE TESTS DIST. LAB NO. **7934**
 INDEPENDENT TESTS BRANCH DIST. LAB **50P**
 SPECIAL TESTS SHIPMENT NO. REQ. NO.

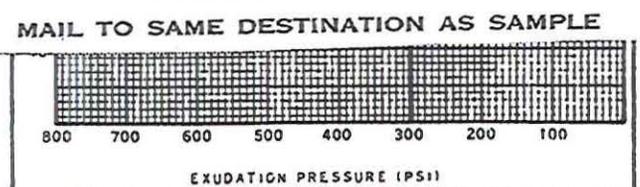
SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-003**
 DEPTH **30-31.5'**
 LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK RR.**

THIS SAMPLE **R-10-003** IS SHIPPED IN **56** (NO. CONTAINERS) AND IS ONE OF A GROUP OF
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE NORMAL PRIORITY TEST RESULTS DESIRED DATE NEEDED **09/24/10**

REMARKS
PARTICLE-SIZE ANALYSIS (M₆₀)
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/17/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0.0**

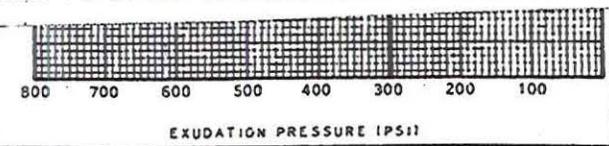
LIMITS
 CONT. NO. **235620** PROJECT **04.00000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX: **510-286-4839**



TEST NO. **6787-51P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
FEB 07 2011
 BILLED _____ DATE REPORTED _____

DISTRICT DIRECTOR TRANS.
 DIS. MATERIALS ENGR. PAV'T. ENGR.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD NUMBER **C708276**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
						IF CONTRACT, USE CONTRACT ITEM			
						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
3									
2 1/2									
2									
1 1/2									
1	100					TEST SPECIMEN		A	B
3/4	85					DATE TESTED			
1/2	92					COMPACTOR FOOT PRESSURE P.S.I.			
3/8	85					INITIAL MOISTURE %			
4	72					SOAK WATER ML			
8	60					WATER ADDED-ML (TOTAL)			
16	50					WATER ADDED %			
30	40					MOISTURE AT COMPACTION %			
50	25					WET WT. OF BRIQUETTE-GMS			
100	17					HEIGHT OF BRIQUETTE-INCHES			
200	13					DRY DENSITY OF BRIQ. - # CU. FT.			
5 1/4	9					STABILOMETER P _n AT 2000 LBS.			
1 1/4	5					DISPLACEMENT			
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.			
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET			
0% Moisture = 11.2%						EXPANSION DIAL READING			
						THICK. BY EXP. PRESS. FEET			
						R-VALUE BY EXPANSION			
REMARKS:						TEST RESULTS		SPEC.	SP. GR.
						LL.	P.L.	P.I.	<input type="checkbox"/> BULK (OV) <input type="checkbox"/> BULK (SS) <input type="checkbox"/> APPARE
						CV			FINE
						S.E.	AS REC'D.		AS REC'D.
							CRUSHED		CRUSHED
							COMBINED		REL. COMPACTION
SURFACE						LART	GRADE	100 REV.	IN PLACE
BASE								500 REV.	DENSITY
SUBBASE						DUR	D ₁		MOISTURE
									% REL. COMP.
GRAVEL EQUIVALENT FACTOR						% CRUSHED PARTICLES			SPEC. ?
TRAFFIC INDEX						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B			
R VALUE									
EXUDATION PRESSURE									
EXPANSION PRESSURE									
AT EQUILIBRIUM SPEC.						EXUDATION PRESSURE (PSI)			
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)									

AUG 30 2010 **6787-51P**

PRELIMINARY TESTS SAMPLE SENT TO: _____ FIELD NO. _____
 ACCEPTANCE TEST BRANCH _____ DIST. LAB. _____
 EXPENDITURE AUTHORIZATION DIST. LAB. _____
 SPECIAL TESTS AUTHORIZATION _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-003**

DEPTH **35-36.5'**

LOCATION OF SOURCE **SAN FRANCISCO WILCO CREEK**

THIS SAMPLE **R-10-003-S1** AND IS ONE OF A GROUP OF _____
 IS SHIPPED IN (NO. CONTAINERS) **S1** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.) _____

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE-SIZE ANALYSIS, (MA) WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/17/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0.0**

LIMITS _____

CONT. NO. **235620** PROJECT **0400000678**

FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775** FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

TEST NO. **6787-52P**
 DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **FEB 07 2011**

DISTRICT DIRECTOR
 DIS. MAT. L.S. JR.
 RESIDENT ENGINEER
 CONSTRUCTION

TRANS. L.
 PAV'T. SEC.
 ACCOUNTANT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER **C708277**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2	100				
3/8	99				
4	96				
8	93				
16	91				
30	89				
50	84				
100	72				
200	55				
5 1/4	20				
1 1/4	10				

REPORT OF TESTS ON
SOIL

IF CONTRACT, USE CONTRACT ITEM		
SOURCE	CHARGE	EXPENDITURE AUTHORIZATION
SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT
		AMOUNT
TEST SPECIMEN	A	B C D
DATE TESTED		
COMPACTOR FOOT PRESSURE P.S.I.		
INITIAL MOISTURE %		
SOAK WATER ML		
WATER ADDED-ML (TOTAL)		
WATER ADDED %		
MOISTURE AT COMPACTION %		
WET WT. OF BRIQUETTE-GMS		
HEIGHT OF BRIQUETTE-INCHES		
DRY DENSITY OF BRIQ. - # CU. FT.		
STABILOMETER P _H AT 2000 LBS.		
DISPLACEMENT		
R-VALUE BY STABILOMETER		
EXUDATION PRES. P.S.I.		
THICK. BY STAB. FEET		
EXPANSION DIAL READING		
THICK. BY EXP. PRESS. FEET		
R-VALUE BY EXPANSION		

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION
 0% Moisture = 24.3%

REMARKS:

TEST RESULTS SPEC. SP. GR. BULK (DYE) BULK (STD) APPARENT FINE %

LL. 26 P.L. 18 P.I. 8

CV

SURFACE AS REC'D. CRUSHED REL. COMPACTION

BASE COMBINED

SUBBASE GRADE 100 REV. IN PLACE OR 500 REV. DENSITY

GRAVEL EQUIVALENT FACTOR

TRAFFIC INDEX

R VALUE EXUDATION PRESSURE MOISTURE % REL. COMP. SPEC. EXPANSION PRESSURE AT EQUILIBRIUM

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

PRELIMINARY TESTS
 FIELD TESTS
 ACCEPTANCE TESTS
 INDEPENDENT ASSESSMENT TESTS
 SPECIAL TESTS

SAMPLE SENT TO: FIELD NO. HQTRS. LAB. BRANCH LAB. DIST. LAB. TRAN. LAB. SHIPMENT NO. AUTHORIZATION NO.

6787-52P

AUG 30 2010
 SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-003**
 DEPTH **40-41.5'**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK**

THIS SAMPLE **R-10-003** AND IS ONE OF A GROUP OF **SB** SAMPLES REPRESENTING (TONS, CANS, BOLS, STA. ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS

PARTICLE ANALYSIS, PI, WATER CONTENT (MA)

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/17/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS

CONT. NO. **235620** Project **0400000678**

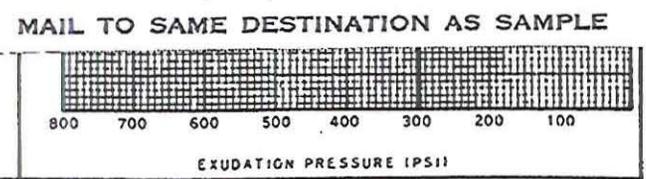
FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**

CONTRACTOR **CA94612**

PHONE **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-54P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **FEB 07 2011**

DISTRICT DIR. OR TRANS.
 DIS. MAT LS OR PAV'T. S.
 RESIDENT ENGINEER ACCOUNT.
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NO. **C708279**

GRADING ANALYSIS						REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL					
3						IF CONTRACT, USE CONTRACT ITEM					
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT		
1 1/2						TEST SPECIMEN					
1						DATE TESTED					
3/4						COMPACTOR FOOT PRESSURE P.S.I.					
1/2						INITIAL MOISTURE %					
3/8						SOAK WATER ML					
4	100					WATER ADDED-ML (TOTAL)					
8	100					WATER ADDED %					
16	99					MOISTURE AT COMPACTION %					
30	99					WET WT. OF BRIQUETTE-GMS					
50	99					HEIGHT OF BRIQUETTE-INCHES					
100	99					DRY DENSITY OF BRIQ. - 4 CU. FT.					
200	98					STABILOMETER P _H AT 2000 LBS.					
5μ	48					DISPLACEMENT					
1μ	30					R-VALUE BY STABILOMETER					
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.					
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET					
% Moisture - 40.1%						EXPANSION DIAL READING					
						THICK. BY EXP. PRESS. FEET					
						R-VALUE BY EXPANSION					
REMARKS:						TEST RESULTS					
						LL. 49	P.L. 21	P.I. 23	SPEC. SP. GR.		
						CV					
						S.E.		AS REC'D.		BULK TO VY BULK (SS) APPAREN	
						CRUSHED		CRUSHED		FINE	
SURFACE						COMBINED		REL. COMPACTION			
BASE						GRADE		100 REV.		IN PLACE OR	
SUBBASE								500 REV.		DENSITY	
						D _f		MOISTURE			
						D _s		% REL. COMP.			
GRAVEL EQUIVALENT FACTOR						% CRUSHED PARTICLES				SPEC. ?	
TRAFFIC INDEX						RICHARD CHAN DISTRICT MATERIALS ENGINEER BRANCH CHIEF, MATERIALS B					
R VALUE											
EXUDATION PRESSURE											
EXPANSION PRESSURE											
AT EQUILIBRIUM SPEC.											
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)											

AUG 30 2010 **6787-54P**

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 ACCEPTANCE TESTS HQTRS. LAB DIST. LAB NO. 7924
 INDEPENDENT TESTS BRANCH DIST. LAB NO. 54P
 LABORATORY DISCREPANCY STATEMENT NO. FIELD NO.
 TRAFFIC LOADS AUTHORIZATION
 SPECIAL TESTS

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-003**

DEPTH **50-51.5'**

LOCATION OF SOURCE **SAN FRANCISCO WITH CREEK BR.**

THIS SAMPLE **R-10-003-S10** AND IS ONE OF A GROUP OF
 IS SHIPPED IN (NO. CONTAINERS) **510** SAMPLES REPRESENTING (TONS, GALS, DBLS, STA, ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE ANALYSIS, PI, WATER CONTENT (MK)**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/17/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS.16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE

800 700 600 500 400 300 200 100
 EXUDATION PRESSURE (PSI)

TEST NO. **6787-55P**

DATE RECEIVED **AUG 30 2010**

DATE REPORTED **FEB 07 2011**

APPROVED BY _____

RESIDENT ENGINEER CONSTRUCTION

DISTRICT DIR. OR DIS. MAT LS. TRANS. L. OR PAV'T. SEC.

ACCOUNTING

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2					
3/8					
4					
8					
16					
30					
50					
100					
200					
5µ					
1µ					

REPORT OF TESTS ON **SOIL**

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIQ. - # CU. FT.				
STABILOMETER P _H AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION

1. Moisture = 35.3%

REMARKS:

EXUDATION PRES. P.S.I.

THICK. BY STAB. FEET

EXPANSION DIAL READING

THICK. BY EXP. PRESS. FEET

R-VALUE BY EXPANSION

TEST RESULTS

LL **43** P.L. **17** P.I. **26**

CV

AS REC'D.

CRUSHED

COMBINED

GRADE

100 REV.

500 REV.

D_f

D_s

% CRUSHED PARTICLES

EXUDATION PRESSURE

EXPANSION PRESSURE

AT EQUILIBRIUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST RESULTS

SPEC.

SP. GR.

BULK (DYE)

BULK (SSD)

APPARENT

FINE C

AS REC'D.

CRUSHED

REL. COMPACTION

IN PLACE OR

DENSITY

MOISTURE

% REL. COMP.

SPEC.

RICHARD CHAN
DISTRICT MATERIALS ENGINEER
BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPT. OF TRANSPORTATION

SAMPLE IDENTIFICATION

TL-0101 (REV. 10/97)

708280

PRELIMINARY TESTS

PROCESS TESTS

ACCEPTANCE TESTS

INDEPENDENT TESTS

SPECIAL TESTS

SAMPLE SENT TO:

HDQTRS. LAB

BRANCH LAB

DIST. LAB

FIELD NO.

DIST. LAB NO. **7934**

REQ. NO.

SAMPLE OF **SOIL**

FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-003**

DEPTH **55-56.5'**

LOCATION OF SOURCE **SAN FRANCISCO MOUNTAIN CREEK DR.**

THIS SAMPLE **R-10-003-S11** AND IS ONE OF A GROUP OF

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE

TEST RESULTS DESIRED

NORMAL PRIORITY

DATE NEEDED **09/24/10**

REMARKS **PI, WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/17/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST. CO, RTE, PM **04-SM-101-0.0**

LIMITS

CONT. NO. **235620** PROJECT **04-00000678**

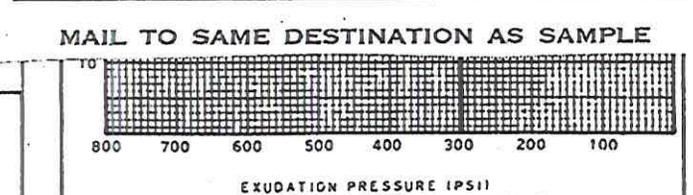
FED. NO. **SUB OBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS 16, 8TH FL OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775** FAX **510-286-4839**



TEST NO. **1787-57P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
FEB 07 2011
 BILLED _____ DATE REPORTED _____

DISTRICT DIRECTOR TRANS. LA
 DIS. MATERIALS ENGR. PAV'T. SEC.
 RESIDENT ENGINEER ACCOUNTING
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORT
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CALIF. NUMBER **C708282**

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1	100				
3/4	98				
1/2	97				
3/8	97				
4	95				
8	94				
16	93				
30	92				
50	92				
100	88				
200	75				
5 1/4	30				
1 1/4	19				

REPORT OF TESTS ON **SOIL**

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION USE WHEN APPLICABLE	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIQ. - 1/4 CU. FT.				
STABILOMETER P _H AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				

GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION

9% Moisture = 92.9%

EXUDATION PRES. P.S.I.
 THICK. BY STAB. FEET
 EXPANSION DIAL READING
 THICK. BY EXP. PRESS. FEET
 R-VALUE BY EXPANSION

REMARKS:

TEST RESULTS

LL. **32** P.L. **18** P.I. **14**

CV

SURFACE	S, E	AS REC'D.		REL. COMPACTION DATA
		CRUSHED	CRUSHED	
BASE		COMBINED		
SUBBASE	LART	GRADE	100 REV.	IN PLACE OPT
			500 REV.	
GRAVEL EQUIVALENT FACTOR	OUR	D _f	DENSITY	
		D _s	MOISTURE	
TRAFFIC INDEX		% REL. COMP.		

