

INFORMATION HANDOUT

WATER QUALITY

[RWQCB 401 Certifications Cert No.33511WQ04](#)

PERMITS AND AGREEMENTS

[United States Fish and Wildlife Service Biological Opinion, \(8-8-09-F-36\) dated October 7,2009](#)

[Amendment of The Biological Opinion \(8-8-09-F-36\) dated March 16, 2012
California Department of Fish and Game 1602 permit Notification No.1600-2011-0169-R4,](#)

[California Fish and Game Incidental Take Permit No.2081-2011-064-04
United States Army Corps of Engineers 404 Permit. Permit No.2010-00345S](#)

MATERIALS INFORMATION

[Foundation Report for San Juan Road OC Bridge, Br. No. 43-0047, dated June 14, 2011](#)

[Final Hydraulic Report for San Juan Road Interchange, Br. No. 43-0047, dated October 11, 2010.](#)

[Foundation Report for Retaining Wall No. 1 \(Soil Nail Wall\) dated June 14, 2011.](#)

[Foundation Report for Retaining Wall No. 2 \(Soil Nail Wall\) dated June 14, 2011.](#)

[Cal-OSHA Division of Mining and Tunneling unit classification.](#)

[Geotechnical Design Report Dated December 20,2011](#)

[Aerially Deposited Lead Site Investigation Report dated January 2008](#)

[Supplemental Site Investigation Report dated January 2012](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

FOR CONTRACT NO.: 05-315804

WATER QUALITY

[RWQCB 401 Certifications Cert No.33511WQ04](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6



California Regional Water Quality Control Board Central Coast Region

895 Aerovista Place, Suite 101, San Luis Obispo, California 93401-7906
(805) 549-3147 • FAX (805) 543-0397
<http://www.waterboards.ca.gov/centralcoast>



Matthew Rodriguez
*Secretary for
Environmental Protection*

Edmund G. Brown Jr.
Governor

April 3, 2012

Jim Walth
Department of Public Works
50 Higuera Street
San Luis Obispo, CA 93401
Email: jimmy_walth@dot.ca.gov

VIA ELECTRONIC MAIL

Dear Mr. Walth:

WATER QUALITY CERTIFICATION NUMBER 33511WQ04 FOR SAN JUAN ROAD INTERCHANGE PROJECT, MONTEREY COUNTY

Thank you for the opportunity to review your November 4, 2011 application for Clean Water Act Section 401 Water Quality Certification (Certification) of the San Juan Road Interchange Project (Project). The application was completed on March 26, 2012 with the submission of the new San Juan Road Mitigation and Monitoring Proposal (MMP). The project, if implemented as described in your application and with the additional mitigation requirements and conditions required by this Certification, appears to be protective of beneficial uses of State waters. We are issuing the enclosed Standard Letter of Certification.

At this time, we do not anticipate issuing additional requirements based on your application. Should new information come to our attention that indicates a water quality problem, we may require additional monitoring and reporting, issue Waste Discharge Requirements, or take other action.

Your Certification application and California Environmental Quality Act (CEQA) documents indicate that project activities may affect beneficial uses and water quality. The Central Coast Regional Water Quality Control Board (Central Coast Water Board) issues this Certification to protect water quality and associated beneficial uses from project activities. We need reports to determine compliance with this Certification. All technical and monitoring reports requested in this Certification, or any time after, are required per Section 13267 of the California Water Code.

Your failure to submit reports required by this Certification, or your failure to submit a report of technical quality acceptable to the Executive Officer, may subject you to enforcement action per Section 13268 of the California Water Code. The Central Coast Water Board will base enforcement actions on the date of certification. Any person affected by this Central Coast Water Board action may petition the State Water Resources Control Board (State Board) to review this action in accordance with California Water Code Section 13320; and Title 23, California Code of Regulations, Sections 2050 and 3867-3869. The State Board, Office of Chief Counsel, PO Box 100, Sacramento, CA 95812, must receive the petition within 30 days of the date of this certification. We will provide upon request copies of the law and regulations applicable to filing petitions.

California Environmental Protection Agency

If you have questions please contact **David Innis** at (805) 549-3150 or via email at DBInnis@waterboards.ca.gov. Please mention the above certification number in all future correspondence pertaining to this project.

Sincerely,

for
Roger W. Briggs
Executive Officer

Enclosure: Action on Request for CWA Section 401 Water Quality Certification

cc: With enclosures

Chuck Cesena
Caltrans District 5
Email: chuck_cesena@dot.ca.gov

Paula Gill
U.S. Army Corps of Engineers
San Francisco District
Regulatory Section
1455 Market Street, Floor 16
San Francisco, CA. 94103-1398
Email: Paula.C.Gill@usace.army.mil

Julie Means
California Department of Fish and Game
Lake and Streambed Alteration
1234 East Shaw Avenue
Fresno, CA 93710
Email: jmeans@dfg.ca.gov

401 Program Manager
State Water Resources Control Board
Division of Water Quality
Email: Stateboard401@waterboards.ca.gov

R9-WTR8-Mailbox@epa.gov

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Action on Request for
Clean Water Act Section 401 Water Quality Certification
for Discharge of Dredged and/or Fill Materials

PROJECT: San Juan Road Interchange Project

APPLICANT: Jim Walth
California Department of Transportation (Caltrans)
District 5
50 Higuera Street
San Luis Obispo, CA 93401

ACTION:

1. Order for Standard Certification
2. Order for Technically-conditioned Certification
3. Order for Denial of Certification

STANDARD CONDITIONS:

1. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment per section 13330 of the California Water Code and section 3867 of Title 23 of the California Code of Regulations (23 CCR).
2. This certification action is not intended 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 per 23 CCR subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license was being sought.
3. The validity of any non-denial certification action (Actions 1 and 2) shall be conditioned upon total payment of the fee required under 23 CCR section 3833, unless otherwise stated in writing by the certifying agency.
4. This certification is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein or any conditions contained in any other permit or approval issued by the State of California or any subdivision thereof may result in the revocation of this Certification and civil or criminal liability.
5. In the event of a violation or threatened violation of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of Section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification.

- 6. In response to a suspected violation of any condition of this certification, the Central Coast Water Board may require the holder of any permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the Central Coast Water Board deems appropriate, provided that the burden, including costs, of the reports shall have a reasonable relationship to the need for the reports and the benefits obtained from the reports.
- 7. The total fee for this project is \$30,684. The remaining fee payable to the Central Coast Water Board is \$0.

CENTRAL COAST WATER BOARD CONTACT PERSON:

David Innis
(805) 549-3150
DBInnis@waterboards.ca.gov

Please refer to the above certification number when corresponding with the Central Coast Water Board concerning this project.

WATER QUALITY CERTIFICATION:

I hereby issue an order certifying that any discharge from the San Juan Road Interchange Project shall 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.

Except insofar as may be modified by any preceding conditions, all certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the applicant's project description and the attached Project Information Sheet, and (b) compliance with all applicable requirements of the Central Coast Water Board's Water Quality Control Plan (Basin Plan).

for _____
Roger W. Briggs
Executive Officer
Central Coast Water Board

April 3, 2012
Date

PROJECT INFORMATION AND CONDITIONS

Application Date	Received: November 4, 2011 Completed: March 26, 2012
Applicant	Jim Walth Email: jimmy_walth@dot.ca.gov 805-549-3233 California Department of Transportation (Caltrans) District 5 50 Higuera Street San Luis Obispo, CA 93401
Applicant Representatives	N/A
Project Name	San Juan Road Interchange Project
Application Number	33511WQ04
Type of Project	Highway Construction
Project Location	Along 2.9 miles of Highway 101 north of Prunedale and south of Aromas in the area between San Juan Road and Cole Road; post miles MON-100 to SBT-1.6
County	San Benito and Monterey Counties
Receiving Water(s)	Elkhorn Slough and Los Carneros Creek 306.00 Bolsa Neuva Hydrologic Unit
Water Body Type	Slough and creek, including freshwater wetlands along creeks, seeps on hillsides, and seasonal wetlands with shallow, perched water tables.
Designated Beneficial Uses for both water bodies unless indicated	Municipal and Domestic Supply (MUN) [Los Carneros only] Water Contact Recreation (REC-1) Non-Contact Recreation (REC-2) Wildlife Habitat (WILD) Cold Fresh Water Habitat (COLD) Warm Fresh Water Habitat (WARM) [Los Carneros only] Migration of Aquatic Organisms (MIGR) Spawning, Reproduction, and/or Early Development (SPWN) Preservation of Biological Habitats of Special Significance (BIOL) [Los Carneros only] Rare, Threatened or Endangered Species (RARE) Estuarine Habitat (EST) [Elkhorn Slough only] Freshwater Replenishment (FRSH) [Los Carneros only] Navigation (NAV) [Elkhorn Slough only] Commercial and Sport Fishing (COMM) Aquaculture (AQUA) [Elkhorn Slough only] Shellfish Harvesting (SHELL) [Elkhorn Slough only]
Project Description (purpose/goal)	The purpose of the project is to reduce congestion and improve safety at the intersections of San Juan Road, Dunbarton Road, and Cole Road with US Route 101. The project proposes to construct an interchange and frontage roads on US Route 101 to include on-ramps and off-ramps for northbound and southbound traffic, and an overpass and changes to local roads to provide controlled access to

	<p>the highway. As part of road construction, approximately 400 to 500 feet of Elkhorn Slough and Los Carneros Creek will be diverted through large box culverts with armored inlets and outlets. Elsewhere throughout the project, fill will cover small wetlands and other jurisdictional waters. All mitigation for filled wetlands will occur at the Carmel River Mitigation Bank, while mitigation for all other waters will occur within the project or nearby right-of-ways.</p>
Preliminary Water Quality Issues	<p>Central Coast Water Board staff finds the project has the potential to cause sedimentation, siltation, and pollutant release to the slough and creek. Erosion could be caused by the construction activities. Pollutants could be released from construction equipment (e.g., oil, gasoline, hydraulic fluid, and other liquid contaminants associated with earth-moving equipment) or from the concrete work associated with road and highway construction.</p>
Project Requirements	<p>Project practices that are required to comply with 401 Water Quality Certification are as follows:</p> <ol style="list-style-type: none"> 1. Construction activities within waters of the State must be completed by October 15. After October 1, materials for erosion control shall be kept on site and immediately available for installation in anticipation of rain events. At any time, if the National Weather Service predicts a 25% or more chance of rain within 24 hours, all construction activities in waters of the State must cease before the rain. In preparation for the rain event, the site manager must install effective erosion and sediment control measures. Prior to October 15, construction activities in waters of the State may resume after the rain event has passed and site conditions are dry enough to continue work without additional risk of discharging to waters of the State. 2. Riparian vegetation adjacent to the construction areas shall be fenced with protective fencing to preclude inadvertent damage from heavy equipment. 3. Any temporary fill for temporary construction shall be clean gravel. 4. No debris, soil, silt, sand, slash, sawdust, rubbish, cement or concrete, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into or be placed where it may be washed by rainfall or runoff into the slough or creek. 5. Caltrans shall implement the Mitigation Banking Measures and other mitigation activities described in "Waters of the United States Onsite Mitigation and Monitoring Proposal for the California Department of Transportation's San Juan Road Interchange Project" (signed March 23, 2012). 6. Caltrans shall implement a Storm Water Pollution Prevention Plan per the Construction General Permit (Order No. 2009-0009-DWQ and amendments). 7. Caltrans shall use adequate Best Management Practices (BMPs) (e.g., revegetation, fiber rolls, erosion control blankets, hydromulching, compost, straw with tackifiers, temporary basins) in and around construction areas to intercept rain drop

	<p>impacts, control the sources of erosion, and capture sedimentation. Caltrans shall implement washout, trackout, and dust control BMPs.</p> <ol style="list-style-type: none">8. As stated in the Water Quality Certification application, all work in waters of the State will occur during the dry season. As such, this Certification does not permit dewatering or construction of diversions. If dewatering or diversion becomes necessary, Caltrans shall submit a dewatering/diversion plan two weeks prior to anticipated dewatering or diversion for Central Coast Water Board approval.9. Caltrans shall apply approved grass seed mixtures with adequate irrigation and soil stabilizers (e.g., compost, hydromulch, tackified straw) and/or erosion control blankets over seeded areas for slope stabilization.10. Any material stockpiled that is not actively being used during construction shall be covered in compliance with the Construction General Permit, unless reserved for seed banking, which may require alternative erosion and dust control BMPs.11. All construction vehicles and equipment used on site shall be well maintained and checked daily for fuel, oil, and hydraulic fluid leaks or other problems that could result in spills of toxic materials.12. Caltrans shall retain a spill plan and appropriate spill control and clean up materials (e.g., oil absorbent pads) onsite in case spills occur.13. Caltrans shall confine all trash and debris in appropriate enclosed and covered bins and dispose of the trash and debris at an approved site at least weekly.14. Caltrans shall designate a staging area for equipment and vehicle fueling and storage at least 100 feet away from waterways, in a location where fluids cannot flow into waterways.15. All vehicle fueling and maintenance activity shall occur at least 100 feet away from waterways, and in designated staging areas.16. Sand and gravel bags, if used, shall be filled only with clean gravel.17. All post-construction BMPs shall be implemented and functioning prior to completion of the project.18. All construction-related equipment, materials, and any temporary BMPs no longer needed shall be removed and cleaned from the site upon completion of the project.19. Central Coast Water Board staff shall be notified if mitigations as described in the 401 Water Quality Certification application for this project are altered by the imposition of subsequent permit conditions by any local, state or federal regulatory authority. Caltrans shall inform Central Coast Water Board staff of any modifications that interfere with compliance with this certification.
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Area of Disturbance	Approximately 1.59 acres, 6,485 linear feet total						
	Impact Summary	Permanent Impacts		Temporary Impacts		Perm + Temp	
		Acres	Linear ft	Acres	Linear ft	Acres	Linear ft
	Streambed Channels	0.23	1,740	0.08	860	0.31	2,600
	Jurisdictional Wetlands	0.97	2,015	0.01	58	0.98	2,073
	Other Jurisdictional Waters*	0.27	1,529	0.03	283	0.30	1,812
	Total	1.47	5,284	0.12	1201	1.59	6,485
	* "Other Waters" composed of culverts, ditches, and drainages						
Fill/Excavation Area	Approximately 5,000 cubic yards of temporary or permanent fill						
Dredge Volume	N/A						
U.S. Army Corps of Engineers Permit No.	Individual Permit 14 – 2010-00345S						
Federal Public Notice	N/A						
US Fish and Wildlife Service	Biological Opinion for the San Juan Interchange Project, Monterey and San Benito Counties, California (8-8-09-F-36)						
Dept. of Fish and Game Streambed Alteration Agreement	Agreement 2011-0169-R4, dated March 30, 2012						
Possible Listed Species	California red-legged frog, California tiger salamander						
Status of CEQA Compliance	Mitigated Negative Declaration State Clearinghouse File No.: 2006021071 Lead Agency: California Department of Transportation (Caltrans)						
Compensatory Mitigation Requirements	<p>The project shall include the following:</p> <ul style="list-style-type: none"> • 0.97 acres of permanent and 0.01 acres temporary impacts to jurisdictional wetlands shall be mitigated through the use of 4.537 acres of jurisdictional wetland mitigation credit at the Carmel River Mitigation Bank, for a ratio of greater than 4.5:1. All jurisdictional wetland credits at this Bank will be dedicated to wetland mitigation for this project. • 0.50 acres of permanent impacts and 0.11 acres of temporary impacts to streambed shall be mitigated at a 1:1 ratio or greater by restoring nearby waters per the "Waters of the United States Onsite Mitigation and Monitoring Proposal for the California Department of Transportation's San Juan Road Interchange Project" (signed March 23, 2012). • The On-site Mitigation shall create and enhance Other Waters in the Cole Road and Rocks Ranch areas. This includes approximately 0.43 acres of created Other Waters in the Cole Road and Rocks Ranch, and 0.21 acres enhanced Other Waters in the Cole Road area. Additionally, Caltrans shall create or restore approximately 1.52 acres of riparian vegetated buffers in the Cole Road, Rocks Ranch, and Dunbarton Road areas. • The constructed Other Waters shall be monitored for a ten 						

	<p>year period post-construction to qualitatively assess channel conditions. Monitoring shall occur at years 1, 2, 3, 4, 5, 7, 9, and 10. Evidence of channel instability (e.g. migrating headcuts or bank erosion) shall be documented and remediation measures shall be proposed to the Central Coast Water Board staff.</p> <ul style="list-style-type: none"> • Caltrans shall conduct plant establishment, growth, watering and maintenance inspections and implement adequate remedial actions in case of vegetation stress or failures. • Caltrans shall ensure the created Other Waters support features capable of conveying surface water from upland sources for two weeks during the wet season (October – April).
<p>Total Certification Fee</p>	<p>\$30,684</p>
<p>Additional Conditions</p>	<p>Contact Central Coast Water Board staff when project begins to allow for a site visit.</p> <p>The Central Coast Water Board requires monitoring and reports for this project, to be submitted in electronic format to RB3_401Reporting@waterboards.ca.gov:</p> <ul style="list-style-type: none"> • Visually inspect the construction site after completion of the project and for four subsequent rainy seasons to ensure that the project is not causing excessive erosion or other water quality problems. If the project does cause water quality problems, contact the Central Coast Water Board staff member overseeing the project. Caltrans will be responsible for obtaining any additional permits necessary for implementing plans for restoration to prevent further water quality problems. • First Report: Within 30 days of project completion, submit a project completion report that contains a summary of daily activities, monitoring and inspection observations, and problems incurred and actions taken; include properly identified post-project photos. • Mitigation efforts shall be monitored for a ten year period to qualitatively assess channel conditions, vegetation success, and habitat function. Submit annual reports complete with photos of revegetation efforts by December 31 for the first five monitoring years, as well as for the seventh, ninth, and tenth monitoring years. Annual reports shall include results of site inspections and shall quantify growth and progress of mitigation and determine to what extent performance criteria have been met. All areas of the mitigation site shall be assessed for percent cover, general health and stature, and signs of reproduction. The report shall also include photographs of revegetation progress over time.

PERMITS AND AGREEMENTS

United States Fish and Wildlife Service Biological Opinion, (8-8-09-F-36) dated
October 7, 2009

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
81440-2009-F-0345

October 7, 2009

Jim Walth, Associate Environmental Planner
California Department of Transportation
50 Higuera Street
San Luis Obispo, California 93401-5415

Subject: Biological Opinion for the San Juan Interchange Project, Monterey and San Benito Counties, California (8-8-09-F-36)

Dear Mr. Walth:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the California Department of Transportation's (Caltrans) San Juan Interchange Project, Monterey and San Benito Counties, and its effects on the federally threatened California red-legged frog (*Rana aurora draytonii*), California tiger salamander (*Ambystoma californiense*), and vernal pool fairy shrimp (*Branchinecta lynchi*), and the federally endangered Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longientenna*), vernal pool tadpole shrimp (*Lepidurus packardi*), and least Bell's vireo (*Vireo bellii pusillus*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.).

Caltrans has assumed the Federal Highway Administration's (FHWA) authority and responsibility for compliance with the National Environmental Policy Act and other environmental laws. A memorandum of understanding between the FHWA and Caltrans allows Caltrans to serve as the lead Federal agency for formal consultation on the proposed project. Your request for initiation of formal consultation, sent June 15, 2009, was received by our office on June 16, 2009.

The subject project is within or near the historic range of the vernal pool fairy shrimp, Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool tadpole shrimp. Protocol level dry season and wet season surveys were conducted in all potential vernal pool habitat in 2008 and 2009 (Caltrans 2009). The results for all the surveys were negative for fairy shrimp. Therefore, you have determined that the subject project will not affect vernal pool fairy shrimp, Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool tadpole shrimp. We concur with your determination. We have based this concurrence on the results of the protocol level surveys that indicated a lack of occupied habitat within the project area. Based on this concurrence, vernal pool fairy shrimp, Conservancy fairy shrimp, longhorn fairy shrimp, and vernal pool tadpole shrimp will not be discussed further within the biological opinion.

The subject project is within the range of the least Bell's vireo. Protocol level surveys were conducted in the project area in 2007 (Greaves 2007). The results were negative for presence of least Bell's vireo. Therefore, you have determined that the subject project will not affect least Bell's vireo. We concur with your determination. We have based this concurrence on the limited amount of suitable habitat and the results of the protocol level surveys that indicated a lack of occupied habitat within the project area. Based on this concurrence, least Bell's vireo will not be discussed further within the biological opinion.

This biological opinion is based on information that accompanied your request for consultation, including the biological assessment (Caltrans 2009). A complete administrative record for this consultation is on file at the Ventura Fish and Wildlife Office.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Caltrans and the Federal Highway Administration (FHWA) propose to construct an interchange on U.S. Route 101 north of the city of Prunedale, Monterey and San Benito Counties. The proposed project would construct an overcrossing at a right angle with Route 101 northeast of the Monterey/San Benito county line. The southbound on-ramp and southbound off-ramp would be a compact diamond interchange configuration. The northbound off-ramp and northbound on-ramp would be a one-quadrant cloverleaf interchange configuration.

The overcrossing of San Juan Road would end at the intersection with a public frontage road on the east side of Route 101. This public frontage road would run south between the northbound off-ramp and the existing Red Barn structure and the end with a cul-de-sac at Marilyn Lane. The Red Barn building would be preserved. Marilyn Lane and Ballantree Lane are private roads and would be connected to this frontage road.

Access to Dunbarton Road (north) from Route 101 would be removed. Dunbarton Road (north) would become a frontage road ending with a cul-de-sac. The gaps in the median barrier on Route 101 within the project limits would be closed with a concrete barrier. Full access control is proposed from 0.4-mile north of Dunbarton Road (north) in Monterey County to 0.2-mile north of Cole Road in San Benito County, and conversion of this segment of Route 101 from a 4-lane rural expressway to a freeway.

The facility would be an interchange on a rural freeway in rolling terrain. The freeway design speed would be 70 miles per hour. The proposed overcrossing structure would provide for future widening to the ultimate six-lane freeway.

The existing Route 101 would retain the current horizontal, vertical, and cross-sectional geometric features except for the section from the San Juan Road intersection to Cole Road. The outside shoulders would be widened to the standard width of 10 feet. A 22-foot wide median with a new concrete barrier would be constructed from the San Juan Road intersection to the

point where the southbound and northbound lanes diverge. The existing gaps in the median barrier at Dunbarton Road (north) and at San Juan Road would be closed with a concrete barrier.

The overcrossing structure would span Route 101, the proposed northbound on-ramp, and the adjacent Elkhorn Slough tributary. The structure width would accommodate three, 12-foot-wide lanes, 8-foot-wide shoulders, and a 6-foot-wide sidewalk. Ramps would have a 12-foot-wide lane and 4- and 8-foot-wide shoulders.

Caltrans proposes the following conservation measures to minimize adverse effects to California red-legged frogs and California tiger salamanders (Caltrans 2009):

1. Work that would impact aquatic resources will be completed during the dry season (typically May 1 –November 1).
2. A qualified biologist or designee will conduct pre-construction surveys for special-status plants and wildlife species. Pre-construction surveys will be scheduled 2 weeks prior to the beginning of construction. The survey area will include the Area of Potential Impact (API) identified on project maps, potential temporary construction access areas and routes, vehicle and equipment storage areas, stream channels in the API, and any staging or borrow sites.
3. The biologist or designee will be present on site during all construction activities that have the potential to impact special-status species within the API and will monitor compliance with all avoidance and minimization measures. The biologist or designee will provide the contractor with instructions on the identification of all special-status species that can occur within the API.
4. The Caltrans Resident Engineer, in consultation with the biologist or designee will have the authority to halt any action that might result in impacts that exceed the anticipated levels of impact that were determined during regulatory agency review. If work is stopped, the appropriate regulatory agency will be notified by the biologist or designee.
5. Environmentally Sensitive Area (ESA) fencing or other appropriate protective markers or signs will be installed to reduced impacts to biological resources. ESA protection will be established in construction areas that have the potential to impact sensitive plant communities, wetlands, potential habitat for special status species, and any identified special-status plant or wildlife species. ESAs will be shown on the project plans and delineated in the field by the project biologist or designee prior to the on-set of construction activities, including vehicle storage.
6. Any water used to control dust and protect air quality during construction will not be taken from local streams and ponds that are known to support sensitive animal species.
7. The number of access routes, size of staging areas, and the total area of the activity will be limited to the minimum necessary to achieve the project goal. Routes and boundaries

will be clearly defined in the field to minimize activities in biologically sensitive areas. Where practical, all access will be restricted to the existing roads or to designated temporary access areas.

8. No heavy equipment will be operated in flowing water outside of the designated work area.
9. Refueling and maintenance of equipment and vehicles will be conducted at least 20 meters (60 feet) from aquatic habitat, wetland areas, or other water resources. The contractor will be required to take appropriate measures to prevent contamination of aquatic resources during such operations.
10. All construction activities will be completed in accordance with Caltrans National Pollution Discharge Elimination System Permit, the General Construction Permit, and Caltrans Statewide Stormwater Management Plan. The permittee will implement appropriate best management practices to minimize or eliminate the potential for a non-storm water discharge to occur. A permanent erosion control plan and seeding specification will be included with the project plan.
11. If work areas need to be de-watered, pumping intakes will be completely screened to prevent aquatic wildlife from entering the pumping system. Water will be released or pumped downstream to maintain appropriate stream flows.
12. Where feasible, vegetation within all temporarily disturbed areas will be cut off at ground level rather than clearing and grubbing with heavy equipment.
13. Creek contours will be returned to their original condition at the end of the project activities, unless determined unbeneficial by regulatory agencies.
14. After construction is complete, areas disturbed by the project will be revegetated with native vegetation.
15. Any trees that need to be removed for construction will be removed between September 1 and February 15 to avoid potentially nesting migratory birds. The biologist or designee will be contacted at least 1 month prior to trees being removed to allow time for inspection of the trees for active nests.

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which evaluates the range-wide condition of the California red-legged frog and California tiger salamander, the factors responsible for that condition, and their survival and recovery needs; (2) the Environmental Baseline, which evaluates the condition of the California red-legged frog and California tiger salamander in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the California

red-legged frog and California tiger salamander; (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 California red-legged frog and California tiger salamander; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the California red-legged frog and California tiger salamander.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the California red-legged frog and California tiger salamander, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the California red-legged frog and California tiger salamander in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the California red-legged frog and California tiger salamander and the role of the action area in the survival and recovery of the California red-legged frog and California tiger salamander as the context for evaluation the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

STATUS OF THE SPECIES

California red-legged frog

The California red-legged frog was federally listed as threatened on May 23, 1996 [61 Federal Register (FR) 25813]. The Service completed a recovery plan for the subspecies in 2002 (Service 2002). The Service designated critical habitat for the California red-legged frog on April 13, 2006 (71 FR 19244). On September 16, 2008, the Service proposed a new rule to designate 1.8 million acres as critical habitat for the California red-legged frog, an area that is 300 percent larger than the 2006 designation for the subspecies (73 FR 53492). Caltrans and the Service are not consulting on critical habitat as the project does not occur within a designated or proposed critical habitat unit.

The historic range of the California red-legged frog extended coastally from southern Mendocino County and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985, Storer 1925). The California red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. Historically, this subspecies was found throughout the Central Valley and Sierra Nevada foothills. Four additional occurrences have been recorded in the Sierra Nevada foothills since listing, bringing the total to five extant populations, compared to approximately 26 historical records (Service 2006). Currently, California red-legged frogs are known from three disjunct regions in 26 California counties and one region in Baja California, Mexico (Grismer 2002; Fidenci 2004; and R. Smith and D. Krofta, in litt. 2005). At present, California red-legged frogs are known to occur in 243 streams or drainages from 22 counties, primarily in central coastal California.

California red-legged frogs have been found at elevations that range from sea level to about 5,000 feet. In the Sierra Nevada Mountains, California red-legged frogs typically occur below 4,000 feet in elevation (Service 2006). The California red-legged frog uses a variety of habitat types, including various aquatic systems, riparian, and upland habitats. The diet of California red-legged frogs is highly variable. Tadpoles probably eat algae (Jennings et al. 1992). Hayes and Tennant (1985) found invertebrates to be the most common food item of adults. Vertebrates, such as Pacific tree frogs (*Hyla regilla*) and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger frogs (Hayes and Tennant 1985). Feeding activity probably occurs along the shoreline and on the surface of the water. Hayes and Tennant (1985) found juveniles to be active diurnally and nocturnally, whereas adults were largely nocturnal.

California red-legged frogs breed from November through March; earlier breeding has been recorded in southern localities (Storer 1925). Males appear at breeding sites from 2 to 4 weeks before females (Storer 1925). Female California red-legged frogs deposit egg masses on emergent vegetation so that the masses float on the surface of the water (Hayes and Miyamoto 1984). Egg masses contain about 2,000 to 5,000 moderately-sized, dark reddish brown eggs (Storer 1925, Jennings and Hayes 1985). Eggs hatch in 6 to 14 days (Storer 1925). Larvae undergo metamorphosis for 3.5 to 7 months after hatching (Storer 1925, Wright and Wright 1949). Sexual maturity can be attained at 2 years of age by males and 3 years of age by females (Jennings and Hayes 1985); adults may live 8 to 10 years (Jennings et al. 1992) although the average life span is considered to be much lower. The California red-legged frog is a relatively large aquatic frog ranging from 1.5 to 5 inches from the tip of the snout to the vent (Stebbins 2003).

California red-legged frogs breed in aquatic habitats. Larvae, juveniles, and adults have been collected from streams, creeks, ponds, marshes, plunge pools and backwaters of streams, dune ponds, lagoons, and estuaries. California red-legged frogs frequently breed in artificial impoundments such as stock ponds, if conditions are appropriate. Although California red-legged frogs successfully breed in streams and riparian systems, high seasonal flows and cold temperatures in streams often make these sites risky environments for eggs and tadpoles. The importance of riparian vegetation for this species is not well understood. When riparian vegetation is present, California red-legged frogs spend considerable time resting and feeding in it; the moisture and camouflage provided by the riparian plant community likely provide good foraging habitat and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding.

Juvenile and adult California red-legged frogs may disperse long distances from breeding sites throughout the year. They can be encountered living within streams at distances exceeding 1.8 miles from the nearest breeding site, and have been found up to 400 feet from water in adjacent dense riparian vegetation (Bulger et al. 2003). During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. Bulger et al. (2003) found marked California red-legged frogs in Santa Cruz County making overland movements of up to 2 miles over the course of a wet season. These individual frogs were observed to make long-distance movements that

are straight-line, point to point migrations over variable upland terrain rather than using riparian corridors for movement between habitats. For the California red-legged frog, suitable habitat is considered to include all aquatic and riparian areas within the range of the species and includes any landscape features that provide cover and moisture (Service 1996).

Habitat loss and degradation, combined with over-exploitation and introduction of exotic predators, were important factors in the decline of the California red-legged frog in the early to mid-1900s. Continuing threats to the California red-legged frog include direct habitat loss due to stream alteration and loss of aquatic habitat, indirect effects of expanding urbanization, competition or predation from non-native species including the bullfrog (*Rana catesbeiana*), catfish (*Ictalurus* spp.), bass (*Micropterus* spp.), mosquitofish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarki*), and signal crayfish (*Pacifasticus leniusculus*). Chytrid fungus (*Batrachochytrium dendrobatidis*) is a waterborne fungus that can decimate amphibian populations, and is considered a threat to California red-legged frog populations.

California tiger salamander

The Service recognizes three distinct populations of the California tiger salamander; in Sonoma County (68 FR 13498), in Central California (69 FR 47212), and in northern Santa Barbara County (65 FR 57242). On September 21, 2000, we listed the Santa Barbara County distinct population of the California tiger salamander as endangered (65 FR 57242). On March 19, 2003, we listed the Sonoma County distinct population segment of the California tiger salamander as endangered (68 FR 13498). On August 3, 2004, we published a final rule listing the California tiger salamander as threatened range-wide, including the previously identified Sonoma and Santa Barbara distinct population segments (69 FR 47212). On August 19, 2005, U.S. District Judge William Alsup vacated the Service's downlisting of the Sonoma and Santa Barbara populations from endangered to threatened. Thus, the Sonoma and Santa Barbara populations are once again listed as endangered, and the Central California population is listed as threatened. On November 24, 2004, we designated critical habitat for the Santa Barbara County population of California tiger salamander (69 FR 68568). On August 23, 2005, we designated critical habitat for the California tiger salamander, Central population, in four regions: Central Valley, Southern San Joaquin Valley, East Bay, and Central Coast (70 FR 49380). On December 14, 2005, we designated critical habitat for the Sonoma County distinct population segment of the California tiger salamander (70 FR 74138).

The California tiger salamander is endemic to the grassland community found in California's Central Valley, the surrounding foothills, and coastal valleys (Fisher and Shaffer 1996). The distribution of breeding locations of this amphibian does not naturally overlap with that of any other species of tiger salamander (Loredo et al. 1996, Petranka 1998, Stebbins 2003).

Historically, natural ephemeral vernal pools were the primary breeding habitats for California tiger salamanders (Twitty 1941, Fisher and Shaffer 1996, Petranka 1998). However, with the conversion and loss of many vernal pools through farmland conversion and urban and suburban development, ephemeral and permanent ponds that have been created for livestock watering are now frequently used by the species (Fisher and Shaffer 1996, Robins and Vollmar 2002).

California tiger salamanders spend the majority of their lives in upland habitats and cannot persist without them (Trenham and Shaffer 2005). The upland component of California tiger salamander habitat typically consists of grassland savannah, but includes grasslands with scattered oak trees, and scrub or chaparral habitats (Shaffer et al. 1993, 65 FR 57242). Juvenile and adult California tiger salamanders spend the dry summer and fall months of the year in the burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gophers (*Thomomys bottae*) (Storer 1925, Loredó and Van Vuren 1996, Trenham 1998, Pittman 2005). The creation of burrow habitat by ground squirrels and utilized by California tiger salamanders suggests a commensal relationship between the two species (Loredó et al. 1996).

Movement of California tiger salamanders within and among burrow systems continues for at least several months after juveniles and adults leave the ponds (Trenham 2001). California tiger salamanders cannot dig their own burrows, and as a result their presence is associated with burrowing mammals (Seymour and Westphal 1994). Active ground-burrowing rodent populations likely are required to sustain California tiger salamanders because inactive burrow systems become progressively unsuitable over time (69 FR 47212). Loredó et al. (1996) found that California ground squirrel burrow systems collapsed within 18 months following abandonment by, or loss of, the mammals.

California tiger salamanders have been found in upland habitats various distances from aquatic breeding habitats. In a trapping study in Contra Costa County, California tiger salamanders were trapped approximately 2,625 feet to 3,940 feet away from potential breeding habitat (69 FR 47212). During a mark and recapture study in the Upper Carmel River Valley, Monterey County, Trenham et al. (2000) observed California tiger salamanders dispersing up to 2,200 ft between breeding ponds between years. In research at Olcott Lake, Solano County, Trenham and Shaffer (2005) captured California tiger salamanders in traps installed 1,312 feet from the breeding pond.

Adults enter breeding ponds during fall and winter rains, typically from October through February (Storer 1925, Loredó and Van Vuren 1996, Trenham et al. 2000). Males migrate to the breeding ponds before females (Twitty 1941, Shaffer et al. 1993, Loredó and Van Vuren 1996, Trenham 1998). Males usually remain in the ponds for an average of about 6 to 8 weeks, while females stay for approximately 1 to 2 weeks. In dry years, both sexes may stay for shorter periods (Loredó and Van Vuren 1996, Trenham 1998).

Females attach their eggs singly or, in rare circumstances, in groups of two to four, to twigs, grass stems, vegetation, or debris in the water (Storer 1925, Twitty 1941). In ponds with little or no vegetation, females may attach eggs to objects, such as rocks and boards on the bottom (Jennings and Hayes 1994). In drought years, the seasonal pools may not form and the adults may not breed (Barry and Shaffer 1994). The eggs hatch in 10 to 14 days with newly hatched salamanders (larvae) ranging in size from 0.5 to 0.6 inch in total length (Petranka 1998). The larvae are aquatic. Each is yellowish gray in color and has a broad fat head, large, feathery external gills, and broad dorsal fins that extend well onto its back. The larvae feed on zooplankton, small crustaceans, and aquatic insects for about 6 weeks after hatching, after which

they switch to larger prey (J. Anderson 1968). Larger larvae have been known to consume smaller tadpoles of Pacific tree frogs and California red-legged frogs (J. Anderson 1968). The larvae are among the top aquatic predators in the seasonal pool ecosystems.

The larval stage of the California tiger salamander usually lasts 3 to 6 months, because most seasonal ponds and pools dry up during the summer (Petranka 1998). Amphibian larvae must grow to a critical minimum body size before they can metamorphose (change into a different physical form) to the terrestrial stage (Wilbur and Collins 1973). Larvae collected near Stockton in the Central Valley during April varied from 1.9 to 2.3 inches in length (Storer 1925). Feaver (1971) found that larvae metamorphosed and left the breeding pools 60 to 94 days after the eggs had been laid, with larvae developing faster in smaller, more rapidly drying pools. The longer the inundation period, the larger the larvae and metamorphosed juveniles are able to grow, and the more likely they are to survive and reproduce (Semlitsch et al. 1988, Pechmann et al. 2001). The larvae perish if a site dries before they complete metamorphosis (P. Anderson 1968, Feaver 1971). Pechmann et al. (2001) found a strong positive correlation between inundation period and total number of metamorphosing juvenile amphibians, including tiger salamanders.

Metamorphosed juveniles leave the breeding sites in the late spring or early summer. Like the adults, juveniles may emerge from these retreats to feed during nights of high relative humidity (Storer 1925, Shaffer et al. 1993) before settling in their selected upland sites for the dry, hot summer months. While most California tiger salamanders rely on rodent burrows for shelter, some individuals may utilize soil crevices as temporary shelter during upland migrations (Loredo et al. 1996). Mortality of juveniles during their first summer exceeds 50 percent (Trenham 1998). Emergence from upland habitat in hot, dry weather occasionally results in mass mortality of juveniles (Holland et al. 1990).

Lifetime reproductive success for California and other tiger salamanders is low. Trenham et al. (2000) found the average female bred 1.4 times over a lifetime, and produced 8.5 young that survived to metamorphosis, per reproductive effort. This resulted in approximately 12 metamorphic offspring over the lifetime of a female. Trenham et al. (2000) also reported that most California tiger salamanders in their study did not reach sexual maturity until 4 or 5 years old, and that less than 5 percent of juveniles survived to reach sexual maturity.

The California tiger salamander is threatened primarily by the destruction, degradation, and fragmentation of upland and aquatic habitats, primarily resulting from the conversion of these habitats by urban, commercial, and intensive agricultural activities (65 FR 57242, 68 FR 13498, 69 FR 47212). Additional threats to the species include hybridization with introduced non-native barred tiger salamanders (*A. tigrinum mavortium*) (65 FR 57242, 69 FR 47212), destructive rodent-control techniques (e.g., deep-ripping of burrow areas, use of fumigants) (68 FR 13498), reduced survival due to the presence of mosquitofish (Leyse and Lawlor 2000), and mortality on roads due to vehicles (65 FR 57242).