% CRUSHED PARTICLES SPEC.

EXUDATION PRESSURE
 EXPANSION PRESSURE
 AT EQUILIBRIUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST RESULTS

SP. GR. BULK (OVEN) BULK (SSD) APPARENT

FINE CO

AS REC'D. CRUSHED

REL. COMPACTION DATA

DENSITY

MOISTURE

% REL. COMP.

% CRUSHED PARTICLES SPEC.

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PROCESS TESTS HOQTRS. LAB DIST. LAB NO. **7934**
 ACCEPTANCE TESTS BRIDGE LAB DIST. LAB NO. **1787-57P**
 INDEPENDENT TESTS DIST. LAB PROJ. OR REQ. NO.
 TRANS. LAB AUTHORIZATION NO.
 SPECIAL TESTS

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-003**

DEPTH **65-66.5'**

LOCATION OF SOURCE **SAN FRANCISCO WILCO CREEK**

THIS SAMPLE **R-10-003** AND IS ONE OF A GROUP OF **513** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PARTICLE ANALYSIS, P.I., WATER CONTENT (on A)**

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/17/2010**

BY **RIFANT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0,0**

LIMITS

CONT. NO. **235620** Project **0400000678**

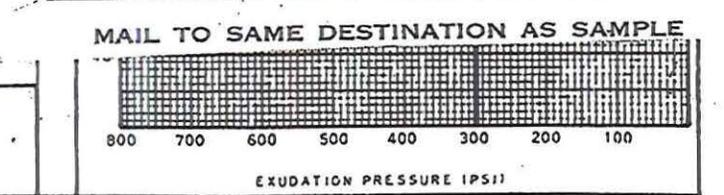
FED. NO. **SUBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**

CONTRACTOR **CA94612**

PHONE **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-58P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
FEB 08 2011
 BILLED _____ DATE REPORTED _____

DISTRICT DIR. OR TRANS.
 DIS. MAT LS. JR. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT.
 CONSTRUCTION

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT
3					
2 1/2					
2					
1 1/2					
1					
3/4					
1/2					
3/8					
4					
8					
16					
30					
50					
100					
200					
5µ					
1µ					

REPORT OF TESTS ON **SOIL**

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION

SPECIAL DESIGNATION (USE WHEN APPLICABLE) _____ ACTIVITY OR OBJECT _____ AMOUNT _____

TEST SPECIMEN	A	B	C	D
DATE TESTED				
COMPACTOR FOOT PRESSURE P.S.I.				
INITIAL MOISTURE %				
SOAK WATER ML				
WATER ADDED-ML (TOTAL)				
WATER ADDED %				
MOISTURE AT COMPACTION %				
WET. WT. OF BRIQUETTE-GMS				
HEIGHT OF BRIQUETTE-INCHES				
DRY DENSITY OF BRIQ. - 5 CU. FT.				
STABILOMETER P _H AT 2000 LBS.				
DISPLACEMENT				
R-VALUE BY STABILOMETER				

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
0%			Moisture = 0.2%

EXUDATION PRES. P.S.I. _____ THICK. BY STAB. FEET _____ EXPANSION DIAL READING _____ THICK. BY EXP. PRESS. FEET _____ R-VALUE BY EXPANSION _____

REMARKS: _____

SURFACE _____ BASE _____ SUBBASE _____

GRAVEL EQUIVALENT FACTOR _____ TRAFFIC INDEX _____

R-VALUE EXUDATION PRESSURE _____ EXPANSION PRESSURE _____ AT EQUILIBRIUM SPEC. _____

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET) _____

TEST RESULTS SPEC. SP. GR. BULK (OV) BULK (SS) APPAREN

LL. **39** P.L. **18** P.I. **21**

CV _____

S.E.	AS REC'D.	CRUSHED	REL. COMPACTION

LART	GRADE	100 REV.	500 REV.	DENSITY	MOISTURE	% REL. COMP.

OUR D_f _____ D_s _____

% CRUSHED PARTICLES _____ SPEC. _____

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD CARD NUMBER **C708283**
 TL-0101 (REV. 10/97)

AUG 30 2010 **6787-58P**

PRELIMINARY TESTS SAMPLE SENT TO: _____ FIELD NO. _____
 ACCEPTANCE TESTS HDOT'S LAB DIS. LAB NO. **7934**
 BRANER LAB
 DIST. _____
 SHIPMENT NO. _____ FOR REQ. NO. _____
 AUTHORIZATION NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-003**

DEPTH **75 - 76.5'**

LOCATION OF SOURCE **SAN FRANCISCO CREEK BR.**

THIS SAMPLE **R-10-003** AND IS ONE OF _____ SAMPLES REPRESENTING (TONS, CANS, BBL'S, STA, ETC.)
 IS SHIPPED IN **15** A GROUP OF _____

OWNER OR MANUFACTURER **CALTRANS**

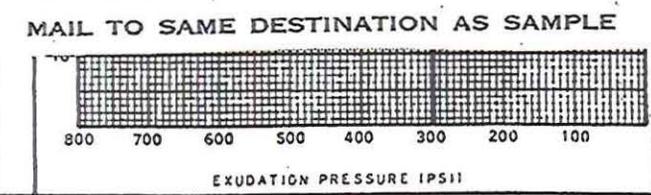
TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS **PI, WATER CONTENT**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/18/2010**
 BY **RIFAAH NASHED** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM _____
04-SM-101-0,0

LIMITS _____

CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE **510-622-1775** FAX **510-286-4839**



TEST NO. **6787-59P**

DATE RECEIVED **AUG 30 2010**

DATE REPORTED **FEB 09 2011**

CALC. BY _____ APPROVED BY _____

DISTRICT DIRECTOR TRANS.
 DIS. MATERIALS R. PAV'T.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C 708284**

GRADING ANALYSIS						REPORT OF TESTS ON								
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL								
						IF CONTRACT, USE CONTRACT ITEM								
						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION						
						SPECIAL DESIGNATION (USE WHEN APPLICABLE)			ACTIVITY OR OBJECT		AMOUNT			
3														
2 1/2														
2														
1 1/2														
1						TEST SPECIMEN			A	B	C	D		
3/4						DATE TESTED								
1/2						COMPACTOR FOOT PRESSURE P.S.I.								
3/8						INITIAL MOISTURE			%					
4	100					SOAK WATER ML								
8	100					WATER ADDED-ML (TOTAL)								
16	100					WATER ADDED			%					
30	99					MOISTURE AT COMPACTION			%					
50	99					WET WT. OF BRIQUETTE-GMS								
100	99					HEIGHT OF BRIQUETTE-INCHES								
200	98					DRY DENSITY OF BRIQ. - 4 CU. FT.								
5µ	87					STABILOMETER P _n AT 2000 LBS.								
1µ	58					DISPLACEMENT								
						R-VALUE BY STABILOMETER								

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
100			Moisture = 33.3%

REMARKS:

TEST RESULTS		SPEC.	SP. GR.	BULK (BY BULK (95) APPARE
LL.	65 P.L	24 P.I.	41	
CV				FINE
SURFACE	AS REC'D.		AS REC'D.	
	CRUSHED		CRUSHED	
	COMBINED		REL. COMPACTION	
BASE	GRADE		IN PLACE	
	100 REV.		DENSITY	
SUBBASE	500 REV.		MOISTURE	
	D _r		% REL. COMP.	
GRAVEL EQUIVALENT FACTOR				
TRAFFIC INDEX				
R-VALUE	EXUDATION PRESSURE		SPEC.	
	EXPANSION PRESSURE			
	AT EQUILIBRIUM			

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

AUG 30 2010

6787-59P

PRELIMINARY TESTS SAMPLE SENT TO: _____ FIELD NO. _____

ACCEPTED FOR USE HDQRS. LAB. _____ DIST. LAB NO. ~~7934~~

BRANCH LAB. _____

DIST. _____

STATEMENT NO. _____

THICKNESS _____

SPECIAL TESTS _____

SAMPLE OF SOIL

FOR USE IN BRIDGE FOUNDATION DESIGN

SAMPLE FROM R-10-003

DEPTH 90-81.5'

LOCATION OF SOURCE SAN FRANCISCO CREEK

THIS SAMPLE R-10-003-S10 AND IS ONE OF A GROUP OF _____

IS SHIPPED IN (NO. CONTAINERS) 510

OWNER OR MANUFACTURER CA-TRANS

TOTAL QUANTITY AVAILABLE _____

TEST RESULTS DESIRED NORMAL PRIORITY

DATE NEEDED 09/24/10

REMARKS
(MA) PARTICLE-SIZE ANALYSIS, PI
WATER CONTENT

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED 08/18/2010

BY RIFAAT NASHED TITLE T.E. (CIVIL)

DIST, CO, RTE, PM 04-SM-101-0.0

LIMITS _____

CONT. NO. 235620 PROJECT 04-0000678

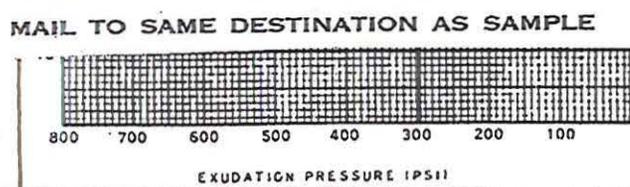
FED. NO. SUB OBJECT 160

RES. ENGR. OR SUPT. TUNG NGUYEN

ADDRESS 111 GRAND AVE, MS 16, 8TH FL. OAKLAND

CONTRACTOR CA94612

PHONE: 510-622-1775 FAX: 510-286-4839



TEST NO. **6787-60P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **FEB 09 2011**

DISTRICT DIRECTOR TRANS. I
 DIS. MAT. LS. JR. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) CARD NUMBER **C708285**

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						IF CONTRACT, USE CONTRACT ITEM				
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
1 1/2										
1						TEST SPECIMEN	A	B	C	D
3/4						DATE TESTED				
1/2						COMPACTOR FOOT PRESSURE P.S.I.				
3/8						INITIAL MOISTURE %				
4						SOAK WATER ML				
8						WATER ADDED-ML (TOTAL)				
16						WATER ADDED %				
30						MOISTURE AT COMPACTION %				
50						WET WT. OF BRIQUETTE-GMS				
100						HEIGHT OF BRIQUETTE-INCHES				
200						DRY DENSITY OF BRIQ. - # CU. FT.				
5µ						STABILOMETER P _H AT 2000 LBS.				
1µ						DISPLACEMENT				

AUG 30 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 ACCEPTED FOR USE HDQTRS. LAB
 BRANCH LAB
 DIST. LAB
 DIST. LAB NO. **7934**
 SPECIAL TESTS AUTHORIZED FOR REC. NO. **6787-60P**

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-003**
 DEPTH **85-86.5'**
 LOCATION OF SOURCE **SAN FRANCISCO TO CRENSHAW**

THIS SAMPLE **R-10-003-** AND IS ONE OF
 IS SHIPPED IN **S17** A GROUP OF
 (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 SAMPLES REPRESENTING (TONS, GALS, BOLS, STA, ETC.)

TOTAL QUANTITY AVAILABLE _____ TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**

REMARKS **PI, WATER CONTENT**

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
1/6			Moisture = 39.3%

REMARKS:

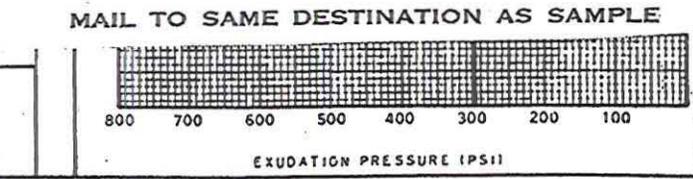
TEST RESULTS	SPEC.	SP. GR.	<input type="checkbox"/> BULK (OVL) <input type="checkbox"/> BULK (SSD) <input type="checkbox"/> APPAREN
LL. 64 P.L. 24 P.I. 40			
CV			
SURFACE	S.E.	AS REC'D.	AS REC'D.
BASE		CRUSHED	CRUSHED
SUBBASE		COMBINED	REL. COMPACTION
	LART	GRADE	100 REV. IN PLACE <input type="checkbox"/>
			500 REV.
	DUR	D _f	DENSITY
		D _c	MOISTURE
			% REL. COMP.
		% CRUSHED PARTICLES	SPEC.

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/18/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM

04-SM-101-0,0
 LIMITS
 CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B



TEST NO. **6787-62P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **FEB 07 2011**

DISTRICT DIR. OR TRANS.
 DIS. MAT. L. OR PAY'T.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708287**

GRADING ANALYSIS						REPORT OF TESTS ON						
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL						
3						IF CONTRACT, USE CONTRACT ITEM						
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION				
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)			ACTIVITY OR OBJECT	AMOUNT		
1 1/2						TEST SPECIMEN			A	B	C	D
1						DATE TESTED						
3/4						COMPACTOR FOOT PRESSURE P.S.I.						
1/2						INITIAL MOISTURE %						
3/8						SOAK WATER ML						
4	100					WATER ADDED-ML (TOTAL)						
8	100					WATER ADDED %						
16	100					MOISTURE AT COMPACTION %						
30	100					WET WT. OF BRIQUETTE-GMS						
50	98					HEIGHT OF BRIQUETTE-INCHES						
100	73					DRY DENSITY OF BRIQ. - 2 CU. FT.						
200	33					STABILOMETER P _n AT 2000 LBS.						
5 1/4	18					DISPLACEMENT						
1 1/4	12					R-VALUE BY STABILOMETER						

AUG 30 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 HQTRS. LAB
 BRAN. LAB
 DIST. LAB
 SHIPMENT NO.
 AUTHORITY NO.

ACCEPTED FOR TESTS
 DIST. LAB NO. **7234**
 FIELD NO. **6787-62P**

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-003**

DEPTH **95-96.5'**

LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK 140'**

THIS SAMPLE **R-10-003** AND IS ONE OF A GROUP OF
 IS SHIPPED IN **519** (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**

REMARKS
PARTICLE-SIZE ANALYSIS, (M&A)
WATER CONTENT

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
			EXUDATION PRES. P.S.I.
			THICK. BY STAB. FEET
			EXPANSION DIAL READING
			THICK. BY EXP. PRESS. FEET
			R-VALUE BY EXPANSION

REMARKS:
Moisture = 25.4%

SURFACE	S.E.	TEST RESULTS		SPEC.	SP. GR.	BULK TO BULK (S) APPAR.
		LL.	P.L.				P.I.
BASE	AS REC'D.					
SUBBASE	CRUSHED					
	COMBINED					
	GRADE	100 REV.				REL. COMPACTION
		500 REV.				IN PLACE
	D _f					DENSITY
	D _f					MOISTURE
						% REL. COMP.
		% CRUSHED PARTICLES				SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/18/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST. CO, RTE, PM **04-SM-101-00**

LIMITS

CONT. NO. **235620** PROJECT **0400000678**

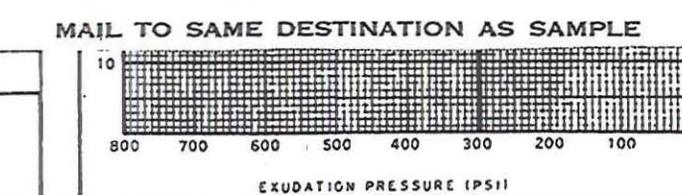
FED. NO. **SUBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775** FAX: **510-286-4839**



TEST NO. **6787-63P** DATE RECEIVED **AUG 30 2010**
 CALC. BY _____ APPROVED BY _____
FEB 10 2011
 BILLED _____ DATE REPORTED _____

DISTRICT DIRECTOR TRANS.
 DIS. MAT LS. JR. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER
 TL-0101 (REV. 10/97) **C708288**

GRADING ANALYSIS						REPORT OF TESTS ON					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL					
3						IF CONTRACT, USE CONTRACT ITEM					
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION			
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT		
1 1/2						TEST SPECIMEN					
1								A	B	C	D
3/4						DATE TESTED					
1/2						COMPACTOR FOOT PRESSURE P.S.I.					
3/8						INITIAL MOISTURE %					
4						SOAK WATER ML					
8						WATER ADDED-ML (TOTAL)					
16						WATER ADDED %					
30						MOISTURE AT COMPACTION %					
50						WET WT. OF BRIQUETTE-GMS					
100						HEIGHT OF BRIQUETTE-INCHES					
200						DRY DENSITY OF BRIQ. - # CU. FT.					
5µ						STABILOMETER P _H AT 2000 LBS.					
1µ						DISPLACEMENT					

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PROPERTIES TESTS HOOPTS. LAB DIST. LAB NO. **2934**
 ACCEPTANCE TESTS BRANCH LAB
 UNDERREINFORCED DIST. LAB
 SPECIAL TESTS AUTHORIZATION NO. **6787-63P**

AUG 30 2010
 SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-003**
 DEPTH **100-101.5'**
 LOCATION OF SOURCE **SAN FRANCISCO CREEK BR.**

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
91			Moisture - 29.21

EXUDATION PRES. P.S.I.
 THICK. BY STAB. FEET
 EXPANSION DIAL READING
 THICK. BY EXP. PRESS. FEET
 R-VALUE BY EXPANSION

THIS SAMPLE **R-10-003-520** AND IS ONE OF A GROUP OF
 (NO. CONTAINERS) **520** SAMPLES REPRESENTING (TONS, CANS, BLS, STA, ETC.)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS **PI, WATER CONTENT**

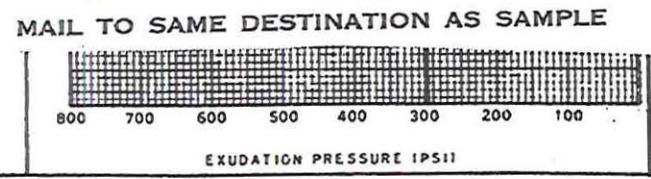
REMARKS:

TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK (OV)	<input type="checkbox"/> BULK (SS)	<input type="checkbox"/> APPARE
LL	40	P.L	17	P.I.	23	
CV						FINE
S.E.	AS REC'D.		AS REC'D.			
	CRUSHED		CRUSHED			
LART	COMBINED		REL. COMPACTION			
	GRADE	100 REV.		IN PLACE		
DUR		500 REV.	DENSITY			
	D ₁		MOISTURE			
	D ₂		% REL. COMP.			
	% CRUSHED PARTICLES		SPEC.			

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/18/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM
04-SM-101-0.0
 LIMITS
 CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)



TEST NO. **6787-IP** DATE RECEIVED **AUG 16 2010**
 CALC. BY APPROVED BY
 BILLED DATE RECEIVED **NOV 12 2010**
 DISTRICT DIRECTOR TRANS.
 DIS. MAT. L.S. PAV'T.
 RESIDENT ENGINEER ACCOUNTANT
 CONSTRUCTION

GRADING ANALYSIS						REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL				
3						IF CONTRACT, USE CONTRACT ITEM				
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION		
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT	
1 1/2						TEST SPECIMEN				
1						DATE TESTED				
3/4						COMPACTOR FOOT PRESSURE P.S.I.				
1/2						INITIAL MOISTURE %				
3/8						SOAK WATER ML				
4						WATER ADDED-ML (TOTAL)				
8						WATER ADDED %				
16						MOISTURE AT COMPACTION %				
30						WET WT. OF BRIQUETTE-GMS				
50						HEIGHT OF BRIQUETTE-INCHES				
100						DRY DENSITY OF BRIQ. - 7 CU. FT.				
200						STABILOMETER P _n AT 2000 LBS.				
5μ						DISPLACEMENT				
1μ						R-VALUE BY STABILOMETER				
GRADING AS USED WAS OBTAINED AS FOLLOWS:						EXUDATION PRES. P.S.I.				
% BY WT. % BY VOL. TEST NO. DESCRIPTION						THICK. BY STAB. FEET				
RESISTIVITY = 4572 SPEC: 1000-1000 (MIS)						EXPANSION DIAL READING				
PH = 7.6 SPEC: 5.6 (MIS)						THICK. BY EXP. PRESS. FEET				
REMARKS:						R-VALUE BY EXPANSION				
SURFACE						TEST RESULTS		SPEC.	SP. GR.	<input type="checkbox"/> BULK TOY <input type="checkbox"/> BULK (S) <input type="checkbox"/> APPARE
BASE						LL.	P.L.	P.I.		
SUBBASE						CV				FINE
GRAVEL EQUIVALENT FACTOR						S.E.	AS REC'D.			AS REC'D.
TRAFFIC INDEX							CRUSHED			CRUSHED
							COMBINED			REL. COMPACTION
						LARY	GRADE	100 REV.		IN PLACE
								500 REV.		DENSITY
						DUR	D _f			MOISTURE
								D _c		% REL. COMP.
						% CRUSHED PARTICLES			SPEC.	

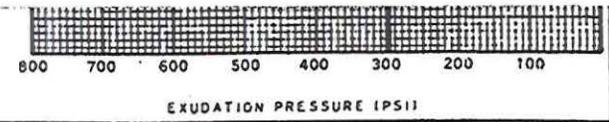
RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD CARD NUMBER
 TL-0101 (REV. 10/97) **C708226**

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PROCESS TESTS HDQTRS. LAB DIST. LAB NO. **7934**
 ACCURACY TESTS LAB DIST. LAB NO. **6787-IP**
 INDEPENDENT DIST. LAB NO. **6787-IP**
 ASSURANCE SUPPLYMENT FOR REQ. NO.
 SPEC. TESTS AUTHORIZATION NO.
 SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **R-10-001**
 DEPTH **1-5'**
 LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK**
 THIS SAMPLE IS SHIPPED IN **BT-001** AND IS ONE OF A GROUP OF
 (NO. CONTAINERS) **1** SAMPLES REPRESENTING (TONS, GALS, BOLS, STA. ETC.)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE **1** TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**
 REMARKS
CORROSION TEST

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.I.E. (CIVIL)**
 DIST, CO, RTE, PM
04-SM-101-00
 LIMITS
 CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUB OBJECT 160 (PHASE: 0)**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX: **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



TEST NO. **6787-2P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 DATE REPORTED **DEC 17 2010**

DISTRICT DIRECTOR TRANS.
 DIS. MAT. LS. PAV'T. S.
 RESIDENT ENGINEER ACCOUN.
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD CARD NUMBER **C708227**
 TL-0101 (REV. 10/97)

GRADING ANALYSIS					REPORT OF TESTS ON				
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2						TEST SPECIMEN			
1						DATE TESTED			
3/4						COMPACTOR FOOT PRESSURE P.S.I.			
3/8						INITIAL MOISTURE %			
4						SOAK WATER ML			
8						WATER ADDED-ML (TOTAL)			
16						WATER ADDED %			
30						MOISTURE AT COMPACTION %			
50						WET WT. OF BRIQUETTE-GMS			
100						HEIGHT OF BRIQUETTE-INCHES			
200						DRY DENSITY OF BRIO. - 4 CU. FT.			
5μ						STABILOMETER P _H AT 2000 LBS.			
1μ						DISPLACEMENT			

6787-2P

AUG 16 2010

PRELIMINARY TESTS PROCESS TESTS ACCEPTANCE TESTS

SAMPLE SENT TO: HDQTRS. LAB DIST. LAB SHIPMENT NO. AUTHORIZATION NO.

FIELD NO. _____
 DIST. LAB NO. **7934**
 DIST. LAB **6787-2P**
 REQ. NO. _____

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-001**

DEPTH **14.5-20'**
 LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK**

THIS SAMPLE IS SHIPPED IN **2** CONTAINERS
 OWNER OR MANUFACTURER **CALTRANS**
 TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**

REMARKS **CORROSION TEST**

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
			EXUDATION PRES. P.S.I.
			THICK, BY STAB. FEET
			EXPANSION DIAL READING
			THICK, BY EXP. PRESS. FEET
			R-VALUE BY EXPANSION

REMARKS: **Pit = 7.2 (Spes: 5.6 thin)**

MATERIAL SUBMITTED FOR TESTABLE FASTER MINIMUM SPES. AND TO SURFACE PRESENT TO METS-SACTO BASE FOR SULFATE CHLORIDE SUBBASE TEST.

TEST RESULTS	SPEC.	SP. GR.	BULK (OVS)		BULK (SSD)		APPARENT			
			LL.	P.L.	P.I.	CV	AS REC'D.	CRUSHED	REL. COMPACTION	IN PLACE	OF
AS REC'D.										
CRUSHED										
COMBINED										
GRADE			100 REV.							
			500 REV.							
D _r			DENSITY							
D _r			MOISTURE							
			% REL. COMP.							
			% CRUSHED PARTICLES							

COVER ADDITIONAL INFORMATION WITH LETTER

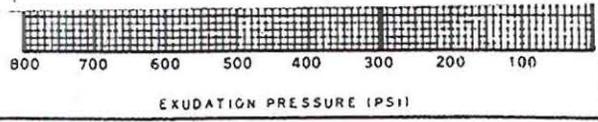
DATE SAMPLED **08/10/2010**
 BY **TUNG NGUYEN** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM _____
 LIMITS **04-SM-101-0.0**

CONT. NO. **235620** PROJECT **04.00000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL, OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX: **510-286-4839**

R VALUE	EXUDATION PRESSURE	SPEC.
	EXPANSION PRESSURE	
	AT EQUILIBRIUM	

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B



TEST NO. **6787-3P** DATE RECEIVED **AUG 16 2010**
 CALC. BY **APPROVED BY** **DEC 17 2010**
 BILLED DATE REPORTED

DISTRICT DIRECTOR TRANS.
 DIS. MAT. L.S. PAV'T. S.
 RESIDENT ENGINEER ACCOUNT
 CONSTRUCTION

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 SAMPLE IDENTIFICATION CARD CARD NUMBER
 TL-0101 (REV. 10/97) **C708228**

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
						IF CONTRACT, USE CONTRACT ITEM			
						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
3									
2 1/2									
2									
1 1/2									
1						TEST SPECIMEN	A	B	C
3/4						DATE TESTED			
1/2						COMPACTOR FOOT PRESSURE P.S.I.			
3/8						INITIAL MOISTURE %			
4						SOAK WATER ML			
8						WATER ADDED-ML (TOTAL)			
16						WATER ADDED %			
30						MOISTURE AT COMPACTION %			
50						WET WT. OF BRIQUETTE-GMS			
100						HEIGHT OF BRIQUETTE-INCHES			
200						DRY DENSITY OF BRIQ. - # CU. FT.			
5 1/4						STABILOMETER P _H AT 2000 LBS.			
1 1/4						DISPLACEMENT			
						R-VALUE BY STABILOMETER			

AUG 16 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PROCESS TESTS HDQTRS. LAB
 ACCEPTANCE TESTS BRANCH LAB
 INDEPENDENT ASSESSMENT DIST. LAB
 DIST. LAB NO. **7934**
 OF NO. **6787-3P**
 NO. OR REQ. NO.

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**
 SAMPLE FROM **BORING R-10-002**
 DEPTH **0.2 - 10'**
 LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

THIS SAMPLE **R-10-002** AND IS ONE OF A GROUP OF
 IS SHIPPED IN **B-7** (NO. CONTAINERS)
 OWNER OR MANUFACTURER **CALTRANS**
 TOTAL QUANTITY AVAILABLE NORMAL PRIORITY
 TEST RESULTS DESIRED NORMAL PRIORITY
 DATE NEEDED **09/24/10**

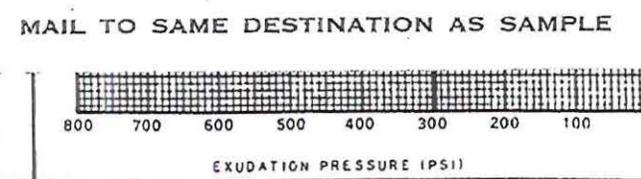
REMARKS **CORROSION TEST**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST. CO, RTE, PM

04-SM-101-0,0

LIMITS

CONT. NO. **235620** PROJECT **0400000678**
 FED. NO. **SUB OBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS16, 8TH FL OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**



GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION

Resistivity = 2700
Specs: 1000 (1-1/4 in. (max))

REMARKS: **pH = 7.66**
spcs: 5.6 (max)

TEST RESULTS		SPEC.	SP. GR.	BULK (OVS)
LL.	P.L.	P.I.		BULK (SSD)
CV				APPAREN
S.E.	AS REC'D.			FINE
	CRUSHED			CRUSHED
LART	COMBINED			REL. COMPACTION
	GRADE			
OUR	100 REV.			DENSITY
	500 REV.			MOISTURE
	D _f			% REL. COMP.
	D _t			
	% CRUSHED PARTICLES			SPEC.

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

R VALUE
 EXUDATION PRESSURE
 EXPANSION PRESSURE
 AT EQUILIBRIUM SPEC.