ENVIRONMENTAL BASELINE

The implementing regulations for section 7(a)(2) of the Act define the “action area” as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations (CFR) 402.02). For the purposes of this biological opinion, we consider the action area to be all areas where people and equipment will be working or staging as described in the Description of the Proposed Action portion of this biological opinion.

The proposed project area is located approximately 4 miles north of the city of Prunedale in Monterey and San Benito Counties, California. The project extends along the existing Route 101 alignment from approximately 0.3-miles south of the Dunbarton Road junction, north to Cole Road; along San Juan Road from the junction with Route 101, west to the junction with Dunbarton Road. The upland habitat in the project area includes annual grassland and highly disturbed areas, such as roads and parking lots.

California red-legged frog

No records of California red-legged frogs occur within the action area; however, we believe that it is possible that California red-legged frogs could occur there (CNDDDB 2009). No protocol surveys were performed for California red-legged frogs for this project. Numerous records of California red-legged frogs within 5 miles of the project area are reported in the California Natural Diversity Database (CNDDDB) (CNDDDB 2009).

California tiger salamander

No records of California tiger salamanders occur within the action area; however, we believe that it is possible that California tiger salamanders could occur there (CNDDDB 2009). Several potential breeding ponds for California tiger salamanders occur within the vicinity of the action area. Protocol level aquatic surveys were conducted in 2007. No California tiger salamanders were identified; however, the results of the surveys were inconclusive due to access limitations of private land and limited rainfall (Mori 2007). One known California tiger salamander breeding pond is approximately 0.10-mile from the action area (Mori 2007; CNDDDB 2009).

EFFECTS OF THE ACTION

The proposed action would permanently remove approximately 14 acres of suitable upland habitat for California red-legged frogs and California tiger salamanders from the realignment of the Route 100/San Juan Road interchange and frontage roads. The cut and fill activities associated with the interchange project would result in the temporary loss of approximately 40 acres of suitable upland habitat for California red-legged frogs and California tiger salamanders. The replacement of the 15 culverts and the creek realignment would result in temporary loss of aquatic habitat for the California red-legged frog.

Development and construction activities in the action area could result in long-term and short-term effects on California red-legged frogs and California tiger salamanders from permanent and temporary disturbance to upland and aquatic habitat. Direct adverse effects to California red-legged frogs and California tiger salamanders in the action area may include injury or mortality from being crushed by heavy equipment, construction debris, and worker foot traffic. These impacts would be reduced by minimizing and clearly demarcating the boundaries of the project area and equipment access routes. Attempting to avoid work activities during the dispersal season would further reduce adverse impacts.

Construction activities, including noise and vibration, may cause California red-legged frogs and California tiger salamanders to temporarily abandon habitat adjacent to work areas. The disturbance may increase the potential for predation and desiccation when California red-legged frogs or California tiger salamanders leave shelter areas.

Grading and paving activities associated with the interchange project could likely result in the death of California red-legged frogs and California tiger salamanders sheltering within ground squirrel burrows and migrating through the action area. The destruction of any rodent burrows could result in mortality or injury to any California tiger salamanders that remain in the project area. Identification of, and fencing or marking a buffer around, upland burrows suitable for salamander or frog refugia in the project area, as proposed in the Description of Proposed Action section of this biological opinion, would minimize injury or death to California red-legged frogs and California tiger salamanders.

The capture and handling of California red-legged frogs and California tiger salamanders to move them from a work area could result in injury or mortality as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat. The use of a Service-approved biologist, who is authorized to relocate any California red-legged frogs and California tiger salamanders found alive during grading and construction activities, would help minimize injury to California red-legged frogs and California tiger salamanders.

Chytrid fungus is a water-borne fungus that can be spread through direct contact between aquatic animals and by a spore that can move short distances through the water. The fungus only attacks the parts of an animal's skin that have keratin (thickened skin), such as the mouthparts of tadpoles and the tougher parts of adults' skin, such as the toes. It can decimate amphibian populations, causing fungal dermatitis, which usually results in death in 1 to 2 weeks. Infected animals may spread the fungal spores to other ponds and streams before they die. Once a pond has become infected with chytrid fungus, the fungus stays in the water for an undetermined amount of time. Infected equipment or footwear could introduce chytrid fungus into areas where it did not previously occur. If this occurs in the action area, many California red-legged frogs or California tiger salamanders could be affected.

The potential exists for uninformed workers to intentionally or unintentionally injure or kill California red-legged frogs or California tiger salamanders. The potential for this impact to occur would be reduced by informing workers of the presence and protected status of these

species and the measures that are being implemented to protect them during project activities as described in the project description section of this biological opinion.

Potential temporary impacts to aquatic habitat for California red-legged frogs could occur from dewatering activities during culvert replacement. California red-legged frogs could become stranded and desiccate if appropriate habitat is not available nearby. Tadpoles may be entrained by pump intakes, if such devices are used to dry out work areas. Screening pump intakes with wire mesh with holes not larger than 0.2 inches will preclude larger tadpoles from entering the intakes. Surveying for individuals prior to construction and activities and proper relocation of any individuals would minimize risk of injury or mortality.

Work in streams or in floodplains could cause unusually high levels of siltation downstream. This siltation could smother eggs of California red-legged frogs and alter the quality of the habitat to the extent that use by individuals of the species is precluded. Implementing best management practices and reducing the area to be disturbed to the minimum necessary will likely assist in reducing the amount of sediment that is washed downstream as a result of project activities.

Trash left during or after project activities could attract predators to work sites, which could, in turn, prey upon California red-legged frogs or California tiger salamanders. For example, feral cats (*Felis catus*) and raccoons (*Procyon lotor*) are attracted to trash and could prey opportunistically on California red-legged frogs or California tiger salamanders.

Accidental spills of hazardous materials or careless fueling or oiling vehicles or equipment could degrade aquatic or upland habitat to a degree where California red-legged frogs or California tiger salamanders are adversely affected or killed. The potential for this impact to occur will be reduced by requiring: all refueling, maintenance, and staging of equipment and vehicles to occur at least 60 feet from riparian habitat or water bodies and not in a location from where a spill would drain directly toward aquatic habitat; the monitor to ensure contamination of habitat does not occur during such operations; that a plan is in place for prompt and effective response to any accidental spills; and all workers be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

The proposed action would affect a small number of California red-legged frogs and California tiger salamanders during project implementation. Because of the small amount of potentially suitable habitat in the action area, the timing of the proposed activities, and because Caltrans has proposed measures to protect both species, we anticipate that few, if any, California red-legged frogs or California tiger salamanders are likely to be killed or injured during this work.

In summary, the effects from implementing the proposed action on the California red-legged frog and the California tiger salamander are likely to be minimal. Only a small portion of habitat of the entire range of California red-legged frogs and California tiger salamanders would be affected by the project.

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. We are unaware of any non-federal actions that are reasonably certain to occur in the action area.

CONCLUSION

After reviewing the current status of the California red-legged frog and the California tiger salamander, the environmental baseline for the action area, the effects of the proposed interchange construction, and the cumulative effects, it is the Service's biological opinion that the proposed project is not likely to jeopardize the continued existence of the California red-legged frog or the California tiger salamander.

We have reached these conclusions because:

1. In comparison with the amount of habitat available to the California red-legged frog and the California tiger salamander elsewhere in Monterey and San Benito Counties, only a small amount of habitat would be permanently lost or temporarily disturbed;
2. Few, if any, California red-legged frogs or California tiger salamanders are likely to be killed or injured during project activities; and
3. Caltrans has proposed measures to reduce the adverse effects of the proposed work on the California red-legged frog and the California tiger salamander.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. The Act defines take as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The Service defines harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. The Service defines harass as intentional or negligent actions that create the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. The Service defines incidental take 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 intended as part of the agency action is not prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary and must be undertaken by Caltrans so that they become binding conditions of any grant or permit issued by Caltrans as appropriate, 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 does not ensure their contractors adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, Caltrans must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

We anticipate all California red-legged frogs and California tiger salamanders found within the action area may be taken in the form of capture during relocation efforts. As a result of capture, a subset of captured California red-legged frogs and California tiger salamanders may be injured or killed or may experience a substantial disruption of normal behavioral patterns to the point that they have been harassed. Any California red-legged frogs and California tiger salamanders that remain in the action area may be crushed or otherwise injured or killed.

We cannot determine the precise number of California red-legged frogs or California tiger salamanders that may be killed, injured, harassed, or harmed as a result of the construction activities authorized by Caltrans. Although protective fencing and/or markers will be placed around potential habitat or individual California red-legged frogs or California tiger salamander in the project area, any California red-legged frogs and California tiger salamanders that remain in the action area may be crushed or otherwise injured or killed. Numbers and locations of California red-legged frogs and California tiger salamanders within a population vary from year to year. Incidental take of the California red-legged frog or the California tiger salamander would be difficult to detect because of their small body size and finding dead or injured specimens is unlikely, especially while below ground in burrows. However, because of the small amount of potentially suitable habitat in the action area, the timing of the proposed activities during the dry season, and because Caltrans has proposed measures to protect both species, we anticipate that few, if any, California red-legged frogs or California tiger salamanders are likely to be killed or injured during this work.

This biological opinion does not exempt any activity from the prohibitions against take contained in section 9 of the Act that is not incidental to the action as described in this biological opinion. Take that occurs outside of demarcated work areas or from any activity not described in this biological opinion is not exempted from the prohibitions against take described in section 9 of the Act.

REASONABLE AND PRUDENT MEASURES

We believe the following reasonable and prudent measures are necessary and appropriate to minimize take of California red-legged frogs and California tiger salamanders:

1. Caltrans must ensure that the level of incidental take that occurs during project implementation is commensurate with the analysis contained herein.

2. Biologists must be authorized by the Service before they survey for, capture, and move California red-legged frogs and California tiger salamanders in the action area.
3. Effects to California red-legged frogs and California tiger salamanders must be minimized in the project area.

Our evaluation of the effects of the proposed action includes consideration of the measures to minimize the adverse effects of the proposed action on the California red-legged frog and the California tiger salamander that were developed by Caltrans and repeated in the Description of the Proposed Action portion of this biological opinion. Any subsequent changes in these measures proposed by Caltrans may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR 402.16. These reasonable and prudent measures are intended to supplement the protective measures that were proposed by Caltrans as part of the proposed action.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, Caltrans must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. The following term and condition implements reasonable and prudent measure 1:

If more than one California red-legged frog or California tiger salamander are found dead or injured during construction activities, Caltrans must contact our office immediately so we can review the project activities to determine if additional protective measures are needed. Project activities may continue pending the outcome of the review, provided that all protective measures proposed by Caltrans, and the terms and conditions of this biological opinion, have been and continue to be fully implemented.

2. The following term and condition implements reasonable and prudent measure 2:

A Service-approved biologist or a designated monitor, trained by the Service-approved biologist, must survey all potential California red-legged frog or California tiger salamander habitat within project area prior to the start of construction, to confirm that no protected species are above ground on the site. If any individuals are located, they must be moved out of harm's way to the nearest appropriate habitat. The request for biologist approval must be in writing and be received by us at least 15 days prior to any such activities being conducted. If a designated monitor is used to conduct surveys, a Service-approved biologist must still be available to capture and relocate any California red-legged frogs or California tiger salamanders that are discovered during the surveys. If California red-legged frogs or California tiger salamanders are located in the project area, they must be relocated by the Service-approved biologist to an appropriate location, pre-determined by Caltrans with Service approval.

3. The following terms and conditions implement reasonable and prudent measure 3:
 - a. To ensure that diseases are not conveyed between work sites by Service-approved biologists, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force must be followed at all times. A copy of the code of practice is enclosed. The Service-approved biologist may substitute a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water) for the ethanol solution. Care must be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.
 - b. The work area must be kept clean. All food-related trash items must be enclosed in sealed containers and regularly removed from the project area. Pets of project personnel must not be allowed on site.

REPORTING REQUIREMENTS

The ongoing effects of the project on the California red-legged frog and the California tiger salamander must be monitored through annual reports provided to the Service. These reports enable the Service to determine how much habitat has been temporarily and permanently affected by the covered actions and how many California red-legged frogs or California tiger salamanders have been killed or injured.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within 3 days of locating any dead or injured California red-legged frog or California tiger salamander, Caltrans must notify the Ventura Fish and Wildlife Office, by telephone ((805) 644-1766) and in writing (2493 Portola Road, Suite B, Ventura, California 93003). The report must include the date, time, location of the carcass, a photograph, cause of death or injury (if known), and any other pertinent information.

Care must be taken in handling dead specimens to preserve biological material in the best possible state for later analysis. Should any injured California red-legged frogs or California tiger salamanders survive, the Service must be contacted regarding their final disposition. The remains of California red-legged frogs and California tiger salamanders must be placed with the California Academy of Sciences Herpetology Department (Contact: Jens Vindum, Collections Manager, California Academy of Sciences Herpetology Department, 875 Howard Street, San Francisco, California, 94103, (415) 321-8289). Arrangements regarding proper disposition of potential museum specimens must be made with the Collections Manager of the California Academy of Sciences or other Service-approved facility prior to implementation of any actions.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act 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, to help implement recovery plans, or to develop information. We recommend the following conservation measures to promote recovery of the California red-legged frog and California tiger salamander:

1. We recommend that Caltrans relocate any native reptiles and amphibians found within the action area to nearby suitable habitat, if such activities comply with State laws. This would help conserve the native wildlife in the region.
2. Non-native predators of the California red-legged frog and the California tiger salamander, such as bullfrogs, should be permanently removed from the wild during project activities, if they can be captured and if such activities are in compliance with State laws.

The Service requests notification of the implementation of any conservation recommendations, so that we may be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the San Juan Interchange Project in Monterey and San Benito Counties, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency 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, any operations causing such take must cease pending reinitiation.

If you have any questions, please contact Christopher Diel of my staff at (805) 644-1766, extension 305.

Sincerely,



for Diane K. Noda
Field Supervisor

Enclosure

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The Declining Amphibian Populations Task Force Fieldwork Code of Practice

- A. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each work site.
- B. Boots, nets, traps, and other types of equipment used in the aquatic environment should then be scrubbed with 70 percent ethanol solution and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond, wetland, or riparian area.
- C. In remote locations, clean all equipment with 70 percent ethanol or a bleach solution, and rinse with sterile water upon return to the lab or "base camp". Elsewhere, when washing-machine facilities are available, remove nets from poles and wash in a protective mesh laundry bag with bleach on the "delicates" cycle.
- D. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean them as directed above and store separately at the end of each field day.
- E. When amphibians are collected, ensure that animals from different sites are kept separately and take great care to avoid indirect contact (e.g., via handling, reuse of containers) between them or with other captive animals. Isolation from unsterilized plants or soils which have been taken from other sites is also essential. Always use disinfected and disposable husbandry equipment.
- F. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.
- G. Used cleaning materials and fluids should be disposed of safely and, if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

The Fieldwork Code of Practice has been produced by the Declining Amphibian Populations Task Force with valuable assistance from Begona Arano, Andrew Cunningham, Tom Langton, Jamie Reaser, and Stan Sessions.

For further information on this Code, or on the Declining Amphibian Populations Task Force, contact John Wilkinson, Biology Department, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK. E-mail: DAPTF@open.ac.uk Fax: +44 (0) 1908-654167

PERMITS AND AGREEMENTS

[Amendment of The Biological Opinion \(8-8-09-F-36\) dated March 16, 2012](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
08EVEN00-2012-TA-0097

March 16, 2012

Jim Walth
Associate Biologist
California Department of Transportation
San Luis Obispo, California 93401-5415

Subject: Amendment of the Biological Opinion for San Juan Road Interchange Project,
Monterey and San Benito Counties, California (8-8-09-F-36)

Dear Mr. Walth:

We have reviewed your request, dated December 9, 2011, and received in our office on December 12, 2011, to amend the biological opinion for San Juan Road Interchange Project (Project), Monterey and San Benito Counties, California (8-8-09-F-36). Your request describes changes to the project that require an amendment to the biological opinion; you requested our concurrence that the revised project will not result in additional effects to the federally threatened California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), and vernal pool fairy shrimp (*Branchinecta lynchi*), and the federally endangered Conservancy fairy shrimp (*Branchinecta conservatio*), longhorn fairy shrimp (*Branchinecta longientenna*), vernal pool tadpole shrimp (*Lepidurus packardi*), and least Bell's vireo (*Vireo bellii pusillus*) beyond those considered in the biological opinion.

You are requesting that a 0.057-acre pond complex located near Balantree Lane be filled outside the dry season as described in the biological opinion. You stated that this pond is part of the first phase of the subject project. You propose filling this pond complex only after completing surveys for sensitive species. The pond complex is currently dry and no federally listed species have been identified during previous surveys.

In electronic mail correspondence to Christopher Diel of my staff, dated December 16, 2011, you requested clarification on the timing of work analyzed in the biological opinion. The conservation measure you proposed states that work that could impact aquatic species will be completed during the dry season (typically May 1 – November 1). You requested clarification on what the Service considers the dry season. We generally consider the dry season to be May 1 through November 1 unless a significant rain event (greater than 0.25 inch at the nearest U.S. Geological Survey weather station) occurs earlier. If a rainfall event occurs during this timeframe, we recommend that you contact the U.S. Fish and Wildlife Service for further assistance.

You also requested amending your proposed conservation measure number 15 regarding avoiding effects to migratory birds during tree removal and trimming. You are requesting that trees may be trimmed or removed as necessary during the nesting season (February 15 to August 15). You would survey the trees for nesting birds prior to conducting trimming or removal activities; if no nesting birds are identified, the trees would be trimmed or removed. We concur with your determination that the proposed tree trimming and removal during the nesting season will not have effects to migratory birds if the trees are first surveyed for nesting birds by a qualified biologist.

Your proposed changes to the San Juan Road Interchange Project are consistent with our analysis in the biological opinion (8-8-09-F-36); therefore, further consultation pursuant to section 7(a)(2) of the Endangered Species Act of 1972, as amended, is not necessary. Your letter and this response will serve as the amendment to the biological opinion.

As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency 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, any operations causing such take must cease pending reinitiation. If you have any questions regarding this matter, please contact Christopher Diel of my staff at (805) 644-1766, extension 305.

Sincerely,


Diane K. Noda
Field Supervisor

PERMITS AND AGREEMENTS

California Department of Fish and Game 1602 permit Notification No.1600-2011-0169-R4,

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

CALIFORNIA DEPARTMENT OF FISH AND GAME
REGION 4 - CENTRAL REGION
1234 East Shaw Avenue
Fresno, California 93710



STREAMBED ALTERATION AGREEMENT
NOTIFICATION No. 1600-2011-0169-R4
Elkhorn Slough, 3 Tributaries to Elkhorn Slough and 4 unnamed drainages, Monterey and San Benito Counties

CALIFORNIA DEPARTMENT OF TRANSPORTATION
CALTRANS DISTRICT 5
Chuck Cesena
50 Higuera Street
San Luis Obispo, California 93401

SR 101 SAN JUAN ROAD INTERCHANGE
05-MON-101 PM 100.0-101.3, 05-SBt-101 PM 0.0-1.6 EA 05-315800

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and California Department of Transportation Caltrans District 5 (Permittee) as represented by Chuck Cesena acting on behalf of Permittee. The term "stream", as used in this Agreement, is defined to mean Elkhorn Slough, three Tributaries to Elkhorn Slough and four unnamed drainages.

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on September 6, 2011, 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 San Juan Road Interchange (Project) is located on Route 101 in the vicinity of San Juan Road from Post Mile (PM) 100.0 in Monterey County to PM 1.6 in San Benito County (See Figure 1). The Project site is bounded by Dunbarton Road to the southwest and Cole Road to the east and extends approximately 2,000 feet up San Juan Road to the northwest and approximately 1,000 feet up Cole Road to the north.

PROJECT DESCRIPTION

The Project is limited to:

- Permittee proposes to construct an overcrossing at a right angle with Route 101 northeast of the Monterey/San Benito county line. The southbound on-ramp and southbound off-ramp would be a compact diamond interchange configuration; the northbound off-ramp and northbound on-ramp would be a one-quadrant cloverleaf interchange configuration. The purpose of the proposed Project is to eliminate the left turn from San Juan Road to north bound Route 101 and improve the safety features of the transportation facility. This will require utility relocation, the extension of existing culverts, construction of new culverts and the realignment of the creek east of the historic Red Barn (which will remain).
- Drainage Plans submitted with the notification show the exact location for each Drainage System described below. System numbers skipped are non-jurisdictional water features. D- # indicates the page in the plans where that feature may be found. Specific details on each of the jurisdictional locations follows:
 - System #1 D-1: System 1 will attach to the existing 18-inch Corrugated Metal Pipe (CMP) located in the median of Route 101 and add two additional drainage inlets and 57 feet of 24-inch culvert. The system will then be routed to the East under northbound Route 101 into a Rock Slope Protection (RSP) pit and spill into the existing channel.
 - System #4 D-2: The Project would construct a 48-inch culvert under Dunbarton Road that would replace the existing double 24-inch pipes. This would maintain the existing flow pattern.
 - System #5 D-3: An existing 10 foot by 8 foot Reinforced Concrete Box (RCB) culvert crosses Route 101 at a skew of 28 degrees. An additional 9-foot diameter welded steel pipe would be jacked parallel to the existing RCB culvert. The natural stream channel at the inlet and outlet would be adjusted for a distance up to 50 feet. RSP would be installed. The headwalls and wingwalls will be removed. New headwalls and wingwalls will be constructed. The proposed wing walls would be approximately 16 feet long.
 - System #6 D-3: This system will consist of a series of inlets and 24-inch culverts which collect runoff from the median of southbound Route 101 and a single inlet on northbound Route 101. The system will then outlet to the West, into a new trapezoidal ditch which carries water to the outlet of System 5.
 - System #8 D-3: An existing Double 6 foot by 7 foot RCB culvert crosses Route 101 for 76 feet at a skew of 40 degrees and for 47 feet at a skew of 17 degrees. An additional 10 foot by 9 foot x 110 foot RCB culvert would be jacked next to the existing RCB culvert. Then both culverts would be

extended under the proposed frontage road to the East and approximately 43 feet to the West. The total length would be about 327 feet. The stream channel at the inlet and outlet would be widened for a distance up to 50 feet. The stream channel on the east would tie into an existing man-made trapezoidal channel on Red Barn properties. The west side channel would be adjusted to ensure flow out of the new culvert. RSP would be installed as an energy dissipater. The existing wing walls and headwalls would be removed. New headwalls and wingwalls would be constructed. The proposed wing walls would be approximately 20 feet long. Approximately 243 cubic yards of clean washed gravel will be added to the floor of the box culvert.

- System #14 D-4: The existing San Juan Road would be widened at this location to provide a left turn lane onto Dunbarton Road (North). The Project will construct a new culvert crossing with 24-inch diameter pipe at a new location a few yards to the west. The existing drainage will be removed. The existing drainage ditch along the north side of San Juan Road would be laterally moved and follow the widened San Juan Road. The new drainage system will include flared end section, and rock slope dissipater at its southern end discharging into the Elkhorn Slough tributary.
- System #15.D-5: The existing San Juan Road would be widened at this location to provide a turning lane onto the adjacent properties. The Project would reconstruct the existing pipe culvert crossing with 24-inch diameter pipe. The existing headwall at the culvert north end would be removed. The existing drainage ditch along the north side of San Juan Road would be piped including new drainage inlets. The proposed inlet would have flared end section with rock slope dissipater. The reconstruction of the existing culvert would include flared end section, and rock slope dissipater at its southern end discharging into the Elkhorn Slough tributary.
- System #26 D-7: The Project will install three inlets and a 24-inch culvert along the northbound Route 101 on ramp and will outlet, to the east, in an RSP pit and drain into an Elkhorn Slough tributary.
- System #27 D-7: The Project intends to construct a 48-inch culvert that will carry water from the West side of Route 101 to the East side. This water is runoff from the County right-of-way and San Juan Road. The culvert will outlet at a location where a 24-inch culvert previously passed runoff from Route 101. There will be RSP installed at the outlet.
- System #32 D-7: A new 48-inch culvert will be installed to pass water that is runoff from Cole Road and Monterey County. This system is approximately 763 feet in length and will have flared end sections and RSP at both ends. This water will spill into an Elkhorn Slough tributary.
- System #35 D-8: The existing channel in its natural bed would be realigned starting on the south side of the existing culvert under Ballantree Lane to the channel's sharp bend near Route 101. The existing culvert under Ballantree

Lane would be removed, and the stream channel would be filled. The proposed realignment under the Frontage Road East, the northbound direct off-ramp and the northbound loop on-ramp would be a 14 feet by 11 feet by 499 feet RCB culvert. The proposed channel would have RSP at the inlet and outlet. The RCB would have wing walls of approximately 15 to 25 feet in length. Approximately 1557 cubic yards of clean washed gravel will be added to the floor of the box culvert.

- System #39 D-8: A 36-inch culvert will be constructed to pass water from east to west under the northbound on and off ramps on the east side of Route 101. There will be RSP at both inlet and outlet. The water will then pass to the entrance to System 35.
- System #40 D-8: An inlet and 24-inch culvert will be placed on the northbound on ramp and will outlet into an RSP pit and flow to System 35. The system collects runoff from the ramp and sends it to an Elkhorn Slough tributary.
- System #43 D-8: The Project intends to construct a 36-inch culvert, with an improved inlet, to pass water from the hillside to the east of the frontage road. A new 24-inch culvert, with water from a high side super ditch, will join the 36-inch culvert at an inlet that will pick up water from a driveway. The 36-inch culvert will then outlet into a ditch that will take water to the Elkhorn Slough tributary.
- System #46 D-9: The proposed 24-inch diameter culvert would cross the realigned Cole Road along the natural swale and cross under the southbound direct off-ramp, and under Route 101. The culvert would maintain the same line of discharge into an Elkhorn Slough tributary. The existing 24-inch culvert is deteriorated, and will be removed. The portion of the existing culvert under Route 101 would be jacked. The inlet and outlet would have either headwall or flared end section, and rock slope protection/energy dissipaters. The total length would be approximately 400 feet. Storm water from Route 101 pavement would be collected into the proposed drainage inlets that would tie into the proposed culvert.
- System #50 D-10: A new 24-inch culvert will be placed under the new Cole Road with RSP and flared end sections at both ends. Water will flow to an Elkhorn Slough tributary.
- System #51 D-10: A new 10 foot by 9 foot RCB culvert is proposed under the proposed Cole Road realignment. The proposed culvert would be 7 feet by 7 feet approximately 212 feet long. The existing creek will be filled for a length of approximately 212 feet. Both ends of the proposed culvert would tie into the existing channel. The RCBs would have wing walls of approximately 20 feet length. RSP would be applied on both culvert ends. Approximately 220 cubic yards of clean washed gravel will be added to the floor of the box culvert.

- System #53 D-11: The northbound lanes are crossed by an existing double 5 foot by 4 foot RCB culvert. The culvert would be extended on the eastern and western ends by approximately 28 feet. The existing headwall and wing walls would be removed. New headwall and wing walls would be constructed. About 25 feet of channel would be contoured to ensure flow.
- System #54 D-11: The southbound lanes are crossed by an existing double 6 foot by 6 foot RCB culvert. The culvert would be extended on the western end by approximately 30 feet and on the eastern end by approximately 17 feet. The existing headwall and wingwalls would be removed. New headwalls and wingwalls would be constructed. About 40 feet of channel would be also contoured to direct the flow into the RCB culvert.
- Equipment to be used includes a backhoe, bobcat, bulldozer/loader, compressor, crane, excavator, flatbed, fork lift, front-end loader, genie man lift, grader, haul truck, jack and bore machine, pile driver/drill rig, pump truck, roller/compactor, scraper, and water truck. Construction equipment will need to enter the jurisdictional drainages. However, no construction equipment is expected to work in the wetted portion of the jurisdictional drainages nor is equipment allowed to work in flowing water.
- The Project will permanently impact 2.02 acres and temporarily impact 0.98 acres of riparian habitat. The Project will also permanently impact 0.25 acres and temporarily impact 0.08 acres of stream channel. The Project will require the removal of riparian trees including 382 arroyo willows (*Salix lasiolepis*) between 4 to 24 inches in diameter at breast height (DBH), 85 coast live oaks (*Quercus agrifolia*) between 4 to 40 inches DBH, and 5 western sycamores (*Platanus racemosa*) between 4 to 36 inches DBH. To the extent practicable replacement tree planting will occur on the Project site, further compensatory mitigation for 1600 jurisdictional impacts will be satisfied at the Carmel River Mitigation Bank.

PROJECT IMPACTS

This Agreement is intended to avoid, minimize, and mitigate adverse impacts to the fish and wildlife resources that occupy the area of Elkhorn Slough, three (3) tributaries to Elkhorn Slough and four (4) unnamed drainages, and the immediate adjacent riparian habitat. Absent implementation of the protective measures required by this Agreement, the following species and habitat types could potentially be impacted within the area covered by this Agreement: State threatened and Federal threatened California tiger salamander (*Ambystoma californiense*), Federal threatened and State Species of Special Concern California red-legged frog (*Rana aurora draytonii*), State Species of Special Concern Western pond turtle (*Actinemys marmorata*), and State Species of Special Concern pallid bat (*Antrozous pallidus*), as well as birds, mammals, fish, reptiles, amphibians, invertebrates and plants that comprise the local riparian ecosystem.

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: Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the Project at the Project site on behalf of Permittee; including but not limited to contractors, subcontractors, inspectors, and monitors.
- 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 enter the Project site at any time to verify compliance with the Agreement.
- 1.5. Legal Obligations: This Agreement does not exempt the Permittee from complying with all other applicable local, State and Federal law, or other legal obligations.
- 1.6. Unauthorized "Take": This Agreement does not authorize the "take" (defined in FGC Section 86 as to hunt, pursue, catch, capture, or kill; or attempt to hunt, pursue, catch, capture, or kill) of State- or Federal-listed threatened or endangered species. Any such "take" shall require separate permitting as may be required.
- 1.7. Water Diversion: To the extent that the Provisions of this Agreement provide for the diversion of water, they are agreed to with the understanding that the Permittee possesses the legal right to so divert such water.
- 1.8. Trespass: To the extent that the Provisions of this Agreement provide for activities that require the Permittee to trespass on another owner's property, they are agreed to with the understanding that the Permittee possesses the legal right to so trespass.
- 1.9. Construction/Work Schedule: The Permittee shall submit a **construction/work schedule** to DFG (lpdiaz@dfg.ca.gov with reference to

Agreement 1600-2011-0169-R4) prior to beginning any activities covered by this Agreement. The Permittee shall also notify DFG upon the completion of the activities covered by this Agreement.

- 1.10. Training: Prior to starting any construction activity, all employees, contractors, and visitors who will be present during Project activities shall have received training from a qualified individual on the contents of this Agreement, the resources at stake, and the legal consequences of non-compliance. A **training sign-in sheet** for the employees and contractors shall be provided to DFG and shall include the date of the training and who gave the training.

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.

- 2.1. Flagging/Fencing: Prior to any activity within the stream, the Permittee shall identify the limits of the required access routes and encroachment into the stream. These "work area" limits shall be identified with brightly colored flagging/fencing. Work completed under this Agreement shall be limited to this defined area only. Flagging/fencing shall be maintained in good repair for the duration of the Project. All areas beyond the identified work area limits shall be considered Environmentally Sensitive Areas (ESA) and shall not be disturbed.
- 2.2. Listed Species: This Agreement does not allow for the "take," or "incidental take," of any State- or Federal-listed threatened or endangered species.
 - 2.2.1. The Permittee affirms that no "take" of listed species will occur as a result of this Project without an Incidental Take Permit (ITP) and will take prudent measures to ensure that all "take" not otherwise permitted is avoided. The Permittee acknowledges that they fully understand that this Agreement does not grant "incidental take" authority. If any State- or Federal-listed threatened or endangered species occur within the proposed work area or could be impacted by the work proposed, and thus "taken" as a result of Project activities, the Permittee is responsible for obtaining and complying with required State and Federal threatened and endangered species permits or other written authorization before proceeding with this Project.
 - 2.2.2. Liability for any "take," or "incidental take," of such listed species remains the separate responsibility of the Permittee for the duration of the Project.

- 2.2.3. The Permittee shall immediately (the same day) notify DFG of the discovery of any such rare, threatened, or endangered species prior to and/or during construction.
- 2.3. California Tiger Salamander (CTS) Specific Measures: All measures in the Incidental Take Permit 2081-2011-064-04 for the SR 101 San Juan Road Interchange Project shall be followed. These include but are not limited to the following:
- 2.3.1. Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information for a biological monitor (Designated Biologist). The Designated Biologist shall be knowledgeable and experienced in the biology and natural history of CTS.
- 2.3.2. The Designated Biologist shall be responsible for monitoring all initial ground- or vegetation-disturbing activities in areas of potential CTS habitat to minimize disturbance of potential CTS habitat. Absent an ITP, in order to avoid impacts to CTS a 50-foot buffer shall be maintained around all burrows.
- 2.3.3. To ensure compliance with the measures within this Agreement, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this Agreement, and/or to order any reasonable measure to avoid the unauthorized "take" of CTS. Neither the Designated Biologist nor DFG shall be liable for any costs incurred in complying with the Conditions of Approval, including cease-work orders issued by DFG.
- 2.3.4. All Project activity in potential CTS habitat shall terminate 30 minutes before sunset and shall not resume until 30 minutes after sunrise during Rainy Weather. Rainy Weather is defined by either measurable rainfall or if a 70 percent or greater chance of rainfall is predicted by the National Weather Service. The applicant shall use sunrise and sunset times established by the United States Naval Observatory Astronomical Applications Department for the geographic area where the Project is located.
- 2.3.5. The Designated Biologist or Designated Monitor as described in the ITP shall be on-site daily while construction and/or surface-disturbing activities are taking place to minimize impacts to CTS; to check for compliance with all Agreement measures; to check all exclusion zones; and to ensure that signs, stakes, and fencing are intact, and that human activities are restricted to outside of these protective zones. The Designated Biologist shall conduct compliance inspections a minimum of once per week during periods of inactivity and after clearing, grubbing, and grading are

completed. The Designated Biologist shall prepare written records summarizing: oversight activities and compliance inspections, observations of CTS and their sign, survey results, and monitoring activities required by this Agreement.

2.4. Fish and Wildlife: If any fish or wildlife is encountered during the course of construction, said fish and wildlife shall be allowed to leave the construction area unharmed.

2.4.1. An approved biologist shall perform **general wildlife surveys** of the Project area (including access routes and storage areas) prior to the start of Project construction with particular attention given to finding evidence of the presence of the species listed above and shall report any possible adverse affect to fish and wildlife resources not originally reported. If any State- or Federal-listed threatened or endangered species are found within the proposed work area or could be impacted by the work proposed, a new Agreement and/or a 2081(b) State Incidental Take Permit may be necessary and a new CEQA analysis conducted before work can begin.

2.4.2. To protect nesting birds, no construction shall be completed from February 15 through August 31 unless the following **avian surveys** are completed by a qualified biologist:

- **Raptors**: Survey for nesting activity of raptors within a 0.25-mile radius of the construction site. Surveys shall be conducted at appropriate nesting times and concentrate on trees with the potential to support raptor nests. If any active nests are observed, these nests and nest trees shall be designated an ESA and protected (until the young have fledged and are no longer dependent on the nest or parents for survival) with a minimum 500-foot buffer during Project-construction unless otherwise agreed upon and approved in writing by DFG.
- **Other Avian Species**: Survey riparian areas for nesting activity within a 300-foot radius of the defined work area two (2) to three (3) weeks before construction begins. If any nesting activity is found, these nests and nest trees shall be designated an ESA and protected (until the young have fledged and are no longer dependent on the nest or parents for survival) with a minimum 250-foot buffer during Project construction unless otherwise agreed upon and approved in writing by DFG.

- 2.4.3. Fish Passage: When any dam or other artificial obstruction is being constructed, maintained, or placed in operation, sufficient water shall at all times be allowed to pass downstream to maintain aquatic life below the dam pursuant to Fish and Game Code Section 5937.
- 2.5. Vegetation: The disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations and shall only occur within the defined work area. Precautions shall be taken to avoid other damage to vegetation by people or equipment. Vegetation or material removed from the riparian area shall not be stockpiled in the streambed or on its banks without measures to ensure its stability, preventing accidental discharge into the stream.
- 2.5.1. As a result of planned construction activities for this Project, 382 arroyo willows (*Salix lasiolepis*) between four to 24 inches diameter at breast height (DBH), 85 coast live oaks (*Quercus agrifolia*) between four to 40 inches DBH, and 5 western sycamores (*Platanus racemosa*) between four to 36 inches DBH will be removed. Native riparian trees and shrubs with a DBH of four (4) inches or greater that are damaged or removed shall be replaced by replanting like species at a 3:1 ratio. Mitigation for heritage trees 24-inches or greater shall require replanting of like species at a 10:1 ratio. (See Revegetation under Compensation below.)
- 2.5.2. When possible, roots and stumps shall be left to facilitate re-growth.
- 2.6. Vehicles and Equipment: Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic and terrestrial life.
- 2.6.1. Construction vehicle access to the stream's banks and bed shall be limited to predetermined ingress and egress corridors on existing roads. All other areas adjacent to the work site shall be considered an ESA and shall remain off-limits to construction equipment. Vehicle corridors and the ESA shall be identified by the Permittee's resident engineer in consultation with the Designated Biologist.
- 2.7. Staging and storage areas: Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located outside of the stream channel and banks, and to the extent possible, on previously disturbed ground. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream, shall be positioned over drip-pans. Vehicles shall be moved away from the stream prior to refueling and lubrication.

- 2.8. Pollution: The Permittee and all contractors shall be subject to the water pollution regulations found in the Department of Fish and Game Code Sections 5650 and 12015.
- 2.8.1. Raw cement, concrete or washings thereof, asphalt, drilling fluids or lubricants, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to fish or wildlife resulting from or disturbed by Project-related activities, shall be prevented from contaminating the soil and/or entering the "Waters of the State."
- 2.8.2. All Project-generated debris, building materials, and rubbish shall be removed from the stream and from areas where such materials could be washed into the stream.
- 2.8.3. In the event that a spill occurs, all Project activities shall immediately cease until cleanup of the spilled materials is completed. DFG shall be notified immediately by the Permittee of any spills and shall be consulted regarding cleanup procedures.
- 2.9. Structures: The Permittee shall confirm that all structures are designed (i.e., size and alignment), constructed, and maintained such that they shall not cause long-term changes in water flows that adversely modify the existing upstream or downstream stream bed/bank contours or increase sediment deposition or cause significant new erosion.
- 2.9.1. Culverts shall be installed at or below stream grade and parallel to the flow of water in the channel at the culvert inlet and outlet.
- 2.10. Fill: Rock, gravel, and/or other materials shall not be imported into or moved within the stream, except as otherwise addressed in this Agreement. Only on-site materials and clean imported fill shall be used to complete the Project. Fill shall be limited to the minimal amount necessary to accomplish the agreed activities. Excess and temporary fill material shall be moved off-site at Project completion.
- 2.11. Spoil: Spoil storage sites shall not be located within the stream, where spoil will be washed into the stream, or where it will cover aquatic or riparian vegetation. Rock, gravel, and/or other materials shall not be imported into or moved within the bed or banks of the stream, except as otherwise addressed in this Agreement.
- 2.12. Erosion: No work within the banks of the stream will be conducted during or immediately following large rainfall events, or when there is water flowing within the channel. All disturbed soils within the Project site shall be stabilized to reduce erosion potential, both during and following construction. Temporary erosion control devices may be used as appropriate to prevent siltation of the stream. Any installation of permanent

non-erodible materials not described in the original Project description shall be coordinated with DFG. Coordination may include the negotiation of additional Agreement Provisions for this activity.