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST NO. **6787-23P** DATE RECEIVED **AUG 16 2010**
 CALC. BY _____ APPROVED BY _____
 BILLED _____ DATE REPORTED **DEC 17 2010**

DISTRICT DIRECTOR TRANS. L.
 DIS. MAT. L.S. PAV'T. SEC.
 RESIDENT ENGINEER ACCOUNTIN
 CONSTRUCTION

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD CARD NUMBER
 TL-0101 (REV. 10/97) **C708248**

GRADING ANALYSIS						REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SPECIF. LIMITS SOUGHT	SOIL			
3						IF CONTRACT, USE CONTRACT ITEM			
2 1/2						SOURCE	CHARGE	EXPENDITURE AUTHORIZATION	
2						SPECIAL DESIGNATION (USE WHEN APPLICABLE)		ACTIVITY OR OBJECT	AMOUNT
1 1/2						TEST SPECIMEN			
1						DATE TESTED			
3/4						COMPACTOR FOOT PRESSURE P.S.I.			
1/2						INITIAL MOISTURE %			
3/8						SOAK WATER ML			
4						WATER ADDED-ML (TOTAL)			
8						WATER ADDED %			
16						MOISTURE AT COMPACTION %			
30						WET WT. OF BRIQUETTE-GMS			
50						HEIGHT OF BRIQUETTE-INCHES			
100						DRY DENSITY OF BRIO. - # CU. FT.			
200						STABILOMETER P _H AT 2000 LBS.			
5 1/4						DISPLACEMENT			
1 1/4						R-VALUE BY STABILOMETER			

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.
 PRODUCTION TEST HDQTRS. LAB DIST. LAB NO. **7934**
 ACCEPTANCE TEST BRANCH
 INDEPENDENT DIST. LAB
 ASSURANCE TESTS DIST. LAB
 SPECIAL TESTS SHIPMENT NO. CON. NO.
 AUTHORIZATION

SAMPLE OF **SOIL**
 FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **BORING R-10-002**
 DEPTH **20-25'**
 LOCATION OF SOURCE **SAN FRANCISQUITO CREEK**

THIS SAMPLE **R-10-002-B2** AND IS ONE OF A GROUP OF **3** SAMPLES REPRESENTING (TONS, GALS, BBLs, STA, ETC.)
 OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE TEST RESULTS DESIRED NORMAL PRIORITY DATE NEEDED **09/24/10**

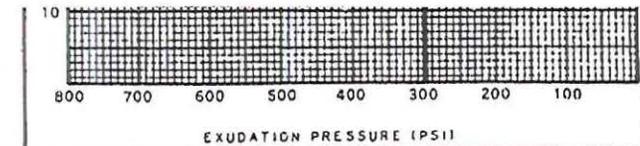
REMARKS **CORROSION TEST**

COVER ADDITIONAL INFORMATION WITH LETTER
 DATE SAMPLED **08/10/2010**
 BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**
 DIST, CO, RTE, PM

04-SM-101-0,0

LIMITS
 CONT. NO. **235620** Project **0400000678**
 FED. NO. **SUBJECT 160**
 RES. ENGR. OR SUPT. **TUNG NGUYEN**
 ADDRESS **111 GRAND AVE, MS 16, 8TH FL. OAKLAND**
 CONTRACTOR **CA94612**
 PHONE: **510-622-1775** FAX **510-286-4839**

MAIL TO SAME DESTINATION AS SAMPLE



GRADING AS USED WAS OBTAINED AS FOLLOWS:
 % BY WT. % BY VOL. TEST NO. DESCRIPTION

Resistivity = 394
Specs: 1000 Ω-cm (min)

pH = 5.14
Specs: 5.6 (max)

REMARKS **MATERIAL SAMPLE SENT TO METS - SACTO FOR SURFACE TO BASE CHANGES AND SULFATE TESTING. MATERIAL SUBMITTED FOR TESTING FAILED GRAVEL EQUIVALENT FACTOR MINIMUM TRAFFIC INDEX SPECS.**

R VALUE	EXUDATION PRESSURE		SPEC.
	AT EQUILIBRIUM		

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

TEST RESULTS	SPEC.	SP. GR.	BULK (OVER BULK (SSD) APPARENT)
LL. P.L. P.I.			
CV			
S.E.	AS REC'D		
	CRUSHED		
LART	COMBINED		
	GRADE		
DUR	100 REV.		
	500 REV.		
		DENSITY	
		MOISTURE	
		% REL. COMP.	
	% CRUSHED PARTICLES		SPEC. %

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B

TEST NO. 6787-44P	DATE RECEIVED AUG 30 2010	<input type="checkbox"/> DISTRICT DIRECTOR	<input type="checkbox"/> TRANS.
CALC. BY	APPROVED BY	<input type="checkbox"/> DIS. MAT L.S. ENGR.	<input type="checkbox"/> PAV'T. S.
BILLED	DATE REPORTED DEC 17 2010	<input type="checkbox"/> RESIDENT ENGINEER	<input type="checkbox"/> ACCOUNTANT
		<input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/>

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
SAMPLE IDENTIFICATION CARD
 TL-0101 (REV. 10/97) **C708269**

GRADING ANALYSIS					REPORT OF TESTS ON			
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	SOIL			
3					SOURCE CHARGE EXPENDITURE AUTHORIZATION			
2 1/2					SPECIAL DESIGNATION (USE WHEN APPLICABLE) ACTIVITY OR OBJECT AMOUNT			
2					TEST SPECIMEN A B C D			
1 1/2					DATE TESTED			
1					COMPACTOR FOOT PRESSURE P.S.I.			
3/4					INITIAL MOISTURE %			
1/2					SOAK WATER ML			
3/8					WATER ADDED-ML (TOTAL)			
4					WATER ADDED %			
8					MOISTURE AT COMPACTION %			
16					WET WT. OF BRIQUETTE-GMS			
30					HEIGHT OF BRIQUETTE-INCHES			
50					DRY DENSITY OF BRIQ. - # CU. FT.			
100					STABILOMETER P _H AT 2000 LBS.			
200					DISPLACEMENT			
5 1/4					R-VALUE BY STABILOMETER			
1 1/4					EXUDATION PRES. P.S.I.			

6787-44P

AUG 30 2010

PRELIMINARY TESTS SAMPLE SENT TO: FIELD NO.

PROCESSING TESTS HDQTRS. DIST. NO. **7824**

ACCEPTANCE TESTS BRANCH **44P**

DEFINITION DIST.

SHIPMENT AUTHORIZATION NO.

SAMPLE OF **SOIL**

FOR USE IN **BRIDGE FOUNDATION DESIGN**

SAMPLE FROM **R-10-003**

DEPTH **5-10'**

LOCATION OF SOURCE **SAN FRANCISCO LITO CREEK**

THIS SAMPLE **R-10-003** AND IS ONE OF SAMPLES REPRESENTING (TONS, GALS, BOLS, STA, ETC.)

IS SHIPPED IN **B2** (NO. CONTAINERS) A GROUP OF

OWNER OR MANUFACTURER **CALTRANS**

TOTAL QUANTITY AVAILABLE NORMAL PRIORITY TEST RESULTS DESIRED DATE NEEDED **09/24/10**

REMARKS

GRADING AS USED WAS OBTAINED AS FOLLOWS:

% BY WT.	% BY VOL.	TEST NO.	DESCRIPTION
			PERMEABILITY = 1926
			SPECS: 1000 IL-CM (MAY)

REMARKS	TEST RESULTS		SPEC.	SP. GR.	BULK (OV BULK (SS) APPARE FINE
	LL.	P.L.			
PERMEABILITY = 1926 SPECS: 1000 IL-CM (MAY)	CV				
	AS REC'D.				
SURFACE	CRUSHED				
	COMBINED				
BASE	GRADE	100 REV.			REL. COMPACTION
		500 REV.			IN PLACE
SUBBASE	D _r				DENSITY
					MOISTURE
GRAVEL EQUIVALENT FACTOR	D _c				% REL. COMP.
TRAFFIC INDEX	% CRUSHED PARTICLES				SPEC.

CORROSION TEST

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLED **08/17/2010**

BY **RIFAAT NASHED** TITLE **T.E. (CIVIL)**

DIST, CO, RTE, PM **04-SM-101-0.0**

LIMITS:

CONT. NO. **235620** PROJECT **040000067B**

FED. NO. **SUBJECT 160**

RES. ENGR. OR SUPT. **TUNG NGUYEN**

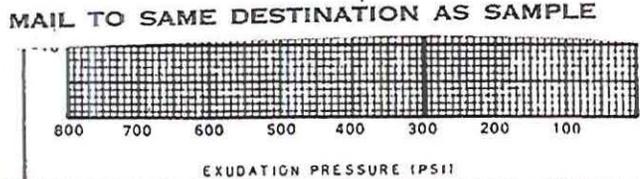
ADDRESS **111 GRAND AVE. MS 16, 8TH FL. OAKLAND**

CONTRACTOR **CA94612**

PHONE: **510-622-1775** FAX: **510-286-4839**

INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)

RICHARD CHAN
 DISTRICT MATERIALS ENGINEER
 BRANCH CHIEF, MATERIALS B





<Rudy_C_Lopez@dot.ca.gov>
01/26/2011 12:32 PM

To <Tung_Nguyen@dot.ca.gov>
cc
bcc
Subject Corrosion Test Summary Report - Soil, EA: 04-235620, P ID 0400000678 (Corr. #s CR110034 & CR110035)

History: This message has been forwarded.

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion And Structural Concrete Field Investigation Branch
Report Date: 1/26/2011
Reported By: Lopez, Rudy

TEST SUMMARY REPORT - Soil/Water

Bridge Name: **SAN FRANCISQUITO CREEK**
Bridge Number: **35-0013**
EA No.: **04-235621**
EFIS No.: **0400000678**
Dist/Co/Rte/PM or KP: **04 / SM / 101 / 0.0**

SIC Number (TL101)	Sample Location	Sample Type	Sample Depth	Minimum Resistivity ¹ (ohm-cm)	pH ²	Chloride Content ³ (ppm)	Sulfate Content ⁴ (ppm)
C708227	SAN FRANCISQUITO CREEK	SOIL	16.5-20 FEET / BORE R-10-001,B2	978	7.2	163	781
C708248	SAN FRANCISQUITO CREEK	SOIL	20-25 FEET / BORE R-10-002, B2	394	5.14	778	6517

This site is corrosive (see note below for MSE wall backfill).

Controlling corrosion parameters are as follows:

- 5.14 pH
- 778 ppm Chloride
- 6517 ppm Sulfate

Note: For MSE wall structure backfill material, minimum resistivity must be 2000 ohm-cm or greater, pH must be between 5.5 and 10.0, chloride content must not be greater than 250 ppm, and sulfate content must not be greater than 500 ppm.

^{1,2}CTM 643, ³CTM 422, ⁴CTM 417

APPENDIX D
SEISMIC STUDY

M e m o r a n d u m

*Flex your power!
Be energy efficient!*

To: MR. SAMAD HAMOUD
Senior Bridge Engineer
Division of Engineering Services
Office of Bridge Design-West
Bridge Design Branch 16

Date: September 23, 2010

File: 04-SM-101
04-235621
San Francisquito Cr. Br.
Bridge No. 35-0013

Attention: Mr. John E. Peterson

From: HOSSAIN SALIMI
Senior Materials and Research Engineer
Division of Engineering Services
Geotechnical Services – MS-5
Office of Geotechnical Design-West

Subject: Final Seismic Design Recommendations

This memorandum is in response to your request to provide the Final Seismic Design Recommendations for the proposed replacement of the existing 3-span San Francisquito Creek Bridge (Bridge No. 35-0013) on Highway 101 in the City of Palo Alto in San Mateo County with a new 4-span structure. It should be noted that a revised Preliminary Seismic Design Recommendation (Revised PSDR) was submitted to your Office in a report dated June 21, 2010.

Geology

The Office of Geotechnical Design-West conducted the field investigation for this site, which included three mud rotary borings (R-10-001, R-10-002, and R-10-003) drilled in August 2010 down to a maximum depth of 105 feet. Borehole R-10-001 was drilled near the proposed Abutment 1, whereas boreholes R-10-002 and R-10-003 were drilled near the proposed Abutment 5. Due to logistics and lack of access, areas near Bents 2, 3, and 4 could not be drilled. Based on this new information, the geology at the site consists of mostly loose sand, silty sand, and poorly graded sand with occasional layers of loose to medium dense silt layers, as well as layers of soft to stiff clay down to the bottom of the borings.

Ground Water

The common water table elevation for all three boring locations is elevation five feet, corresponding to 10 feet below original ground.

Seismicity

The revised PSDR included two graphs which were the spectrum comparisons (Figure 1) and the recommended preliminary response spectrum based on the USGS De-Aggregation procedure (Figure 2). The latest foundation investigation confirms the geology as outlined in the PSDR. Therefore, the recommended preliminary response spectrum included in the PSDR is still valid and considered final. Please see the attached figure.

Please note that the recommended Final Acceleration Response Spectrum curve has been modified to account for the proximity of the site to the fault. The modifications are such that there is no increase in spectral acceleration in periods less than 0.5 seconds and a 20% increase for periods greater than one second. A linear interpolation was used between 0.5 and one second.

Liquefaction Potential

Due to the seismicity of the site, the presence of loose to medium dense granular material(s), and relatively high water table, there is a potential for liquefaction during a seismic event.

At abutment 1, there is a moderate to high potential from elevation 5 feet to -5 feet, and from elevation -20 feet to -23 feet. At Abutment 3, there is a moderate to high potential from elevation 5 feet to -7 feet, and from -10 feet to -15 feet.

If there are any questions, please contact Hossain Salimi at (916) 227-7147.

Attachment

- c: TPokrywka (OGD-W)
- MMacaranes (OGD-W)
- TNguyen (OGD-W)
- GS File room
- District Project Manager
- District Environmental Planning
- GS Corporate

04-SCL/SM-101
04-235621
Bridge No. 35-0013

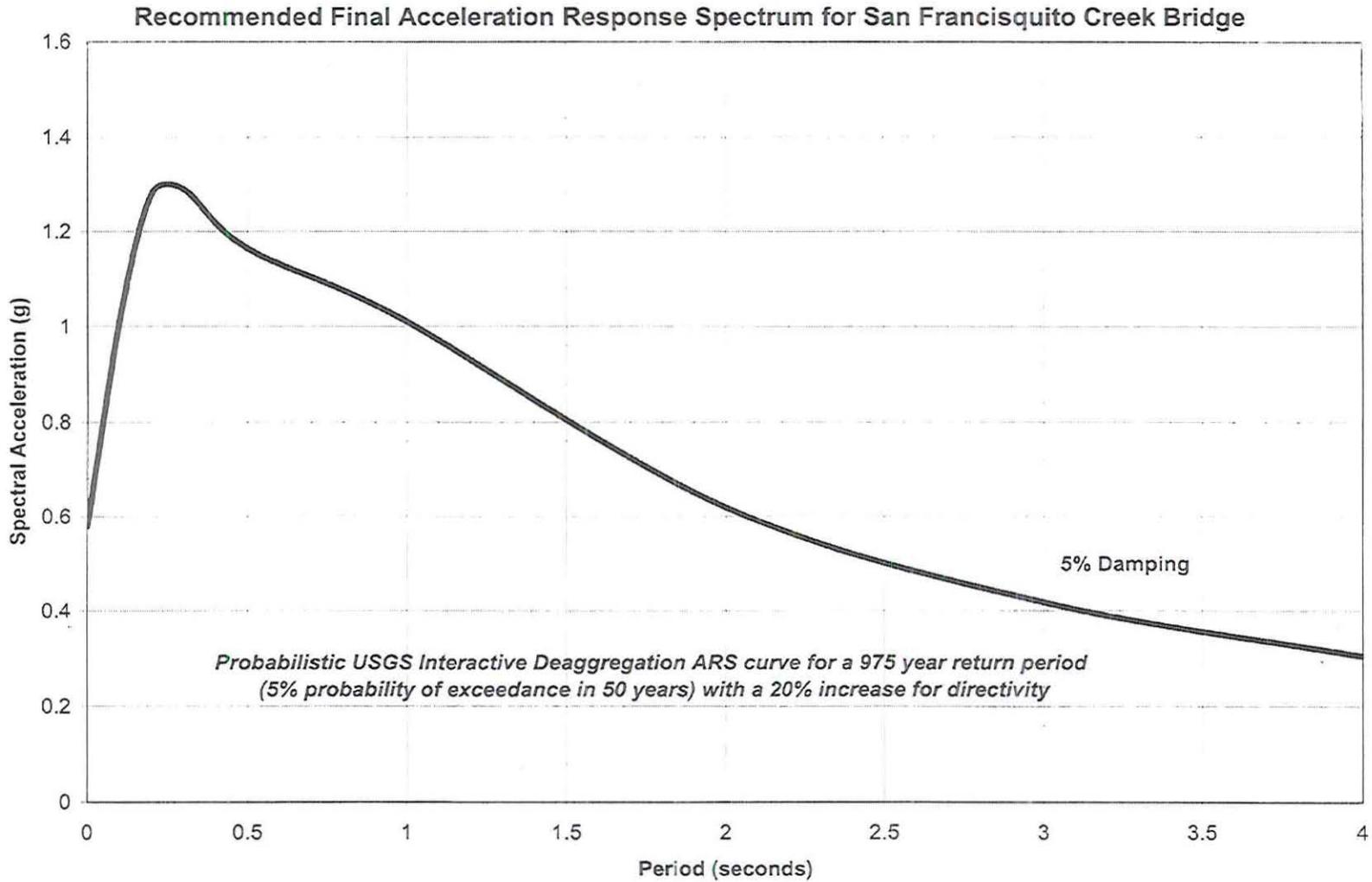


Figure 1

STRUCTURES FINAL HYDRAULIC REPORT

SAN FRANCISQUITO CREEK

Br. No. 35-0348

Project: 04 0000 0678

Located on Route 101 in San Mateo County

04-SM-101-PM 0.01

This report has been prepared under my direction as the professional engineer in responsible charge of the work, in accordance with the provisions of the Professional Engineers Act of the State of California.



REGISTERED CIVIL ENGINEER

REGISTRATION NUMBER C 60368

DATE: November 7, 2014

Hydrology & Hydraulics Report

General

This is the Final Hydraulic Report for the proposed San Francisquito Creek Bridge replacement. The new bridge number is 35-0348, the project is located at PM 0.01 along Route 101, in San Mateo County. The evaluation is based upon the following:

1. General Plans dated 11/5/2014, with abutment, pier and deck details dated 10/9/2014 from Office of Bridge Design West, Bridge Design Branch 16
2. General Plans for Retaining Wall A, B & C, dated 10/9/2014
3. Survey data from the Preliminary Investigations North, dated 3/22/2009
4. Bridge Inspection Reports (BIR's)
5. Hydraulic Review Technical Memorandum, prepared by HDR, dated 8/03/2010
6. Final Report of San Francisquito Creek Development and Calibration /Verification of Hydraulic Model, prepared by Noble Consultants, Inc for the US Army Corps of Engineers, dated 4/17/2009
7. FEMA study for City of East Palo Alto in the County of San Mateo, California, dated 8/13/1999
8. FIRM (Flood Insurance Rate Map), Community Panel Number 060708-0001 B, dated 8/23/1999
9. FIRM (Flood Insurance Rate Map), Community Panel Number 06085C-0030 H, dated 5/18/2009 for Santa Clara County
10. HEC-RAS data provided from HDR Engineering Inc, dated 6/14/2010

Notes

This report supersedes all previous reports for this project.

This report provides elevations in both NGVD29 and NAVD88 datums; The elevations for the bridge plans provided by Branch 16 Structure Design are based on the NGVD29 datum, while the hydraulic model provided by HDR Engineering is based on the NAVD88 datum. The structure elevations were converted to NAVD88 by adding 2.70 feet to correlate with the existing channel data and HEC RAS model provided by HDR. Based on the NGS/NOAA/Vertcon website (http://www.ngs.noaa.gov/cgi-bin/VERTCON/vert_con.pr1), the orthometric height conversion factor to determine the datum shift between the NGVD29 and NAVD88 datums at the project site is 2.700 feet. The factor of 2.700 ft is added to the NGVD29 elevations to determine the NAVD88 elevations. Please verify datum references to the Final Design Plans and make elevation adjustments as required.

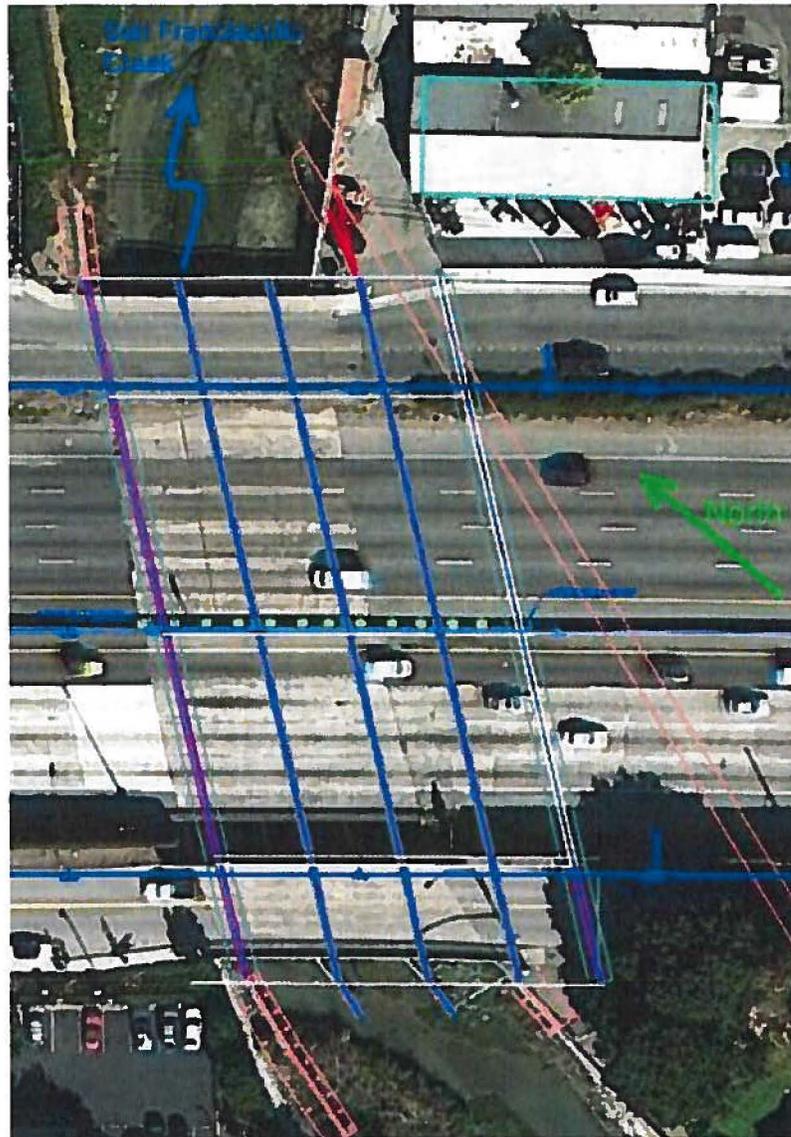


Figure 1: Aerial View of Existing San Francisquito Creek Bridge with Proposed Bridge Superimposed

Existing San Francisquito Creek Bridge (Br. No. 35-0013)

The existing San Francisquito Creek Bridge (Br. No. 35-0013) is a three-span structure, built in 1931 and widened in 1957, including the frontage road, East Bayshore Road. The frontage road along the upstream side, West Bayshore Road, has a separate deck but the substructure is continuous. It is a combination of reinforced concrete (18) girders with a reinforced concrete deck widening on each side, all supported on reinforced concrete (13) pile bents that have been walled in (girder portion) and reinforced concrete RC pier walls founded on reinforced concrete piles at the slab portion. It has a length of 83 feet and a total width of 180 feet. The NBIS Item 113 code is 5, "Bridge foundations determined to be stable for assessed or

calculated scour condition. Scour is determined to be within the limits of footing or piles".

The existing bridge, the existing channel both upstream and downstream from the project site and numerous local structures upstream of the project are all considered to be undersized in relation to the 100-year discharge for the SanFrancisquito Creek watershed. There are numerous reports of flooding occurring in the neighborhoods upstream of the project site for discharges less than the 100-year event. This flooding is primarily due to the size of the natural channel, the encroachment of residential parcels and undersized local structures. The SFCJPA is proposing to modify the channel, both upstream and downstream, to increase the capacity, although it is not known when these projects will be constructed. The existing West Frontage Road bridge also has a history of debris related issues. The Santa Clara Valley Water District has placed two Bridgeshark debris deflectors immediately upstream of the debris fins at Pier 2 and Pier 3 walls, and have been known to temporarily park debris removal equipment nearby for the quick, efficient removal of debris that becomes caught at the bridge. This debris can cause backwater effects and flood low lying parcels upstream of the site.

Based on the HEC-RAS model, the water surface elevation for both the 100-year discharge and the current channel capacity encroach upon the soffit of the existing structure, potentially causing pressure scour and backwater effects to occur. There may also be some minor flooding between the West Frontage Road and the Route 101 Mainline structures due to the gap between the two structures.

Proposed San Francisquito Creek Bridge (Br. No. 35-0348)

District 4 proposes to replace the existing San Francisquito Creek Bridge and both frontage road structures with a single structure featuring separate decks built on common abutment and pier layouts and featuring a 3-foot wide gap between the deck sections of the West Frontage Road and Route 101. To increase the channel capacity to match that of the proposed future channel improvements, the bridge length will be extended to the south of the existing bridge to conform the San Francisquito Creek channel improvement plans by the San Francisquito Creek Joint Powers Authority (SFCJPA). The new bridge will be a CIP/RC slab bridge with four spans. The 3 northern spans will be approximately 30.9 feet each while the southern span will be approximately 27.3 ft, center-to-center for a total structure length of approximately 125 feet. The width of the West Bayshore deck will be about 41 feet, while the Highway 101 and East Bayshore deck will be about 200 feet in width. The pier wall width is 1'-4".

The southern span will be blocked off by retaining walls at both the upstream and downstream ends, confining channel flows to the three northern spans until the proposed channel improvements have been completed. Even with the increased waterway opening of the new four-span bridge and the channel improvements, it is still anticipated that the water surface elevation for the 100-year discharge will impact the soffit of the new structure. Due to various issues such as the proximity of the San

Francisco Bay and its tidal influence including the effects of future sea level rise, and the established roadway profile and vertical clearances along the mainline Route 101, the new structure will not meet the recommended minimum soffit elevation. The recommended minimum soffit elevation is based on the calculated water surface elevation for either the 50-year or 100-year discharges with special consideration for debris passage. While the recommended soffit elevation will not be met, there are no significant flood concerns due to the configuration of the new structure. There may be some minor flooding in the gap between the two proposed structures, and there may be some minor increase in the upstream water surface elevation, but this increase should be retained within the channel of proposed upstream channel improvements. Debris will also continue to be an issue at this location irrespective of the minimum soffit elevation.