2.13. Turbidity: Turbid water shall not be discharged into the stream, or created within the stream. The Permittee's ability to minimize siltation shall be the subject of preconstruction planning and feature implementation. Precautions to minimize siltation may require that the work site be isolated so that silt or other deleterious materials are not allowed to pass to downstream reaches. The placement of any structure or materials in the stream for this purpose, not included in the original Project description, shall be coordinated with DFG. If it is determined that silt levels resulting from Project-related activities constitute a threat to aquatic life, activities associated with the siltation shall be halted until effective DFG-approved control devices are installed, or abatement procedures are initiated.

2.14. Stream Diversion: If work cannot be completed when the stream is dry and work must occur within the wetted portion of the channel, the Permittee shall develop a **Stream Diversion Plan**. This Stream Diversion Plan shall be completed and submitted to DFG for approval prior to commencement of any proposed diversion or activities within the wetted portion of the stream. The Plan shall include, at a minimum, the following: flow diversion shall be done in a manner that shall prevent pollution and/or siltation, and which shall provide flows to downstream reaches; flows to downstream reaches shall be provided during all times that the natural flow would have supported aquatic life; said flows shall be of sufficient quality and quantity, and of appropriate temperature to support aquatic life, both above and below the diversion; and normal flows shall be restored to the affected stream immediately upon completion of work at that location.

2.15. Restoration: Excess material must be removed from the Project site, pursuant to Department of Transportation Standard Specifications Section 7-1.13

2.15.1. All disturbed soils and new fill, including recontoured slopes and all other cleared areas, shall be revegetated with riparian vegetation or other plants, as appropriate to prevent erosion. If the Project causes any exposed slopes or exposed areas on the stream banks, these areas shall be seeded with a blend of a minimum of three (3) locally native grass species and covered with a protective layer of weed-free straw or mulch. One (1) or two (2) sterile non-native perennial grass species may be added to the seed mix provided that amount does not exceed 25 percent of the total seed mix by count. Locally native wildflower and/or shrub seeds may also be included in the seed mix. The seeding shall be completed as soon as possible, but no later than November 15 of the year construction ends. A seed mixture has been submitted to DFG and given

approval for application. At the discretion of DFG, all exposed areas where seeding is considered unsuccessful after 90 days shall receive appropriate soil preparation and a second application of seeding, straw, or mulch as soon as is practical on a date mutually agreed upon.

3. **Compensatory Measures**

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall implement each measure listed below.

3.1. **Revegetation:** As indicated in the Project Description, 382 arroyo willows between 4 to 24 inches DBH, 85 coast live oaks between 4 to 40 inches DBH, and 5 western sycamores between 4 to 36 inches DBH will be removed from the Project area, the Permittee therefore shall develop a **Revegetation Plan** for the site and submit it to DFG for approval prior to commencement of the proposed work. All Plans shall specifically address what, where, when and how replacement shrubs and trees will be planted.

3.1.1. What species and the number of trees both removed and to be planted should be identified. Native riparian trees and shrubs (e.g., cottonwood, willow, sycamore, valley oak, etc.) between four (4) to 25-inches DBH shall be replaced in-kind at a ratio of 3:1, and trees greater than 25-inches DBH shall be replaced at a ratio of 10:1.

3.1.2. Where should be on-site whenever possible.

3.1.3. When should be the first suitable season after construction is complete.

3.1.4. How should include layout, monitoring, and maintenance to ensure a minimum of 70 percent survival for the plantings after five (5) years.

4. **Monitoring and Reporting Measures**

Permittee shall meet each reporting and monitoring requirement described below.

4.1. **Monitoring Obligations of the Permittee:**

4.1.1. The Permittee shall have primary responsibility for monitoring compliance with all protective measures included as "Measures" in this Agreement. Protective measures must be implemented within the time periods indicated in the Agreement. DFG shall be notified immediately if monitoring reveals that any of the protective measures were not implemented during the period indicated in this

Agreement, or if it anticipates that measures will not be implemented within the time period specified.

- 4.1.2. The Permittee (or the Permittee's designee) shall ensure the implementation of the Measures of the Agreement, and shall monitor the effectiveness of these Measures. DFG shall be notified immediately if any of the protective measures are not providing the level of protection that is appropriate for the impact that is occurring, and recommendations, if any, for alternative protective measures.

4.2. Reporting Obligations of the Permittee:

- 4.2.1. The Permittee shall submit the following Reports described in the Measures above to DFG:

- Construction/work schedule (Measure 1.9).
- Employees and contractors training sign-in sheet (Measure 1.10).
- Results of general wildlife surveys (Measure 2.4.1).
- Results of avian surveys if construction is scheduled during the nesting season (Measure 2.4.2).
- Stream Diversion Plan if diversion is required (Measure 2.14).
- If required, a Revegetation Plan (Measure 3.1).

- 4.2.2. A Final Project Report shall be submitted to DFG within 30 days after the Project is completed. The final report shall summarize the Project construction, including any problems relating to the protective measures of this Agreement and how the problems were resolved. "Before and after" photo documentation of the Project site shall be included.

VERIFICATION OF COMPLIANCE:

DFG may verify compliance with protective measures to ensure the accuracy of Permittee's monitoring and reporting efforts at any point in time it is deemed necessary. DFG may, at its sole discretion, review relevant Project documents maintained by the Permittee, interview Permittee employees and agents, inspect the Project area, and take other actions to assess compliance with or effectiveness of protective measures for the Project.

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 United States 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 (Caltrans)
District 5
Jim Walth
50 Higuera Street
San Luis Obispo, California 93401
(805) 542-4657
jimmy_walth@dot.ca.gov

To DFG:

Department of Fish and Game
Region 4 - Central Region
1234 East Shaw Avenue
Fresno, California 93710
Attn: Lake and Streambed Alteration Program – Laura Peterson-Diaz
Notification No.1600-2011-0169-R4
Phone: (559) 243-4017, extension 225
Fax: (559) 243-4020
lpdiaz@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 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 remain in effect for five (5) years beginning on the date signed by DFG, 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.

CEQA COMPLIANCE

In approving this Agreement, DFG is independently required to assess the applicability of CEQA. The features of this Agreement shall be considered as part of the overall Project description. The Permittee's concurrence signature on this Agreement serves as confirmation to DFG that the activities that shall be conducted under the terms of this Agreement are consistent with the Project described in Notification No. 2011-0169-R4.

Caltrans, as CEQA Lead Agency, submitted an Initial Study with Proposed Mitigated Negative Declaration in December 2009, State Clearinghouse No. 2006021071, for the parent Project the Route 101 San Juan Road Interchange Project. A copy of the Notice of Determination for the Project was provided with the Section 1602 Notification. DFG, as a CEQA Responsible Agency, shall make findings and submit a Notice of Determination to the State Clearinghouse upon signing this Agreement.

EXHIBITS

The document(s) listed below is included as an exhibit to the Agreement and incorporated herein by reference.

A. Figure 1. Project Location USGS Quad Map.

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

Chuck Cesena Senior Environmental Planner	Date
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FOR DEPARTMENT OF FISH AND GAME

Jeffrey R. Single, Ph.D. Regional Manager	Date
--	------

Prepared by: Laura Peterson-Diaz
Environmental Scientist

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FOR CALIFORNIA DEPARTMENT OF TRANSPORTATION

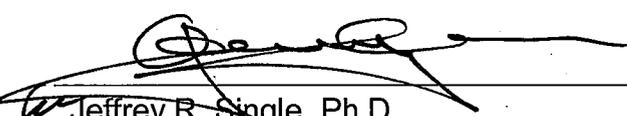


Chuck Cesena
Senior Environmental Planner.

3/30/12

Date

FOR DEPARTMENT OF FISH AND GAME



Jeffrey R. Single, Ph.D.
Regional Manager

3/30/12

Date

Prepared by: Laura Peterson-Diaz
Environmental Scientist

Figure 1

Exhibit A

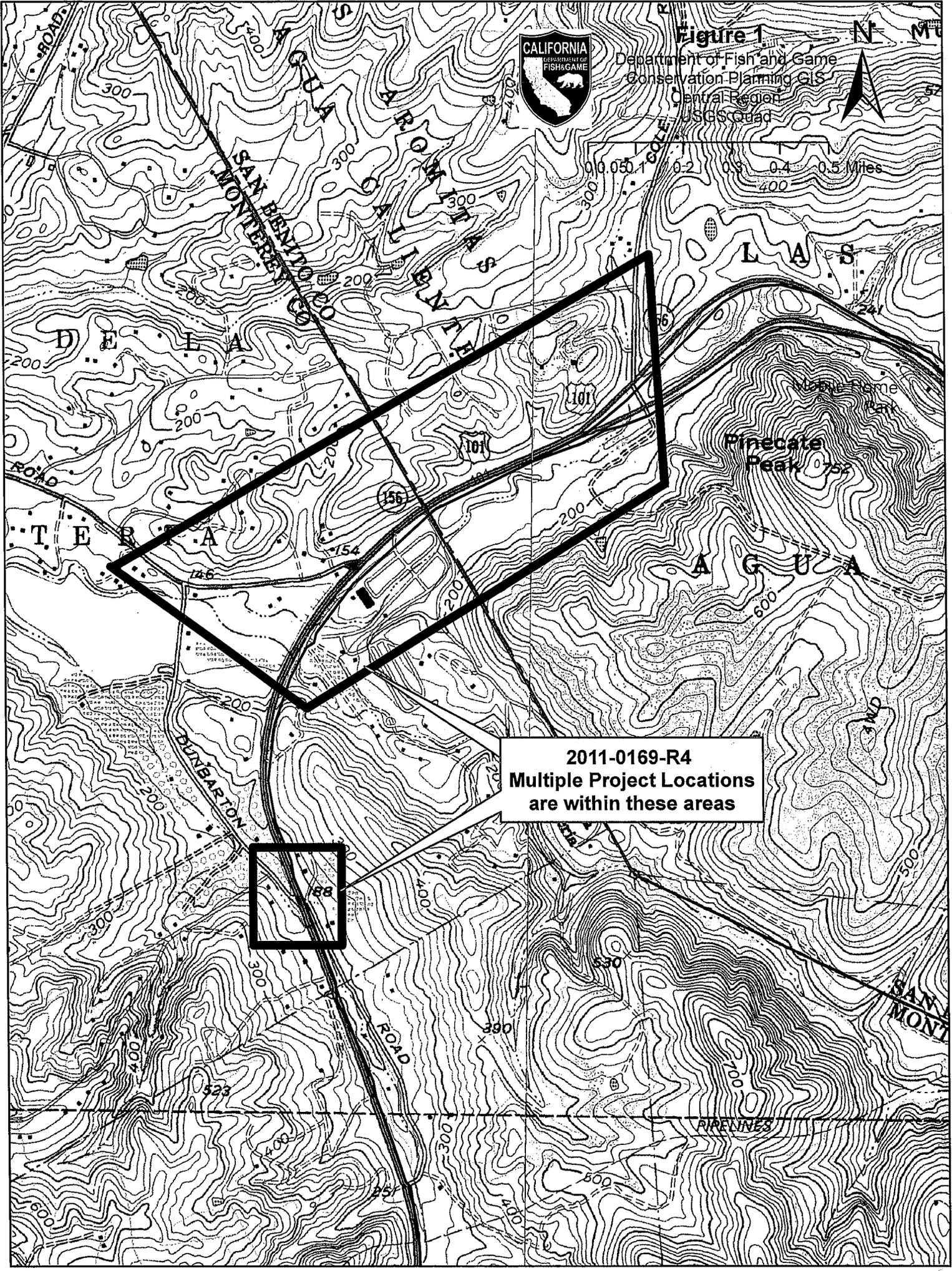


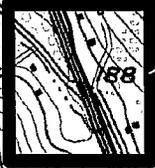
Figure 1

Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad



0 0.05 0.1 0.2 0.3 0.4 0.5 Miles

**2011-0169-R4
Multiple Project Locations
are within these areas**



FOR CONTRACT NO.: 05-315804

PERMITS AND AGREEMENTS

[California Fish and Game Incidental Take Permit No.2081-2011-064-04](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6



**California Department of Fish and Game
Central Region
1234 East Shaw Avenue
Fresno, California 93710**

California Endangered Species Act
Incidental Take Permit No. 2081-2011-064-04

SAN JUAN ROAD INTERCHANGE

Authority: This California Endangered Species Act (CESA) incidental take permit (ITP) is issued by the Department of Fish and Game (DFG) pursuant to Fish and Game Code section 2081, subdivisions (b) and (c), and California Code of Regulations, Title 14, section 783.0 et seq. CESA prohibits the take¹ of any species of wildlife designated by the California Fish and Game Commission as an endangered, threatened, or candidate species.² DFG may authorize the take of any such species by permit if the conditions set forth in Fish and Game Code section 2081, subdivisions (b) and (c) are met. (See also Cal. Code Regs., tit. 14, § 783.4.)

Permittee: California Department of Transportation (Caltrans)
Principal Officer: Chuck Cesena, Senior Environmental Planner, (805) 549-3622
Contact Person: Jim Walth, Associate Biologist, (805) 542-4657
Mailing Address: Department of Transportation, District 5
Central Coast Environmental Management Branch
50 Higuera Street, San Luis Obispo, California 93501

Effective Date and Expiration Date of this ITP:

This ITP shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by signature of the Permittee on the last page of this ITP and returned to DFG's Habitat Conservation Planning Branch at the address listed in the Notices section of this ITP. Unless renewed by DFG, this ITP's authorization to take the Covered Species shall expire on **December 31, 2016**.

Notwithstanding the expiration date on the take authorization provided by this ITP, Permittee's obligations pursuant to this ITP do not end until DFG accepts as complete the Permittee's Final Mitigation Report required by Condition of Approval 7.8 of this ITP.

¹Pursuant to Fish and Game Code section 86, "Take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill." See also Environmental Protection Information Center v. California Department of Forestry and Fire Protection (2008) 44 Cal.4th 459, 507 (for purposes of incidental take permitting under Fish and Game Code section 2081, subdivision (b), "take' ... means to catch, capture or kill").
² The definitions of endangered, threatened, and candidate species for purposes of CESA are found in Fish and Game Code sections 2062, 2067, and 2068, respectively.

Project Location:

The San Juan Road Interchange (Project) is located on U.S. Route 101 near San Juan Road from Post Mile (PM) 100.0 in Monterey County to PM 1.6 in San Benito County (see Figure 1). The Project site is bounded by Dunbarton Road to the southwest and Cole Road to the east and goes approximately 2,000 feet up San Juan Road to the northwest and approximately 1,000 feet up Cole Road to the north.

Project Description:

The Project involves constructing an overcrossing at a right angle with Route 101 northeast of the Monterey/San Benito county line. The southbound on-ramp and southbound off-ramp would be a compact diamond interchange configuration; the northbound off-ramp and northbound on-ramp would be a one-quadrant cloverleaf interchange configuration. The purpose of the proposed Project is to eliminate the left turn from San Juan Road to northbound Route 101 and improve the safety features of the transportation facility. The contractor is scheduled to begin in spring of 2013 and continue until closeout in 2016. Caltrans will need to fill two small vernal pools (see Figure 2) prior to October 31, 2012 in order for the contractor to work in that area prior to June 15, 2013.

The proposed Project includes the development of 14.24 acres of undeveloped land. See Caltrans Design Plans (Figure 3) for location details. The habitat on-site includes coastal oak woodlands and non-native grassland. Project activities include grubbing and grading of the entire Project site, equipment storage, the creation of staging and laydown areas, excavation or fill to change ground elevation in some areas, ground compaction, construction of retaining walls, construction of the overpass, placing and compacting a sub grade base layer, road paving, relocation of utilities, trench digging, tree removal, stream realignment, culvert installation or extension and other activities to accomplish the work described above.

Covered Species Subject to Take Authorization Provided by this ITP:

This ITP covers the following species:

Name	CESA Status
1. <i>California tiger salamander</i> (<i>Ambystoma californiense</i>) (CTS)	Threatened ³

This species and only this species is the "Covered Species" for the purposes of this ITP.

Impacts of the Taking on Covered Species:

Project activities and their resulting impacts are expected to result in the incidental take of individuals of the Covered Species. Take as defined by state law of individuals of the Covered Species could occur as a result of Project construction activities, including grubbing, grading, excavation, fill, road construction, relocation of utilities, trench digging, tree removal,

³See Cal. Code Regs., tit. 14, § 670.5, subd. (b)(3)(G).

and stream realignment (Covered Activities). Incidental take of individuals of the Covered Species in the form of mortality ("kill") may occur as a result of Covered Activities involving vehicles or construction equipment, by vegetation clearing and trenching, through collapsing of burrows, or by entrapment in trenches or within construction materials. Because the entire Project footprint is within the Covered Species' migratory range of 1.24 miles from either the known California tiger salamander breeding pond northeast of the intersection of Cole Road and Route 101 or potential breeding ponds (Figure 4), take as defined by state law could occur throughout the Project footprint where there are impacts, either permanent or temporary, to habitat (see Figure 5) (collectively, the Project Area).

Incidental take of the Covered Species may also occur from the Covered Activities in the form of pursuit, catch, and capture of the Covered Species if it is found within the Project Area and needs to be relocated. The Project will cause the permanent loss of 14.18 acres of upland habitat and 0.06 acres of aquatic habitat and temporary loss of 29.49 acres of upland habitat for the Covered Species. There will be no temporary impacts to aquatic habitat; the permanent impact to the 0.06 acres of aquatic habitat is due to two vernal pools in the impact area that Caltrans will fill. Impacts of the authorized taking also include adverse impacts to the Covered Species related to temporal losses, increased habitat fragmentation and edge effects, and the Project's incremental contribution to cumulative impacts (indirect impacts). These impacts to the Covered Species include: stress resulting from noise and vibrations, stress resulting from capture and relocation, increased vulnerability to predation and long-term effects due to increased pollution, displacement from preferred habitat, and increased competition for food and space.

Covered Species Incidental Take Authorization:

This ITP authorizes incidental take of the Covered Species and only the Covered Species. With respect to incidental take of the Covered Species, DFG authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Covered Activities, subject to the limitations described in this section and the Conditions of Approval identified below. This ITP does not authorize take of Covered Species from activities outside the scope of the Covered Activities, take of Covered Species outside of the Project Area, take of Covered Species resulting from violation of this ITP, or intentional take of Covered Species except for capture and relocation of Covered Species as authorized by this ITP.

Conditions of Approval:

Unless specified otherwise, the following measures apply to all Covered Activities within the Project Area, including areas used for vehicular ingress and egress, staging and parking, and noise and vibration-generating activities that may cause take. DFG's issuance of this ITP and Permittee's authorization to take the Covered Species are subject to Permittee's compliance with and implementation of the following Conditions of Approval:

1. **Legal Compliance:** Permittee shall comply with all applicable state, federal, and local laws in existence on the effective date of this ITP or adopted thereafter.
2. **CEQA Compliance:** Permittee shall implement and adhere to the mitigation measures related to the Covered Species in the Biological Resources section of the Initial Study/ Mitigated Negative Declaration and Environmental Assessment/Finding of No Significant Impact (SCH No: 2006021071) adopted by the lead agency, Caltrans, for the Project pursuant to the California Environmental Quality Act (CEQA) on December 15, 2009.
3. **LSA Agreement Compliance:** Permittee shall implement and adhere to the mitigation measures and conditions related to the Covered Species in the Lake and Streambed Alteration (LSA) agreement (Notification No. 1600-2011-0169-R4) for the Project pursuant to Fish and Game Code section 1602 et seq.)
4. **ESA Compliance:** Permittee shall implement and adhere to the terms and conditions related to the Covered Species in the Biological Opinion for the San Juan Interchange Project, Monterey and San Benito Counties, California (8-8-09-F-36) for the Project pursuant to the Federal Endangered Species Act (ESA), unless those terms and conditions are less protective of the Covered Species or conflict with the conditions of this ITP.
5. **ITP Time Frame Compliance:** Permittee shall fully implement and adhere to the conditions of this ITP within the time frames set forth below and as set forth in the Mitigation Monitoring and Reporting Program (MMRP), which is included as Attachment 1 to this ITP.
6. **General Provisions:**
 - 6.1. Designated Representative. Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with DFG and overseeing compliance with this ITP. Permittee shall notify DFG in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify DFG in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.
 - 6.2. Designated Biologist. Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information of a Designated Biologist before starting Covered Activities. Permittee shall ensure that the Designated Biologist is knowledgeable and experienced in the biology, natural history, collecting and handling of the Covered Species. The Designated Biologist must have a valid

California Scientific Collecting Permit (SCP) that includes the Covered Species. The Designated Biologist shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain DFG approval of the Designated Biologist in writing before starting Covered Activities, and shall also obtain approval in advance in writing if the Designated Biologist must be changed. The Designated Biologist(s) may be assisted by approved biologists that do not have an SCP; these biologists shall be identified as Designated Monitors.

- 6.3. Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species.
- 6.4. Education Program. Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided for any new workers before their performing work in the Project Area. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.
- 6.5. Construction Monitoring Notebook. The Designated Biologist shall maintain a construction-monitoring notebook on-site throughout the construction period which shall include a copy of this ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by DFG.
- 6.6. Trash Abatement. Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof containers and removed at least once a week to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.

- 6.7. Dust Control. Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed, and shall not allow water to form puddles.
- 6.8. Erosion Control Materials. Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as mono-filament netting (erosion control matting) or similar material, in potential Covered Species' habitat.
- 6.9. Firearms and Dogs. Permittee shall prohibit firearms and domestic dogs from the Project Area and site access routes during Covered Activities, except those in the possession of authorized security personnel or local, state, or federal law enforcement officials.
- 6.10. Delineation of Property Area. Before starting Covered Activities Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes or flags. Permittee shall restrict all Covered Activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Covered Activities.
- 6.11. Delineation of Habitat. Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat.
- 6.12. Project Access. Project-related personnel shall access the Project Area using existing routes, and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. If Permittee determines construction of routes for travel are necessary outside of the Project Area, the Designated Representative shall contact DFG for written approval before carrying out such an activity. DFG may require an amendment to this ITP if additional take of Covered Species may result from Project modification.
- 6.13. Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition of Approval 6.12 of this ITP.

- 6.14. Hazardous Waste. Permittee shall immediately stop and following pertinent state and federal statutes and regulations arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.
- 6.15. DFG Access. Permittee shall provide DFG staff with reasonable access to the Project and mitigation lands under Permittee control, and shall otherwise fully cooperate with DFG efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.
- 6.16. Refuse Removal. Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.

7. Monitoring, Notification and Reporting Provisions:

- 7.1. Notification Before Commencement. The Designated Representative shall notify DFG 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.
- 7.2. Notification of Non-compliance. The Designated Representative shall immediately notify DFG in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any non-compliance with this ITP to DFG within 24 hours.
- 7.3. California Tiger Salamander Relocation Plan. The Designated Biologist shall prepare a California tiger salamander relocation plan and submit it to DFG for approval at least 30 days prior to the beginning of Covered Activities occurring within 1.3 miles of known and/or potential California tiger salamander breeding pools. Covered Activities within these areas may not proceed until DFG approves the relocation plan in writing.
- 7.4. Compliance Monitoring. The Designated Biologist shall be on-site daily when Covered Activities occur. The Designated Biologist shall conduct compliance inspections to (1) minimize incidental take of the Covered Species; (2) prevent

unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; and (5) ensure that signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area. The Designated Representative or Designated Biologist shall prepare daily written observation and inspection records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP. The Designated Biologist shall conduct compliance inspections a minimum of once per week during periods of inactivity and after clearing, grubbing, and grading are completed.

- 7.5. Monthly Compliance Report. The Designated Representative or Designated Biologist shall compile the observation and inspection records identified in Condition of Approval 7.4 into a Monthly Compliance Report and submit it to DFG along with notes showing the current implementation status of each mitigation measure. Monthly Compliance Reports shall be submitted via e-mail to DFG's Regional Representative. At the time of this ITP's approval, the DFG Regional Representative is Laura Peterson-Diaz (lpdiaz@dfg.ca.gov). DFG may at any time increase the timing and number of compliance inspections and reports required under this provision depending upon the results of previous compliance inspections. If DFG determines the reporting schedule must be changed, DFG will notify Permittee in writing of the new reporting schedule.
- 7.6. Annual Status Report. Permittee shall provide DFG with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Monthly Compliance Reports for that year identified in Condition of Approval 7.5 (2) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) an accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (7) information about other Project impacts on the Covered Species.
- 7.7. CNDDDB Observations. The Designated Biologist shall submit all observations of Covered Species to DFG's California Natural Diversity Database (CNDDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the next Monthly Compliance Report or ASR, whichever is submitted first relative to the observation.

7.8. Final Mitigation Report. No later than 45 days after completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all Monthly Compliance Reports and all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.

7.9. Notification of Take or Injury. Permittee shall immediately notify the Designated Biologist if a Covered Species is taken or injured by a Project-related activity, or if a Covered Species is otherwise found dead or injured within the vicinity of the Project. The Designated Biologist or Designated Representative shall provide initial notification to DFG by calling the Regional Office at (559) 243-4005. The initial notification to DFG shall include information regarding the location, species, and number of animals taken or injured and the ITP Number. Following initial notification, Permittee shall send DFG a written report within two calendar days. The report shall include the date and time of the finding or incident, location of the animal or carcass, and if possible provide a photograph, explanation as to cause of take or injury, and any other pertinent information.

8. Take Minimization Measures:

The following requirements are intended to ensure the minimization of incidental take of Covered Species in the Project Area during Covered Activities. Permittee shall implement and adhere to the following conditions to minimize take of Covered Species:

8.1. A Designated Biologist(s) shall be on-site daily during all initial surface-disturbing activities to minimize potential impacts to the Covered Species; to check for compliance with all required measures; to check all exclusion zones; and to ensure that signs, stakes, and fencing are intact, and that human activities are restricted to outside of these protective zones. The Designated Biologist(s) shall conduct compliance inspections a minimum of once per week during periods of inactivity and after clearing, grubbing, and grading are completed. The Designated Biologist(s) shall prepare written records summarizing: oversight activities and compliance

inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by the ITP.

- 8.2. If any Covered Species are found in the Project Area during construction, all work that could potentially harm the Covered Species shall stop immediately until the Designated Biologist(s) can relocate the Covered Species to an active rodent burrow system. Only approved Designated Biologist(s) with the state SCP and the appropriate federal permit for amphibians are authorized to capture and handle Covered Species. The Designated Biologist(s) shall identify relocation areas prior to the start of construction in accordance with the approved Relocation Plan.
- 8.3. All Covered Species sightings confirmed by the Designated Biologist(s) shall include the following documented information: the date, time, and location of each occurrence using Global Positioning System (GPS) technology, the name of the party that actually identified the animal, circumstances of the incident, the general condition and health of each individual, any diagnostic markings, sex, age (juvenile or adult), and actions undertaken and habitat description. Permittee shall submit this information to the CNDDDB. This information should also be included in the Monthly Compliance Report.
- 8.4. Any small mammal burrows present within the portion of the Project area to be disturbed, shall be fully excavated by hand by the Designated Biologist(s). The Permittee shall relocate any live Covered Species as per the relocation plan prepared pursuant to Condition of Approval 7.3.
- 8.5. Fill or other ground-disturbing activities within or immediately adjacent to the Covered Species' potential breeding habitat within the permanent impact area, consisting of 0.057 acres located on the east side of Balentree Lane just south of the tributary to the Elkhorn Slough, shall be confined to the dry season from June 15 to October 31.
- 8.6. Covered activities within Covered Species potential upland habitat shall be restricted to periods of low rainfall (less than 1/2 inch precipitation per 24-hour period), time periods with less than a 30 percent chance of rain in a 24-hour period, or dry weather periods. Permittee shall monitor the National Weather Service (NWS) 72-hour forecast for the Project area.
 - 8.6.1. If a 70 percent or greater chance of rainfall is predicted within 24 hours of Project activity, a Designated Biologist shall survey the Project site before construction begins EACH day rain is forecast. If Permittee uses a Designated Monitor to conduct surveys, a Designated Biologist must still be available to capture and relocate any Covered Species discovered during the surveys.

- 8.6.2. If precipitation begins, then a Designated Biologist shall be at the Project site for the duration of the rain event in order for work to continue. If a Designated Monitor is used, then a Designated Biologist must still be on call and available to relocate any Covered Species discovered.
- 8.6.3. If rain exceeds 1/2 inch during a 24-hour period, all covered work activities shall cease until it is no longer raining and no further rain is forecast.
- 8.7. All Covered Activities within Covered Species potential upland habitat shall terminate 30 minutes before sunset and shall not resume until 30 minutes after sunrise during the migration/active season from November 1 to June 14. Permittee shall use sunrise and sunset times established by the United States Naval Observatory Astronomical Applications Department for the geographic area where the Project is located. If night work cannot be avoided during this time period, a Designated Biologist shall survey the Project site before construction begins each night. If Permittee uses a Designated Monitor to conduct surveys, a Designated Biologist must still be available to capture and relocate any Covered Species discovered during the surveys.
- 8.8. Permittee shall prohibit all night work within potential Covered Species upland habitat when a 70 percent or greater chance of rainfall is predicted within 24 hours of Project activity, until no further rain is forecast.
- 8.9. Permittee shall place soil stockpiles where soil shall not pass into potential Covered Species breeding pools; nor shall it pass into any other "waters of the state," in accordance with Fish and Game Code 5650. Permittee shall appropriately protect stockpiles to prevent soil erosion.
- 8.10. Within 1.24 miles of known or potential Covered Species breeding sites (including but not limited to the sites shown on Figure 1), Permittee shall not construct roadways with steep curbs, berms, or dikes, which prevent Covered Species from exiting the roadway. If curbs are necessary for safety and/or surface runoff, the Permittee shall design them to allow Covered Species to walk over them. Caltrans' Standard Plan Type E curbs and Type D and Type E dikes are preferred designs and shall be used where possible (refer to The Caltrans' Standard Plan A87, Curbs, Dikes, and Driveways). These rounded or gently sloping structures allow Covered Species to crawl over them. If steep dikes are required, design shall include over-side drains or curb/dike breaks spaced at intervals of 25 feet to allow Covered Species passage.
- 8.11. To ensure that the Designated Biologist(s) do not convey disease between work sites, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force Fieldwork Code of Practice (see Attachment 2) shall be followed at all times. The Designated Biologist(s) may substitute a bleach solution

(0.5 to 1.0 cup of bleach to 1.0 gallon of water) for the ethanol solution. Care shall be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.

8.12. Designated Biologists shall inspect all open trenches, auger holes, and other excavations that may trap Covered Species prior to any work in or around them and before they are backfilled. Designated Biologists shall safely remove and relocate any Covered Species they find in accordance with this ITP.

8.13. Covered Species Injury. If a Covered Species is injured as a result of Project-related activities, the Designated Biologist shall immediately take it to a DFG-approved wildlife rehabilitation or veterinary facility. Permittee shall identify the facility before starting Covered Activities. Permittee shall bear any costs associated with the care or treatment of such injured Covered Species. The Permittee shall notify DFG of the injury to the Covered Species immediately by telephone and e-mail followed by a written incident report as described in Condition of Approval 7.9. Notification shall include the name of the facility where the animal was taken.

9. Habitat Management Land Acquisition and Restoration:

DFG has determined that permanent protection and perpetual management of compensatory habitat is necessary and required pursuant to CESA to fully mitigate Project-related impacts of the taking on the Covered Species that will result with implementation of the Covered Activities. This determination is based on factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and DFG's estimate of the acreage required to provide for adequate compensation. A mitigation ratio of 2:1 was used for permanent impacts and 0.75:1 for temporary impacts. Compensatory mitigation for permanent impacts is $14.18 \times 2 = 28.36$ acres for upland habitat plus $0.06 \times 2 = 0.12$ acres for aquatic habitat. Compensatory mitigation for temporary impacts is $29.49 \times 0.75 = 22.12$. Total compensatory mitigation required is $28.36 + 0.12 + 22.12 = 50.6$.

To meet this requirement, the Permittee shall provide for the permanent protection and management of 50.6 acres of Habitat Management (HM) lands by completing the transfer of fee title to a DFG-approved public agency, or by recording a conservation easement pursuant to Government Code 65965, and calculating and depositing management funds (Condition of Approval 9.3). Permanent protection and perpetual management of compensatory habitat, including the funding of the long-term management fund (Endowment Fund), must be complete before starting Covered Activities or within 18 months of the effective date of this ITP if Security is provided pursuant to Condition of Approval 10 below. The Permittee shall also restore on-site

29.49 acres of temporarily impacted Covered Species habitat pursuant to Condition of Approval 9.5 below.

The Permittee has been given approval to pursue recordation of a Conservation Easement over a portion of the Packard property located adjacent to the north edge of the Moss Landing Wildlife Area in Township 13 south, Range 2 east, Sections 5 and 8, in Monterey County. The property has both upland and breeding habitat. The landowner wishes to establish the Conservation Easement for an 80.0 acre block. This would leave a balance of 29.4 acres to be used as Covered Species mitigation for other Caltrans projects pending DFG approval for future project(s) to mitigate at this site.

9.1. Cost Estimates. DFG has estimated the cost of acquisition, protection, and perpetual management of the HM lands and restoration of temporarily disturbed habitat as follows:

9.1.1. Conservation Easement acquisition costs for HM lands identified in Condition of Approval 9.2 below, estimated at \$16,000.00/acre for 50.6 acres: **\$809,600.00**. Land acquisition costs are estimated using local fair market current value for lands with habitat values meeting mitigation requirements;

9.1.2. Start-up costs for HM lands, including initial site protection and enhancement costs as described in Condition of Approval 9.2.5 below, estimated at **\$80,976.00**;

9.1.3. Interim management period funding as described in Condition of Approval 9.2.6 below, estimated at **\$40,488.00**;

9.1.4. Long-term management funding as described in Condition of Approval 9.3 below, estimated at \$9,600.00/acre for 50.6 acres: **\$485,760.00**. The long-term management endowment fund is estimated initially for the purpose of providing Security to ensure implementation of HM land management.

9.1.5. Related transaction fees including but not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG as described in Condition of Approval 9.4, estimated at **\$3,000.00**.

9.1.6. Restoration of on-site temporary effects to Covered Species habitat as described in Condition of Approval 9.5, calculated at \$37,000.00/acre for 29.49 acres: **\$1,091,130.00**.

9.2. Habitat Acquisition and Protection. To provide for the acquisition and protection of the HM lands, the Permittee shall:

9.2.1. Fee Title/Conservation Easement. Transfer fee title to the HM lands to DFG pursuant to terms approved by DFG. Alternatively, DFG, in its sole discretion, may authorize a special district, non-profit organization, for-profit entity, person, or other entity to hold title to the property provided that the district, organization, entity, or person meets the requirements of Government Code section 65965, et seq., as amended. If DFG does not hold fee title to the HM lands, DFG shall act as grantee for a conservation easement over the HM lands or shall, in its sole discretion, approve a non-profit entity, public agency, or Native American tribe to act as grantee for a conservation easement over the HM lands provided that the entity, agency, or tribe meets the requirements of Civil Code section 815.3. If DFG does not hold the conservation easement, DFG shall be named third-party beneficiary. The Permittee shall obtain DFG approval of any conservation easement before its recordation;

9.2.2. HM Lands Approval. DFG has already granted approval for Permittee to initiate negotiations with the Packards for recordation of a conservation easement on a portion of their property. If this falls through and other options must be pursued, then Permittee shall obtain DFG approval of the HM lands before acquisition and/or transfer of the land by submitting, at least three months before acquisition and/or transfer of the HM lands, a formal Proposed Lands for Acquisition Form (see Attachment 3B) identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the Project's impacts on Covered Species;

9.2.3. HM Lands Documentation. Provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents (see Attachment 3A). All documents conveying the HM lands and all conditions of title are subject to the approval of DFG, and if applicable, the Wildlife Conservation Board and the Department of General Services;

9.2.4. Land Manager. Designate an interim and long-term land manager approved by DFG. The land manager may be the conservation easement grantee, landowner, or other party. Documents related to land management shall identify the land manager. Permittee shall notify DFG of any subsequent changes in the land manager within 30 days of the change. If DFG will hold fee title to the mitigation land, DFG will also act as long-term land manager unless otherwise specified.

9.2.5. Start-up Activities. Provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands, once the HM

lands have been approved by DFG. Start-up activities include, at a minimum: (1) preparing a final management plan for DFG approval (see <http://www.dfg.ca.gov/habcon/conplan/mitbank/>); (2) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (3) developing and transferring Geographic Information Systems (GIS) data if applicable; (4) establishing initial fencing; (5) conducting litter removal; (6) conducting initial habitat restoration or enhancement, if applicable; and (7) installing signage;

9.2.6. Interim Management (Initial and Capital). Provide for the interim management of the HM lands. The Permittee shall ensure that the interim land manager implements the interim management of the HM Lands as described in the final management plan and conservation easement approved by DFG. The interim management period shall be a minimum of three years from the date of HM land acquisition and protection and full funding of the Endowment and includes expected management following start-up activities. Interim management period activities described in the final management plan shall include fence repair, continuing trash removal, site monitoring, and vegetation and invasive species management. Permittee shall either (1) provide a security to DFG for the minimum of three years of interim management that the land owner, Permittee, or land manager agrees to manage and pay for at their own expense, (2) establish an escrow account with written instructions approved in advance in writing by DFG to pay the land manager annually in advance, or (3) establish a short-term enhancement account with DFG for annual payment to the land manager.

9.3. Endowment Fund. If the Permittee will permanently protect and perpetually manage compensatory habitat as described in Condition of Approval 9.2, Permittee shall ensure that the HM lands are perpetually managed, maintained, and monitored by the long-term land manager as described in the final management plan and conservation easement approved by DFG. After obtaining DFG approval of the HM lands, Permittee shall provide long-term management funding for the in-perpetuity management of the HM lands by establishing a long-term management fund (Endowment Fund) prior to permit expiration. The Endowment Fund is a sum of money, held in a DFG-authorized fund that provides funds for the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the management plan(s) required by Condition of Approval 9.2.5. Endowment Fund, as used in this ITP, shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon.

After the interim management period, Permittee shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be

obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this ITP, the conservation easement, and the final management plan. Such activities shall be funded through the Endowment Fund.

9.3.1. Identify an Endowment Fund Manager. The Endowment Fund shall be held by the Endowment Fund Manager, which shall be either DFG or an entity qualified pursuant to Government Code section 65965, et seq., as amended, and designated in writing by DFG in its sole discretion. DFG shall designate the Endowment Fund Manager within 180 days of the effective date of this ITP. If Permittee seeks to transfer the funds for the Endowment Fund prior to DFG's designation of an Endowment Fund Manager, Permittee shall transfer the funds to an escrow account (Endowment Escrow Account) pursuant to written escrow instructions to be approved in advance in writing by DFG. All interest, dividends, and other earnings, additions, and appreciation on the Endowment Fund accrued while it is held in the Endowment Escrow Account shall be added to the Endowment Fund and transferred to the Endowment Fund Manager once designated by DFG;

9.3.2. Calculate the Endowment Funds Deposit. After obtaining DFG approval of the HM lands, long-term management plan, and Endowment Fund Manager, Permittee shall prepare a Property Analysis Record (PAR) to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). The Permittee shall submit to DFG for review and approval the results of the PAR before transferring funds to the Endowment Escrow Account or the Endowment Fund Manager.