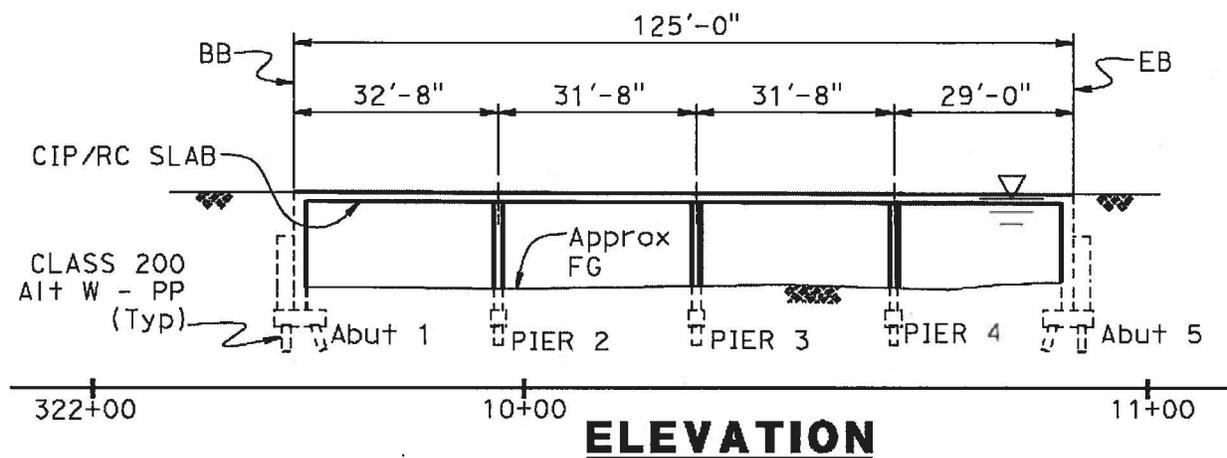


Figure 2: Elevation View of Proposed San Francisquito Creek Bridge

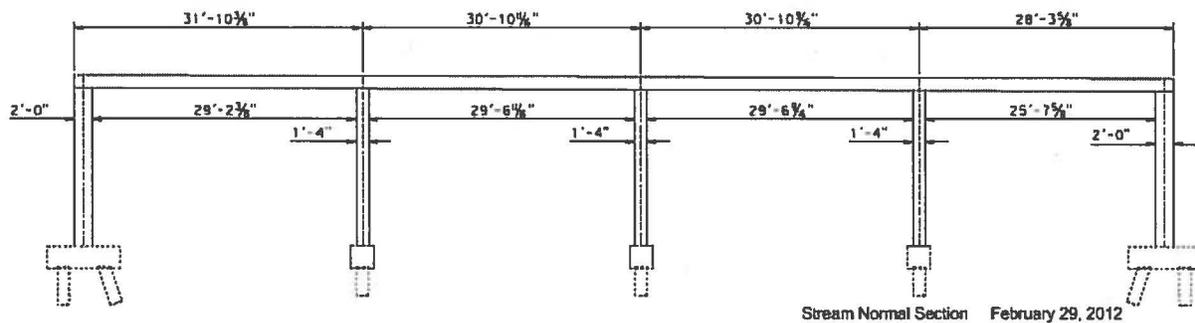


Figure 3: Proposed San Francisquito Creek Bridge, Normal to Channel Details

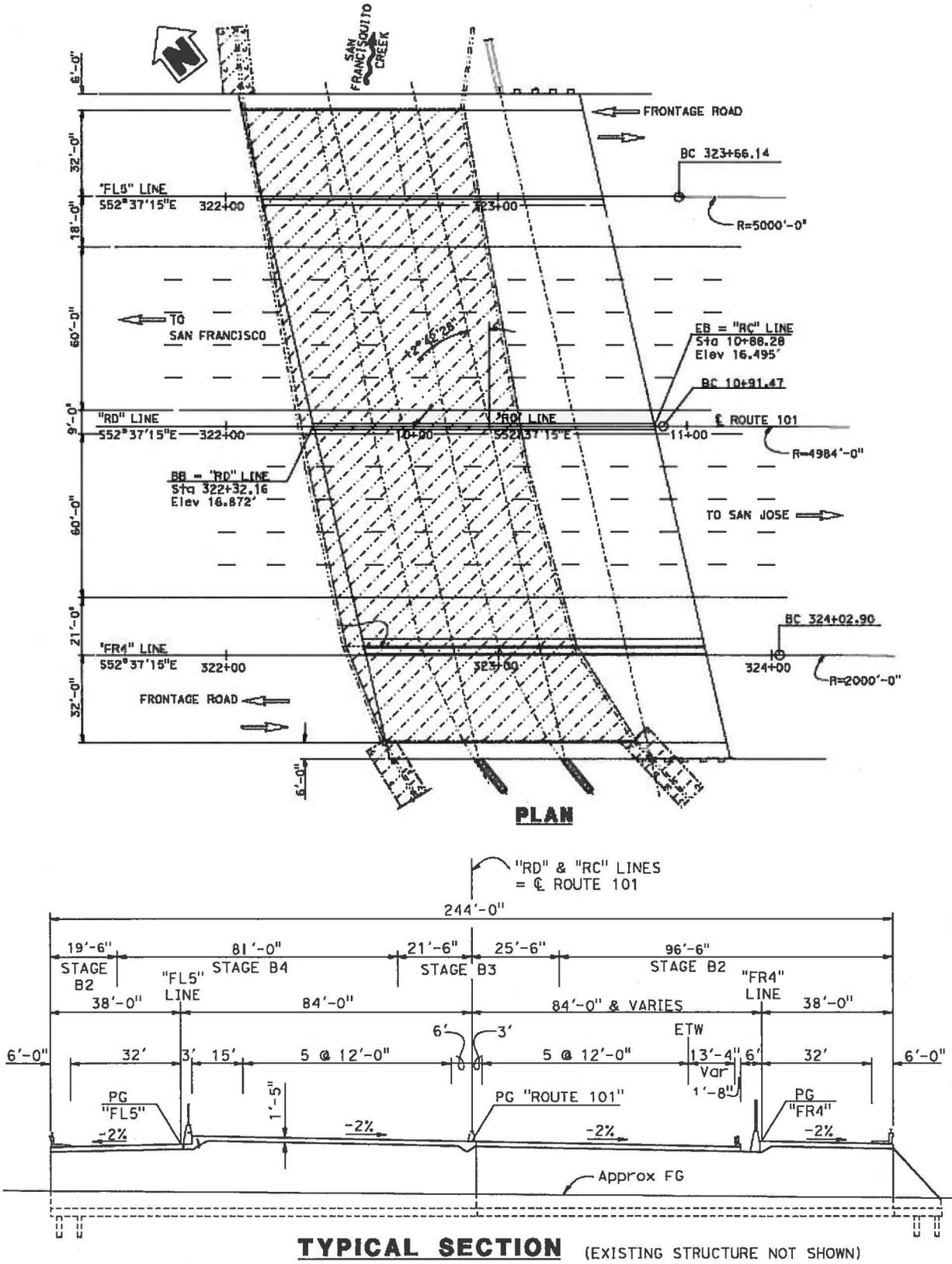


Figure 4: Plan View and Typical Section of Proposed San Francisquito Creek Bridge

Interim Configurations

It is possible that the new bridge will be constructed prior to the completion of the upstream and downstream channel improvements. In this interim situation the southern span, Span 4, of the new structure will be blocked off with Soldier Pile Retaining Walls at both ends. Wall C will be located on the western, upstream side of the structure and Wall B will be located on the eastern, downstream side of the structure. It will also be necessary to construct a third Soldier Pile Wall, Wall A, along the channel downstream of Pier 4. The purpose of Wall A is to retain embankment fills along the southeastern quadrant of the project, until such time as the channel improvements are implemented and the fourth span is opened. Wall A will be roughly parallel to the Pier 4 layout, with a slight skew of approximately 5°, compared with Pier 4 layout, extending toward the center of the channel to a point where it intersects the existing vertical channel wall upstream from the existing 96" outfall. Wall A is proposed to be a steel H-beam wall with wood lagging attached to the channel-side flange of the H-beams. RSP with adequate filter material will be placed at the base of the wall to protect against potential scour and erosion. Based on FHWA HEC-23 guidelines, the RSP to be used at Wall A was estimated to be a minimum 2-foot thick layer of Class #1 Backing with Class #8 RSP Fabric as the filter material. The RSP and filter material are temporary, and will be removed along with Wall A once the final channel improvements are implemented. Both the wall design and the RSP will increase the roughness of the channel surface, as well as slightly impede the flow. Manning's roughness coefficients were raised to 0.050 at the location of the RSP and wall. The effects are minimal, and overall, this configuration will be an improvement when compared to the existing channel configuration.

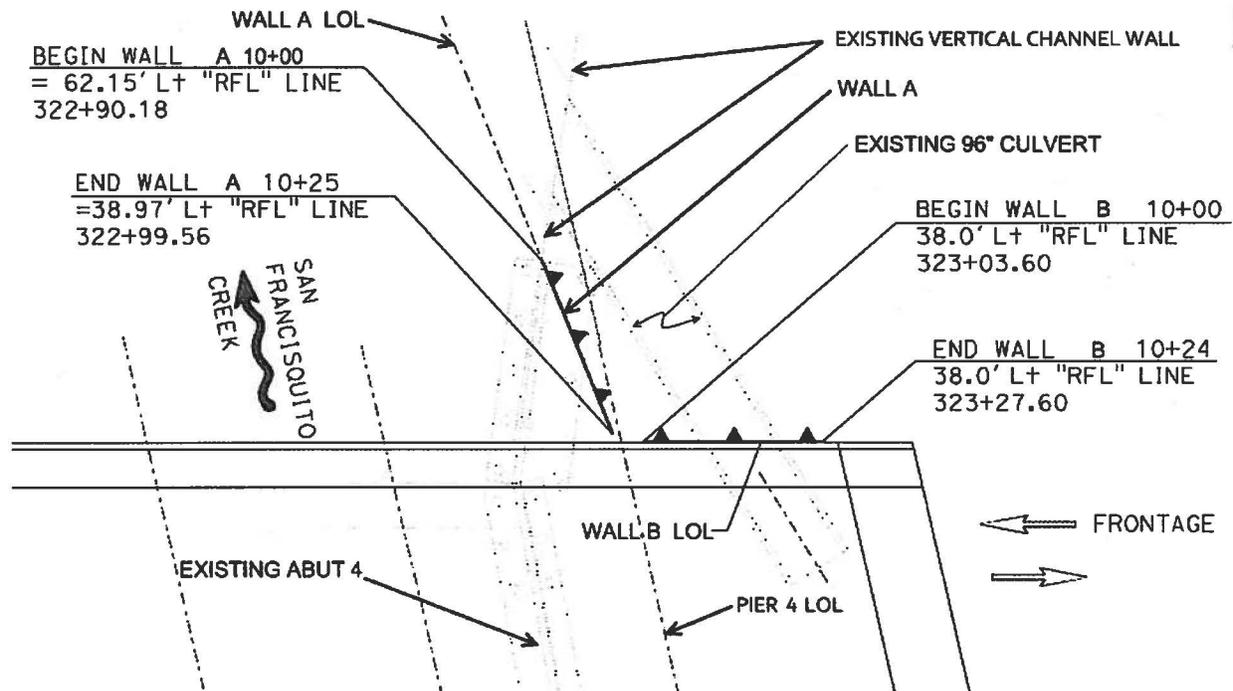


Figure 5: Wall A, Pier 4 and Existing Wall Layout, Plan View

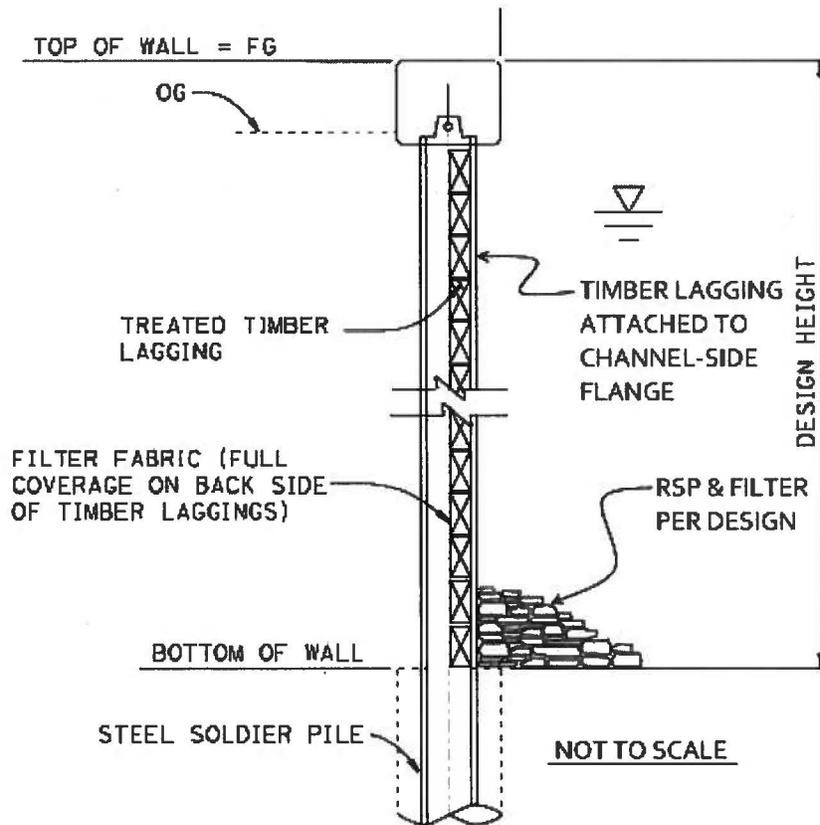


Figure 6: Wall A Details

There will also be a temporary interim condition due to the staged construction of the bridge itself. During construction, the channel configuration will be a mix of the existing structure and the proposed configuration with the blocked southern span. During this temporary configuration, much of the flow through the third span of the proposed structure will be blocked by the roadway bed to the south of the existing southern abutment. While this will reduce the overall capacity of the proposed project for the duration of the construction, the capacity during construction, approximately 7700 cfs, will still be roughly equivalent to the capacity of the current configuration. To maximize the interim capacity during the rainy season, generally from October 15 through April 15, no falsework or other obstructions outside of scour and debris collection countermeasures should remain in the channel beneath the structure. During the dry season when in-channel work will be allowed, the contractor should provide some means of diverting discharges through the site.

Due to debris concerns at the project location, it is likely that debris could become caught on the piers. This debris could reduce the waterway area reducing conveyance and cause an increase in the water surface elevation upstream of the project. Due to the location under the structure, these areas cannot be readily monitored and effective, timely debris removal would be difficult during even typical winter flows. Therefore it is strongly recommended to provide a debris control

structure at the upstream end of the project. This debris control structure should allow the capture, observation and periodic removal of debris so as to maximize conveyance and minimize debris blockage which may cause storm water to back up

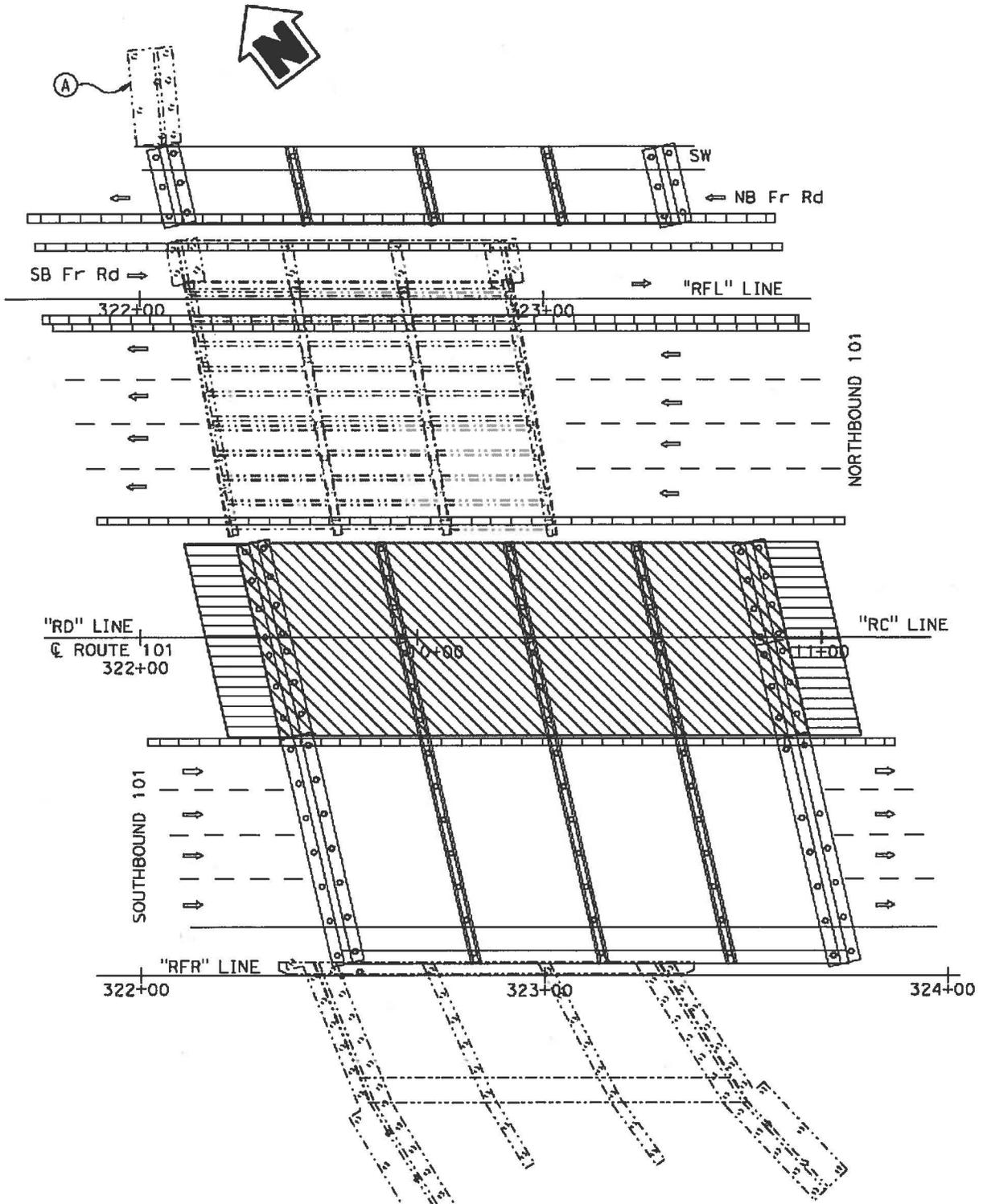


Figure 7: Stage 3 Plan View Illustrating the Offset Pierwalls.

upstream of the project. Some alternatives can be found in the Federal Highway Administration (FHWA) manual, *Hydraulic Engineering Circular No.9 (HEC 9), Debris Control Structures; Evaluation and Countermeasures*; Third Edition, October 2005 (<http://www.fhwa.dot.gov/engineering/hydraulics/pubs/04016/hec09.pdf>). Based on the reduced width of some openings between the existing and proposed portions found during the different construction stages, it is suggested that a "Debris Rack for Culverts" would be an appropriate type of alternative for this situation. A debris rack could be attached to either the sloping upstream ends of the existing pier walls or to the superstructure with the toe of the debris rack resting on the channel bed. The design should keep any large debris from going around, under or over the debris rack and entering the waterway under the bridge.