9.3.2.1. Capitalization Rate and Fees. Permittee shall obtain the capitalization rate from the selected Endowment Fund Manager for use in calculating the PAR and adjust for any additional administrative, periodic, or annual fees. If the funds for the Endowment Fund will be placed in an Endowment Escrow Account, the capitalization rate and PAR shall be calculated to take account of the reasonably anticipated rate of return for the funds while held in escrow.

9.3.2.2. Endowment Buffers/Assumptions. Permittee shall include in PAR assumptions the following buffers for endowment establishment and use that will substantially ensure long-term viability and security of the Endowment Fund:

9.3.2.2.1. 10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.

9.3.2.2.2. Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding.

9.3.2.2.3. Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Fund Manager and DFG.

9.3.3. Transfer Long-term Endowment Funds. Permittee shall transfer the long-term endowment funds to the Endowment Escrow Account or the Endowment Fund Manager upon DFG approval of the Endowment Deposit Amount identified above. The approved Endowment Fund Manager may pool the Endowment Fund with other endowments for the operation, management, and protection of HM lands for local populations of the Covered Species but shall maintain separate accounting for each Endowment Fund.

9.4. Reimburse DFG. Permittee shall reimburse DFG for all reasonable expenses incurred by DFG such as transaction fees, account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG.

9.5. Habitat Restoration. Permittee shall restore on-site the 29.49 acres of Covered Species habitat that will be temporarily disturbed during construction to pre-project or better conditions. Within 6 months of issuance of this ITP, the Permittee shall prepare a Vegetation Restoration Plan to facilitate revegetation of the 29.49 acres of temporary construction disturbance on-site, and shall ensure that the Plan is successfully implemented by the contractor. The Plan shall include detailed specifications for restoring all temporarily disturbed areas, such as seed mixes and application methods. The Plan shall also indicate the best time of year for seeding to occur and the dates when regular watering would be required to ensure adequate growth. The Plan shall be implemented the first season appropriate. Described below are the measures and success criteria that must be included in the Vegetation Restoration Plan.

9.5.1. Identifying species damaged or removed during Project activities. Native trees and shrubs (e.g., oak, willow, cottonwood, sycamore, etc.) between four to 25-inches diameter at breast height (DBH) shall be replaced in-kind at a ratio of 3:1, and trees greater than 25-inches DBH shall be replaced at a ratio of 10:1.

9.5.2. Describing when, where, and how replacement shrubs and trees will be planted. "When" shall be the first suitable season after construction is complete. "Where" shall include a planting layout design with sufficient space appropriate for each species. "How" shall include measures to be implemented (i.e., irrigation methods, weed management, maintenance and replanting if necessary) to ensure a minimum of 70 percent survivorship for three (3) years, after the last planting, (i.e., if up to 30 percent of any of the species are at risk of not surviving and repeated plantings are necessary, then monitoring, maintenance, and annual reporting shall continue for the subsequent three (3) years).

9.5.3. For seeding and mulching exposed slopes, the seed blend shall include a minimum of three (3) locally native grass species. Locally native wildflower and/or shrub seeds may also be included in the mix. One or two sterile non-native perennial grass species may be added to the seed mix provided that amount does not exceed 25 percent of the total seed mix by count. Seeding shall be completed as soon as possible, but no later than November 15 of the year construction ends.

9.5.4. At the discretion of the Department, all exposed areas where seeding is considered unsuccessful after 90 days shall receive appropriate soil preparation and a second application of seeding, straw, or mulch as soon as is practical on a date mutually agreed upon.

10. Performance Security

The Permittee may proceed with Covered Activities only after the Permittee has ensured funding (Security) to complete any activity required by Condition of Approval 9 that has not been completed before Covered Activities begin. Permittee shall provide Security as follows:

10.1. Security Amount. The Security shall be in the amount of **\$2,510,954.00**. This amount is based on the cost estimates identified in Condition of Approval 9.1 above;

10.2. Security Form. The Security shall be in the form of a funding assurance letter signed by the District Deputy Directors of Project Management and Environmental Planning and Engineering, or another form of Security approved in advance in writing by DFG's Office of the General Counsel, or another mechanism approved in advance in writing by DFG's Office of the General Counsel.

10.3. Security Timeline. The Security shall be provided to DFG before Covered Activities begin or within 30 days after the effective date of this ITP, whichever occurs first;

10.4. Security Holder. The Security shall be held by DFG or in a manner approved in advance in writing by DFG.

10.5. Security Transmittal. If DFG holds the Security, Permittee shall transmit it to DFG with a completed Mitigation Payment Transmittal Form (see Attachment 4) or by way of an approved instrument such as escrow, irrevocable letter of credit, or other.

10.6. Security Drawing. The Security shall allow DFG to draw on the principal sum if DFG in its sole discretion determines that the Permittee has failed to comply with the Conditions of Approval of this ITP.

10.7. Security Release. The Security (or any portion of the Security then remaining) shall be released to the Permittee after all secured requirements have been met as evidenced by:

- Timely submission of all required reports;
- An on-site inspection by DFG; and
- Written approval from DFG.

Even if Security is provided, the Permittee must complete the required acquisition, protection and transfer of all HM lands and record any required conservation easements no later than 18 months from the effective date of this ITP. DFG may require the Permittee to provide additional HM lands and/or additional funding to ensure the impacts of the taking are minimized and fully mitigated, as required by law, if the Permittee does not complete these requirements within the specified timeframe.

Amendment:

This ITP may be amended as provided by California Code of Regulations, Title 14, section 783.6, subdivision (c), and other applicable law. This ITP may be amended without the concurrence of the Permittee as required by law, including if DFG determines that continued implementation of the Project as authorized under this ITP would jeopardize the continued existence of the Covered Species, or where Project changes or changed biological conditions necessitate an ITP amendment to ensure that all Project-related impacts of the taking to the Covered Species are minimized and fully mitigated.

Stop-Work Order:

DFG may issue Permittee a written stop-work order requiring Permittee to suspend any Covered Activity for an initial period of up to 25 days to prevent or remedy a violation of this ITP, including but not limited to the failure to comply with reporting, monitoring, or habitat acquisition obligations, or to prevent the unauthorized take of any CESA endangered, threatened, or candidate species. Permittee shall stop work immediately as directed by DFG upon receipt of any such stop-work order. Upon written notice to Permittee, DFG may extend

any stop-work order issued to Permittee for a period not to exceed 25 additional days. Suspension and revocation of this ITP shall be governed by California Code of Regulations, Title 14, section 783.7, and other applicable law. Neither the Designated Biologist nor DFG shall be liable for any costs incurred in complying with stop-work orders.

Compliance with Other Laws:

This ITP sets forth DFG's requirements for the Permittee to implement the Project pursuant to CESA. This ITP does not necessarily create an entitlement to proceed with the Project. Permittee is responsible for complying with all other applicable federal, state, and local laws.

Notices:

The Permittee shall deliver a fully executed duplicate original ITP by registered first class mail or overnight delivery to the following address:

Habitat Conservation Planning Branch
California Department of Fish and Game
Attention: CESA Permitting Program
1416 Ninth Street, Suite 1260
Sacramento, California 95814

Written notices, reports and other communications relating to this ITP shall be delivered to DFG by registered first class mail at the following addresses, or at addresses DFG may subsequently provide the Permittee. Notices, reports, and other communications shall reference the Project name, Permittee, and ITP Number (2081-2011-064-04) in a cover letter and on any other associated documents.

Original cover with attachment(s) to:

Jeffrey R. Single, Ph.D., Regional Manager
California Department of Fish and Game
Region 4 - Central Region
1234 East Shaw Avenue
Fresno, California 93710
Phone: (559) 243-4005
Fax: (559) 243-4022

Copy of cover without attachment(s) to:

Office of the General Counsel
California Department of Fish and Game
1416 Ninth Street, 12th Floor
Sacramento, California 95814

Incidental Take Permit
No. 2081-2011-064-04
CALIFORNIA DEPARTMENT OF TRANSPORTATION
SAN JUAN ROAD INTERCHANGE

And:

Habitat Conservation Planning Branch
California Department of Fish and Game
1416 Ninth Street, Suite 1260
Sacramento, California 95814

Unless Permittee is notified otherwise, DFG's Regional Representative for purposes of addressing issues that arise during implementation of this ITP is:

Laura Peterson-Diaz
California Department of Fish and Game
Region 4 - Central Region
1234 East Shaw Avenue
Fresno, California 93710
Phone: (559) 243-4017, extension 225
Fax: (559) 243-4020
lpdiaz@dfg.ca.gov

Compliance with CEQA:

DFG's issuance of this ITP is subject to CEQA. DFG is a responsible agency pursuant to CEQA with respect to this ITP because of prior environmental review of the Project by the lead agency, California Department of Transportation. (See generally Pub. Resources Code, §§ 21067, 21069.) The lead agency's prior environmental review of the Project is set forth in a Mitigated Negative Declaration and Finding of No Significant Impact, (SCH No. 2006021071) adopted by the California Department of Transportation for the Project on December 15, 2009. At the time the lead agency adopted the Mitigated Negative Declaration and approved the Project, it also adopted various mitigation measures for the Covered Species as conditions of Project approval.

This ITP, along with DFG's related CEQA findings, which are available as a separate document, provide evidence of DFG's consideration of the lead agency's Mitigated Negative Declaration for the Project and the environmental effects related to issuance of this ITP (CEQA Guidelines, § 15096, subd. (f)). DFG finds that issuance of this ITP will not result in any previously undisclosed potentially significant effects on the environment or a substantial increase in the severity of any potentially significant environmental effects previously disclosed by the lead agency. Furthermore, to the extent the potential for such effects exists, DFG finds adherence to and implementation of the Conditions of Project Approval adopted by the lead agency, as well as adherence to and implementation of the Conditions of Approval imposed by DFG through the issuance of this ITP, will avoid or reduce to below a level of significance any such potential effects. DFG consequently finds that issuance of this ITP will not result in any significant, adverse impacts on the environment.

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Findings Pursuant to CESA:

These findings document DFG's compliance with the specific findings requirements set forth in CESA and related regulations. (Fish & G. Code § 2081, subs. (b),(c); Cal. Code Regs., tit. 14, §§ 783.4, subds, (a),(b), 783.5, subd. (c)(2).)

DFG finds based on substantial evidence in the ITP application, Mitigated Negative Declaration, LSA agreement notification number 1600-2011-0169-R4, Biological Opinion (8-8-09-F-36), the results of site visits and consultations, and the administrative record of proceedings, that issuance of this ITP complies and is consistent with the criteria governing the issuance of ITPs pursuant to CESA:

- (1) Take of Covered Species as defined in this ITP will be incidental to the otherwise lawful activities covered under this ITP;
- (2) Impacts of the taking on Covered Species will be minimized and fully mitigated through the implementation of measures required by this ITP and as described in the MMRP. Measures include: (1) permanent habitat protection; (2) establishment of avoidance zones; (3) worker education; and (4) Monthly Compliance Reports. DFG evaluated factors including an assessment of the importance of the habitat in the Project Area, the extent to which the Covered Activities will impact the habitat, and DFG's estimate of the acreage required to provide for adequate compensation. Based on this evaluation, DFG determined that the protection and management in perpetuity of 50.61 acres of compensatory habitat that is contiguous with other protected Covered Species habitat and/or is of higher quality than the habitat being destroyed by the Project, along with the minimization, monitoring, reporting, and funding requirements of this ITP minimizes and fully mitigates the impacts of the taking caused by the Project;
- (3) The take avoidance and mitigation measures required pursuant to the conditions of this ITP and its attachments are roughly proportional in extent to the impacts of the taking authorized by this ITP;
- (4) The measures required by this ITP maintain Permittee's objectives to the greatest extent possible;
- (5) All required measures are capable of successful implementation;
- (6) This ITP is consistent with any regulations adopted pursuant to Fish and Game Code sections 2112 and 2114;

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- (7) Permittee has ensured adequate funding to implement the measures required by this ITP as well as for monitoring compliance with, and the effectiveness of, those measures for the Project; and
- (8) Issuance of this ITP will not jeopardize the continued existence of the Covered Species based on the best scientific and other information reasonably available, and this finding includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (1) known population trends; (2) known threats to the species; and (3) reasonably foreseeable impacts on the species from other related projects and activities. Moreover, DFG's finding is based, in part, on DFG's express authority to amend the terms and conditions of this ITP without concurrence of the Permittee as necessary to avoid jeopardy and as required by law.

Attachments:

FIGURE 1	Map of Project Location
FIGURE 2	Photo of Aquatic habitat at Pool # 41 and # 42
FIGURE 3	San Juan Road Design Plans
FIGURE 4	Map of Potential CTS Breeding Locations
FIGURE 5	Map of Potential Impact Areas
ATTACHMENT 1	Mitigation Monitoring and Reporting Program
ATTACHMENT 2	Declining Amphibian Populations Task Force Fieldwork Code of Practice
ATTACHMENT 3A	Habitat Management Lands Checklist
ATTACHMENT 3B	Proposed Lands for Acquisition Form
ATTACHMENT 4	Mitigation Payment Transmittal Form

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on 2/23/12



Jeffrey R. Single, Ph.D.,
Regional Manager
CENTRAL REGION

APPROVED AS TO FORM:



John H. Mattox
Staff Counsel IV

ACKNOWLEDGMENT

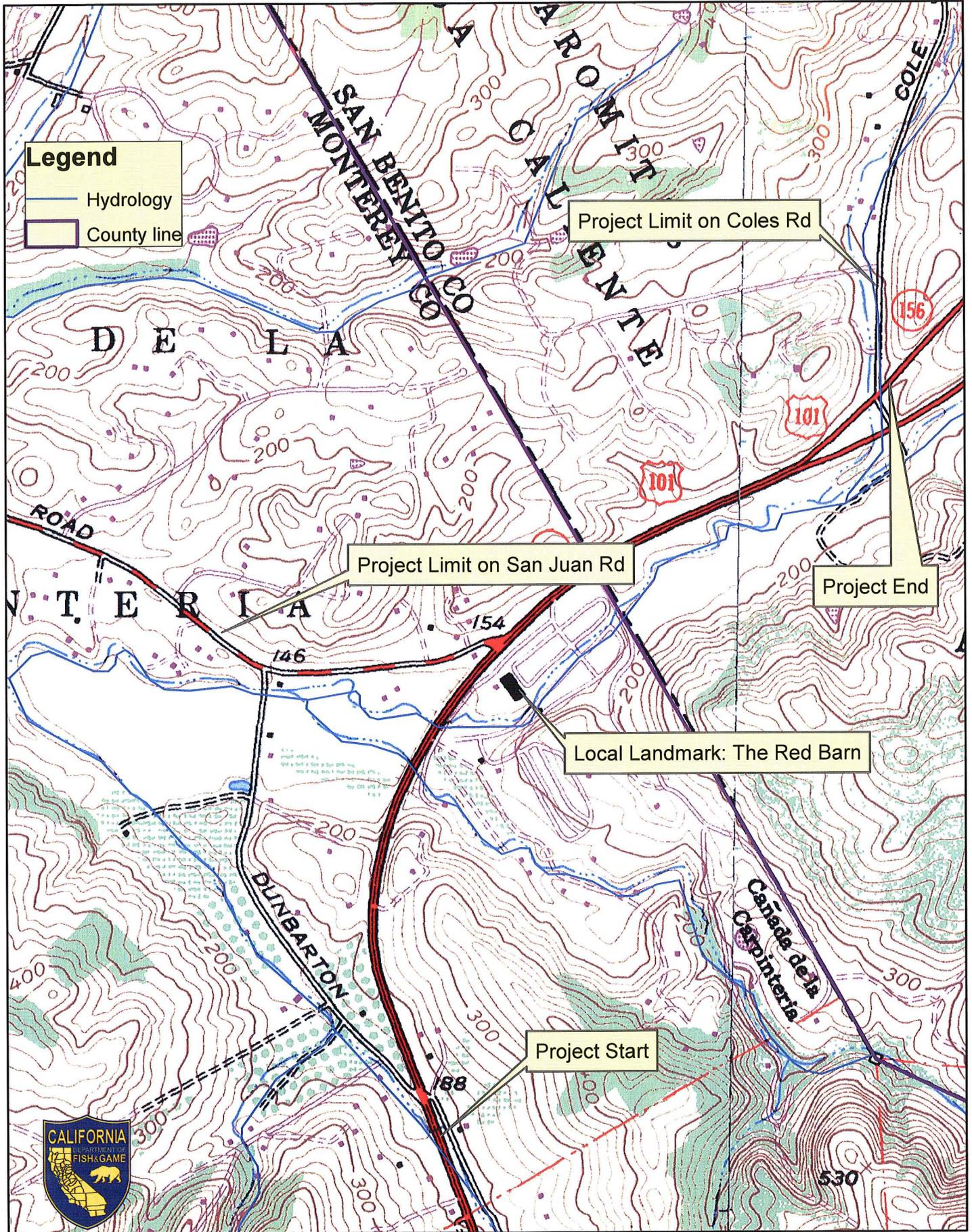
The undersigned: (1) warrants that he or she is acting as a duly authorized representative of the Permittee, (2) acknowledges receipt of this ITP, and (3) agrees on behalf of the Permittee to comply with all terms and conditions

By: _____ Date: _____

Printed Name: _____ Title: _____

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Figure 1 - San Juan Road Project Location Map



By: LPD on 9-12-11

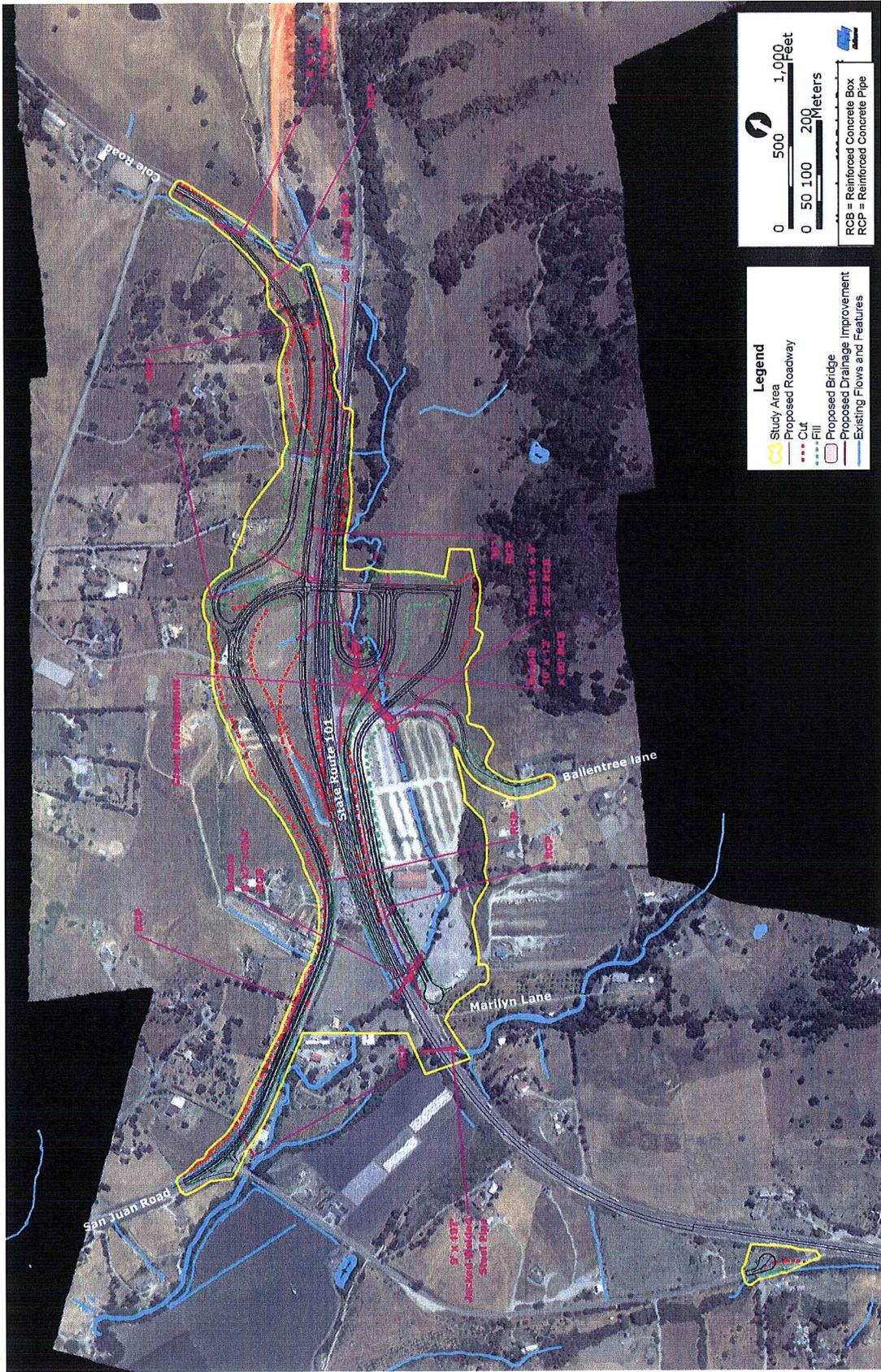
0 0.25 0.5 1 Miles



Figure 2 – Pools 41 and 42 which total 0.057 acres of aquatic habitat



Figure 3 - Caltrans Design Plans from the Incidental Take Permit Application for the San Juan Road Interchange Project



Legend

- Study Area
- Proposed Roadway
- Cut
- Fill
- Proposed Bridge
- Proposed Drainage Improvement
- Existing Flows and Features

RCB = Reinforced Concrete Box
 RCP = Reinforced Concrete Pipe

0 500 1,000 Feet
 0 50 100 200 Meters

Figure 4. Potential California Tiger Salamander Breeding Locations

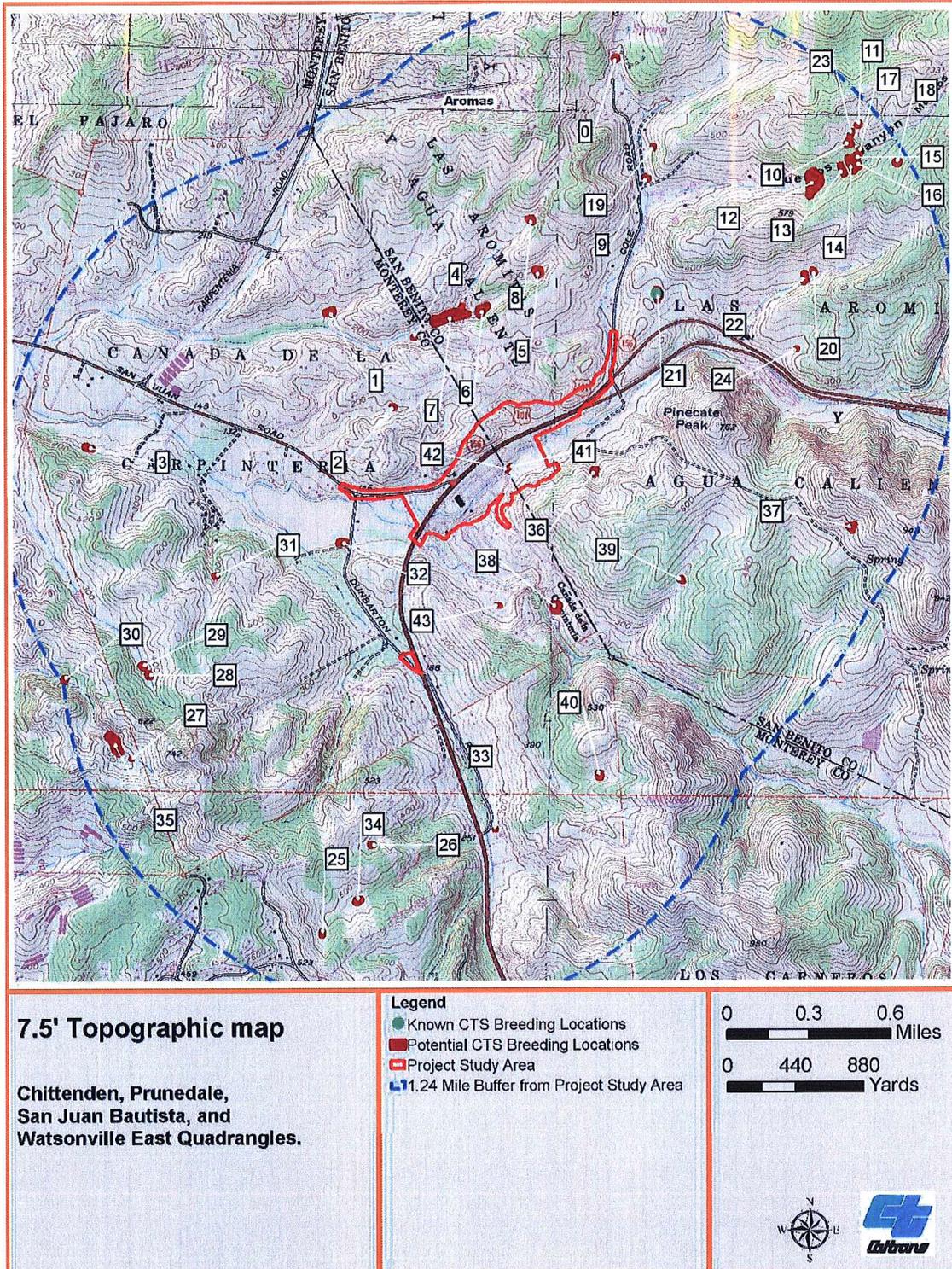
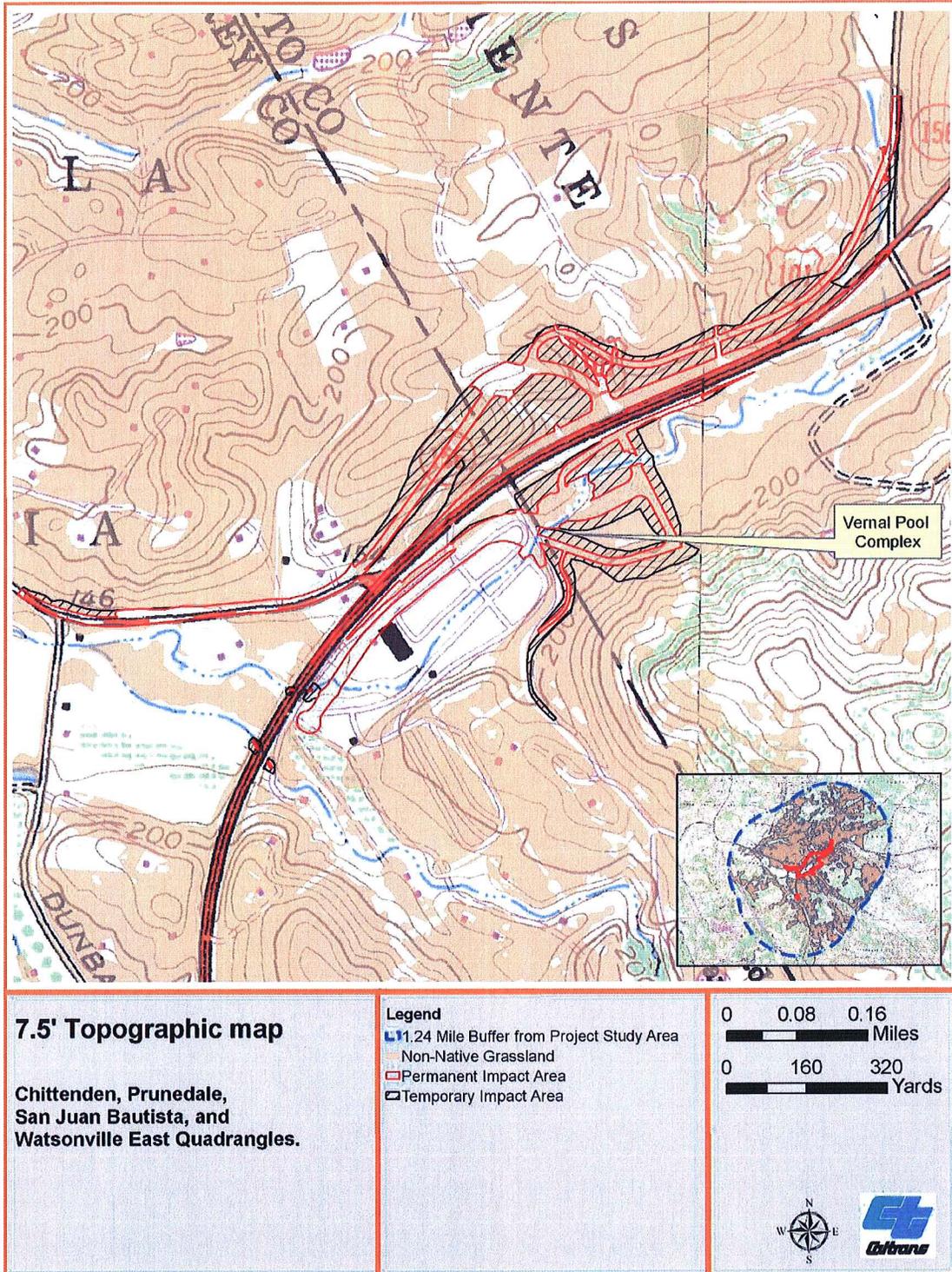


Figure 5 - Areas of potential impacts within the project footprint from the Incidental Take Permit Application for the San Juan Road Interchange Project



Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND GAME MITIGATION MONITORING AND REPORTING PROGRAM (MMRP) CALIFORNIA ENDANGERED SPECIES ACT

INCIDENTAL TAKE PERMIT NO. 2081-2011-064-04

PERMITTEE: California Department of Transportation (Caltrans)

PROJECT: San Juan Road Interchange

PURPOSE OF THE MMRP

The purpose of the MMRP is to ensure that the impact minimization and mitigation measures required by the Department of Fish and Game (DFG) for the above-referenced Project are properly implemented, and thereby to ensure compliance with section 2081(b) of the Fish and Game Code and section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by DFG is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the California Incidental Take Permit (ITP) and in attachments to the ITP, and the omission of a permit requirement from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance of all mitigation measures and for reporting to DFG on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the ITP itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

DFG may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Mitigation Measure column summarizes the mitigation requirements of the ITP. The Source column identifies the ITP condition that sets forth the mitigation measure. The Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The Status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
BEFORE DISTURBING SOIL OR VEGETATION				
1	6.1. Designated Representative. Before starting Covered Activities, Permittee shall designate a representative (Designated Representative) responsible for communications with DFG and overseeing compliance with this ITP. Permittee shall notify DFG in writing before starting Covered Activities of the Designated Representative's name, business address, and contact information, and shall notify DFG in writing if a substitute Designated Representative is selected or identified at any time during the term of this ITP.	ITP Condition # 6.1	Permittee	
2	6.2. Designated Biologist. Permittee shall submit to DFG in writing the name, qualifications, business address, and contact information of a Designated Biologist before starting Covered Activities. Permittee shall ensure that the Designated Biologist is knowledgeable and experienced in the biology, natural history, collecting and handling of the Covered Species. The Designated Biologist must have a valid California Scientific Collecting Permit (SCP) that includes the Covered Species. The Designated Biologist shall be responsible for monitoring Covered Activities to help minimize and fully mitigate or avoid the incidental take of individual Covered Species and to minimize disturbance of Covered Species' habitat. Permittee shall obtain DFG approval of the Designated Biologist in writing before starting Covered Activities, and shall also obtain approval in advance in writing if the Designated Biologist must be changed. The Designated Biologist(s) may be assisted by approved biologists that do not have an SCP; these biologists shall be identified as Designated Monitors.	ITP Condition # 6.2	Permittee	
3	6.4. Education Program. Permittee shall conduct an education program for all persons employed or otherwise working in the Project Area before performing any work. The program shall consist of a presentation from the Designated Biologist that includes a discussion of the biology and general behavior of the Covered Species, information about the distribution and habitat needs of the Covered Species, sensitivity of the Covered Species to human activities, its status pursuant to CESA including legal protection, recovery efforts, penalties for violations and Project-specific protective measures described in this ITP. Permittee shall provide interpretation for non-English speaking workers, and the same instruction shall be provided for any new workers before their performing work in the Project Area. Permittee shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry in the Project Area. Upon completion of the program, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent employees that will be conducting work in the Project Area.	ITP Condition # 6.4	Permittee	
4	6.6. Trash Abatement. Permittee shall initiate a trash abatement program before starting Covered Activities and shall continue the program for the duration of the Project. Permittee shall ensure that trash and food items are contained in animal-proof containers and removed at least once a week to avoid attracting opportunistic predators such as ravens, coyotes, and feral dogs.	ITP Condition # 6.6	Permittee	
5	6.7. Dust Control. Permittee shall implement dust control measures during Covered Activities to facilitate visibility for monitoring of the Covered Species by the Designated Biologist. Permittee shall keep the amount of water used to the minimum amount needed, and shall not allow water to form puddles.	ITP Condition # 6.7	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
6	6.8. Erosion Control Materials. Permittee shall prohibit use of erosion control materials potentially harmful to Covered Species and other species, such as mono-filament netting (erosion control matting) or similar material, in potential Covered Species' habitat.	ITP Condition # 6.8	Before commencing ground- or vegetation-disturbing activities and Entire Project	Permittee	
7	6.9. Firearms and Dogs. Permittee shall prohibit firearms and domestic dogs from the Project Area and site access routes during Covered Activities, except those in the possession of authorized security personnel or local, state, or federal law enforcement officials.	ITP Condition # 6.9	Before commencing ground- or vegetation-disturbing activities and Entire Project	Permittee	
8	6.10. Delineation of Property Area. Before starting Covered Activities Permittee shall clearly delineate the boundaries of the Project Area with fencing, stakes or flags. Permittee shall restrict all Covered Activities to within the fenced, staked or flagged areas. Permittee shall maintain all fencing, stakes and flags until the completion of Covered Activities.	ITP Condition # 6.10	Before commencing ground- or vegetation-disturbing activities and Entire Project	Permittee	
9	6.11. Delineation of Habitat. Permittee shall clearly delineate habitat of the Covered Species within the Project Area with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize the disturbance of Covered Species' habitat.	ITP Condition # 6.11	Before commencing ground- or vegetation-disturbing activities and Entire Project	Permittee	
10	6.12. Project Access. Project-related personnel shall access the Project Area using existing routes, and shall not cross Covered Species' habitat outside of or en route to the Project Area. Permittee shall restrict Project-related vehicle traffic to established roads, staging, and parking areas. If Permittee determines construction of routes for travel are necessary outside of the Project Area, the Designated Representative shall contact DFG for written approval before carrying out such an activity. DFG may require an amendment to this ITP if additional take of Covered Species may result from Project modification.	ITP Condition # 6.12	Before commencing ground- or vegetation-disturbing activities and Entire Project	Permittee	
11	6.13. Staging Areas. Permittee shall confine all Project-related parking, storage areas, laydown sites, equipment storage, and any other surface-disturbing activities to the Project Area using, to the extent possible, previously disturbed areas. Additionally, Permittee shall not use or cross Covered Species' habitat outside of the marked Project Area unless provided for as described in Condition of Approval 6.12 of this ITP.	ITP Condition # 6.13	Before commencing ground- or vegetation-disturbing activities and Entire Project	Permittee	
12	7.1. Notification Before Commencement. The Designated Representative shall notify DFG 14 calendar days before starting Covered Activities and shall document compliance with all pre-Project Conditions of Approval before starting Covered Activities.	ITP Condition # 7.1	Before commencing ground- or vegetation-disturbing activities	Permittee	
13	7.3. California Tiger Salamander Relocation Plan. The Designated Biologist shall prepare a California tiger salamander relocation plan and submit it to DFG for approval at least 30 days prior to the beginning of Covered Activities occurring within 1.3 miles of known and/or potential California tiger salamander breeding pools. Covered Activities within these areas may not proceed until DFG approves the relocation plan in writing.	ITP Condition # 7.3	Before commencing ground- or vegetation-disturbing activities	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
14	<p>9.1. Cost Estimates. DFG has estimated the cost of acquisition, protection, and perpetual management of the HM lands and restoration of temporarily disturbed habitat as follows:</p> <p>9.1.1. Conservation Easement acquisition estimated at \$809,600.00.</p> <p>9.1.2. Start-up costs for HM lands, including enhancement estimated at \$80,976.00.</p> <p>9.1.3. Interim management estimated at \$40,488.00.</p> <p>9.1.4. Long-term management endowment estimated at \$485,760.00.</p> <p>9.1.5. Related transaction fees estimated at \$3,000.00.</p> <p>9.1.6. Restoration of on-site temporary effects estimated at \$1,091,130.00.</p>	ITP Condition # 9.1	Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided	Permittee	
15	<p>10. Performance Security</p> <p>The Permittee may proceed with Covered Activities only after the Permittee has ensured funding (Security) to complete any activity required by Condition of Approval 9 that has not been completed before Covered Activities begin. Permittee shall provide Security as follows:</p> <p>10.1. Security Amount. The Security shall be in the amount of \$2,510,954.00. This amount is based on the cost estimates identified in Condition of Approval 9.1 above:</p> <p>10.2. Security Form. The Security shall be in the form of a funding assurance letter signed by the District Deputy Directors of Project Management and Environmental Planning and Engineering, or another form of Security approved in advance in writing by DFG's Office of the General Counsel, or another mechanism approved in advance in writing by DFG's Office of the General Counsel.</p> <p>10.3. Security Timeline. The Security shall be provided to DFG before Covered Activities begin or within 30 days after the effective date of this ITP, whichever occurs first.</p> <p>10.4. Security Holder. The Security shall be held by DFG or in a manner approved in advance in writing by DFG.</p> <p>10.5. Security Transmittal. If DFG holds the Security, Permittee shall transmit it to DFG with a completed Mitigation Payment Transmittal Form (see Attachment 4) or by way of an approved instrument such as escrow, irrevocable letter of credit, or other.</p> <p>10.6. Security Drawing. The Security shall allow DFG to draw on the principal sum if DFG in its sole discretion determines that the Permittee has failed to comply with the Conditions of Approval of this ITP.</p> <p>10.7. Security Release. The Security (or any portion of the Security then remaining) shall be released to the Permittee after all secured requirements have been met as evidenced by:</p> <ul style="list-style-type: none"> • Timely submission of all required reports; • An on-site inspection by DFG; and • Written approval from DFG. 	ITP Condition # 10	Before commencing ground- or vegetation-disturbing activities If Mitigation can not be completed before work is scheduled to begin	Permittee	

Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
<p>16</p> <p>9.2.1. Fee Title/Conservation Easement. Transfer fee title to the HM lands to DFG pursuant to terms approved by DFG. Alternatively, DFG, in its sole discretion, may authorize a special district, non-profit organization, for-profit entity, person, or other entity to hold title to the property provided that the district, organization, entity, or person meets the requirements of Government Code section 65965, et seq., as amended. If DFG does not hold fee title to the HM lands, DFG shall act as grantee for a conservation easement over the HM lands or shall, in its sole discretion, approve a non-profit entity, public agency, or Native American tribe to act as grantee for a conservation easement over the HM lands provided that the entity, agency, or tribe meets the requirements of Civil Code section 815.3. If DFG does not hold the conservation easement, DFG shall be named third-party beneficiary. The Permittee shall obtain DFG approval of any conservation easement before its recordation;</p>	<p>ITP Condition # 9.2.1</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	
<p>17</p> <p>9.2.2. HM Lands Approval. DFG has already granted approval for Permittee to initiate negotiations with the Packards for recordation of a conservation easement on a portion of their property. If this falls through and other options must be pursued, then Permittee shall obtain DFG approval of the HM lands before acquisition and/or transfer of the land by submitting, at least three months before acquisition and/or transfer of the HM lands, a formal Proposed Lands for Acquisition Form (see Attachment 3B) identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the Project's impacts on Covered Species;</p>	<p>ITP Condition #9.2.2</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	
<p>18</p> <p>9.2.3. HM Lands Documentation. Provide a recent preliminary title report, initial hazardous materials survey report, and other necessary documents (see Attachment 3A). All documents conveying the HM lands and all conditions of title are subject to the approval of DFG, and if applicable, the Wildlife Conservation Board and the Department of General Services;</p>	<p>ITP Conditions # 9.2.3</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	
<p>19</p> <p>9.2.4. Land Manager. Designate an interim and long-term land manager approved by DFG. The land manager may be the conservation easement grantee, landowner, or other party. Documents related to land management shall identify the land manager. Permittee shall notify DFG of any subsequent changes in the land manager within 30 days of the change. If DFG will hold fee title to the mitigation land, DFG will also act as long-term land manager unless otherwise specified.</p>	<p>ITP Conditions # 9.2.4</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	
<p>20</p> <p>9.2.5. Start-up Activities. Provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands, once the HM lands have been approved by DFG. Start-up activities include, at a minimum: (1) preparing a final management plan for DFG approval (see http://www.dfg.ca.gov/habcon/complan/mitbank/); (2) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (3) developing and transferring Geographic Information Systems (GIS) data if applicable; (4) establishing initial fencing; (5) conducting litter removal; (6) conducting initial habitat restoration or enhancement, if applicable; and (7) installing signage;</p>	<p>ITP Conditions # 9.2.5</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
21	<p>9.2.6. Interim Management (Initial and Capital). Provide for the interim management of the HM lands. The Permittee shall ensure that the interim land manager implements the interim management of the HM Lands as described in the final management plan and conservation easement approved by DFG. The interim management period shall be a minimum of three years from the date of HM land acquisition and protection and full funding of the Endowment and includes expected management following start-up activities. Interim management period activities described in the final management plan shall include fence repair, continuing trash removal, site monitoring, and vegetation and invasive species management. Permittee shall either (1) provide a security to DFG for the minimum of three years of interim management that the land owner, Permittee, or land manager agrees to manage and pay for at their own expense, (2) establish an escrow account with written instructions approved in advance in writing by DFG to pay the land manager annually in advance, or (3) establish a short-term enhancement account with DFG for annual payment to the land manager.</p>	ITP Conditions # 9.2.6	Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided	Permittee	
22	<p>9.3. Endowment Fund. If the Permittee will permanently protect and perpetually manage compensatory habitat as described in Condition of Approval 9.2, Permittee shall ensure that the HM lands are perpetually managed, maintained, and monitored by the long-term land manager as described in the final management plan and conservation easement approved by DFG. After obtaining DFG approval of the HM lands, Permittee shall provide long-term management funding for the in perpetuity management of the HM lands by establishing a long term management fund (Endowment Fund) prior to permit expiration. The Endowment Fund is a sum of money, held in a DFG-authorized fund that provides funds for the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the management plan(s) required by Condition of Approval 9.2.5. Endowment Fund, as used in this ITP, shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon.</p> <p>After the interim management period, Permittee shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this ITP, the conservation easement, and the final management plan. Such activities shall be funded through the Endowment Fund.</p>	ITP Conditions # 9.3	Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided	Permittee	
23	<p>9.3.1. Identify an Endowment Fund Manager. The Endowment Fund shall be held by the Endowment Fund Manager, which shall be either DFG or an entity qualified pursuant to Government Code section 65965, et seq, as amended, and designated in writing by DFG in its sole discretion. DFG shall designate the Endowment Fund Manager within 180 days of the effective date of this ITP. If Permittee seeks to transfer the funds for the Endowment Fund prior to DFG's designation of an Endowment Fund Manager, Permittee shall transfer the funds to an escrow account (Endowment Escrow Account) pursuant to written escrow instructions to be approved in advance in writing by DFG. All interest, dividends, and other earnings, additions, and appreciation on the Endowment Fund accrued while it is held in the Endowment Escrow Account shall be added to the Endowment Fund and transferred to the Endowment Fund Manager once designated by DFG.</p>	ITP Conditions # 9.3.1	Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided	Permittee	
24	<p>9.3.2. Calculate the Endowment Funds Deposit. After obtaining DFG approval of the HM lands, long-term management plan, and Endowment Fund Manager, Permittee shall prepare a Property Analysis Record (PAR) to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). The Permittee shall submit to DFG for review and approval the results of the PAR before transferring funds to the Endowment Escrow Account or the Endowment Fund Manager.</p>	ITP Conditions # 9.3.2	Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided	Permittee	

Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
<p>25</p> <p>9.3.2.1. Capitalization Rate and Fees. Permittee shall obtain the capitalization rate from the selected Endowment Fund Manager for use in calculating the PAR and adjust for any additional administrative, periodic, or annual fees. If the funds for the Endowment Fund will be placed in an Endowment Escrow Account, the capitalization rate and PAR shall be calculated to take account of the reasonably anticipated rate of return for the funds while held in escrow.</p>	<p>ITP Conditions # 9.3.2.1</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	
<p>26</p> <p>9.3.2.2. Endowment Buffers/Assumptions. Permittee shall include in PAR assumptions the following buffers for endowment establishment and use that will substantially ensure long-term viability and security of the Endowment Fund:</p> <p>10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.</p> <p>Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding.</p> <p>Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Fund Manager and DFG.</p>	<p>ITP Conditions # 9.3.2.2</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	
<p>27</p> <p>9.3.3. Transfer Long-term Endowment Funds. Permittee shall transfer the long-term endowment funds to the Endowment Escrow Account or the Endowment Fund Manager upon DFG approval of the Endowment Deposit Amount identified above. The approved Endowment Fund Manager may pool the Endowment Fund with other endowments for the operation, management, and protection of HM lands for local populations of the Covered Species but shall maintain separate accounting for each Endowment Fund.</p>	<p>ITP Conditions # 9.3.3</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	
<p>28</p> <p>9.4. Reimburse DFG. Permittee shall reimburse DFG for all reasonable expenses incurred by DFG such as transaction fees, account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM Lands to DFG.</p>	<p>ITP Conditions # 9.4</p>	<p>Before commencing ground- or vegetation-disturbing activities or within 18 months of issuance of the ITP if Security is provided</p>	<p>Permittee</p>	
DURING CONSTRUCTION				
<p>29</p> <p>6.3. Designated Biologist Authority. To ensure compliance with the Conditions of Approval of this ITP, the Designated Biologist shall have authority to immediately stop any activity that is not in compliance with this ITP, and/or to order any reasonable measure to avoid the unauthorized take of an individual of the Covered Species.</p>	<p>ITP Condition # 6.3</p>	<p>Entire Project</p>	<p>Permittee</p>	
<p>30</p> <p>6.5. Construction Monitoring Notebook. The Designated Biologist shall maintain a construction-monitoring notebook on-site throughout the construction period which shall include a copy of the ITP with attachments and a list of signatures of all personnel who have successfully completed the education program. Permittee shall ensure a copy of the construction-monitoring notebook is available for review at the Project site upon request by DFG.</p>	<p>ITP Condition # 6.5</p>	<p>Entire Project</p>	<p>Permittee</p>	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
31	7.2. Notification of Non-compliance. The Designated Representative shall immediately notify DFG in writing if it determines that the Permittee is not in compliance with any Condition of Approval of this ITP, including but not limited to any actual or anticipated failure to implement measures within the time periods indicated in this ITP and/or the MMRP. The Designated Representative shall report any non-compliance with this ITP to DFG within 24 hours.	ITP Condition # 7.2	Entire Project	Permittee	
32	7.4. Compliance Monitoring. The Designated Biologist shall be on-site daily when Covered Activities occur. The Designated Biologist shall conduct compliance inspections to (1) minimize incidental take of the Covered Species; (2) prevent unlawful take of species; (3) check for compliance with all measures of this ITP; (4) check all exclusion zones; and (5) ensure that signs, stakes, and fencing are intact, and that Covered Activities are only occurring in the Project Area. The Designated Representative or Designated Biologist shall prepare daily written observation and inspection records summarizing oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by this ITP. The Designated Biologist shall conduct compliance inspections a minimum of once per week during periods of inactivity and after clearing, grubbing, and grading are completed.	ITP Condition # 7.4	Entire Project	Permittee	
33	7.5. Monthly Compliance Report. The Designated Representative or Designated Biologist shall compile the observation and inspection records identified in Condition of Approval 7.4 into a Monthly Compliance Report and submit it to DFG along with notes showing the current implementation status of each mitigation measure. Monthly Compliance Reports shall be submitted via e-mail to DFG's Regional Representative. At the time of this ITP's approval, the DFG Regional Representative is Laura Peterson-Diaz (lpdiaz@dfg.ca.gov). DFG may at any time increase the timing and number of compliance inspections and reports required upon this provision depending upon the results of previous compliance inspections. If DFG determines the reporting schedule must be changed, DFG will notify Permittee in writing of the new reporting schedule.	ITP Condition # 7.5	Entire Project	Permittee	
34	7.6. Annual Status Report. Permittee shall provide DFG with an Annual Status Report (ASR) no later than January 31 of every year beginning with issuance of this ITP and continuing until DFG accepts the Final Mitigation Report identified below. Each ASR shall include, at a minimum: (1) a summary of all Monthly Compliance Reports for that year identified in Condition of Approval 7.5; (2) a general description of the status of the Project Area and Covered Activities, including actual or projected completion dates, if known; (3) a copy of the table in the MMRP with notes showing the current implementation status of each mitigation measure; (4) an assessment of the effectiveness of each completed or partially completed mitigation measure in avoiding, minimizing and mitigating Project impacts; (5) all available information about Project-related incidental take of the Covered Species; (6) an accounting of the number of acres subject to both temporary and permanent disturbance, both for the prior calendar year, and a total since ITP issuance; and (7) information about other Project impacts on the Covered Species.	ITP Condition # 7.6	Entire Project	Permittee	
35	7.7. CNDDB Observations. The Designated Biologist shall submit all observations of Covered Species to DFG's California Natural Diversity Database (CNDDB) within 60 calendar days of the observation and the Designated Biologist shall include copies of the submitted forms with the next Monthly Compliance Report or ASR, whichever is submitted first relative to the observation.	ITP Condition # 7.7	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
36	6.14. Hazardous Waste. Permittee shall immediately stop and following pertinent state and federal statutes and regulations arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as it is safe to do so. Permittee shall exclude the storage and handling of hazardous materials from the Project Area and shall properly contain and dispose of any unused or leftover hazardous products off-site.	ITP Condition # 6.14	Entire Project	Permittee	
37	6.15. DFG Access. Permittee shall provide DFG staff with reasonable access to the Project and mitigation lands under Permittee control, and shall otherwise fully cooperate with DFG efforts to verify compliance with or effectiveness of mitigation measures set forth in this ITP.	ITP Condition #6.15	Entire Project	Permittee	
38	8.1. A Designated Biologist(s) shall be on-site daily during all initial surface-disturbing activities to minimize potential impacts to the Covered Species; to check for compliance with all required measures; to check all exclusion zones; and to ensure that signs, stakes, and fencing are intact, and that human activities are restricted to outside of these protective zones. The Designated Biologist(s) shall conduct compliance inspections a minimum of once per week during periods of inactivity and after clearing, grubbing, and grading are completed. The Designated Biologist(s) shall prepare written records summarizing: oversight activities and compliance inspections, observations of Covered Species and their sign, survey results, and monitoring activities required by the ITP.	ITP Condition # 8.1	Entire Project	Permittee	
39	8.2. If any Covered Species are found in the Project Area during construction, all work that could potentially harm the Covered Species shall stop immediately until the Designated Biologist(s) can relocate the Covered Species to an active rodent burrow system. Only approved Designated Biologist(s) with the state SCP and the appropriate federal permit for amphibians are authorized to capture and handle Covered Species. The Designated Biologist(s) shall identify relocation areas prior to the start of construction in accordance with the approved Relocation Plan.	ITP Condition # 8.2	Entire Project	Permittee	
40	8.3. All Covered Species sightings confirmed by the Designated Biologist(s) shall include the following documented information: the date, time, and location of each occurrence using Global Positioning System (GPS) technology, the name of the party that actually identified the animal, circumstances of the incident, the general condition and health of each individual, any diagnostic markings, sex, age (juvenile or adult), and actions undertaken and habitat description. Permittee shall submit this information to the CNDDB. This information should also be included in the Monthly Compliance Report.	ITP Condition # 8.3	Entire Project	Permittee	
41	8.4. Any small mammal burrows present within the portion of the Project area to be disturbed, shall be fully excavated by hand by the Designated Biologist(s). The Permittee shall relocate any live Covered Species as per the relocation plan prepared pursuant to Condition of Approval 7.3.	ITP Condition # 8.4	Entire Project	Permittee	
42	8.5. Fill or other ground-disturbing activities within or immediately adjacent to the Covered Species' potential breeding habitat within the permanent impact area, consisting of 0.057 acres located on the east side of Balentree Lane just south of the tributary to the Eikhorn Slough, shall be confined to the dry season from June 15 to October 31.	ITP Condition # 8.5	Entire Project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
43	<p>8.6. Covered activities within Covered Species potential upland habitat shall be restricted to periods of low rainfall (less than 1/2 inch precipitation per 24-hour period), time periods with less than a 30 percent chance of rain in a 24-hour period, or dry weather periods. Permittee shall monitor the National Weather Service (NWS) 72-hour forecast for the Project area.</p> <p>8.6.1. If a 70 percent or greater chance of rainfall is predicted within 24 hours of Project activity, Project site shall be surveyed before construction begins EACH day rain is forecast.</p> <p>8.6.2. If precipitation begins, then a Designated Biologist or Monitor shall be at the Project site for the duration of the rain event in order for work to continue.</p> <p>8.6.3. If rain exceeds 1/2 inch during a 24-hour period, all covered work activities shall cease until it is no longer raining and no further rain is forecast.</p>	ITP Condition # 8.6	Entire Project	Permittee	
44	<p>8.7. All Covered Activities within Covered Species potential upland habitat shall terminate 30 minutes before sunset and shall not resume until 30 minutes after sunrise during the migration/active season from November 1 to June 14. Permittee shall use sunrise and sunset times established by the United States Naval Observatory Astronomical Applications Department for the geographic area where the Project is located. If night work cannot be avoided during this time period, a Designated Biologist shall survey the Project site before construction begins each night. If Permittee uses a Designated Monitor to conduct surveys, a Designated Biologist must still be available to capture and relocate any Covered Species discovered during the surveys.</p>	ITP Condition # 8.7	Entire Project	Permittee	
45	<p>8.8. Permittee shall prohibit all night work within potential Covered Species upland habitat when a 70 percent or greater chance of rainfall is predicted within 24 hours of Project activity, until no further rain is forecast.</p>	ITP Condition # 8.8	Entire Project	Permittee	
46	<p>8.9. Permittee shall place soil stockpiles where soil shall not pass into potential Covered Species breeding pools; nor shall it pass into any other "waters of the state," in accordance with Fish and Game Code 5650. Permittee shall appropriately protect stockpiles to prevent soil erosion.</p>	ITP Condition # 8.9	Entire Project	Permittee	
47	<p>8.10. Within 1.24 miles of known or potential Covered Species breeding sites (including but not limited to the sites shown on Figure 1), Permittee shall not construct roadways with steep curbs, berms, or dikes, which prevent Covered Species from exiting the roadway. If curbs are necessary for safety and/or surface runoff, the Permittee shall design them to allow Covered Species to walk over them. Caltrans' Standard Plan Type E curbs and Type D and Type E dikes are preferred designs and shall be used where possible (refer to The Caltrans' Standard Plan A87, Curbs, Dikes, and Driveways). These rounded or gently sloping structures allow Covered Species to crawl over them. If steep dikes are required, design shall include over-side drains or curb/dike breaks spaced at intervals of 25 feet to allow Covered Species passage.</p>	ITP Condition # 8.10	Entire Project	Permittee	
48	<p>8.11. To ensure that the Designated Biologist(s) do not convey disease between work sites, the fieldwork code of practice developed by the Declining Amphibian Populations Task Force Fieldwork Code of Practice (see Attachment 2) shall be followed at all times. The Designated Biologist(s) may substitute a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water) for the ethanol solution. Care shall be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat.</p>	ITP Condition # 8.11	Entire Project	Permittee	
49	<p>8.12. Designated Biologists shall inspect all open trenches, auger holes, and other excavations that may trap Covered Species prior to any work in or around them and before they are backfilled. Designated Biologists shall safely remove and relocate any Covered Species they find in accordance with this ITP.</p>	ITP Condition # 8.12	Entire Project	Permittee	

Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
50 8.13. Covered Species Injury. If a Covered Species is injured as a result of Project-related activities, the Designated Biologist shall immediately take it to a DFG-approved wildlife rehabilitation or veterinary facility. Permittee shall identify the facility before starting Covered Activities. Permittee shall bear any costs associated with the care or treatment of such injured Covered Species. The Permittee shall notify DFG of the injury to the Covered Species immediately by telephone and e-mail followed by a written incident report as described in Condition of Approval 7.9. Notification shall include the name of the facility where the animal was taken.	ITP Condition # 8.13	Entire Project	Permittee	
POST-CONSTRUCTION				
51 6.16. Refuse Removal. Upon completion of Covered Activities, Permittee shall remove from the Project Area and properly dispose of all temporary fill and construction refuse, including, but not limited to, broken equipment parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, and boxes.	ITP Condition # 6.16	Post-construction	Permittee	
52 9.5. Habitat Restoration. Permittee shall restore on-site the 29.50 acres of Covered Species habitat that will be temporarily disturbed during construction to pre project or better conditions. Within 6 months of issuance of this ITP, the Permittee shall prepare a Vegetation Restoration Plan to facilitate revegetation of the 29.50 acres of temporary construction disturbance on-site, and shall ensure that the Plan is successfully implemented by the contractor. The Plan shall include detailed specifications for restoring all temporarily disturbed areas, such as seed mixes and application methods. The Plan shall also indicate the best time of year for seeding to occur and the dates when regular watering would be required to ensure adequate growth. The Plan shall be implemented the first season appropriate. Described below are the measures and success criteria that must be included in the Vegetation Restoration Plan.	ITP Condition # 9.5	Post-construction	Permittee	
53 9.5.1. Identifying species damaged or removed during Project activities. Native trees and shrubs (e.g., oak, willow, cottonwood, sycamore, etc.) between four to 25-inches diameter at breast height (DBH) shall be replaced in kind at a ratio of 3:1, and trees greater than 25-inches DBH shall be replaced at a ratio of 10:1.	ITP Condition # 9.5.1	Post-construction	Permittee	
54 9.5.2. Describing when, where, and how replacement shrubs and trees will be planted. "When" shall be the first suitable season after construction is complete. "Where" shall include a planting layout design with sufficient space appropriate for each species. "How" shall include measures to be implemented (i.e., irrigation methods, weed management, maintenance and replanting if necessary) to ensure a minimum of 70 percent survivorship for three (3) years, after the last planting, (i.e., if up to 30 percent of any of the species are at risk of not surviving and repeated plantings are necessary, then monitoring, maintenance, and annual reporting shall continue for the subsequent three (3) years).	ITP Condition # 9.5.2	Post-construction	Permittee	
55 9.5.3. For seeding and mulching exposed slopes, the seed blend shall include a minimum of three (3) locally native grass species. Locally native wildflower and/or shrub seeds may also be included in the mix. One or two sterile non-native perennial grass species may be added to the seed mix provided that amount does not exceed 25 percent of the total seed mix by count. Seeding shall be completed as soon as possible, but no later than November 15 of the year construction ends.	ITP Condition # 9.5.3	Post-construction	Permittee	
56 9.5.4. At the discretion of the Department, all exposed areas where seeding is considered unsuccessful after 90 days shall receive appropriate soil preparation and a second application of seeding, straw, or mulch as soon as is practical on a date mutually agreed upon.	ITP Condition #9.5.4	Post-construction	Permittee	

Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
<p>57</p> <p>7.8. Final Mitigation Report. No later than 45 days after completion of all mitigation measures, Permittee shall provide DFG with a Final Mitigation Report. The Designated Biologist shall prepare the Final Mitigation Report which shall include, at a minimum: (1) a summary of all Monthly Compliance Reports and all ASRs; (2) a copy of the table in the MMRP with notes showing when each of the mitigation measures was implemented; (3) all available information about Project-related incidental take of the Covered Species; (4) information about other Project impacts on the Covered Species; (5) beginning and ending dates of Covered Activities; (6) an assessment of the effectiveness of this ITP's Conditions of Approval in minimizing and fully mitigating Project impacts of the taking on Covered Species; (7) recommendations on how mitigation measures might be changed to more effectively minimize take and mitigate the impacts of future projects on the Covered Species; and (8) any other pertinent information.</p>	<p>ITP Condition # 7.8</p>	<p>Post-construction after completion of mitigation</p>	<p>Permittee</p>	

Attachment 2

The Declining Amphibian Task Force Fieldwork Code of Practice

A code of practice, prepared by the Declining Amphibian Task Force (DAPTF) to provide guidelines for use by anyone conducting field work at amphibian breeding sites or in other aquatic habitats. Observations of diseased and parasite-infected amphibians are now being frequently reported from sites all over the world. This has given rise to concerns that releasing amphibians following a period of captivity, during which time they can pick up unapparent infections of novel disease agents, may cause an increased risk of mortality in wild populations. Amphibian pathogens and parasites can also be carried in a variety of ways between habitats on the hands, footwear, or equipment of fieldworkers, which can spread them to novel localities containing species which have had little or no prior contact with such pathogens or parasites. Such occurrences may be implicated in some instances where amphibian populations have declined. Therefore, it is vitally important for those involved in amphibian research (and other wetland/pond studies including those on fish, invertebrates and plants) to take steps to minimize the spread of disease and parasites between study sites.

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires and all other surfaces. Rinse cleaned items with sterilized (e.g. boiled or treated) water before leaving each study site.
2. Boots, nets, traps, etc., should then be scrubbed with 70% ethanol solution (or sodium hypochlorite 3 to 6%) and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland.
3. In remote locations, clean all equipment as described above upon return to the lab or "base camp". Elsewhere, when washing machine facilities are available, remove nets from poles and wash with bleach on a "delicates" cycle, contained in a protective mesh laundry bag.
4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolates species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean and store them separately and the end of each field day.
5. When amphibians are collected, ensure the separation of animals from different sites and take great care to avoid indirect contact between them (e.g. via handling, reuse of containers) or with other captive animals. Isolation from un-sterilized plants or soils which have been taken from other sites is also essential. Always use disinfected/disposable husbandry equipment.
6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.
7. Used cleaning materials (liquids, etc.) should be disposed of safely and if necessary taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

ATTACHMENT 3A
DEPARTMENT OF FISH AND GAME

HABITAT MANAGEMENT LAND ACQUISITION PACKAGE CHECKLIST FOR PROJECT APPLICANTS
The following checklist is provided to inform you of what documents are necessary to expedite Department processing of your Habitat Management Land acquisition proposal. Any land acquisition processing requests which are incomplete when received, will be returned. The Region contact will review and approve the document package and forward it to the Habitat Conservation Planning Branch Senior Land Agent with a request to process the land acquisition for formal acceptance.

To: _____
Regional Manager, Region Name

From: _____
Project Applicant

Phone: _____

Tracking #: _____
CDFG assigned permit or agreement #

Project Name: _____

Enclosed is the complete package for the Conservation Easement OR Grant Deed

Documents in this package include:

Fully executed, approved as to form Conservation Easement Deed or Grant Deed.

Date executed: _____

Proposed Lands for Acquisition Form (PLFAF)

Phase I Environmental Site Assessment Report Date on report: _____
(An existing report may be used, but it must be less than two years old.)

Preliminary Title Report(s) for subject property is enclosed and has been reviewed for encumbrances and other easements. The title report must be less than six months old when final processing is conducted.

Included are additional documents:

document(s) to support title exceptions

document(s) to explain title encumbrances

a plot or map of easements/encumbrances on the property

Policy of Title Insurance (an existing title policy is not acceptable)

County Assessor Parcel Map(s) for subject property

Site Location Map (Site location with property boundaries outline on a USGS 1:24,000 scale topo)

Final Permit or Agreement (or other appropriate instrument)

Type of agreement: Bank Agreement Mitigation Agreement

Permit _____ Other: _____
(write in type of permit)

Final Management Plan (if required prior to finalizing permit or agreement or if this package is for a Grant Deed)

Biological Resources Report

Draft Summary of Transactions hard copy electronic copy (both are required)

Attachment 3B

PROPOSED LANDS FOR ACQUISITION FORM ("PLFAF")

Date: _____

TO: Regional Representative

Facsimile:

FROM: _____

Applicant proposes that the following parcel of land be considered for approval by the Department as suitable for purposes of habitat management lands to replace the adverse environmental impacts of the Project:

<u>Section(s)</u>	<u>Township</u>	<u>Range</u>	<u>County</u>	<u>Acres</u>

Current Legal Owner(s) including Assessor Parcel Number(s) (APN):

General Description of the location of the parcel(s):

Land Value: \$ _____

For Regional Use Only:

APPROVED ___ By: _____ DATE: _____

REJECTED ___ _____
Region

Explanation: _____

Attachment 4

California Department of Fish and Game

Mitigation Payment Transmittal Form

Project Applicant Instructions: Please fill out and attach this form to payment. For conservation banks, also attach the Bill(s) of Sale for credits sold. One form may be used for multiple transactions, **BUT YOU MUST USE A SEPARATE FORM FOR EACH CHECK YOU TRANSMIT.** Make sure to include Project Name, Project Tracking Number, and FASB Mitigation Tracking Number (if available) on the attached payment type.

(1) **DATE:** _____

TO: _____

[CDFG Regional Manager]

[CDFG Region Office Address]

(2) **FROM:** _____

Name

Mailing Address

City, State, Zip

Telephone Number/FAX Number

(3) **RE:** _____

[Project Name as appears on permit/agreement]

(4) **AGREEMENT/ACCOUNT INFORMATION:**

(Check the applicable type)

2081 Permit Conservation Bank 1802 Agreement

2835 NCCP Other _____

XXXX-XXXX-XXX-XX

[Project Tracking Number]

[FASB Mitigation Tracking Number (if available)]

Index _____ PCA _____

(5) **PAYMENT TYPE** (One check per form only): The following funds are being remitted in connection with the above referenced project:

Check information:

Total \$ _____

Check No. _____

Account No. _____

Bank Routing No. _____

a. Endowment: for Long-Term Management Subtotal \$ _____

b. Habitat Enhancement Subtotal \$ _____

c. Security:

1. Cash Refundable Security Deposit Subtotal \$ _____

2. Letter of Credit Subtotal \$ _____

1. Financial Institution: _____

2. Letter of Credit Number: _____

3. Date of Expiration: _____

FOR CONTRACT NO.: 05-315804

PERMITS AND AGREEMENTS

[United States Army Corps of Engineers 404 Permit. Permit No.2010-00345S](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6



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

REPLY TO
ATTENTION OF:

Regulatory Division

SUBJECT: File No. 2010-00345S

APR -5 2012

Mr. Larry Bonner
California Department of Transportation
50 Higuera Street
San Luis Obispo, California 93401

Dear Mr. Bonner:

Enclosed are two copies of a Department of the Army (DA) permit to construct the San Juan Road Interchange located along 2.9 miles of U.S.101, between San Juan Road and Cole Road, north of Prunedale and south of Aromas, in Monterey and San Benito Counties, California (36.85052, -121.63447).

Please complete the appropriate parts of "Project Status" form (Enclosure 2), and return it to this office as your work progresses. You are responsible for ensuring that the contractor or workers executing the activity authorized herein are knowledgeable of the terms and conditions of this authorization.

Should you have any questions regarding this matter, please call Paula Gill of our Regulatory Division at (415) 503-6776. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter. If you would like to provide comments on our permit review process, please complete the Customer Survey Form available online at <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,

 Torrey A. DiCiro, P.E., PMP
Lieutenant Colonel, U.S. Army
Commanding

Enclosures

Copies Furnished (w/encl 1 only):

US EPA, San Francisco, CA

US FWS, Ventura, CA

CA DFG, Monterey, CA

CA RWQCB, San Luis Obispo, CA

PROJECT STATUS

Please use the forms below to report the dates when you start and finish the work authorized by the enclosed permit. Also if you suspend work for an extended period of time, use the forms below to report the dates you suspended and resumed work. The second copy is provided for your records. If you find that you cannot complete the work within the time granted by the permit, please apply for a time extension at least one month before your permit expires. If you materially change the plan or scope of the work, it will be necessary for you to submit new drawings and a request for a modification of your permit.

(cut as needed) -----

Date: _____

NOTICE OF COMPLETION OF WORK under Department of the Army Permit No. 2010-00345S

TO: District Engineer, US Army Corps of Engineers, Regulatory Division, 1455 Market Street, 16th Floor, San Francisco, CA 94103-1398

In compliance with the conditions of Permit No. 2010-00345S, this is to notify you that work was completed on _____.

Permittee: Caltrans, Mr. Larry Bonner

Address: 50 Higuera Street, San Luis Obispo, California 93401

(cut as needed) -----

Date: _____

NOTICE OF RESUMPTION OF WORK under Department of the Army Permit No. 2010-00345S

TO: District Engineer, US Army Corps of Engineers, Regulatory Division, 1455 Market Street, 16th Floor, San Francisco, CA 94103-1398

In compliance with the conditions of Permit No. 2010-00345S, this is to notify you that work was resumed on _____.

Permittee: Caltrans, Mr. Larry Bonner

Address: 50 Higuera Street, San Luis Obispo, California 93401

(cut as needed) -----

Date: _____

NOTICE OF SUSPENSION OF WORK under Department of the Army Permit No. 2010-00345S

TO: District Engineer, US Army Corps of Engineers, Regulatory Division, 1455 Market Street, 16th Floor, San Francisco, CA 94103-1398

In compliance with the conditions of Permit No. 2010-00345S, this is to notify you that work was suspended on _____.

Permittee: Caltrans, Mr. Larry Bonner

Address: 50 Higuera Street, San Luis Obispo, California 93401

(cut as needed) -----

Date: _____

NOTICE OF COMMENCEMENT OF WORK under Department of the Army Permit No. 2010-00345S

TO: District Engineer, US Army Corps of Engineers, Regulatory Division, 1455 Market Street, 16th Floor, San Francisco, CA 94103-1398

In compliance with the conditions of Permit No. 2010-00345S, this is to notify you that work was commenced on _____.

Permittee: Caltrans, Mr. Larry Bonner

Address: 50 Higuera Street, San Luis Obispo, California 93401

DEPARTMENT OF THE ARMY PERMIT

PERMITTEE:

California Department of Transportation
Mr. Larry Bonner
50 Higuera Street
San Luis Obispo, California 93401

PERMIT NO.: 2010-00345S

ISSUING OFFICE: San Francisco District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate District or Division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below:

PROJECT DESCRIPTION:

This Department of the Army permit authorizes the construction of an interchange with frontage roads on U.S. 101. A median barrier will be constructed to close existing gaps. Work will include: (1) construction of an overcrossing at a right angle with U.S. 101 northeast of the Monterey/San Benito county line. The southbound on-ramp and southbound off-ramp will be a compact diamond interchange configuration, while the northbound off-ramp and northbound on-ramp will be one-quadrant cloverleaf interchange configuration. (2) Closure of access to U.S. 101 at Dunbarton Road on the west side of the highway through construction of a cul-de-sac. The cul-de-sac will be located at Dunbarton Road and Oak Ridge Road. Dunbarton Road on the east side of U.S. 101 will remain as-is, with continued access to U.S. 101. (3) Traffic will be restricted to allow only right hand access at Dunbarton Road east of U.S. Route 101, by installation of a concrete barrier. (4) Access will be provided east and west of U.S. 101 through construction of an overcrossing and associated local road realignment. (5) Gaps will be closed through construction of a median barrier, where needed. (6) The existing median crossover at Cole Road will be removed. (7) Full access control from 0.4 mile north of Dunbarton Road in Monterey County to 0.2 mile north of Cole Road in San Benito County will be provided. (8) The existing four-lane expressway will be converted to a freeway, which requires access to private driveways open onto local roads instead of the highway. (9) Utilities will be relocated where necessary. (10) The overcrossing at San Juan Road will be ended at a right-angle intersection, with a public frontage road on the east side of U.S. 101. The overcrossing road on the east side of U.S. 101 will connect to a frontage road that follows the western edge of the Red Barn parking area, ending at Marilyn Lane with a cul-de-sac. Ballantree Lane will connect to the frontage road. (11) Retaining walls will be constructed near the San Juan Road/Cole Road intersection and near the San Juan Road/Red Barn frontage road intersection and along the southbound on-ramp and off-ramp.

All work shall be completed in accordance with the plans and drawings titled "*USACE File #2010-00345S, San Juan Road Interchange Project, April 3, 2012, Figures 1 to 13*", provided as enclosure 1. Project implementation will result in permanent impact to 0.5 and temporary impact to 0.122 acre of Other Waters of the United States. Work would also result in 0.97 acre of permanent and 0.01 acre of temporary impact to wetlands.

PROJECT LOCATION: The project is located along 2.9 miles of U.S. 101, between San Juan Road and Cole Road, north of Prunedale and south of Aromas, in Monterey and San Benito Counties, California.

PERMIT CONDITIONS:

GENERAL CONDITIONS:

1. The time limit for completing the work authorized ends on May 1, 2017. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. A conditioned water quality certification has been issued for your project; you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions, enclosure 2.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.
7. You understand and agree that, if future operations by the United States require the removal, relocation or other alteration of the structure or work authorized herein, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, you will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

SPECIAL CONDITIONS:

1. This Corps permit does not authorize you to take an endangered species. In order to legally take a listed species, you must have a separate authorization under the Endangered Species Act (ESA) (e.g., an ESA Section 10 permit or a Biological Opinion (BO) under ESA Section 7 with "incidental take" provisions with which you must comply). The U.S. Fish and Wildlife Service (USFWS) BO dated October 7, 2009, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that are also specified in the BO and letter of concurrence (enclosure 3). Your authorization under this Corps permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take authorized by the attached BO and letter of concurrence, whose terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO or letter of concurrence, where a 'take' of the listed species occurs, would constitute an unauthorized take and it would also constitute non-compliance with this Corps permit. The USFWS is the appropriate authorities to determine compliance with the terms and conditions of their BO and with the ESA.

2. You shall employ sediment and erosion control best management practices as needed throughout the project area. No objects or fill shall be placed where they can be eroded or washed into drainage systems in the project area. All debris generated as a result of the project, shall be removed from the site and disposed of at an approved location outside of Corps jurisdiction. All project staging and equipment storage areas shall be located away from areas subject to the jurisdiction of the Corps. After construction, any materials used to dewater areas within the creeks shall be removed in their entirety.
3. Within 1-year of impact to a jurisdictional feature, on-site compensatory mitigation for unavoidable impacts to Other Waters U.S. will be achieved through establishment (0.435 acre), enhancement (0.208 acre), and riparian buffer plantings (0.61 acre), of the project area as outlined in the "*Waters of the United States Onsite Mitigation and Monitoring Proposal for the California Department of Transportation's San Juan Road Interchange Project in Monterey and San Benito Counties*" signed March 23, 2012. A 5-year vegetation and 10-year Other Waters management and monitoring program will be implemented as outlined in the above mentioned plan. Annual monitoring reports shall be submitted to the Corps by December 31st, of each year.
4. In the event that you are unable to implement the plan described in special condition 3 within 1-year of initiation of 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.
5. Your responsibility to complete the required compensatory mitigation as set forth in Special Conditions 3 above will not be considered fulfilled until you have demonstrated mitigation success and have received written verification from the Corps.
6. Permanent and temporary impacts to jurisdictional seasonal wetlands have been fully mitigated for at the Carmel River Mitigation Bank. This Bank is no longer available for use to compensate for impacts to Corps' jurisdictional features.
7. All work occurring below the plane of ordinary high water shall be confined to the low-flow period, during summer months to avoid excessive sedimentation of creek waters.

FURTHER INFORMATION:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
 - () Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Section 403).
 - (X) Section 404 of the Clean Water Act (33 U.S.C. Section 1344).
 - () Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. Section 1413).
2. Limits of this authorization:
 - a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.
 - b. This permit does not grant any property rights or exclusive privileges.
 - c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability: In issuing this permit, the Federal Government does not assume any liability for the following:
 - a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or

from natural causes.

- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
- a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate. (See Item 4 above.)
 - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 C.F.R. Section 325.7 or enforcement procedures such as those contained in 33 C.F.R. Sections 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 C.F.R. Section 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Lucy E. B. 4-5-12
(PERMITTEE) (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Torrey A. DiCiro 4/9/12
for Torrey A. DiCiro, PMP, P.E.
Lieutenant Colonel, U.S. Army
District Commander (DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE) (DATE)

MATERIALS INFORMATION

Foundation Report for San Juan Road OC Bridge, Br. No. 43-0047, dated June 14,
2011

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

Memorandum

*Flex your power!
Be energy efficient!*

To: FRITZ HOFFMAN
Bridge Design Branch 6
DIVISION OF ENGINEERING SERVICES
STRUCTURES DESIGN
Attn: Richard Melko

Date: June 14, 2011
File: 05-Mon-101-100.0/101.3
05-SBt-101-0.0/0.6
San Juan Road OC Bridge
Bridge No. 43-0047
EA 05-315801

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

Subject: Foundation Report

Scope of Work

A Foundation Report (FR) is provided for the above referenced project per your original request dated January 7, 2011 and Final Foundation Data Sheet provided on May 10, 2011. The proposed improvements will construct a new interchange just north of the existing intersection of Highway 101 and San Juan Road. The primary purpose of the project is to improve the safety and operational efficiency of this segment of Route 101 which extends from Dunbarton Rd. in Monterey County to Cole Rd. in San Benito County. This will be achieved by eliminating the existing at grade intersections, constructing a new grade separated interchange at the Monterey/San Benito County line, realignment of San Juan Road, and the construction of new frontage roads on both the east and west side of the highway.

A General Plan showing the preferred alternative was provided by Design. Review of published geologic data and previous geotechnical reports, field reconnaissance, laboratory testing and design calculations were performed as part of the geotechnical investigation.

This Foundation Report supersedes the Preliminary Foundation Report for the San Juan Road OC dated September 29, 2009 and the Structure Preliminary Geotechnical Report dated July 28, 2009.

Project Description

The proposed project is located in the rolling hills northeast of Prunedale and west of San Juan Bautista in both Monterey and San Benito counties.

This project proposes to construct a new highway overcrossing for the San Juan Road intersection. The proposed interchange project will improve the current at grade crossings for San Juan Road, Dunbarton Road, and Cole Road by realigning the frontage roads to the new overcrossing. In addition, a new frontage road (Frontage Road East) will be constructed on the east side of the highway to provide access to the business and residential area at and near the Red

Barn. In total, the proposed project will consist of a new San Juan Road highway overcrossing structure, new ramp connections, four new creek crossing structures, two culvert structures (pipe jacking), and new frontage road extensions which will require soil retaining structures.

At San Juan Road, the existing intersection is at grade. The new proposed interchange and overcrossing is located approximately 1700 feet north. Structures Design proposes to construct a new two-span cast-in-place pre-stressed concrete box girder bridge. The proposed structure has a total length of 385 feet with unequal span lengths. The northerly span is 197.5 feet and the southerly span is 187.5 feet. The width varies from 64.5 feet for the majority of the structure to 80 feet on the easterly end.

The proposed foundation of the new structure consists of high cantilever seat abutments supported by Standard Plan Class 200 driven pile foundations. The center bent will consist of three transversely flared columns also supported by Class 200 piles. Due to the height of the structure and geometric constraints, Type 1 retaining wall wingwalls are proposed on both sides of each abutment to be constructed in embankment fill. Slope paving is also proposed for both abutments.

Pertinent Reports and Investigations

The following publications were used to assist in the assessment of site conditions:

1. *California Seismic Hazard Map 1996*, Caltrans, Lalliana Mualchin, 1996.
2. *Map Showing Geology and Liquefaction Potential of Northern Monterey and Southern Santa Cruz Counties, CA*. Dupre and Tinsley, 1980.
3. *Preliminary Geotechnical Design Report* for 05-SBt-101-PM 0.4/1.4, 05-388200 by Geotechnical Services, dated September 2, 1998.
4. *Geotechnical Design Report* for 05-SBt-101-PM 0.4/1.4, 05-388200 by Geotechnical Services, dated June 10, 1999.
5. *Structure Foundation Report, Revision 2*, for Mon-101-PM 92.3/100.4, 05-0161B1, by Geotechnical Services, dated April 6, 2004.
6. *Preliminary Geotechnical Design Report* for 05-MON-101-PM 98.4, 05-0161E0 by Geotechnical Services, dated March 23, 2004.
7. *Geotechnical Design Report* for 05-MON-101-PM 98.4, 05-0161E0 by Geotechnical Services, dated June 16, 2008.
8. *Final Hydraulics Report* for 05-SBt-101-0.13, 05-315801 by Structure Hydraulics and Hydrology, dated October 11, 2010.

Field Investigation and Laboratory Testing Program

A subsurface investigation was conducted to assess foundation conditions for the proposed overcrossing. This investigation consisted of drilling three mud rotary borings at both abutments and the center bent of the proposed structure. The locations of the borings are shown on the attached Layout Sheets-Attachment B. Standard penetration tests (SPT), ASTM test method 1586, were performed at 5-foot depth intervals to estimate soil apparent density. Soils obtained from the punch core barrel and from the split spoon sampler were visually classified in accordance with the Caltrans *Soil and Rock Logging, Classification, and Presentation Manual (2010 Edition)*. Pocket penetrometer measurements of unconfined compressive strength were used to estimate the undrained shear strength of some of the clay samples.

Soil samples were also collected and sent to the District 5 Laboratory and the Headquarters Geotechnical Laboratory for mechanical analyses, moisture content, Atterburg limits, triaxial testing and corrosion potential testing.

Site Geology and Subsurface Conditions

Physical Setting

The project is located in the Coast Ranges Geomorphic Province of California in the Gabilan Range. The topography is semi-mountainous. The local terrain in the project limits consists of moderately sloped hills covered with grasslands and a mixture of heavy brush and trees.

The climate in the project area is warm and foggy and in the summers, while the winters are cool and moist. The mean annual precipitation is 18 inches. The mean annual temperature is about 57°. Winters are generally mild with occasional freezing temperatures overnight. Nearly all the precipitation accumulates during Pacific storms between October and May, with the majority falling during winter months.

Vegetation in the project area primarily consists of grasses, brush, oaks and willows growing near water. Stands of willows were observed growing along all of the unnamed tributaries to the Elkhorn Slough while the majority of the project area consists of seasonal grasses.

Regional Geology

The project area lies within the central portion of the Coast Ranges Geomorphic Province, at the northern portion of the Salinas River Valley and is in the Gabilan Range. The project is bounded by the San Andreas Fault to the east, Monterey Bay and the Santa Lucia Range to the west, the Santa Cruz Mountains to the north and the Salinas Valley to the south.

The geologic units encountered in the highway in the project area are alluvial deposits, terrace deposits, colluvial and fluvial deposits.

The alluvial deposits consist of unconsolidated, heterogeneous, moderately-sorted silt and sand with discontinuous lenses of clay and silty clay. Locally this deposit may include large amounts of gravel.

The terrace deposits consist of weakly-consolidated to semi-consolidated, moderately to poorly-sorted silt, silty clay, sand and gravels mostly deposited in the fluvial environment.

The colluvium deposits consist of unconsolidated, heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel deposited by slope wash and mass movement. Locally it includes numerous undifferentiated landslides and small alluvial fans.

The fluvial deposits consist of semi-consolidated, moderately to poorly-sorted silty clay, silt, sand and gravel deposited by meandering and braided streams as well as alluvial fans. The beds can include relatively well-sorted gravel.

The Soil Survey of Monterey County published by the US Department of Agriculture shows that in the project area, the soils consist mostly of Salinas Series, Santa Ynez Series and the Placentia Series. The Salinas series consist of well-drained soils that formed in mixed alluvium derived from sedimentary and granitic rocks on alluvial fans. The slopes are from 0 to 9 percent. The Santa Ynez series consists of moderately to well-drained soils that formed on terraces in alluvium derived from sandstone and granitic rocks. The slopes are from 2 to 30 percent. The Placentia series consists of well-drained soils that formed in alluvium that was derived from granitic and schistose rocks on old alluvial fans and terraces. The slopes range from 0 to 30 percent.

Geotechnical Site Conditions

Subsurface soils encountered in the vicinity of the proposed San Juan Road OC are detailed in the project LOTB's.

In boring R-10-008, which is located at Abutment 1, the soils consisted of interbedded soils with varying contents of sands, silts and clay. From the ground surface to approximately 14.5 feet below the surface, the soils consisted of medium dense clayey sand. From 14.5 feet to 27.5 feet, the soil consisted of hard sandy lean clay. From 27.5 to 42.0 feet, very dense clayey sand was encountered with gravel present from 35.0 to 42.0 feet. From 42.0 feet to 64.0 feet, hard sandy lean clay was encountered. From 64.0 feet to 70.0 feet, a very dense of clayey gravel was encountered. From 70.0 feet to 73.0 feet, a layer of very dense silty sand was observed. And from 76.0 feet to the bottom of the boring at 81.5 feet, the soil consisted of very dense clayey sand.

In boring R-10-010, located at Abutment 3, similar stratigraphy was observed with the exception of the upper portion of the boring. From the ground surface to 19.5 feet very loose to medium dense silty sand was encountered. This was followed by a 4.0 foot layer of very dense clayey sand. From 23.5 feet to 27.0 feet, very dense well graded sand was encountered. From 27.0 feet to the bottom of the boring at 101.8 feet alternating layers of predominately hard clay and very dense silt were encountered with the exception of a few minor layers of silty sand and clayey sand.

Similar stratigraphy was present in boring R-10-009, at the center bent.

This is typical of terrace and alluvial deposits with laterally discontinuous, alternating layers of varying thickness and gradation of sands, silts, clays and some gravels.

Ground Water

Open observation wells were installed in borings R-10-008 at Abutment 1 and R-10-010 at abutment 3. No observation well was installed in R-10-009, at Bent 2, due to the installation of the casing required to complete the P-S logging. The purpose of the wells is to observe fluctuations in groundwater levels and determine if groundwater will influence construction and foundation design. Results of the groundwater-monitoring program are summarized in Table 1.

Table 1. Groundwater Elevations

Location	Surface Elevation (Ft)	Date of Measurement	Depth to Groundwater (Ft)	Groundwater Elevation (Ft)
R-10-008	170.4	7-27-10	18.9	151.5
		11-3-10	27.0	143.4
		2-2-11	2.3	168.1
		4-12-11	2.6	167.8
R-10-010	163.7	8-4-10	11.4	152.3
		11-3-10	13.5	150.2
		2-2-11	9.5	154.2
		4-12-11	6.9	156.8

Scour Evaluation

The unnamed stream that flows adjacent to Abutment 3 is referred to as the Elkhorn Slough Tributary. The Final Hydraulics Report indicates that future degradation and lateral migration are not expected to cause significant concern with this structure, with the possible exception of fill material to be used for Abutment 3. The report states that fills should be kept away from the existing channel as much as possible or be protected from erosion.

While there is a chance for lateral migration of the channel, the proposed location of Bent 2 is considered to be located far enough from the active channel that the potential for impact is considered negligible. Thus, no scour or degradation is anticipated at Bent 2.

Corrosion Evaluation

The Department considers a site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil and/or water samples taken at the site: pH of less than 5.5 and a Resistivity of less than 1000 ohm-cm. If the the resistivity is 1000 ohm-cm, the additional testing chloride and sulphate is required. The site is then considered corrosive if chloride content greater than 500 ppm, or sulphate content greater than 2000 ppm.

Soil samples were obtained in each of the three borings and sent to the HQ Geotechnical Laboratory for corrosion potential evaluation. Based on the results of the corrosion analyses, the site is considered to be non-corrosive. Refer to the table below for complete corrosion testing results.

Table 2. Corrosion Testing Summary

<i>Boring ID</i>	<i>Depth (ft)</i>	<i>pH</i>	<i>Resistivity ohm-cm</i>	<i>Chloride ppm</i>	<i>Sulphate ppm</i>	<i>Corrosive</i>
R-10-008	20.0-21.5	6.77	1416	-	-	NO
R-10-008	80.0-81.5	6.69	1434	-	-	NO
R-10-009	9.5-11.0	7.10	1596	-	-	NO
R-10-009	34.5-36.0	7.08	1198	-	-	NO
R-10-009	44.5-46.0	7.20	845	9	12	NO
R-10-010	10.5-11.8	7.29	4532	-	-	NO
R-10-010	30.3-31.8	7.07	1603	-	-	NO
R-10-010	50.3-51.8	7.23	2111	-	-	NO

Final Seismic Recommendations

Based on the 2009 Caltrans Seismic Design Procedure, the following active or potentially active fault has the potential to influence the proposed structure. The Caltrans ARS Online Tool was used to develop acceleration response spectra (ARS) curves for deterministic and probabilistic analyses.

After the completion of the Boring R-10-009, down hole P-S logging was completed by the Geophysics Branch to accurately determine the shear wave velocity in the top 100 feet of soil. The final report prepared by that department indicates a shear wave velocity of 1465 ft/sec or approximately 450 m/sec.

The corresponding deterministic and probabilistic ARS curves are presented in Figure 1. The controlling Design ARS curve is based on the USGS probabilistic method which uses the USGS 5% probability of exceedence in 50 years (return period of 975 years). It is presented in Figure 2.

A basin factor of 1.0 was assumed for this location and near fault factors were applied to periods from 0.5 to 5.0 seconds.

Table 1. Active and Potentially Active Faults

<i>Fault Name</i>	<i>Fault Type</i>	<i>Moment magnitude of maximum credible earthquake</i>	<i>Rupture Distance (miles)</i>	<i>Peak ground acceleration T=0 sec (gravity)</i>
Zayante-Vergales	Strike Slip	7.0	1.4	0.50
San Andreas	Strike Slip	7.9	2.7	0.48

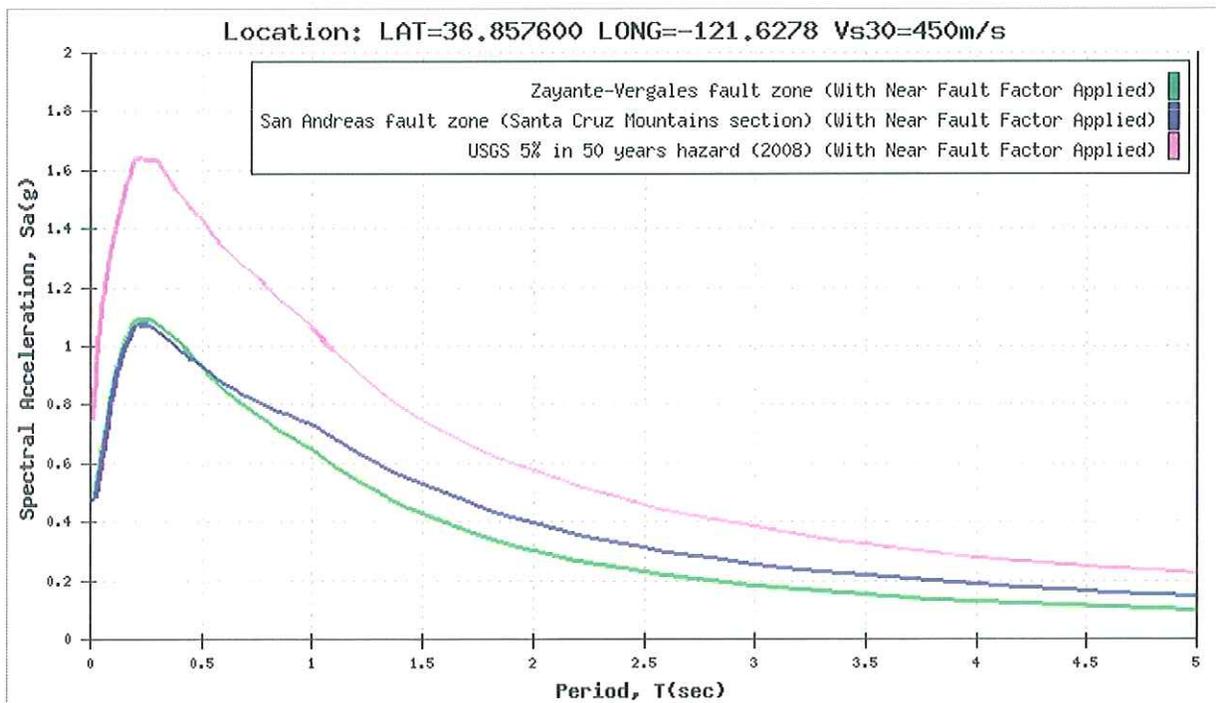


Figure 1. Design ARS Curves

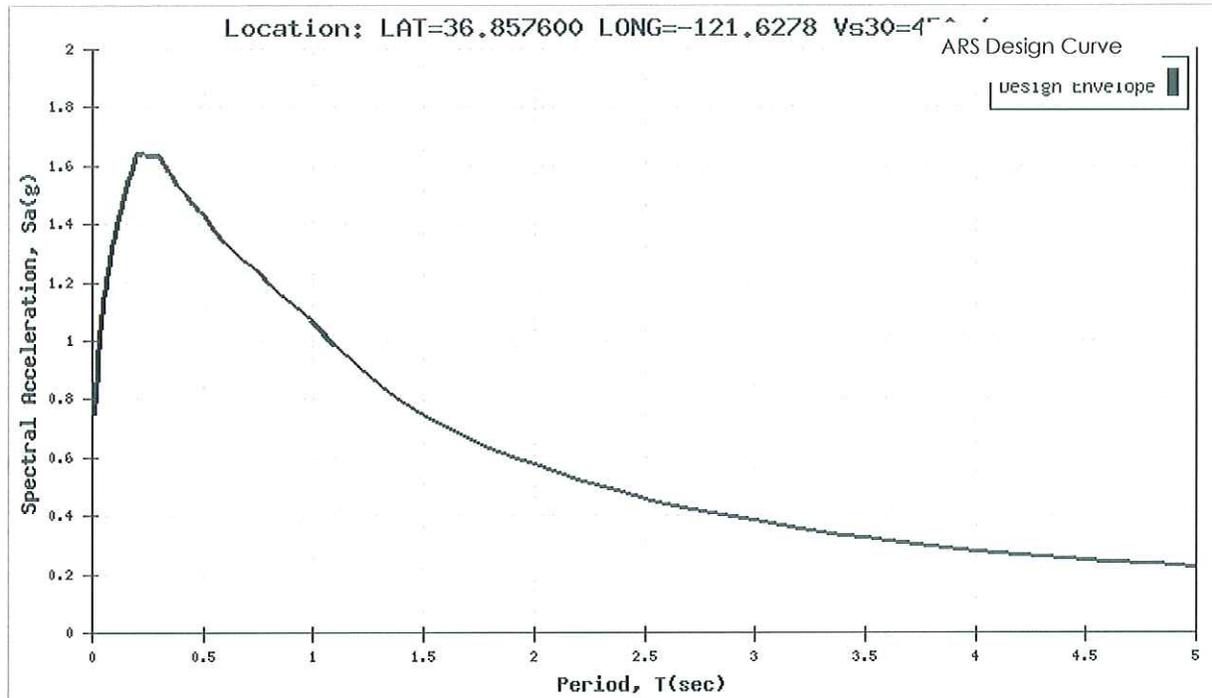


Figure 2. Design ARS Curve based on USGS Probabilistic Method

The fault traces do not intersect the project area, therefore the potential for ground rupture hazard is low.

Liquefaction is the partial or complete loss of soil strength due to the build-up of excess pore water pressure during a seismic event. Soils with a potential for liquefaction are loose sands and gravels with 35 percent fines or less that have the potential of being saturated. Based on the subsurface investigations for this structure, liquefaction potential is low.

As-Built Foundation Data

No As-Built data is available to utilize in the design of this structure. The existing roadway in the project area was constructed under contract 5TC7, which extended from PM 99.55 in Monterey County to PM 4.88 in San Benito County. The plan approval date was May 20, 1946.

Foundation Recommendations

The following foundation type is recommended for the bridge structure.

Driven Displacement Piles

Class 200 piles are recommended for the abutment and bent locations. These Standard Plan piles consist of precast concrete piles, closed end pipe piles, or small diameter open-ended pipe piles. It is assumed that open-ended pipe piles will plug during driving, behaving as a displacement pile.

Open-ended pipe piles also allow for drilling through the pile if hard strata is encountered before reaching the required tip elevation. Piles will develop required axial resistance from skin friction and end bearing. Therefore, it is recommended Class 200 – Alternative W piles are used.

Pile capacities derived from side resistance and end bearing were determined using the “CT Drive” spreadsheet which performs nominal resistance and pile group settlement calculations for Standard Plan driven piles. The calculations are standard of practice procedures. For the Class 200 – Alternative W piles, it was assumed that the pipe piles will plug during driving and significant values of axial resistance will be obtained from pile end bearing.

The Foundation Recommendations and Pile Data Table are provided below based upon the Foundation Design Data Sheet submitted with the Request for the Foundation Report (Attachment D). Per MTD 3-1, a completed Foundation Design Data Sheet with LRFD loads at the bent and WSD loads at the abutments has been provided. Should the pile tip elevations required to meet lateral load demands exceed the specified pile tip elevations required for axial load demands, Geotechnical Design shall be contacted for further recommendations.

Abutment Foundation Design Recommendations									
Support Location	Pile Type	Cut-off Elevation (ft)	LRFD Service-I Limit State Load (kips) per Support		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	178.3	4896	4436	190	380	124.0 (a) 160.0 (b)	124.0	380
Abut. 3	Class 200	169.25	5953	5268	180	360	113.0(a) 137.0 (b)	113.0	360

Notes:

- 1) *Design tip elevations are controlled by: (a) Compression, and (b) Settlement*
- 2) *The specified tip elevation shall not be raised above the design tip elevations for tension, lateral, and tolerable settlement.*

Bent Foundation Design Recommendations											
Support Location	Pile Type	Cut-off Elevation (ft)	Service-I Limit State Load per Support (kips)	Total Permissible Support Settlement (inches)	Required Factored Nominal Resistance (kips)				Design Tip Elevations (ft)	Specified Tip Elevation (ft)	Nominal Driving Resistance Required (kips)
					Strength Limit		Extreme Event				
					Comp. ($\phi=0.7$)	Tension ($\phi=0.7$)	Comp. ($\phi=1$)	Tension ($\phi=1$)			
Bent 2L	Class 200	159.25	3109	1	271	N/A	396	N/A	109.0 (a-I) 108.0(a-II), 110.0 (c)	108.0	396
Bent 2C	Class 200	160.0	1828	1	218	N/A	218	N/A	117.0 (a-I) 126.0(a-II), 125.0 (c)	117.0	312
Bent 2R	Class 200	159.25	3103	1	271	N/A	396	N/A	109.0 (a-I) 108.0(a-II), 110.0 (c)	108.0	396

Notes:

- 1) *Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Settlement.*
- 2) *The specified tip elevation shall not be raised above the design tip elevations for tension, lateral, and tolerable settlement.*
- 3) *Design tip elevations for extreme events will be provided in the Supplemental Final Foundation Report after Load requirements for extreme event have determined.*

Pile Data Table- San Juan Road OC						
Location	Pile Type	Required Nominal Resistance (kips)		Design Tip Elevation (ft)	Specified Tip Elevation (ft)	Nominal Driving Resistance (kips)
		Compression	Tension			
Abut. 1	Class 200	380	0	124.0 (a) 160.0 (b)	124.0	380
Bent 2L	Class 200	400	0	109.0 (a-I) 108.0(a-II), 110.0 (c)	108.0	400
Bent 2C	Class 200	320	0	117.0 (a-I) 126.0 (a-II), 125.0 (c)	117.0	320
Bent 2R	Class 200	400	0	109.0 (a-I) 108.0(a-II), 110.0 (c)	108.0	400
Abut. 3	Class 200	360	0	113.0(a) 137.0 (b)	113.0	360

Notes:

- 1) *Design tip elevations for Abutments are controlled by: (a) Compression and (b) Settlement.*
- 2) *Design tip elevations for Bents are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Settlement.*
- 3) *The specified tip elevation shall not be raised above the design tip elevations for tension load, lateral load, and tolerable settlement.*

The following foundation type is recommended for the wing walls.

Construction of a standard plan Type 1 retaining wall supported on Class 90 piles is recommended to support the new abutment fill slopes adjacent to the proposed overcrossing. Piles should be “Alternative W”, steel pipe piles. Pile capacities derived from side resistance and end bearing were determined using the “CT Drive” spreadsheet which performs nominal resistance and pile group settlement calculations for Standard Plan driven piles. The calculations are standard of practice procedures. For the Class 90 – Alternative W piles, it was assumed that the pipe piles will plug during driving and significant values of axial resistance will be obtained from pile end bearing.

Open-ended pipe piles also allow for drilling through the pile if hard strata is encountered before reaching the required tip elevation.

The computed and recommended pile tip elevations are summarized in the following Pile Data Tables.

Pile Data Table- Abutment 1 South Wingwall						
Bottom of Footing Elevation (FT)	Pile Type	Design Loading (kips)	Nominal Resistance (kips)		Design Tip Elevations (Ft)	Specified Tip Elevations (Ft)
			Compression	Tension		
188.69	Class 90	90	180	N/A	143.0	143.0
192.29	Class 90	90	180	N/A	143.0	143.0
197.86	Class 90	90	180	N/A	143.0	143.0

Design tip elevation is controlled by the following demands: (1) Compression

Pile Data Table- Abutment 1 North Wingwall						
Bottom of Footing Elevation (FT)	Pile Type	Design Loading (kips)	Nominal Resistance (kips)		Design Tip Elevations (Ft)	Specified Tip Elevations (Ft)
			Compression	Tension		
188.93	Class 90	90	180	N/A	143.0	143.0
193.90	Class 90	90	180	N/A	143.0	143.0
199.16	Class 90	90	180	N/A	143.0	143.0
204.14	Class 90	90	180	N/A	143.0	143.0

Design tip elevation is controlled by the following demands: (1) Compression

Pile Data Table- Abutment 3 South Wingwall						
Bottom of Footing Elevation (FT)	Pile Type	Design Loading (kips)	Nominal Resistance (kips)		Design Tip Elevations (Ft)	Specified Tip Elevations (Ft)
			Compression	Tension		
183.47	Class 90	90	180	N/A	133.0	133.0
187.64	Class 90	90	180	N/A	133.0	133.0

Design tip elevation is controlled by the following demands: (1) Compression

Pile Data Table- Abutment 3 North Wingwall						
Bottom of Footing Elevation (FT)	Pile Type	Design Loading (kips)	Nominal Resistance (kips)		Design Tip Elevations (Ft)	Specified Tip Elevations (Ft)
			Compression	Tension		
176.48	Class 90	90	180	N/A	133.0	133.0
180.84	Class 90	90	180	N/A	133.0	133.0
185.33	Class 90	90	180	N/A	133.0	133.0
189.40	Class 90	90	180	N/A	133.0	133.0
193.58	Class 90	90	180	N/A	133.0	133.0

Design tip elevation is controlled by the following demands: (1) Compression

Approach Fill Work

Fill slopes for the abutment approach embankments are recommended at a slope of 2:1 (horizontal: vertical). If non-native soils are imported to construct the approach fills, laboratory testing shall be performed to ensure that soils meet the minimum requirements for backfill as required by the Standard Specification. Settlement of the approach fills and underlying bearing strata is expected to be immediate. Settlement was estimated using Hough's Method, which correlates SPT data to a bearing capacity factor used to calculate the amount of settlement. Total calculated settlement for Abutment 1 is 5.5 inches and calculated settlement for Abutment 3 is 6.2 inches.

A 30 day fill delay period is recommended after construction of new embankment. No additional surcharge of the embankments is required. Newly placed fill shall be predrilled prior to pile driving as specified in the Standard Specification 49-1.06.

Construction Considerations

Dense sands may limit the depth to which displacement piles can be driven. Pre-drilling of open-ended pipe piles may be required to advance piles to the required tip elevations.

Maintain a minimum horizontal distance of 5.0 from the toe of the retaining wall footing to the face of the slope below the wall.

The project LOTB's have not been finalized. They will be sent electronically from the Graphics Section when they are completed.

Standard Special Provision S5-280, "Project Information", discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the addressee(s) of this report via electronic mail.

Data and information attached with the project plans are:

- A. Log of Test Borings for San Juan Road OC

Data and information included in the Information Handout provided to the bidders and Contractors are:

- A. Foundation Report for San Juan Road OC dated June 14, 2011

If you have any questions or comments, please contact Zeke De Llamas at (805) 549-3327, or Michael Finegan at (805) 549-3194.

Supervised by:



ZEKE DELLAMAS, P.E.
Transportation Engineer Civil
Geotechnical Design – North
Branch D

MICHAEL S. FINEGAN, P.E.
Branch Chief
Geotechnical Design – North
Branch D

- c: Project Manager - David Silberberger
Project Coordination Engineer – Andrew Tan
GS Corporate – Mark Willian
District Environmental Planning – Chuck Cesena
District Materials Engineer – Doug Lambert
Job File / Branch D Records
Roy Bibbens / GDN Records

LIST OF ATTACHMENTS

Vicinity Map	Attachment A
Layouts with Boring Locations	Attachment B
General Plan	Attachment C
Foundation Design Data Sheet	Attachment D
Laboratory Test Results	Attachment E

Vicinity Map

Attachment A

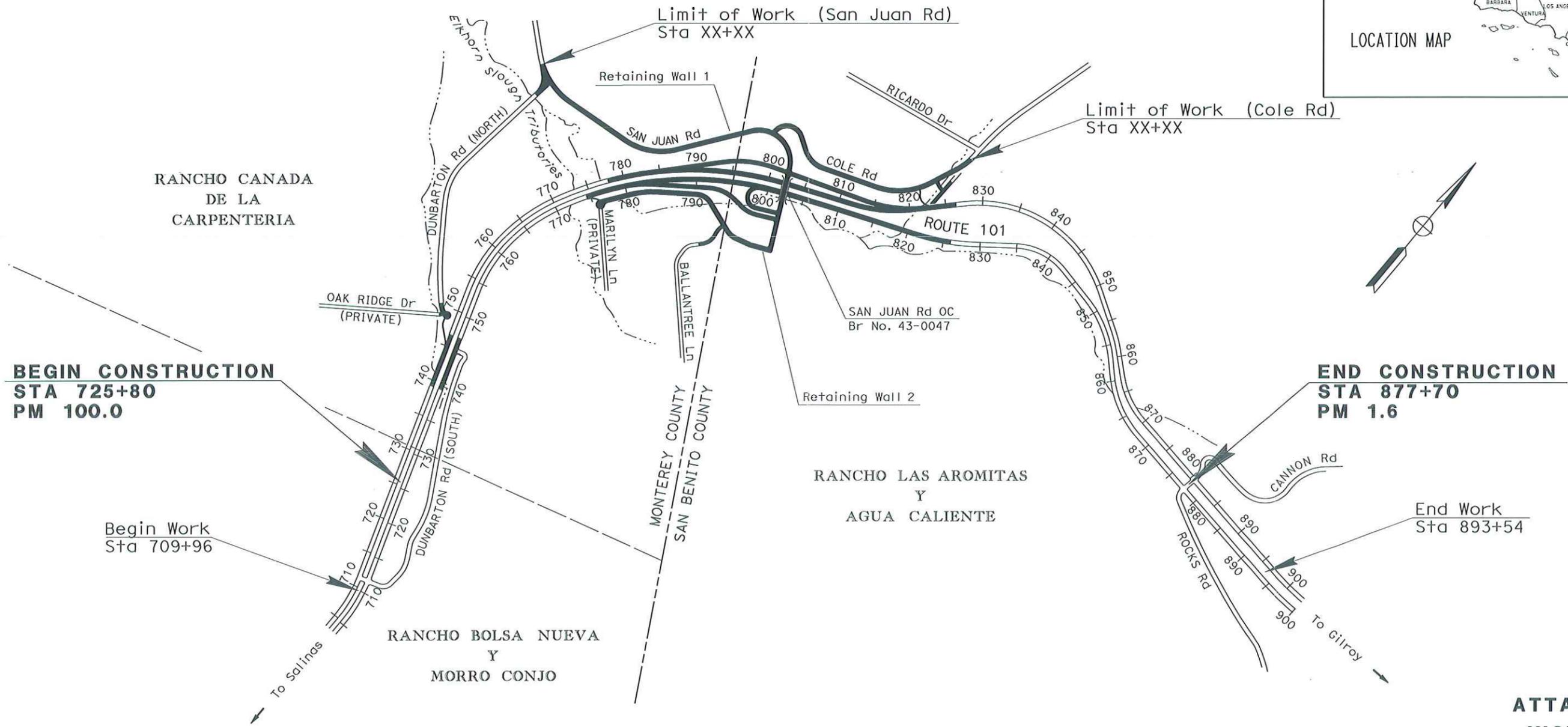
**STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY**

**NEAR PRUNEDALE FROM 0.4 MILE SOUTH OF
DUNBARTON ROAD (NORTH) IN MONTEREY COUNTY TO
1.0 MILE NORTH OF COLE ROAD IN SAN BENITO COUNTY**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon, SB†	101	100.0/101.3 0.0/1.6		

LOCATION MAP



NO SCALE

PROJECT MANAGER
DAVID SILBERBERGER

DESIGN ENGINEER
ERNIE PENUNA

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO CONTRACTORS."

**ATTACHMENT A
VICINITY MAP**

CONTRACT No. **05-315804**

LAST REVISION DATE: 07/11/05

Layouts with Boring Locations

Attachment B

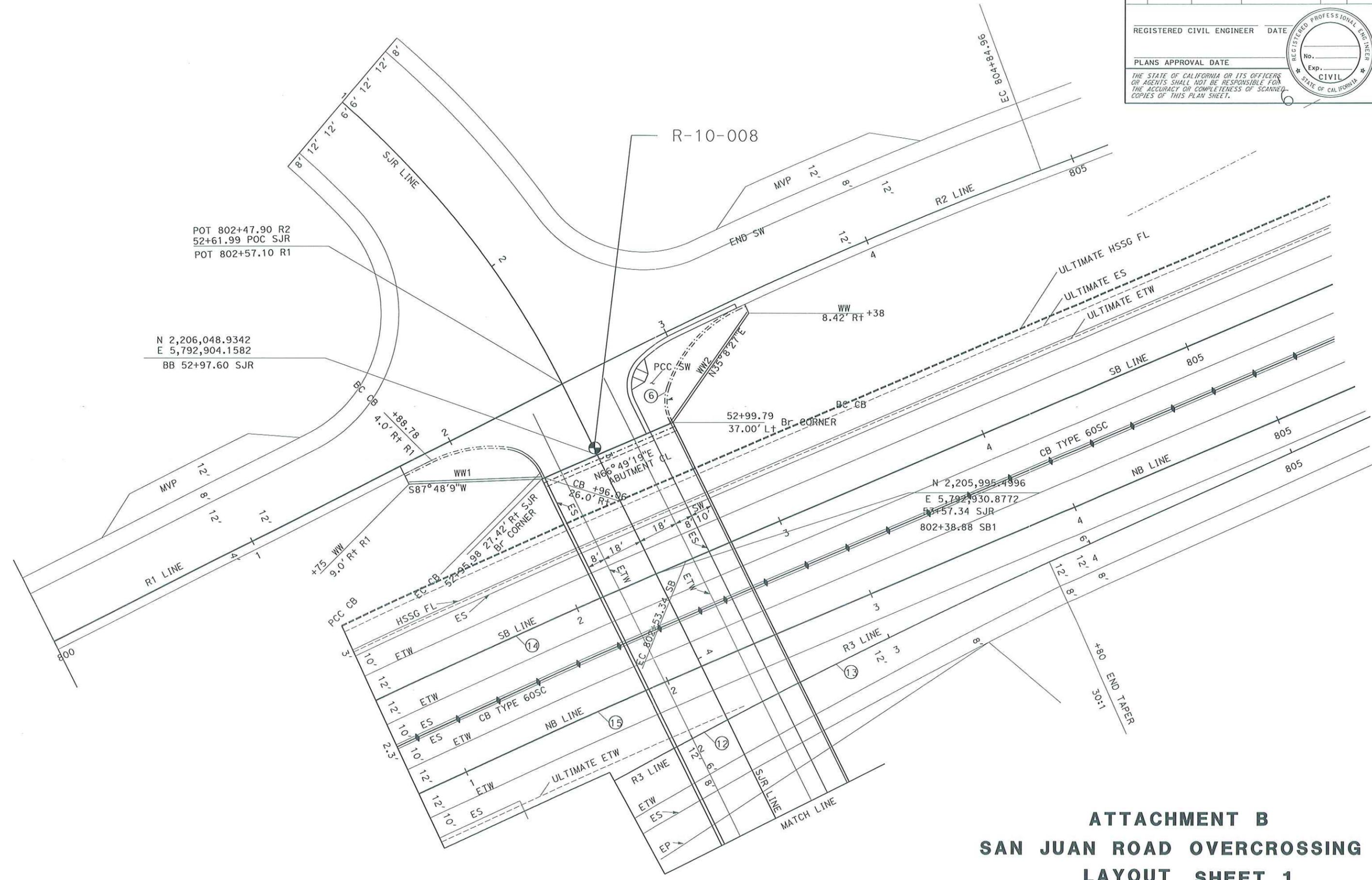
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

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.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 FUNCTIONAL SUPERVISOR
 CALCULATED BY
 CHECKED BY
 REVISED BY
 DATE REVISED



**ATTACHMENT B
 SAN JUAN ROAD OVERCROSSING
 LAYOUT SHEET 1**

LAST REVISION DATE: 01/15/2010

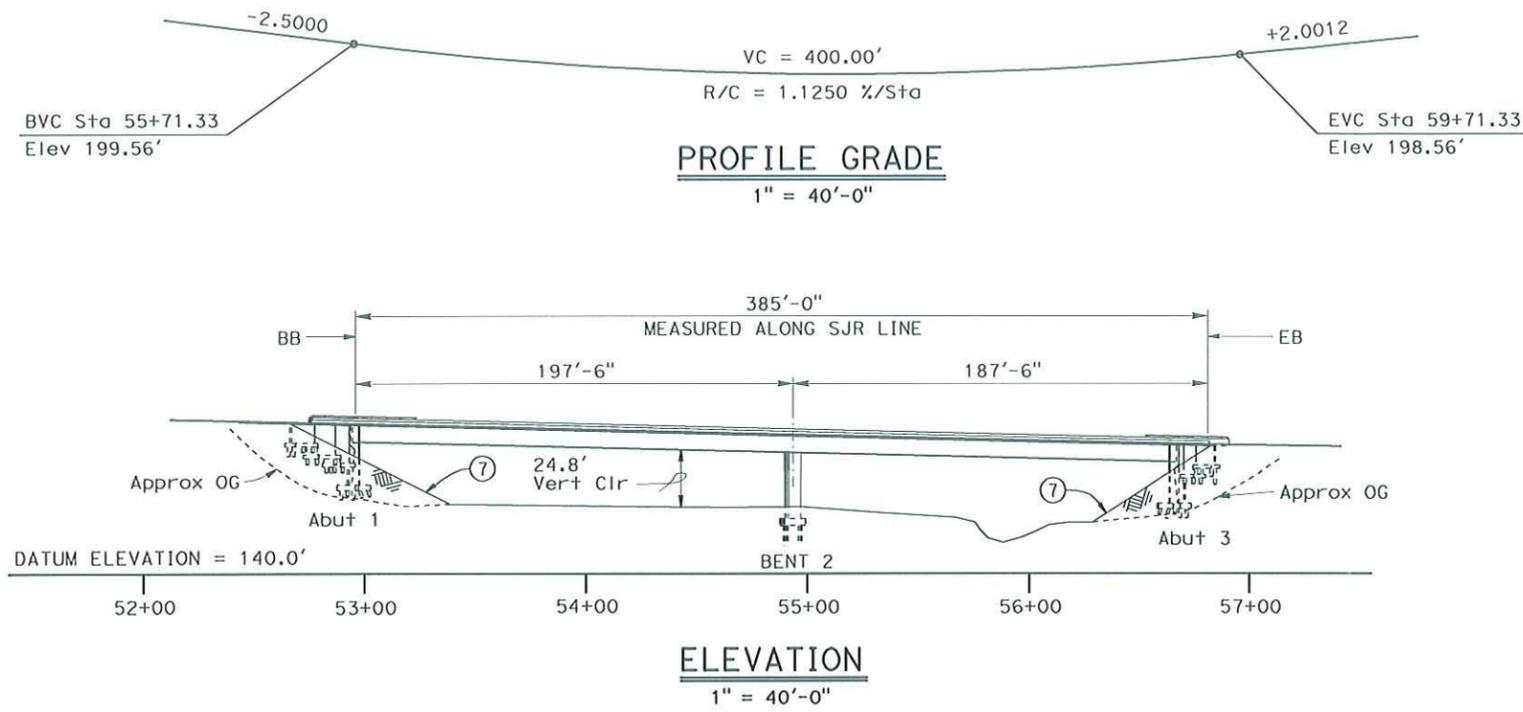
General Plan

Attachment C

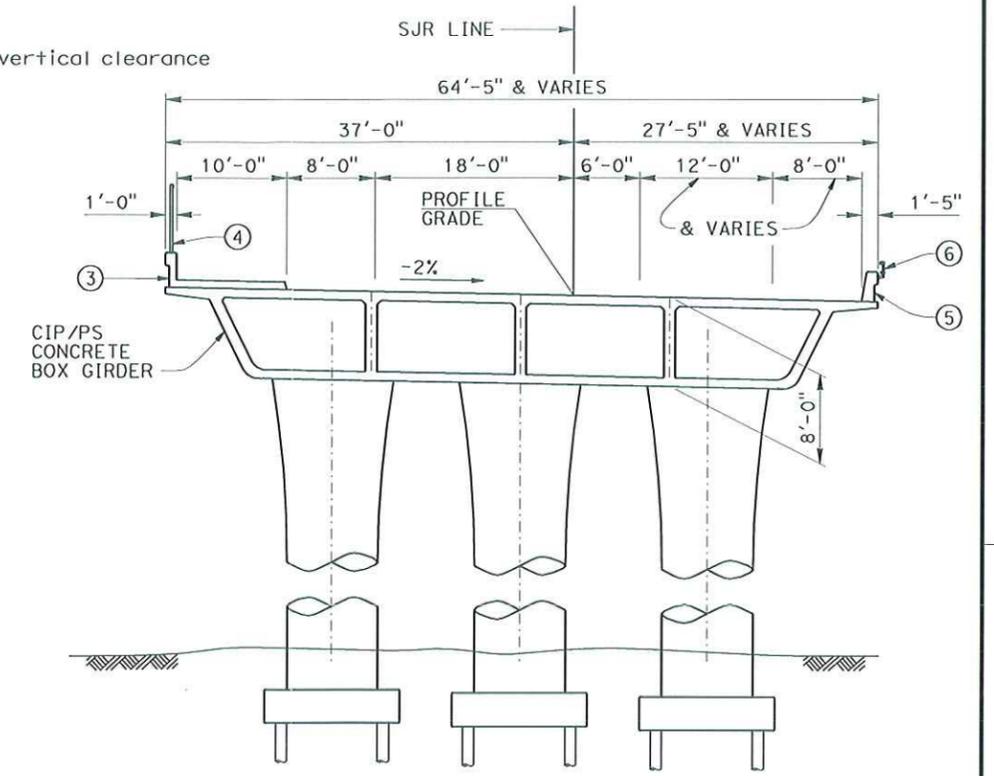
DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon/SBt	101			
REGISTERED CIVIL ENGINEER			X	DATE	
PLANS APPROVAL DATE					