The design should have a maximum horizontal spacing of 36" between the vertical members. A minimum horizontal spacing of 18" should be sufficient for fish passage and debris capture. Assuming a 50% blockage, vertical members should be capable of withstanding hydrostatic forces of approximately 2000 pounds each. It is estimated that a design velocity of 8.5 feet per second should be used at this location. Vertical spacing of the lateral support members, if needed, should have a minimum spacing of 24", and be set back from the face of the vertical members to facilitate debris removal. The debris rack should be installed at a 1:2 (horizontal:vertical) slope (or flatter), with the toe of the debris rack oriented upstream from the top of the debris rack. The National Marine Fisheries Service guide, *Anadromous Salmonid Passage Facility Design* may also be consulted for design guidance and information (http://www.habitat.noaa.gov/pdf/salmon_passage_facility_design.pdf).

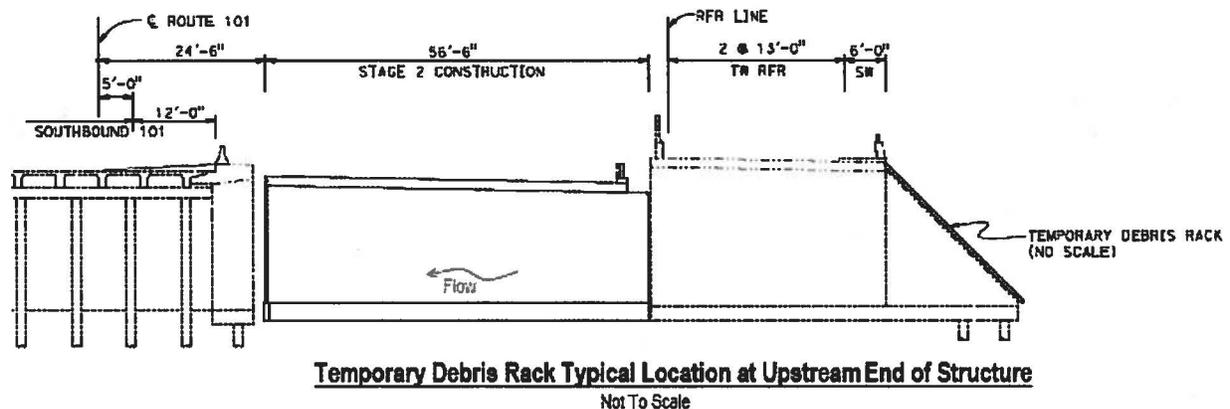


Figure 8: Elevation View with a Typical, Suggested Location for the Temporary Debris Rack.

Maintenance of the debris rack should be handled as required to keep large debris from being conveyed beneath the structure. For this project, large debris would be considered debris in excess of 36" inches in any dimension. All debris should be

removed and the debris rack inspected within one day prior and after, and periodically during a storm event that would be expected to cause significant flows within the channel. Significant flows could be considered flows that are expected to cause the water surface of the channel to rise to a depth of more than 5 feet immediately upstream of the bridge. Debris should also be removed and the debris rack inspected for damage after each significant flow event. Debris accumulation should not be allowed to exceed 33% blockage of the debris rack at any time or cause stream flow to overtop the banks of the creek due to debris accumulation at the site.

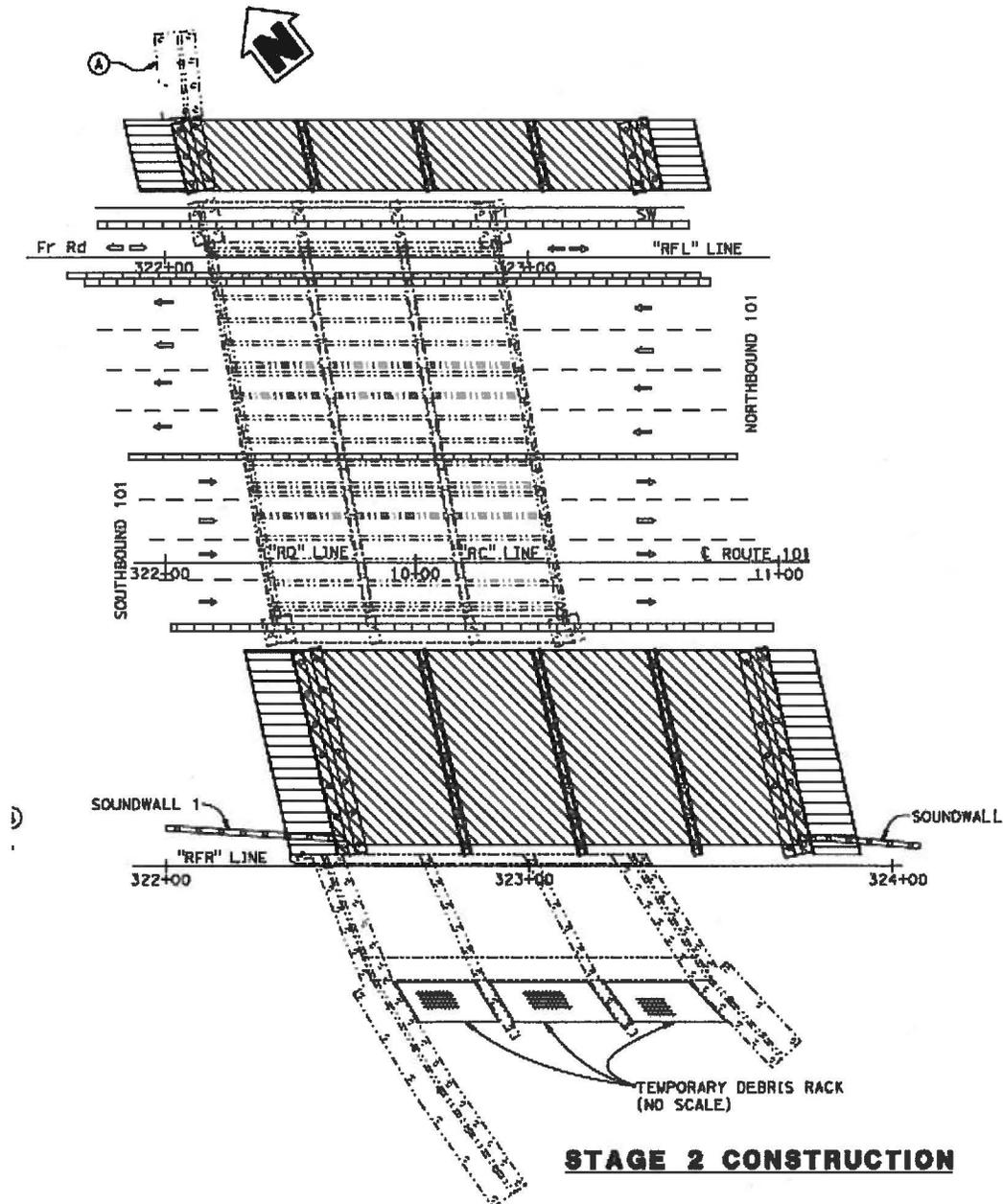


Figure 9: Plan View with a Typical, Suggested Location for the Temporary Debris Rack.

Basin

The San Francisquito Creek watershed encompasses about 45 square miles starting in the rugged hillsides of the Santa Cruz Mountains and extending to the San Francisco Bay in San Mateo County, California. Two major tributaries of San Francisquito Creek are Bear Creek and Los Trancos Creek. However, their confluences are far from the creek mouth and the project site. The lower reach of the stream begins at the base of Searville Dam at Stanford University and discharges water into the San Francisco Bay approximately 2.5 miles south of the Dumbarton Bridge. The climate in San Mateo County is moderate; the average temperature ranges from 48⁰F in January to 67⁰F in July and the average humidity is 75% to 80% in summer and winter respectively. The average yearly precipitation is 18 inches, varying from year to year with about 90% occurring during the rainy season, November to March.

Streambed

The soils in this area are alluvial and sedimentary deposits; it is a mixture of clay, loam, sand and gravel. For more information on the channel bed composition and its depths, please refer to the Log of Test Borings provided by the Foundation Investigation Branch, Division of Geotechnical Services for this project.

Discharge

There has been a lengthy history of flooding on San Francisquito Creek, largely due to the existing structures, many of which cannot convey higher flows, along with low

levees which do not contain the higher water surface elevations. To reduce local flooding, a 96-inch storm drain was built in 1971 to pickup overland flow from a residential area upstream of US Hwy 101. The outfall is located at downstream of the East Bayshore Frontage Road Bridge, and discharges into San Francisquito Creek. Santa Clara Valley Water District constructed/improved the levees along San Francisquito Creek in 2004 for flood control purposes, but did not solve the flooding problem. There have been several different studies to determine the flow capacity for the existing structures over the San Francisquito Creek, and the latest study is the Final Report of San Francisquito Creek Development and Calibration/Verification of Hydraulic Model, prepared by Noble Consultants, Inc for the US Army Corps of Engineers dated 4/17/2009. According to this report, most existing structures including the San Francisquito Creek Bridge at Route 101 "are incapable of carrying the 100-year flow". The peak flow rate at US Hwy 101 is estimated at 9,300 cfs for 100-year storm. Caltrans had a meeting with all local agencies, including the San Francisquito Creek Joint Powers Authority (SFCJPA) to finalize the San Francisquito Creek improvement plans. In an agreement, the design discharge of Q_{100} will be 9,300 cfs. The Joint Powers Authority (SFCJPA) agreed to make improvements throughout the channel to meet the design discharge (9,300 cfs). Caltrans will replace the existing San Francisquito Creek Bridge and the Bayshore Frontage Bridges with a single

structure. One cell along the southern side (Span 4) of the new bridge will initially be blocked until the final improvements for the channel are completed.

Tidal effects

San Francisquito Creek discharges water into the lower end of the San Francisco Bay. Referring to the Final Report for San Francisquito Creek Development and Calibration/Verification of Hydraulic Model prepared by Noble Consultants, Inc for the U.S Army Corps of Engineers; the Mean Higher High Water (MHHW) at the elevation of +7.1 feet NAVD88 (4.4 feet NGVD29) and the highest tidal stage at 9.3 feet NAVD 88 (6.6 feet NGVD29) on February 1998 were recorded at the nearest tidal station (Redwood City-Station ID: 9414523). The latest FIRM (Flood Insurance Rate Map), dated 5/18/2009 for Santa Clara County shows the 100-year flood level in the affected areas downstream of the site is 11.0 feet NAVD88 (8.3 feet NGVD29). However, the recommendation in the Hydraulic Review Technical Memorandum prepared by HDR, the tidal stage at the creek mouth will be 12.52 feet NAVD88 (9.82 feet NGVD29) by adding 26 inches Sea Level Rise to 10.35 feet NAVD (7.65 feet NGVD29) from the USACE 2005 study. This water height will be used as the downstream boundary control in the HEC-RAS study.

HEC-RAS Model

HEC-RAS Version 4.1.0 – a streambed analysis computer program was used for the water modeling and bridge scour calculations. The model for this project originated from HDR, Inc, dated 6/14/2010. Caltrans Structure Hydraulics Office has made minor modifications to the HDR model by interpolating new cross-sections in the vicinity of the proposed replacement structure at the US HWY 101 Bridge and the interim Wall A locations. The Manning's roughness coefficients (0.027 to 0.055) were taken from 2009 field inspection reports. Channel migration and moderate debris were considered for the scour calculations. Channel degradation was considered to be negligible for the site.

Velocity

Based on the estimated channel discharge at the proposed structure, the average velocity will range from 5.3 fps – 6.5 fps. Under the Interim conditions, average velocities will range from 5.5 fps – 9.3 fps in the immediate vicinity of the proposed structure and Wall A. At the upstream end of the structure where the water will impact the pierwalls at a slight skew, the maximum average velocity for the differing scenarios is approximately 6.5 fps.

Waterway

The structures are required to provide a waterway area, which has sufficient capacity to pass the discharge plus adequate freeboard per section 821.3 CALTRANS Highway Design Manual. The minimum required waterway for the proposed structure is 1750 square feet above the finished grade elevation.

Drift

Bridge maintenance records are available for the existing San Francisquito Bridge (Br. No. 35-0013). According to these records, moderate to large drift have been found around various piers and debris removal has been recommended several times. The channel was clear without any drift during the field investigation on May 1, 2009. There are existing debris spinners upstream of the bridge to keep the drift away from the piers that will affect the water level in the channel. To compensate for this issue, if the debris spinners are reinstalled, then they will be assumed to be permanent floating debris in the HEC-RAS model. Caltrans design criteria recommends that all substructural elements of new structures should be designed to be stable under the anticipated, potential scour without reliance upon scour countermeasures. Debris width at the piers was assumed to add an additional 1 foot of width to each side of the piers, for a total width of 3'-4".

Stage and Minimum Recommended Soffit Elevation

The calculated 100-year water stage elevation is 17.9 feet NAVD88 (15.2 feet NGVD29), and the minimum recommended soffit elevation at the upstream side of the proposed structure is 17.9 feet NAVD88 (15.2 feet NGVD29). Due to project constraints, both the existing and the proposed structure do not meet the recommended minimum soffit elevation, therefore the structure depth should be minimized and design should consider a soffit elevation no lower than that of the existing structure. Buoyancy should be considered in the deck design.

The recommended minimum soffit elevation is based on the calculated water surface elevation for either the 50-year or 100-year discharges with special consideration for debris passage. While the recommended soffit elevation will not be met, there are no significant flood concerns due to the configuration of the new structure. There may be some minor flooding in the gap between the two proposed structures, and there may be some minor increase in the upstream water surface elevation, but this increase should be retained within the channel of proposed upstream channel improvements. Debris will also continue to be an issue at this location irrespective of the minimum soffit elevation.

Bridge Skew and Hydraulic Skew

The bridge skew is about 14 degrees and the hydraulic skew is less than 10 degrees based on the new channel reconfiguration and the bridge replacement.

HEC-RAS Plan Wall A Locations: User Defined Profile: 100-Year										
River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Max Chl Dpth (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Froude # Chl
SF Creek	R1	8027.550	100-Year	9300.00	3.56	19.28	15.72	5.41	1728.50	0.25
SF Creek	R1	7883.61*	100-Year	9300.00	3.05	19.09	16.04	5.90	1575.85	0.28
SF Creek	R1	7880.61	100-Year	9300.00	3.05	18.92	15.87	6.58	1414.23	0.29
SF Creek	R1	7878.62		Bridge						
SF Creek	R1	7836.11	100-Year	9300.00	1.81	18.60	16.79	6.49	1432.72	0.29
SF Creek	R1	7834.61		Bridge						
SF Creek	R1	7627.808	100-Year	9300.00	1.81	17.49	15.68	6.97	1334.38	0.32
SF Creek	R1	7609.61	100-Year	9300.00	1.72	17.23	15.51	7.40	1256.76	0.34
SF Creek	R1	7597.61	100-Year	9300.00	1.66	17.12	15.46	7.08	1313.85	0.33

Table 1: HEC-RAS Output for Interim Condition, Wall A, Elevations using NAVD88 Datum.