REGISTERED PROFESSIONAL ENGINEER
RICHARD MELKO
No. C61617
Exp. 06-30-11
CIVIL
STATE OF CALIFORNIA

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

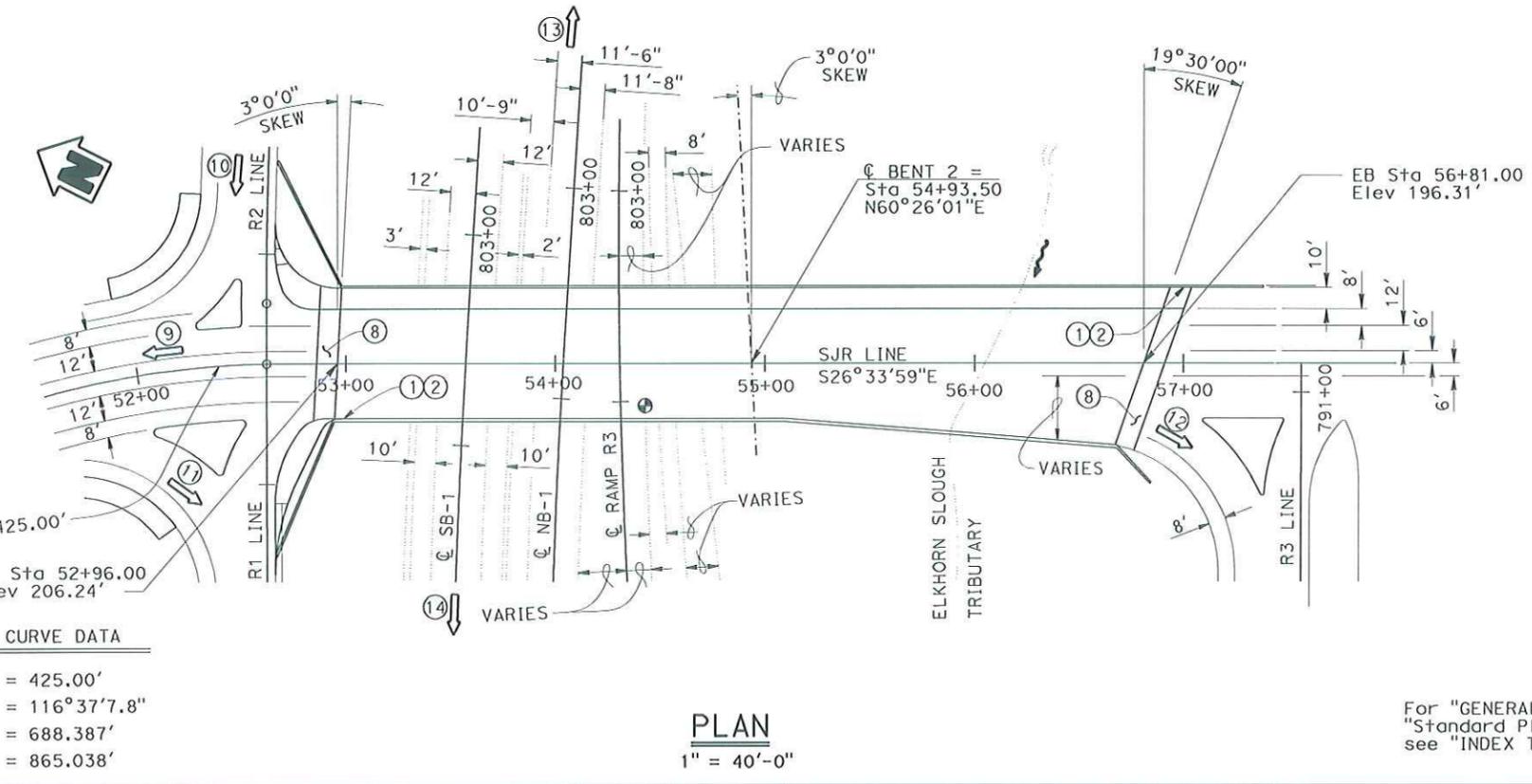


- Notes:
- ① Paint "San Juan Road OC"
 - ② Paint "Bridge No. 43-0047"
 - ③ Concrete Barrier Type 26
 - ④ Chain Link Railing Type 7, Black Vinyl Coated
 - ⑤ Concrete Barrier Type 732
 - ⑥ Tubular Bicycle Railing
 - ⑦ Slope Paving, see Road Plans
 - ⑧ Structure Approach Type EQ(10)
 - ⑨ To Watsonville
 - ⑩ SB Off-Ramp
 - ⑪ SB On-Ramp
 - ⑫ NB On-Ramp
 - ⑬ To Gilroy
 - ⑭ To Prunedale
 - Point of minimum vertical clearance



- Vehicular Traffic
1. New alignment. No traffic at the site.
 2. Traffic will be detoured away from the site.
 3. Traffic will be carried on the structure. Stage construction will/will not be required.
 4. X Traffic will pass under the structure on ROUTE 101 (Name of St. or Hwy.)
 - A. No falsework allowed over traffic.
 - B. X Falsework opening(s) required:

	Temporary Vertical Clearance	Width of Traffic Opening
NORTH Bnd	16.5'	32'
SOUTH Bnd	16.5'	32'
Two-way		
 - C. Temporary traffic lane reduction needed for footing excavation.



For "GENERAL NOTES", "INDEX TO PLANS", "Standard Plans List", and "PILE DATA TABLE", see "INDEX TO PLANS" sheet

X DESIGN ENGINEER	DESIGN BY D. ALVAREZ	CHECKED X	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL93 W/"LOW-BOY"; PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA	BRIDGE NO. 43-0047	SAN JUAN ROAD OC		
	DETAILS BY S. NG	CHECKED X	LAYOUT BY D. ALVAREZ	CHECKED X	DEPARTMENT OF TRANSPORTATION	POST MILE 0.13		GENERAL PLAN	
	QUANTITIES BY X	CHECKED X	SPECIFICATIONS BY X	CHECKED X					
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS					0 1 2 3	UNIT: 05 PROJECT NUMBER & PHASE: 0500000495-1	CONTRACT NO.: 315801	REVISION DATES 12-27-10 12-28-10 12-30-10	SHEET 1 OF X

Foundation Design Data Sheet

Attachment D

Foundation Design Data Sheet

Bridge Name: San Juan Rd. O.C (New)

Br No: 43-0047 EA: 0500000495-1 Date: 05/06/11

General Foundation Information

Support #	Design Method	Pile Type	FG Elev (ft)	Cut-off Elev (ft)	Pile Cap Size (ft)		Permissible Settlement under Service Load (in.) ¹	Number of Piles per Support
					B	L		
Abut 1	WSD	Class 200	189.0	178.3	12.5	66.5	1.0	26
Bent 2-Left	LRFD	Class 200	164.8	159.25	13	16.3	1.0	20
Bent 2-Center	LRFD	Class 200	164.8	160.0	13	13	1.0	16
Bent 2-Right	LRFD	Class 200	164.8	159.25	13	16.3	1.0	20
Abut 3	WSD	Class 200	184.6	169.25	14	86.75	1.0	35

¹ Based on CALTRANS' current practice, the total permissible settlement is one inch for multi-span structures with continuous spans or multi-column bents, one inch for single span structures with diaphragm abutments, and two inches for single span structures with seat abutments. Different permissible settlement under service loads may be allowed if a structural analysis verifies that required level of serviceability is met.

Foundation Design Loads

Support #	Service-I Limit State (kips)			Strength Limit State ² (Controlling Group, kips)						Extreme Event Limit State ² (Controlling Group, kips)					
	Total		Permanent Per Support	Compression		Tension		Compression		Tension		Compression		Tension	
	Per Support	Max/Pile		Per Support	Max/Pile	Per Support	Max/Pile	Per Support	Max/Pile	Per Support	Max/Pile	Per Support	Max/Pile	Per Support	Max/Pile
Abut 1	4896	189	4436	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bent 2-L	3109	N/A	2370	4471	271	N/A	271	N/A	N/A	6628	396	N/A	N/A	N/A	N/A
Bent 2-C	1828	N/A	1491	2577	218	N/A	218	N/A	N/A	2577	218	N/A	N/A	N/A	N/A
Bent 2-R	3103	N/A	2365	4471	271	N/A	271	N/A	N/A	6628	396	N/A	N/A	N/A	N/A
Abut 3	5953	180	5268	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

² Does not include loading due to downdrag.

Laboratory Test Results

Attachment E

DESCRIPTION	BORING OR SAMPLE No.	R-10-008	R-10-008	R-10-008
	DATE SAMPLED	7/14/2010	7/14/2010	7/14/2010
	STATION			
	LINE			
	DISTANCE FROM LINE (Rt. OR Lt.)			
	DEPTH OR ELEVATION (FEET)	20.0 - 21.5	45.0 - 46.0	80.0 - 81.5
	USCS CLASSIFICATION			
SIEVE ANALYSIS	3	100	100	100
	2 1/2	100	100	100
	2	100	100	100
	1 1/2	100	100	100
	1	100	100	100
	3/4	100	100	100
	1/2	100	100	100
	3/8	100	100	100
	4	100	100	100
	8	99	99	98
	16	95	97	93
	30	90	94	85
	50	84	88	77
	100	78	76	69
	200	64	60	60
	CLASSIFICATION TEST SUMMARY	5 µm	24	21
1 µm		16	8	19
FL STRENGTH Direct Shear Test	IN-PLACE DENSITY (DRY WT. lb/cu ft)			
	IN-PLACE MOISTURE (PERCENT)			
	SPECIFIC GRAVITY			
	LIQUID LIMIT		27	36
	PLASTICITY INDEX		12	19
	SAND EQUIVALENT			
CORROSION	EFFECTIVE STRESS			
	FRICTION ANGLE (DEGREES)			
	COHESION (psf)			
	TOTAL STRESS			
FRICTION ANGLE (DEGREES)				
COHESION (psf)				
RESISTIVITY (ohm-cm)	1416		1434	
pH	6.77		6.69	
SULFATES (ppm)				
CHLORIDES (ppm)				

R-10-010

DESCRIPTION	BORING OR SAMPLE No.	R-10-010	R-10-010	R-10-010	R-10-010	R-10-010
	DATE SAMPLED	7/27/2010	7/27/2010	7/27/2010	7/27/2010	7/27/2010
	STATION					
	LINE					
	DISTANCE FROM LINE (Rt. OR Lt.)					
	DEPTH OR ELEVATION (FEET)	5.3 - 6.8	10.3 - 11.8	15.3 - 16.8	30.3 - 31.8	50.3 - 51.8
	USCS CLASSIFICATION					
SIEVE ANALYSIS	3	100	100	100	100	100
	2 1/2	100	100	100	100	100
	2	100	100	100	100	100
	1 1/2	100	100	100	100	100
	1	100	100	100	100	100
	3/4	100	100	100	100	100
	1/2	100	100	100	100	100
	3/8	100	100	100	100	100
	4	100	100	100	100	100
	8	99	99	100	98	100
	16	97	99	99	96	98
	30	95	98	97	92	95
	50	86	87	88	86	89
	100	68	57	53	79	77
	200	58	45	36	68	59
	5 µm	30	15	11	26	28
	1µm	22	9	8	10	17
CLASSIFICATION TEST SUMMARY	IN-PLACE DENSITY (DRY WT. lb/cu ft)					
	IN-PLACE MOISTURE (PERCENT)					
	SPECIFIC GRAVITY					
	LIQUID LIMIT	33		18	32	28
	PLASTICITY INDEX	20		1	16	13
SAND EQUIVALENT						
SOIL STRENGTH Test Shear Test	EFFECTIVE STRESS					
	FRICTION ANGLE (DEGREES)					
	COHESION (psf)					
	TOTAL STRESS					
	FRICTION ANGLE (DEGREES)					
CORROSION	COHESION (psf)					
	RESISTIVITY (ohm-cm)		4532		1603	2111
	pH		7.29		7.07	7.23
	SULFATES (ppm)					
CHLORIDES (ppm)						

MATERIALS INFORMATION

Final Hydraulic Report for San Juan Road Interchange, Br. No. 43-0047, dated
October 11, 2010.

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

State of California – Department of Transportation
Division of Engineering Services
Structure Design Services

FINAL HYDRAULIC REPORT

San Juan Road Interchange

Elkhorn Slough Tributary

Bridge No. 43 0047

05 - SBt - 101 - PM 0.13

EA 05-315801

Prepared by:

Anthony Nedwick, PE
Structure Hydraulics and Hydrology
October 11, 2010



General:

The new San Juan Road interchange is proposed as a safety and operational improvement on Route 101 in Monterey and San Benito Counties. The proposed bridge will be a 377 foot long, 2 span, cast-in place prestressed box girder. The spans will be equal length and the width will vary from 68 foot in Span 1 and part of Span 2, flaring out as it approaches Abutment 3 in order to accommodate a right turn lane. Bent 2 is proposed to consist of three 7-foot diameter flared columns founded on piles. The overall structural depth is 7'-6".

This report is based on the plans and information provided by design, as well as various other sources including FEMA Flood Studies, previous Caltrans reports, USGS information and survey data from Preliminary Investigations. **All elevations indicated in this report are based on Vertical Datum NGVD 1929.**

Basin:

The unnamed stream is called the Elkhorn Slough Tributary for the purposes of this report. At the bridge site, the watershed for the stream encompasses approximately 6.3 square miles. The stream originates to the east of the site, and flows in a westerly direction where it eventually crosses Route 101 downstream of the project. While the stream at the project site roughly parallels Route 101 along the south side of the highway, portions of the watershed lie to the north of Route 101 and flows are eventually conveyed past route 101 upstream from the site. Land use is mostly native vegetation with annual grasslands with some oak and eucalyptus woodlands and rural residential scattered around the watershed.

Discharges:

For the Elk Horn Slough Tributary, the discharges were estimated using FEMA flood studies and USGS regional regression formulas for the area as well as being correlated to other watersheds in the area. In the vicinity of the bridge site, the 50-year and 100-year peak discharges are 1,200 cfs and 1,600 cfs, respectively.

Hydraulic Analysis:

The channel hydraulics were modeled using the Army Corps of Engineers HEC-RAS modeling program, version 4.0 utilizing data previously provided for the project. HEC-RAS was used to determine the water surface elevation and velocities throughout the project reach. The 50-year and 100-year discharge stages were evaluated using a Manning's roughness coefficient of 0.042 in the main channel, which is well vegetated with trees and brush, and 0.030 for the grassy overbank areas outside of the main channel.

Streambed:

Information regarding the channel bed material was not available at the time of this report. However, based on similar nearby sites, the bed material is considered susceptible to scour, erosion and lateral migration of the thalweg. There were no cross-sections available to determine channel degradation rates. Future degradation and lateral migration are not expected to cause significant concern with this structure, with the possible exception of fill material to be used for Abutment 3. Abutment 3 fills should be kept away from the existing channel as much as possible or be protected from erosion.

Scour Analysis:

While there is a chance for lateral migration of the thalweg at the site, the proposed location of Bent 2 has been placed far enough from the active channel that the chance of migration affecting the Bent is considered negligible. Based on survey data, 100-year flows in the current channel will not reach Bent 2. Therefore, there is no scour or degradation anticipated at Bent 2.

Summary & Recommendations:

Below is a summary of key design parameters based on the hydrology and hydraulic analysis performed for these structures.

All elevations given are referenced to the data provided by Structures Design and Preliminary Investigations-North, using the NGVD 29 vertical datum.

Hydrologic/Hydraulic Summary San Juan Road Interchange Br. No. 43C0047 Drainage Area = 6.3 mi ² Proposed Bridge Minimum Soffit Elevation = 164.6 ft			
	Design Flood	Base Flood	Overtopping Flood / Flood of Record
Frequency	50-yr	100-yr	N/A
Discharge	1,200 cfs	1,600 cfs	N/A
Average Velocity	4.8 fps	5.4 fps	N/A
Water Surface Elevation (WSEL) at Bridge	162.6 ft	163.3 ft	N/A
Elevations are based on Vertical Datum NGVD29			
<i>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.</i>			

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.

MATERIALS INFORMATION

[Foundation Report for Retaining Wall No. 1 \(Soil Nail Wall\) dated June 14, 2011.](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

Memorandum

Flex your power!

Be energy efficient!

To: FRITZ HOFFMAN
Branch Chief
Division of Engineering Services, Structure Design
Office of Bridge Design – Central, Branch 6

Date: June 14, 2011

File: 05-Mon-101-100.0/101.3
05-SBt-101-0.0/0.6
Retaining Wall No. 1
(Soil Nail Wall)
EA 05-315801

Attn: Richard Melko
Design Engineer

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES – MS 5

Subject: Foundation Report

Scope of Work

As per your request dated March 17, 2011, a Foundation Report (FR) is provided for Retaining Wall 1 as part of San Juan Road interchange project. The recommendations contained in this report are based on a review of published geotechnical/geologic literature, published maps, the results of a subsurface exploration performed at the proposed wall site, detailed analysis and our observations and engineering judgment.

This Foundation Report supersedes the Preliminary Foundation Report for Retaining Wall 1 dated September 30, 2010 and the Structure Preliminary Geotechnical Report dated August 10, 2009.

Project Description

The proposed project is located in the rolling hills northeast of Prunedale and west of San Juan Bautista in both Monterey and San Benito counties.

This project proposes to construct a new highway overcrossing for the San Juan Road and Highway 101 intersection. The proposed interchange project will improve the current at

grade crossings for San Juan Road, Dunbarton Road, and Cole Road by realigning the frontage roads to the new overcrossing. In addition, a new frontage road (Frontage Road East) will be constructed on the southeast side of the highway to provide access to the business and residential area at and near the Red Barn. In total, the proposed project will consist of a new San Juan Road highway overcrossing structure, new ramp connections, four new creek crossing structures, two culvert structures (pipe jacking), and new frontage road extensions which will require two soil retaining structures.

On San Juan Road, for the new alignment, a retaining wall is required to minimize the amount of Right of Way required while maintaining the desired vertical alignment. The proposed retaining wall will begin approximately 500 feet northeast of the proposed transition from the existing San Juan Road to the new San Juan Road alignment. Structures Design proposes to construct a new soil nail wall with a total length of approximately 1380 feet and a maximum combined wall height of approximately 66 feet not including the parapets on each wall. In order to reduce the visual impact of the project, the structure referred to as Retaining Wall 1 will consist of three individual and separated terraced walls. Each of these walls will vary in length and height. Each of these individual walls is identified with unique stationing and referenced as RW1A, RW1B, or RW1C. RW1A is the upper wall, RW1B is the middle wall and RW1C is the lower wall. For the purpose of this report, the individual wall stationing will be referenced to San Juan Road which correspond to the cross sections provided by Design.

Retaining Wall 1 begins at Station 34+00 "SJR" and consists of RW1A and RW1C. This corresponds to Station 70+00 "RW1A" and Station 10+00 "RW1C". At this location, RW1A is located 92.0 feet left of San Juan Road and RW1C is located 32.6 feet of left of San Juan Road. At Station 34+00, the bench width between the structures is 59.4 feet and gradually transitions to 24.4 feet at Station 35+76 "SJR". The slope of the bench between the individual walls in this segment is variable.

At Station 36+75.0 "SJR", the retaining wall transitions from a two tiered structure to a three tiered structure. This corresponds to the beginning of RW1B at Station 50+00 "RW1B". In this three tiered segment, the wall heights of the individual walls vary and the combined total wall height is the greatest. The bench width between the individual walls is approximately 10 feet in width with a 5:1 slope.

At approximate Station 43+93 "SJR", each of the walls transitions into a curved structure to match the curve of the proposed San Juan Road and continue to maintain the same

offsets between the terraces. At Station 45+81.2 "SJR", RW1C terminates which corresponds to Station 22+00 "RW1C".

From Station 45+81.2 "SJR" to Station 46+42.3 "SJR", the structure consists of two individual walls (RW 1B and RW1A) of variable heights with a 10 foot bench width. At approximate Station 46+29 "SJR", this segment curves to match the transition to the proposed Cole Road. Retaining Wall 1B terminates at Station 46+42.3 "SJR" which corresponds to Station 60+00 "RW1B".

From Station 46+42.3 "SJR" to Station 15+96.3 "CO1" on the proposed Cole Road, the remaining structure consists of one wall, RW1A. The structure terminates at Station 83+80 "RW1A".

The retaining wall will be designed with an architectural treatment consistent with other structures in the project. Each individual terrace will have a concrete lined ditch at the top of the wall and will include a variable height parapet and cable railing.

Soil nailing uses a top down construction technique where closely spaced steel bars or "nails" are installed as the excavation proceeds to reinforce and strengthen the slope or excavation. Soil nailing provides improved economy and lessened environmental impacts compared to conventional retaining walls, through the elimination of the need for a cut excavation and backfilling.

Pertinent Reports and Investigations

The following reports contain pertinent information that is directly related to this project site. These reports should be read to provide a full picture of the project area even though they do not discuss the soil nail wall directly. These reports discuss many points, which are relevant to any project constructed in the San Juan Road area.

The following publications were used to assist in the assessment of site conditions:

1. *California Seismic Hazard Map 1996*, Caltrans, Lalliana Mualchin, 1996.
2. *Map Showing Geology and Liquefaction Potential of Northern Monterey and Southern Santa Cruz Counties, CA*. Dupre and Tinsley, 1980.

3. *Preliminary Geotechnical Design Report* for 05-SBt-101-PM 0.4/1.4, 05-388200 by Geotechnical Services, dated September 2, 1998.
4. *Geotechnical Design Report* for 05-SBt-101-PM 0.4/1.4, 05-388200 by Geotechnical Services, dated June 10, 1999.
5. *Structure Foundation Report, Revision 2*, for Mon-101-PM 92.3/100.4, 05-0161B1, by Geotechnical Services, dated April 6, 2004.
6. *Preliminary Geotechnical Design Report* for 05-MON-101-PM 98.4, 05-0161E0 by Geotechnical Services, dated March 23, 2004.
7. *Geotechnical Design Report* for 05-MON-101-PM 98.4, 05-0161E0 by Geotechnical Services, dated June 16, 2008.
8. *Rippability Evaluation* for 05-MON-101-101.3 for 05-315800 by Geotechnical Services, dated August 30, 2009.

A subsurface investigation in the area of the proposed soil nail wall was conducted in December of 2010 to provide subsurface information.

Site Geology and Subsurface Conditions

Physical Setting

The project is located in the Coast Ranges Geomorphic Province of California in the Gabilan Range. The topography is semi-mountainous. The local terrain in the project limits consists of moderately sloped hills covered with grasslands and a mixture of heavy brush and trees.

The climate in the project area is warm and foggy and in the summers, while the winters are cool and moist. The mean annual precipitation is 18 inches. The mean annual temperature is about 57°. Winters are generally mild with occasional freezing temperatures overnight. Nearly all the precipitation accumulates during Pacific storms between October and May, with the majority falling during winter months.

Vegetation in the project area primarily consists of grasses, brush, oaks and willows growing near water. Stands of willows were observed growing along all of the unnamed tributaries to the Elkhorn Slough while the majority of the project area consists of seasonal grasses.

Regional Geology

The project area lies within the central portion of the Coast Ranges Geomorphic Province, at the northern portion of the Salinas River Valley and is in the Gabilan Range. The project is bounded by the San Andreas Fault to the east, Monterey Bay and the Santa Lucia Range to the west, the Santa Cruz Mountains to the north and the Salinas Valley to the south.

The geologic units encountered in the highway in the project area are alluvial deposits, terrace deposits, colluvial and fluvial deposits.

The alluvial deposits consist of unconsolidated, heterogeneous, moderately-sorted silt and sand with discontinuous lenses of clay and silty clay. Locally this deposit may include large amounts of gravel.

The terrace deposits consist of weakly-consolidated to semi-consolidated, moderately to poorly-sorted silt, silty clay, sand and gravels mostly deposited in the fluvial environment. The colluvium deposits consist of unconsolidated, heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel deposited by slope wash and mass movement. Locally it includes numerous undifferentiated landslides and small alluvial fans.

The fluvial deposits consist of semi-consolidated, moderately to poorly-sorted silty clay, silt, sand and gravel deposited by meandering and braided streams as well as alluvial fans. The beds can include relatively well-sorted gravel.

The Soil Survey of Monterey County published by the US Department of Agriculture shows that in the project area, the soils consist mostly of Salinas Series, Santa Ynez Series and the Placentia Series. The Salinas series consist of well-drained soils that formed in mixed alluvium derived from sedimentary and granitic rocks on alluvial fans. The slopes are from 0 to 9 percent. The Santa Ynez series consists of moderately to well-drained soils that formed on terraces in alluvium derived from sandstone and granitic rocks. The slopes are from 2 to 30 percent. The Placentia series consists of well-drained soils that formed in alluvium that was derived from granitic and schistose rocks on old

alluvial fans and terraces. The slopes range from 0 to 30 percent.

Geotechnical Site Conditions

A subsurface investigation for this structure was completed in 2010. The investigation consisted of 8 borings along or near the alignment of the proposed retaining wall. Subsurface soils encountered in the vicinity of the proposed Retaining Wall 1 are described below and the location of the borings is shown on the Attachment B.

In boring R-10-017, which is located at approximately Station 42+60 "SJR" at 45.2 feet left, the soils consisted of interbedded soils with varying contents of sands, silts and clay. From the ground surface to approximately 1.0 feet below the surface, the soils consisted of silty sand topsoil. From 1.0 feet below the surface to 2.5 feet below the surface, hard lean clay was encountered. From 2.5 feet to 7.0 feet below the surface, a very dense silty sand was encountered. From 7.0 feet below the surface to 16.0, a hard lean clay was present. From 16.0 feet to 21.5 feet below the surface, dense clayey sand was found. A 3.5 foot layer of very stiff lean clay was then encountered from 21.5 feet to 25.0 feet. From 25.0 feet to 35.5 feet, medium dense clayey sand was encountered with a 0.75 foot layer of poorly graded sand at 29.5 feet below the surface. Very stiff lean clay was then encountered from 35.5 feet to 45.0 feet with a 1.0 foot layer of medium dense poorly graded sand located at 37.5 feet below the surface. A 6.0 foot layer of dense silty sand was then encountered between 45.0 feet and 54.5 feet with a 1.5 foot layer of hard lean clay occurring at 51.0 feet. From 54.5 to 67.5 feet below the surface, alternating layers of medium dense clayey sand and sandy lean clay occurred. From 67.5 feet to 80.5 feet, medium dense to very dense silty sand was found. Very dense layers, well graded sand and poorly graded were then encountered to a depth of 89.7 feet. From 89.7 feet to the bottom of the boring at 102.0 feet below the ground surface, the soil consisted of very dense clayey sand and hard sandy lean clay.

Similar findings occurred in the remaining 7 borings. This is typical of terrace and alluvial deposits with laterally discontinuous, alternating layers of varying thickness and gradation of sands, silts, clays and some gravels.

Ground Water

Open observation wells were installed in borings A-10-001, A-10-002, A-10-003, R-10-015, and R-10-017. The purpose of the wells is to observe fluctuations in groundwater levels and determine if groundwater will influence construction and foundation design. Results of the groundwater-monitoring program are summarized in Table 1.

Table 1. Groundwater Elevations

<i>Location</i>	<i>Surface Elevation (Ft)</i>	<i>Date of Measurement</i>	<i>Depth to Groundwater (Ft)</i>	<i>Groundwater Elevation (Ft)</i>
A-10-001	247.2	7-22-10	Dry	-
		11-3-10	Dry	-
		2-2-11	Dry	-
		4-12-11	Dry	-
A-10-002	248.2	7-22-10	Dry	-
		11-3-10	Dry	-
		2-2-11	Dry	-
		4-12-11	Dry	-
A-10-003	253.2	7-27-10	Dry	-
		11-3-10	Dry	-
		2-2-11	Dry	-
		4-12-11	Dry	-
R-10-015	199.0	2-2-11	35.4	163.6
		4-12-11	7.7	191.3
R-10-017	270.6	2-2-11	Dry	-
		4-12-11	Dry	-

A spring has been noted on the slope in the vicinity of boring R-10-015 at approximately 80 feet left of Station 35+55 "SJR". In this area, groundwater was encountered at elevation 191.3 feet. The bottom elevation of the Retaining Wall 1C in this location is at approximately 166 feet and the bottom of Retaining Wall 1A is at 181 feet. As can be seen in the table above, observations from other wells did not result in similar finds.

It is possible that groundwater will be encountered in the excavation of the benches during the top down construction or during the installation of the soil nails.

Other springs not identified in the investigation may be encountered during construction due to the varied geology of the site.

Corrosion Evaluation

The Department considers a site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil and/or water samples taken at the site: pH of less than 5.5 and a resistivity of less than 1000 ohm-cm. If the resistivity is

less than 1000 ohm-cm, additional testing of chloride and sulphate is required. The site is then considered corrosive if chloride content is greater than 500 ppm, or sulphate content is greater than 2000 ppm.

Soil samples were obtained in each of the eight borings and sent to the HQ Geotechnical Laboratory for corrosion potential evaluation. Based on the results of the corrosion analyses, the site is considered to be non-corrosive. Refer to Table 2 below for complete corrosion testing results.

Table 2. Corrosion Testing Summary

<i>Boring ID</i>	<i>Depth (ft)</i>	<i>pH</i>	<i>Resistivity ohm-cm</i>	<i>Chloride ppm</i>	<i>Sulphate ppm</i>	<i>Corrosive</i>
A-10-001	9.0-10.5	7.5	816	350	15-	NO
A-10-001	39.0-40.5	6.5	6110	-	-	NO
A-10-002	14.0-15.5	6.1	611	440	55	NO
A-10-002	39.0-40.5	6.9	3927			NO
A-10-002	64.0-65.5	7.2	3697			NO
A-10-003	44.0-45.5	6.8	1892			NO
A-10-004	9.0-10.5	5.2	662	400	14	NO
A-10-004	69.0-70.5	7.7	6386			NO
R-10-015	6.0-10.0	5.6	1400			NO
R-10-015	22.5-29.0	6.7	1230			NO
R-10-016	7.0-15.0	6.3	12800			NO
R-10-016	22.5-30.0	7.1	6070			NO

Seismicity

No known or potentially active faults, as classified by Caltrans, intersect the project area. Consequently, the potential for surface fault rupture is low and no mitigation efforts in regards to fault rupture are necessary.

The project area is located within a seismically active region of California. As determined by Caltrans, the following are the active and potentially active faults that have the greatest potential of influencing the site along with the Moment Magnitude, distance to the site and the expected peak ground accelerations. The distance to the fault is measured from the location of the proposed retaining wall. The faults and the fault characteristics are listed below in Table 3.

Table 3. Fault Information

<i>Fault</i>	<i>Magnitude</i>	<i>Distance</i>	<i>Peak Gound Acceleration</i>
Zayante- Vergales	7.0	1.4 mi	0.50g (gravity)
San Andreas	7.9	2.7 mi	0.48g (gravity)

Liquefaction is a loss of soil strength and stiffness due to an increase in excess pore water pressure during cyclic loading, such as occurs during an earthquake. Soils with liquefaction potential include loose cohesionless soils that may become saturated. Liquefaction susceptibility is considered low. Low ground water levels as well as the medium-dense to dense soils encountered during the geotechnical foundation investigation confirm this finding.

Design Requirements and Approach

The design of the soil nail wall was performed using GoldNail software, developed by Golder Associates of Redmond, Washington. GoldNail is a slip-surface, limit equilibrium, slope-stability model based on satisfying overall limit equilibrium (translational and rotational) of individual free bodies defined by circular slip surfaces. This overall soil nail wall design approach is recommended in the FHWA publication *Soil Nail Walls*, Geotechnical Engineering Circular No. 7, Publication No. FHWA0-IF-03-017. The nail Service Load Design (SLD) method was used. The Strength Factors and Factors of Safety recommended in the FHWA manual for Group VII and Group I load combinations were used. The load combinations that controlled the design of the soil nail wall are as follows:

Group VII Strength Factors and Factors of Safety

Nail Head Strength = 0.89
Nail Tendon Tensile Strength = 0.73
Ground-Grout Pullout Resistance = 0.67
Minimum Global Soil Factor of Safety = 1.01

Group I Strength Factors and Factors of Safety

Nail Head Strength = 0.67
Nail Tendon Tensile Strength = 0.55
Ground-Grout Pullout Resistance = 0.5
Minimum Global Soil Factor of Safety = 1.35

The following design assumptions and approaches have been utilized:

- The maximum contributory area of the soil nail assembly ($S_v \times S_h$) $\leq 25 \text{ ft}^2$ where,
 S_v is the vertical spacing of the nails
 $S_{v, \text{Max}} = 5.0 \text{ ft}$
 S_h is the horizontal spacing of the nails
 $S_{h, \text{Max}} = 5.0 \text{ ft}$
- Diameter of the grout hole (D) = 0.5 ft
- The declination angle (θ) of the nails from the horizontal = 15°
- Based on the variable characteristics of the subsurface soils, the following soil profile has been utilized for the analysis of this wall:

Unit Weight = 120 lb/ft^3
Cohesion = 100 psf
Friction Angle = 33°
Design Nail Pullout Resistance = 2000 lb/ft
Ultimate Nail Pullout Resistance = 3000 lb/ft
Ultimate Bond Stress = 2000 psf

- The top nail profile line was assumed to be parallel to the OG line at the top of the wall, 2.0 feet below the top of cut. The bottom nail profile line shall be parallel to the bottom of the wall, 2.0 feet above the bottom of wall. The bottom of the wall is assumed to be 2.5 feet below finished grade. Equal vertical nail spacing at each row not to exceed 5.0 feet for intermediate nails was assumed.
- When the wall height is less than 6.0 feet, the horizontal spacing shall be reduced to 4.0 feet and one soil nail shall be placed in the center of the vertical column.

Soil Nail Bars Grade and Bearing Plate Capacity

The following information is provided to the Office of Bridge Design for design of the wall facing.

From the stability analyses of the soil nail wall design, #10, Grade 75 bars conforming to ASTM Designation A615 are required. The calculated tendon strength for this bar size is 95.3 kips. The maximum calculated factored tension load for the soil nail design was 81.0 kips. For bar sizes that are unavailable in the designated steel grade, other steel grades with adjusted bar sizes may be used.

A maximum service nail head tension load of 31.8 kips was used for the wall facing design. The structural resistance for a permanent cast in place (CIP) concrete facing was calculated with the following assumptions:

- Thickness of permanent facing is 8 inches.
- Permanent facing reinforcement consists of No. 7 deformed bars spaced at 12 inches on center, placed both vertically and horizontally.
- Facing steel is placed in the center of CIP facing.
- Grade 60 reinforcing and head studs.
- 28 day concrete compressive strength equals or exceeds 4000 psi
- Horizontal soil nail spacing equals 5.0 feet
- Vertical soil nail spacing equals 5.0 feet
- Bearing Plate dimensions are 0.75 in. x 10 in. x 10 in.

- Headed Stud dimensions are 0.75 in. diameter body, 1.25 in. diameter head, 0.38 in. head thickness, 5 in. length, 6 in spacing.

The facing resistance was checked for facing flexure, facing punching shear, and headed stud tension strength criteria.

The design of the wall facing system is the responsibility of the Office of Bridge Design in consultation with the District Landscape Architect. A sculpted shotcrete finish facing or cast-in-place (CIP) concrete facing may be used for this wall.

Soil Nail Lengths

Due to the varied nature of this tiered structure, the soil nail length analysis was broken into multiple segments representing varied wall configurations and wall heights. Thus, the soil nail length can vary from segment to segment, on the same wall, without a significant corresponding change in height. This is the result of the comparison between the number of walls, the combined wall heights and the bench width for a particular segment. The segments used in the analysis are shown in Table 4 below:

Table 4: RW1 Design Segments

Segment Number	Station Limits "SJR" Line	Number of walls
1	34+00 to 36+75	2
2	36+75 to 45+81.2	3
3	45+82.2 to 46+45.1	2
4	46+45.1 to 15+96.3 "CO1"	1

The design nail lengths (embedment depth) of the soil nails are shown in the following tables. One table is presented for each of the three walls. Wall heights used for the design of the soil nail wall were obtained from the spreadsheets provided by the Office of Structures Design and cross sections that were provided by Design.

The wall heights presented in the following tables are based on the bottom of the wall elevations and the original ground catch point. The wall heights do not include the parapets and the cable railings as these elements are not included as part of the reinforced zone.