HEC-RAS Plan Final 16" wall: Locations: User Defined Profile: 100-Year										
River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Max Chl Dpth (ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Froude # Chl
SF Creek	R1	8027.550	100-Year	9300.00	3.56	18.08	14.52	5.91	1573.57	0.29
SF Creek	R1	7883.61*	100-Year	9300.00	3.05	17.83	14.78	6.51	1427.70	0.33
SF Creek	R1	7880.61	100-Year	9300.00	3.05	17.93	14.88	5.43	1714.28	0.25
SF Creek	R1	7878.62		Bridge						
SF Creek	R1	7836.11	100-Year	9300.00	1.81	17.80	15.99	5.33	1743.67	0.24
SF Creek	R1	7834.61		Bridge						
SF Creek	R1	7627.808	100-Year	9300.00	1.81	17.26	15.45	5.35	1736.99	0.25
SF Creek	R1	7418.670	100-Year	9300.00	0.70	17.22	16.52	5.71	2081.06	0.26

Table 2: HEC-RAS Output for Proposed Final Configuration, 4 spans, Elevations using NAVD88 Datum.

Scour and Channel Degradation

No channel cross-section records were available until 1993, with a second measurement taken in 2003. Preliminary Investigations – North performed a channel survey on 3/22/2009. Under normal flows, the material in channel bed recharges by itself by tidal effect. The channel appears laterally stable and based on historical cross-sections, future channel degradation is assumed to be negligible. Contraction scour at the proposed structure is also considered to be negligible. The total local pier scour depth is estimated and based on the cross-sections in the HECRAS model. Moderate debris loading is considered in the scour calculation by adding a debris width of 1.67 feet to each pier, for a total width of 3.0 feet. Local Pier Scour was calculated within HEC-RAS using the CSU equation. The final supported elevation for all pier and abutment foundations should be consulted with the Geotechnical Branch. At the piers, the anticipated short term local scour depth is 7.7 feet, reaching an

elevation of -4.65 feet NAVD88 (-7.35 feet NGVD29). Due to retaining walls upstream of the structure, integral with the abutments, abutment scour is anticipated to be minimal; however there will likely be some scour due to the hydraulic skew at the upstream end of the project. The top of footing elevation for both abutments should be placed below elevation -0.30 feet NAVD 88 (-3.0 feet NGVD 29)

Bank Protection

Considerable bank erosion at the embankments may occur due to the soil composition. The District is to recommend bank protection for channel embankments and roadway approaches, if required.

Flood Plain Encroachment

The proposed project is located on the boundary between the cities of Palo Alto and East Palo Alto, and is in the flood hazard area inundated by the 100-year flood with two different zonings. The first zoning is "ZONE A, No base flood elevation determined" as shown on the East Palo Alto City, California Flood Insurance Rate Map (FIRM), Community-Panel Number 060708-0001 B, and dated August 23, 1999. The second zoning is "ZONE AE, Base flood elevation determined" as shown on the Santa Clara County, California Flood Insurance Rate Map (FIRM), Community Panel Number 06085C-0030 H, and dated 5/18/2009. The current 100-year flood elevation is at 11.0 feet NAVD (8.3 feet NGVD29) as shown on Santa Clara County 2009 flood map.

Summary Information for the Bridge Designer

Below is a summary of key design parameters based on the hydrology and hydraulic analysis performed for this structure:

All calculated elevations in this report are based on the General Plans from the Office of Bridge Design West, Branch 16, dated 11/5/2014 and the HEC-RAS model provided by HDR. Elevations are provided for both the NGVD29 datum as well as the NAVD88 datum.

HYDROLOGIC SUMMARY			
Bridge Number: 35-0348			
Drainage Area: 45 square miles			
	Design Flood	Base Flood	Overtopping
Frequency (yrs)	100-Year	100-Year	N/A
Discharge (ft ³ /s)	9,300	9,300	>10,000
Water Surface Elevation at Bridge (ft)	17.9 NAVD88 15.2 ft NGVD29	17.9 NAVD88 15.2 ft NGVD29	Under pressure flow, no freeboard
Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.			
Minimum Recommended Soffit Elevation		17.9 ft NAVD88 (15.2 ft NGVD29)	
Potential Scour Elevation at Abutments		-0.30 ft NAVD88 (-3.0 ft NGVD29)	
Potential Scour Elevation at Piers		-4.65 ft NAVD88 (-7.35 ft NGVD29)	
Recommended Waterway Opening		1,750 ft ²	
Average Velocity, 100-year discharge		5.4 fps	

All calculated elevations in this report are based on the General Plans from the Office of Bridge Design West, Branch 16, dated 11/5/2014 and the HEC-RAS model provided by HDR. Elevations are provided for both the NGVD29 datum as well as the NAVD88 datum.

Long Term Scour Depths

Support Location	Degradation Scour Depth (ft)	Contraction Scour Depth (ft)
All Supports	N/A	N/A

Scour Data (Elevation and Depth)

Support Location	Long Term Scour Elev (ft)	Short Term (Local) Scour Depth (ft)
All Piers	N/A	7.7
Abutments	N/A	3.35



Figure 5.15. Steel debris rack in urban area.

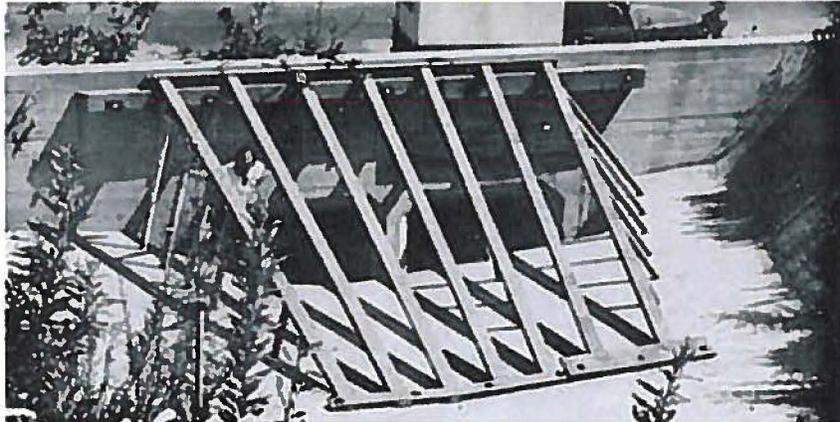


Figure 5.21. Steel grill debris rack with provision for cleanout afforded by concrete paved area in foreground.



Figure 5.22. Steel grill debris rack on slope mitered culvert entrance.

Figure 10: FHWA HEC 9, Pictures of Typical Debris Racks.

4.6 HYDRAULIC LOADING ASSOCIATED WITH DEBRIS ACCUMULATION

There are three steps for computing the hydraulic loading on a bridge structure with debris accumulation. The first step is to define the geometry of the debris accumulation using the procedures and recommendations presented in Chapter 3 of this manual. The second step is to compute the flow hydraulics through the bridge structure using the procedures and recommendations presented in the previous sections of this chapter. The last step is to compute the hydrodynamic loads using the hydraulic characteristics associated with the presence of the debris accumulation and the following equations and general procedure developed by Parola⁽⁴⁹⁾.

The hydrodynamic drag force is based on the general form of the drag equation and the drag coefficient relationship developed from a model study investigation by Parola at the University of Louisville⁽⁴⁹⁾.

$$F_D = C_D \gamma A_D \frac{V_r^2}{2g} \quad (4.1)$$

where:

- F_D = Drag force, N (lbs)
- C_D = Drag coefficient, see Tables 4.1 and 4.2
- γ = Specific weight of water, N/m³ (lbs/ft³)
- A_D = Area of wetted debris based on the upstream water surface elevation projected normal to the flow direction, m² (ft²)
- V_r = Reference velocity, see discussion in Subsection 4.3.3.1, m/s (ft/s)
- g = Acceleration of gravity, 9.81 m/s² (32.2 ft/s²)

Drag coefficient for debris on piers is provided in Table 4.1 and for debris on superstructures in Table 4.2.

Table 4.1. Drag Coefficient for Debris on Piers.

Value of B	Value of F_r	C_D
$B < 0.36$	$F_r < 0.4$	1.8
$B < 0.36$	$0.4 < F_r < 0.8$	$2.6 - 2.0F_r$
$0.36 < B < 0.77$	$F_r < 1$	$3.1 - 3.6B$
$B > 0.77$	$F_r < 1$	$1.4 - 1.4B$

Table 4.2. Drag Coefficient for Debris on Superstructure.

Value of B	Value of F_r	C_D
$B < 0.33$	$F_r < 0.4$	1.9
$B < 0.33$	$0.4 < F_r < 0.8$	$2.8 - 2.25F_r$
$0.33 < B < 0.77$	$F_r < 1$	$3.1 - 3.6B$
$B > 0.77$	$F_r < 1$	$1.4 - 1.4B$

Figure 11: FHWA HEC 9, Typical Hydrodynamic Force Equations & Variables.

The drag coefficient as provided in these tables is related to the blockage ratio and Froude number as defined below.

$$B = \frac{A_d}{A_d + A_c} \quad (4.2)$$

where:

- B = Blockage ratio
- A_d = Cross-sectional flow area blocked by debris in the contracted bridge section, m^2 (ft^2)
- A_c = Unobstructed cross-sectional flow in the contracted section, m^2 (ft^2)

$$F_r = \frac{V_r}{\sqrt{gy_r}} \quad (4.3)$$

where:

- Fr = Froude number
- V_r = Reference velocity, see discussion in Subsection 4.3.3.1, m/s (ft/s)
- g = Acceleration of gravity, $9.81 m/s^2$ ($32.2 ft/s^2$)
- y_r = Average flow depth corresponding with the reference velocity, m (ft)

The total force on the structure that is caused by the hydrostatic pressure difference can be approximated as:

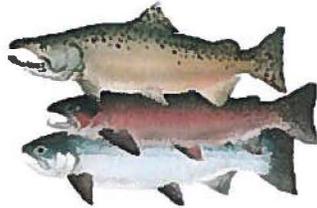
$$F_h = \gamma(h_{cu}A_{hu} - h_{cd}A_{hd}) \quad (4.4)$$

where:

- F_h = Horizontal hydrostatic force on area A_h , N (lbs)
- γ = Specific weight of water, N/m^3 (lbs/ft^3)
- h_{cu} = Vertical distance from the upstream water surface to the centroid of area A_{hu} , m (ft)
- A_{hu} = Area of the vertically projected, submerged portion of the debris accumulation below the upstream water surface, m^2 (ft^2)
- h_{cd} = Vertical distance from the downstream water surface to the centroid of area A_{hd} , m (ft)
- A_{hd} = Area of the vertically projected, submerged portion of the debris accumulation below the downstream water surface, m^2 (ft^2)

Figure 12: FHWA HEC 9, Typical Hydrodynamic Force Equations & Variables.

ANADROMOUS SALMONID PASSAGE FACILITY DESIGN



**NATIONAL MARINE FISHERIES SERVICE
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FEBRUARY 2008



Figure 13: NOAA Fish Passage Facility Design Manual.

4.8.2 Specific Criteria and Guidelines – Coarse Trash Rack

4.8.2.1 Velocity: The velocity through the gross area of a clean *coarse trash rack* should be less than 1.5 ft/s.

4.8.2.2 Depth: The depth of flow through a *coarse trash rack* should be equal to the pool depth in the *fishway*.

4.8.2.3 Maintenance: The *coarse trash rack* should be installed at 1:5 (horizontal:vertical) slope (or flatter) for ease of cleaning. The *coarse trash rack* design must allow for easy maintenance, considering access for personnel, travel clearances for manual or automated raking, and removal of debris.

4.8.2.5 Bar Spacing: The *fishway* exit *coarse trash rack* should have a minimum clear space between vertical flat bars of 10 inches if Chinook salmon are present, and 8 inches in all other instances. Lateral support bar spacing must be a minimum of 24 inches, and must be sufficiently back set of the *coarse trash rack* face to allow full trash rake tine penetration. *Coarse trash racks* must extend to the appropriate elevation above water to allow easy removal of raked debris.

4.8.2.6 Orientation: The *fishway* exit *coarse trash rack* must be oriented at a deflection angle greater than 45° relative to the direction of river flow.

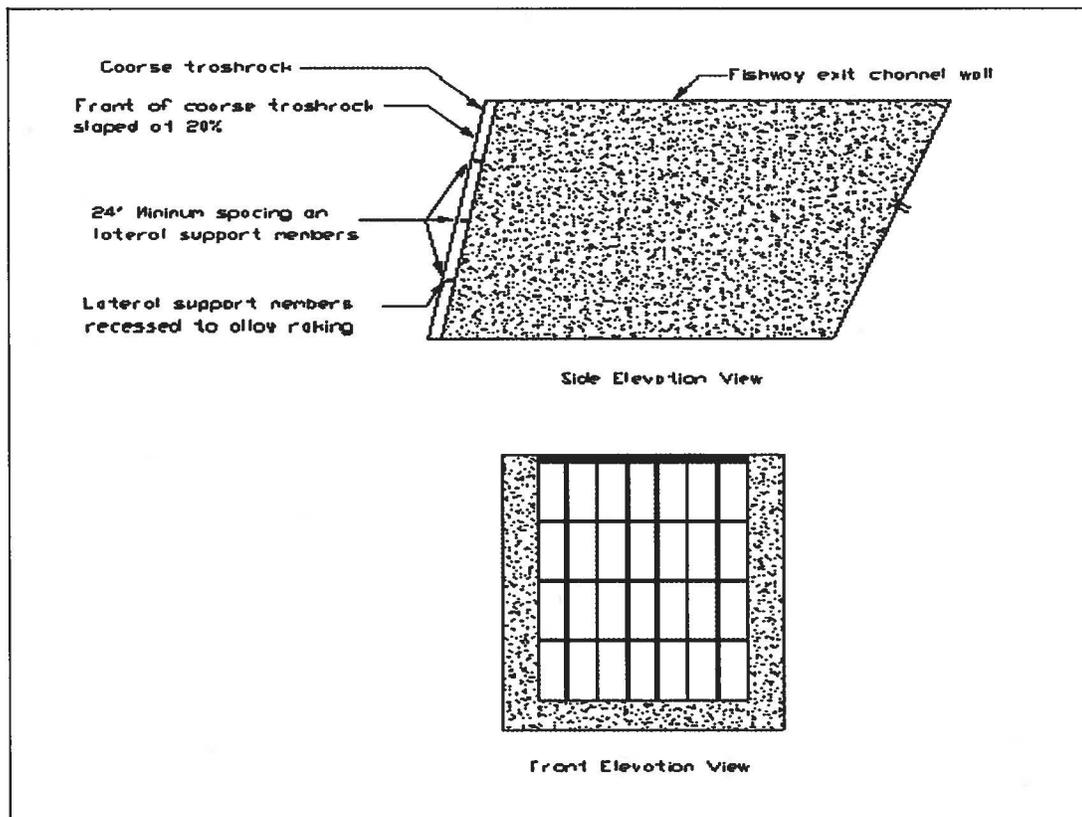


Figure 14: NOAA Fish Passage Facility Design Manual, Criteria & Guidelines (Figure 4-5).