Table 5: Retaining Wall 1A –Soil Nail Schedule

Station Limits “SJR” Line	Approximate Station Limits “RW1A” Line	Nail Length (ft)
34+00 to 35+50	70+00 to 71+53.9	12
35+50 to 36+75	71+53.9 to 72+79.6	15
36+75 to 37+00	72+79.6 to 73+04.6	30
37+00 to 38+00	73+04.6 to 74+04.7	35
38+00 to 38+70	74+04.7 to 74+74.7	42
38+70 to 40+60	74+74.7 to 76+64.7	50
40+60 to 43+20	76+64.7 to 79+24.7	45
43+20 to 44+80	79+24.7 to 80+92.9	35
44+80 to 45+30	80+92.9 to 81+50.8	30
45+30 to 45+81.2	81+50.8 to 82+14.9	25
45+81.2 to 46+20	82+14.9 to 82+59.9	20
46+20 to 46+45.1	82+59.9 to 82+83.3	15
46+45.1 “SJR” to 15+96.3 “CO1”	82+83.3 to 83+80.0	12

Table 6: Retaining Wall 1B –Soil Nail Schedule

Station Limits “SJR” Line	Approximate Station Limits “RW1B” Line	Nail Length (ft)
36+75 to 37+00	50+00 to 50+25	30
37+00 to 38+00	50+25 to 51+25	35
38+00 to 38+70	51+25 to 51+95	42
38+70 to 40+60	51+95 to 53+85	50
40+60 to 43+20	53+85 to 56+45	45
43+20 to 44+80	56+45 to 58+11.8	35
44+80 to 45+30	58+11.8 to 58+68.4	30
45+30 to 45+81.2	58+68.4 to 59+30.2	25
45+81.2 to 46+20	59+30.2 to 59+73.0	20
46+20 to 46+45.1	59+73.0 to 60+00	15

Table 7: Retaining Wall 1C –Soil Nail Schedule

Station Limits “SJR” Line	Approximate Station Limits “RW1C” Line	Nail Length (ft)
34+00 to 36+75	10+00 to 12+75	12
36+75 to 37+00	12+75 to 13+00	30
37+00 to 38+00	13+00 to 14+00	35
38+00 to 38+70	14+00 to 14+70	42
38+70 to 40+60	14+70 to 16+60	50
40+60 to 43+20	16+60 to 19+20	45
43+20 to 44+80	19+20 to 20+85.4	35
44+80 to 45+30	20+85.4 to 21+40.5	30
45+30 to 45+81.2	21+40.5 to 22+00	25

For uniformity and ease of construction, the length of the bottom row of nails in each wall has been increased to the required length for the upper rows of nails.

Soil Nail Wall Drainage

To prevent the build up of hydrostatic pore pressure behind the wall and facing, construction of a proper drainage system is critical. We recommend the following:

- Grade to drain the finished slopes immediately above the retaining wall.
- Place 2.0 foot wide prefabricated geocomposite drain strips vertically on 5.0 foot centers, prior to applying shotcrete. Geocomposite drains shall start 2.0 feet below the top of the cut and end at 0.5 feet below the weep hole inserts. This will reduce hydrostatic pressure, which may develop as a result of surface water infiltration from the top of the Soil Nailed Retaining Wall and from groundwater.
- Install PVC pipe weep holes through the shotcrete face at the base of each of the prefabricated drainage strips.

Stability Testing

Stability testing shall be performed by the contractor to verify the Contractor's proposed excavation lift height and exposure duration for the soil nail wall construction. The test consists of exposing a 20 foot bench of material to the Contractor's proposed lift height for the proposed exposure duration.

A minimum of one stability test shall be performed within each wall zone, for each of the three terraced walls, as defined in the following tables:

Table 8: Retaining Wall 1A –Stability Testing

Wall Zone	Beginning Station "RW1A"	End Station "RW1A"	Upper Elevation (ft)	Lower Elevation (ft)
1A	70+00	74+04	225.0	185.2
2A	74+04	81+10	257.0	203.8
3A	81+10	15+96.3 "CO1"	246.5	217.0

Table 9: Retaining Wall 1B –Stability Testing

Wall Zone	Beginning Station “RW1B”	End Station “RW1B”	Upper Elevation (ft)	Lower Elevation (ft)
1B	50+00	53+25	224.8	184.5
2B	53+25	56+65	235.3	204.0
3B	56+65	60+00	235.4	205.5

Table 10: Retaining Wall 1C –Stability Testing

Wall Zone	Beginning Station	End Station	Upper Elevation (ft)	Lower Elevation (ft)
1C	10+00	14+00	192.6	160.2
2C	14+00	18+00	192.5	176.1
3C	18+00	22+00	218.2	207.0

The stability testing procedure described in the Special Provisions shall be followed.

Soil Nail Testing

The Contractor shall perform load testing of verification and proof soil nails. Verification tests are performed before excavation for wall construction and are meant to verify both the soil nail design and the Contractor’s means and methods. Two verification soil nails shall be installed and tested for each soil nail wall zone listed. Proof test are performed during wall construction and are for quality control. The number of proof test nails is equal to eight percent of the total number of soil nails. Proof tests shall be performed at locations shown on the plans. When the wall Elevation View showing the location and total number of soil nails is completed, forward these sheets to Geotechnical Design-North so that the locations of the proof test nails can be selected. In addition to the proof test nails shown on the plans, the Engineer will select locations for an additional two percent of proof test nails.

The verification and proof testing procedure described in the Special Provisions shall be followed. When the Special Provisions have been prepared, please forward them to this office for review.

Construction Considerations

The holes made from the borings for the geotechnical exploration remained open for their full length following the extraction of the drill steel. Mud rotary continuous flight and auger drilling techniques were used for the geotechnical exploration. Depending on the drilling methods and rates used by the contractor, casing may be required to prevent caving in the formation material.

Excavation for the mass grading should be conducted in top-down manner and consist of bench and slopes in general agreement with Cal-OSHA requirements. Caving of surficial soils may occur during wall excavation. The surficial soil may be laid back at a stable slope angle to facilitate wall construction. Reconstructed permanent slopes above the wall shall not be steeper than 2H:1V.

It is unlikely utilities will be encountered during construction but potential conflicts with underground utilities should be cleared prior to the construction of the soil nail wall.

Seepage of water at the cut face may be encountered at isolated locations during construction. Local instability of the cut face may occur. The contractor must be prepared to take corrective measures to prevent excessive sloughing.

The project LOTB's have not been finalized. They will be sent electronically from the Graphics Section when they are completed.

Standard Special Provision S5-280, "Project Information", discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the addressee(s) of this report via electronic mail.

05-MON-101-100.0/101.3
05-SBt-101-0.0/0.6
EA 05-315801

June 14, 2011
Page 18

Data and information attached with the project plans are:

A. Log of Test Borings for Retaining Wall 1 (Soil Nail)

Data and information included in the Information Handout provided to the bidders and Contractors are:

A. Foundation Report for Retaining Wall 1 (Soil Nail) dated June 14, 2011

05-MON-101-100.0/101.3
05-SBT-101-0.0/0.6
EA 05-315801

June 14, 2011
Page 19

If you have any questions or comments, please contact Zeke De Llamas at (805) 549-3327, or Michael Finegan at (805) 549-3194.

Supervised by:



ZEKE DELLAMAS, P.E.
Transportation Engineer Civil
Geotechnical Design – North
Branch D

MICHAEL S. FINEGAN, P.E.
Branch Chief
Geotechnical Design – North
Branch D

- c: Project Manager - David Silberberger
Project Coordination Engineer – Andrew Tan
GS Corporate – Mark Willian
District Environmental Planning – Chuck Cesena
District Materials Engineer – Doug Lambert
Job File / Branch D Records
Roy Bibbens / GDN Records

LIST OF ATTACHMENTS

Title Sheet	Attachment A
Layouts with Boring Locations	Attachment B
General Plan	Attachment C
Typical Cross Section	Attachment D
Geologic Map	Attachment E

Vicinity Map

Attachment A

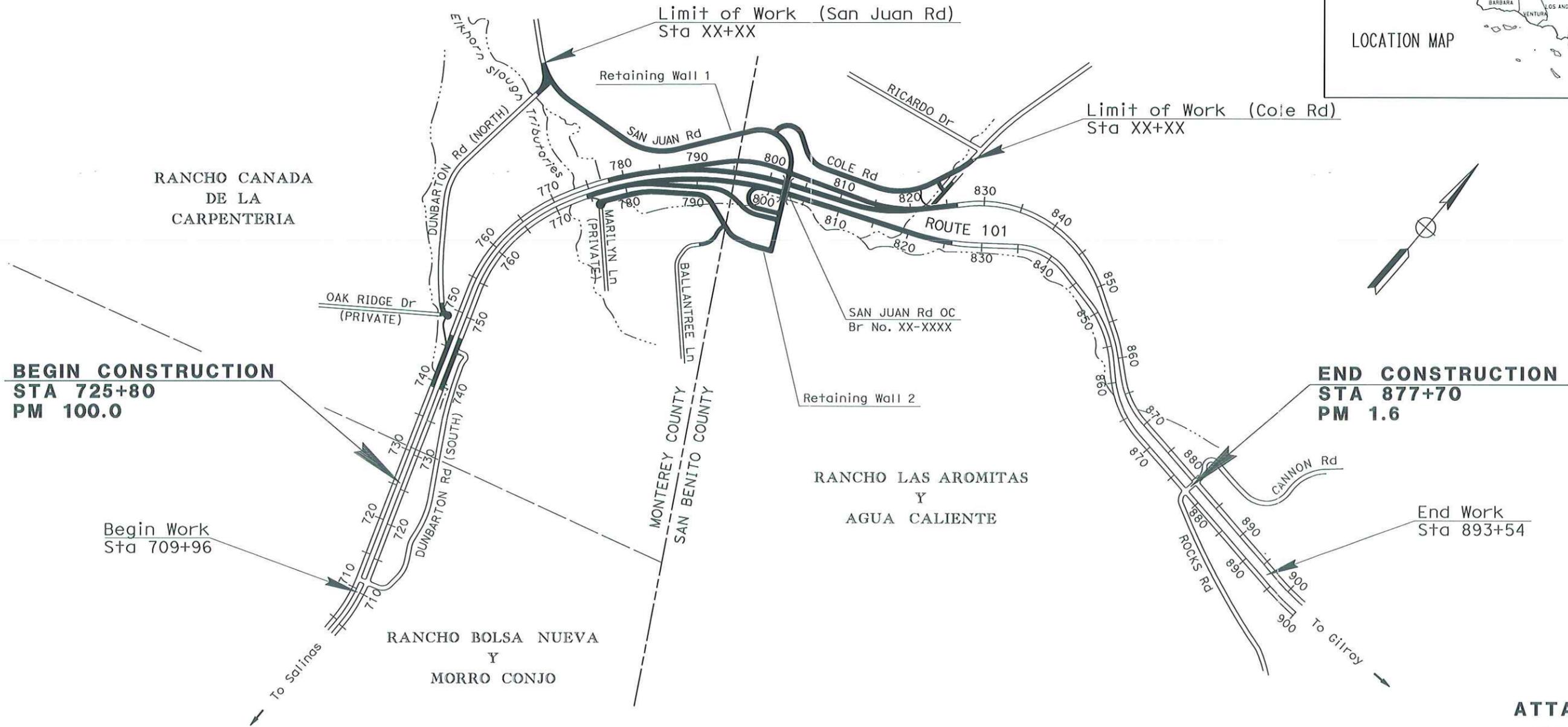
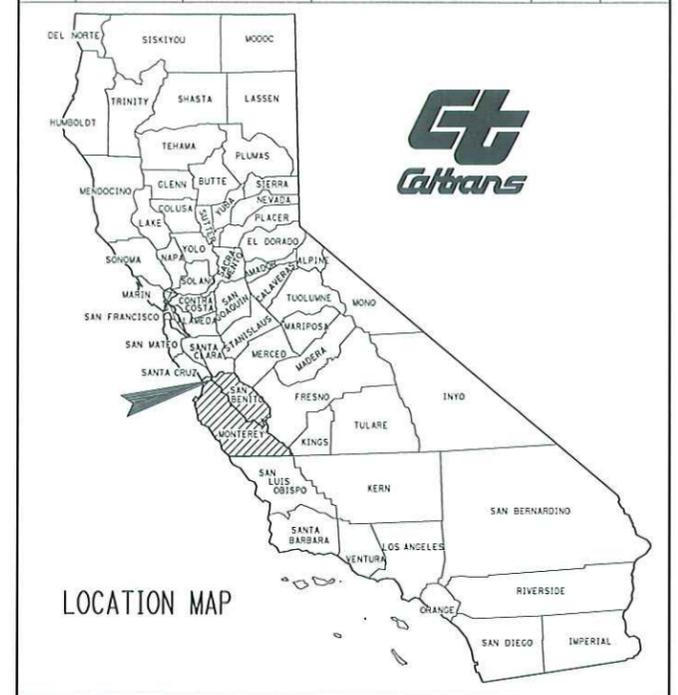
**STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION**

**PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY**

**NEAR PRUNEDALE FROM 0.4 MILE SOUTH OF
DUNBARTON ROAD (NORTH) IN MONTEREY COUNTY TO
1.0 MILE NORTH OF COLE ROAD IN SAN BENITO COUNTY**

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon,SB†	101	100.0/101.3 0.0/1.6		



**BEGIN CONSTRUCTION
STA 725+80
PM 100.0**

**END CONSTRUCTION
STA 877+70
PM 1.6**

Begin Work
Sta 709+96

End Work
Sta 893+54

PROJECT MANAGER
DAVID SILBERBERGER

DESIGN ENGINEER
ERNIE PENUNA

NO SCALE

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO CONTRACTORS."

**ATTACHMENT A
VICINITY MAP**

CONTRACT No. **05-315804**

LAST REVISION DATE DRAWN BY UNIT NO.

Layouts with Boring Locations

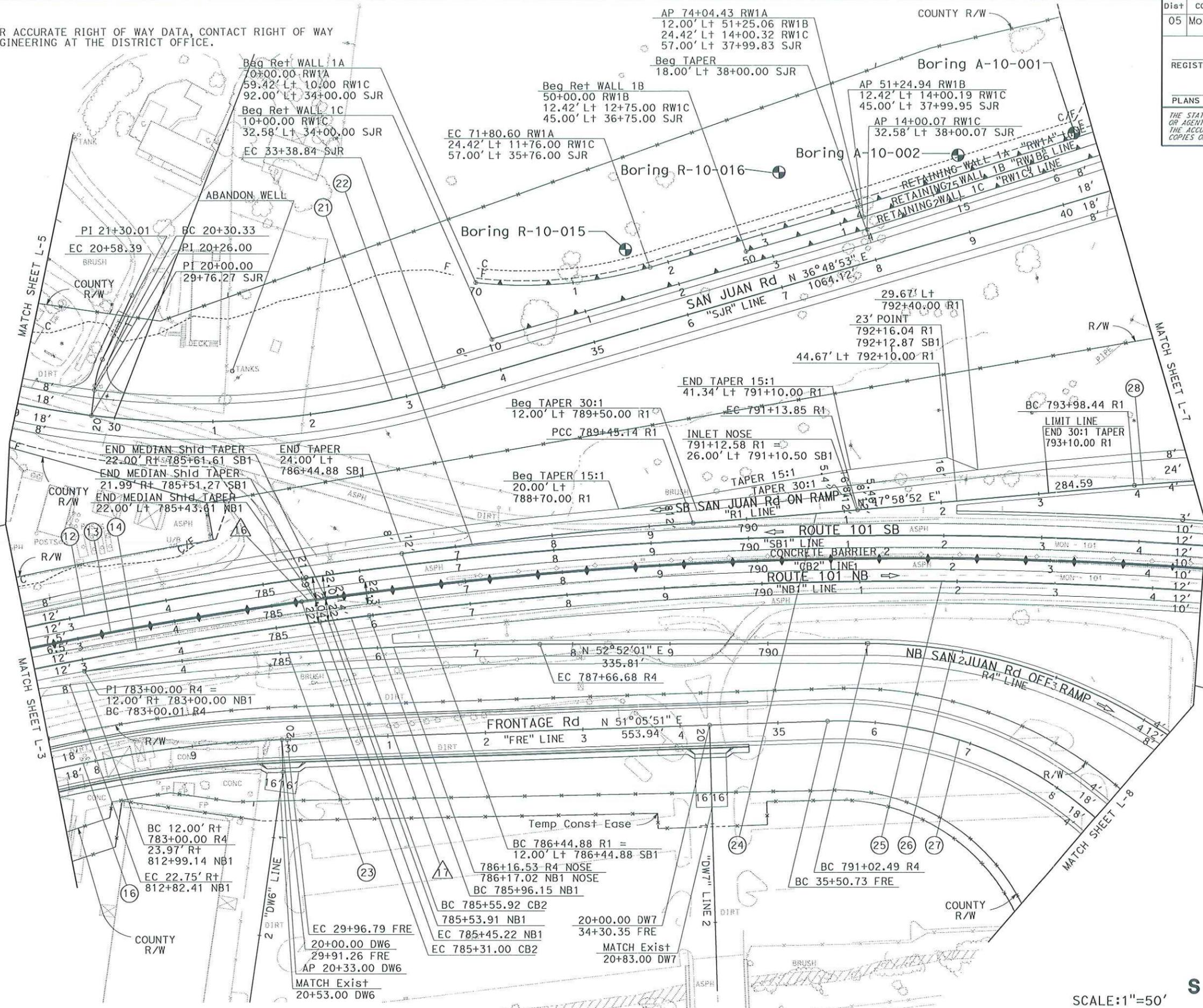
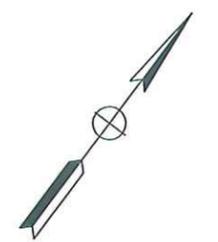
Attachment B

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
05	Mon,SB†	101	100.0/101.3, 0.0/1.6		

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.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
06-DESIGN
 FUNCTIONAL SUPERVISOR: ERNIE PENUNA
 CHECKED BY: JOSEPH VALDIVIA
 DESIGNED BY: JOSEPH VALDIVIA
 REVISIONS: REVISED BY: DATE REVISED:

Attachment B
Soil Nail Wall No. 1
LAYOUT

SCALE: 1"=50'

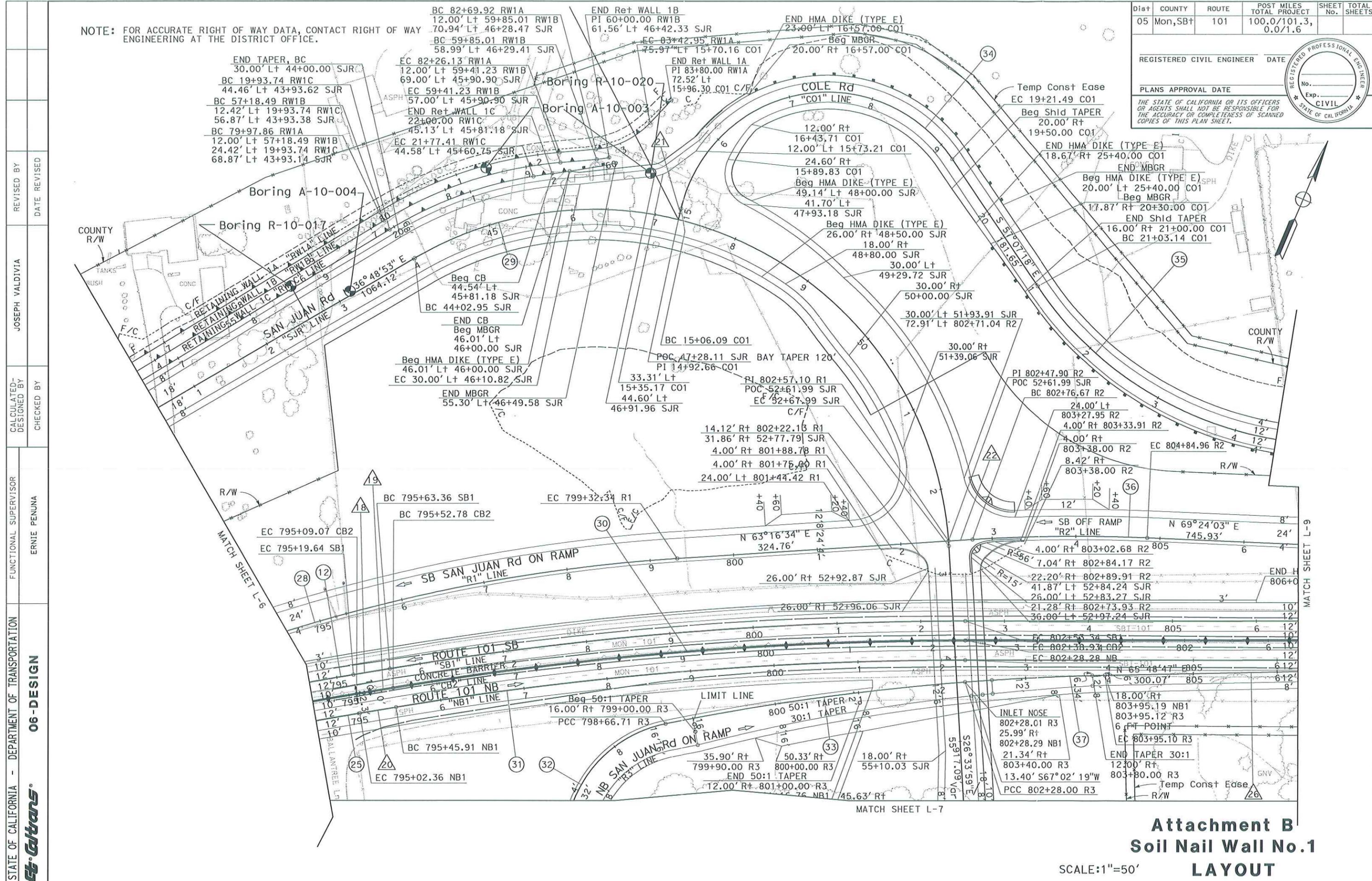
LAST REVISION DATE BY

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
05	Mon,SB+	101	100.0/101.3, 0.0/1.6		

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.



REVISED BY: JOSEPH VALDIVIA
 DATE REVISION: [blank]
 CALCULATED/DESIGNED BY: ERNIE PENUNA
 CHECKED BY: [blank]
 FUNCTIONAL SUPERVISOR: [blank]
 DEPARTMENT OF TRANSPORTATION
06 - DESIGN
 STATE OF CALIFORNIA - **St. Gallans**

Attachment B
Soil Nail Wall No.1
LAYOUT
 SCALE: 1"=50'

LAST REVISION: DATE BY APPROV. BY

General Plan

Attachment C

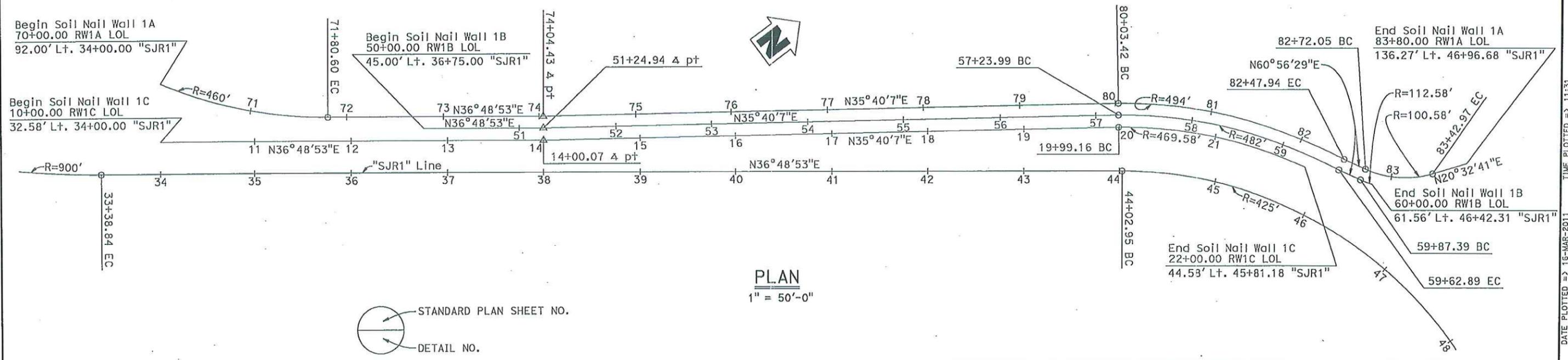
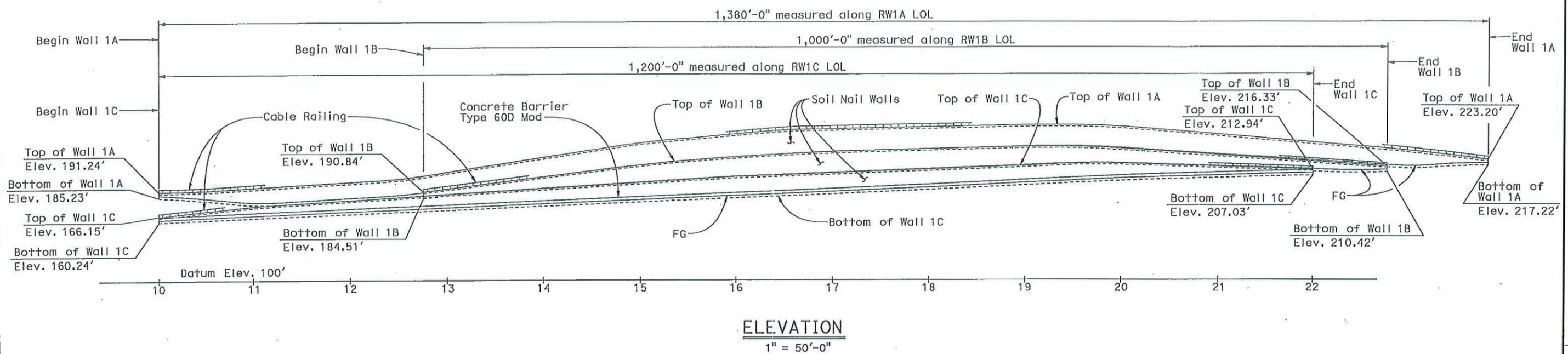
CURVE DATA				
	R	Δ	T	L
"SJR1"	900.00'	47°51'20"	399.35'	751.71'
"SJR1"	425.00'	116°37'08"	688.39'	865.04'
RW1A LOL	460.00'	22°29'42"	91.48'	180.60'
RW1A LOL	494.00'	28°21'38"	124.82'	244.52'
RW1A LOL	100.58'	40°23'47"	37.00'	70.92'
RW1B LOL	482.00'	28°23'55"	121.96'	238.90'
RW1B LOL	112.58'	6°24'59"	6.31'	12.61'
RW1C LOL	469.58'	24°30'19"	101.98'	200.84'

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon/SB+	101			

REGISTERED CIVIL ENGINEER	X	DATE
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.

Notes:
 1. For Typical Section of Soil Nail Wall, see "GENERAL PLAN NO.2" sheet.
 2. For "Quantities", see "GENERAL PLAN NO.2" sheet.



X DESIGN ENGINEER	DESIGN	BY A. Salimi	CHECKED X	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL 93 W/ "LOW-BOY" PERMIT DESIGN VEHICLE	BRIDGE NO.	SOIL NAIL RETAINING WALL 1 GENERAL PLAN NO.1
	DETAILS	BY D. Pato	CHECKED X	LAYOUT	BY D. Pato	X	
	QUANTITIES	BY X	CHECKED X	SPECIFICATIONS	BY X	X	

STATE OF CALIFORNIA	DIVISION OF ENGINEERING SERVICES	BRIDGE NO.	
DEPARTMENT OF TRANSPORTATION	STRUCTURE DESIGN	POST MILE	
	DESIGN BRANCH 6	X	

UNIT: 3591	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET	OF
PROJECT NUMBER & PHASE: 0500000495-1	CONTRACT NO.: 315801	3-4-11	1	X

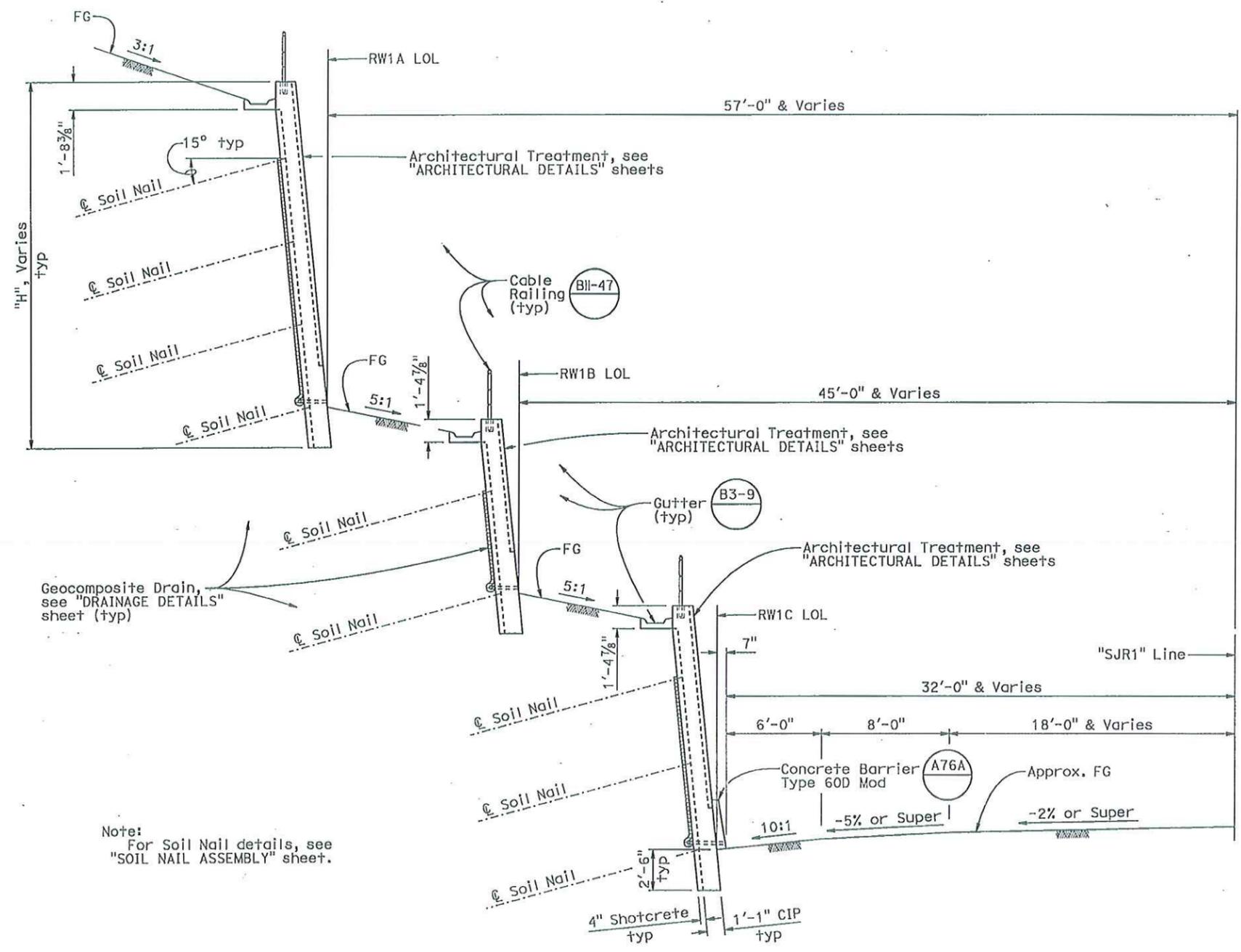
Typical Cross Section

Attachment D

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon/SB†	101			

REGISTERED CIVIL ENGINEER	DATE	X
PLANS APPROVAL DATE		

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Note:
For Soil Nail details, see
"SOIL NAIL ASSEMBLY" sheet.

**TYPICAL SECTION
SOIL NAIL WALL**
1/4" = 1'-0"

X DESIGN ENGINEER	DESIGN	BY Unknown	CHECKED X	LOAD & RESISTANCE FACTOR DESIGN	LIVE LOADING: HL 93 W/"LOW-BOY"? PERMIT DESIGN VEHICLE	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 6	BRIDGE NO.	X	SOIL NAIL RETAINING WALL 1 GENERAL PLAN NO.2	
	DETAILS	BY D. Pato	CHECKED X	LAYOUT	BY D. Pato			CHECKED X	POST MILE		X
	QUANTITIES	BY X	CHECKED X	SPECIFICATIONS	BY X			CHECKED X	PLANS AND SPECS COMPARED		X

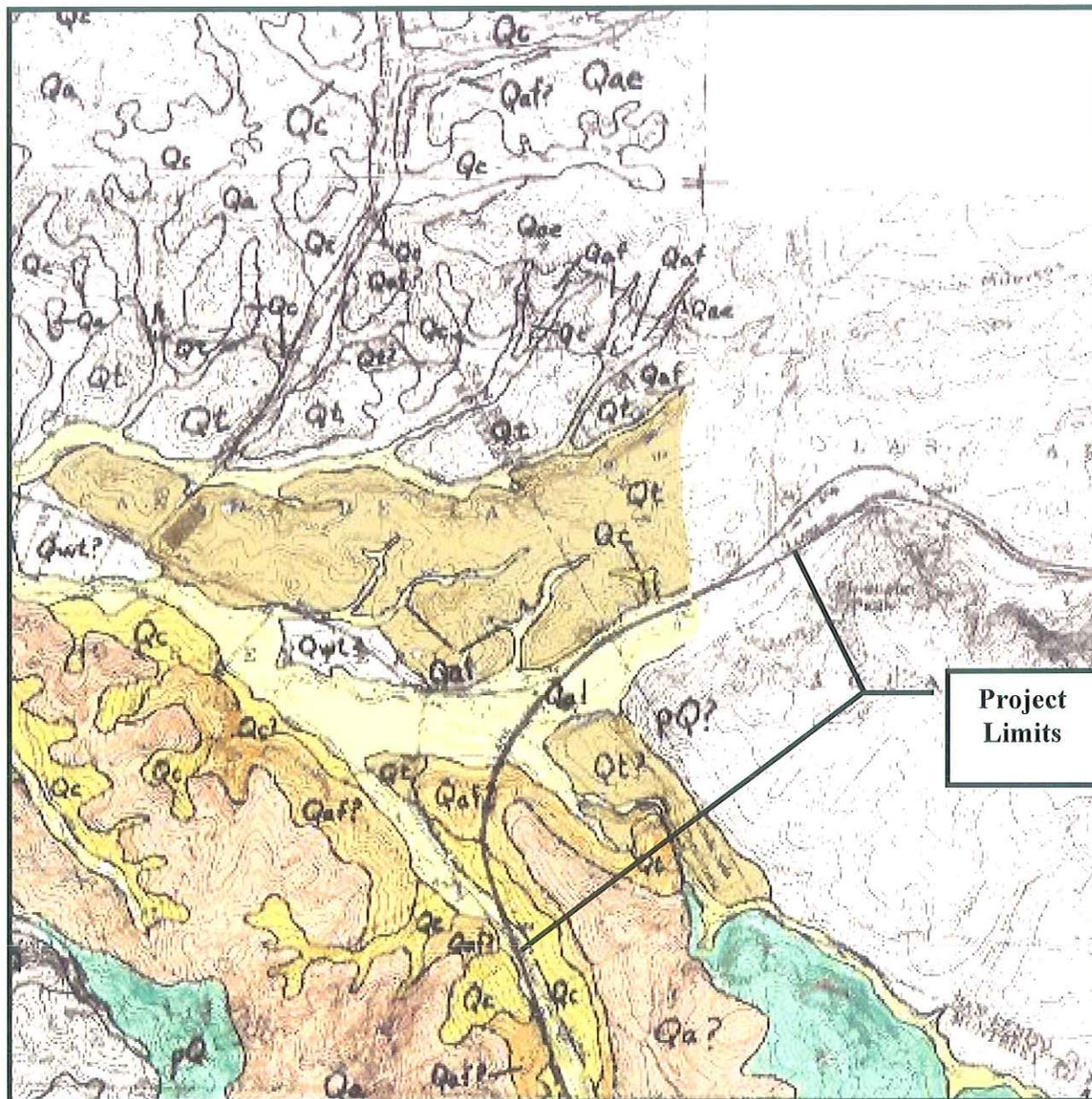
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS	0	1	2	3
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UNIT: 3591	PROJECT NUMBER & PHASE: 0500000495-1	CONTRACT NO.: 315801
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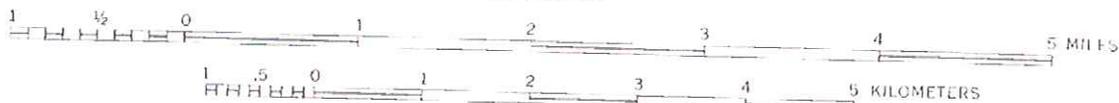
DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES	SHEET	OF
	3-11-11	2	X

Geologic Map and Legend

Attachment E



SCALE 1:62 500



CONTOUR INTERVAL 20 FEET
 DASHED LINES REPRESENT 10 FOOT CONTOURS
 MOSS LANDING QUADRANGLE CONTOUR INTERVAL 10 FEET
 NATIONAL GEODETIC VERTICAL DATUM 1929

GEOLOGIC MAP

Attachment E

This map is part of:
**Map Showing Geology and Liquefaction
 Potential of Northern Monterey and
 Southern Santa Cruz Counties, California**
 By: Dupre and Tinsley

GEOLOGIC LEGEND

Qb

BASIN DEPOSITS--Unconsolidated plastic clay and silty clay contain much organic material. Locally contain interbedded thin layers of silt and silty sand. Deposited in a variety of environments including estuaries, lagoons, tidal flats, marsh-filled sloughs, flood basins, and lakes. Thickness highly variable; may be as much as 30 m thick underlying some sloughs. High susceptibility to flooding. Moderate to high liquefaction susceptibility except where water table is more than 10 m below the surface. Highly expansive soils develop on these deposits

Qa1

ALLUVIAL DEPOSITS, UNDIFFERENTIATED--Unconsolidated, heterogeneous, moderately sorted silt and sand with discontinuous lenses of clay and silty clay. Locally includes large amounts of gravel. May include deposits equivalent to both younger and older flood-plain deposits in areas where these were not differentiated. Thickness highly variable; may be more than 30 m thick near the coast. Variable permeability and porosity. Depth to water table highly variable. High susceptibility to flooding in areas where not incised by present stream. Liquefaction susceptibility moderate to high where water is close to surface

Qc

COLLUVIUM--Unconsolidated heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel, deposited by slope wash and mass movement. Minor fluvial reworking. Locally includes numerous undifferentiated landslides and small alluvial fans. Contacts generally gradational. Locally grades into fluvial deposits. Generally more than 2 m thick. Moderately well drained and permeable. Mostly moderately low liquefaction potential but can be moderately high locally. Slope stability relatively low; small landslides common where water is close to surface

Qch

ALLUVIAL FAN DEPOSITS OF CHUALAR--Weakly consolidated, moderately to poorly sorted sand, silt, and gravel deposited as a series of alluvial fans flanking the Salinas Valley. Depth to water table generally greater than 10 m because of ground-water pumping. Characterized by well-drained, medially developed soils. Relatively low susceptibility to flooding; low susceptibility for liquefaction

Qt

TERRACE DEPOSITS, UNDIFFERENTIATED--Weakly consolidated to semiconsolidated, moderately to poorly sorted silt, silty clay, sand, and gravels, mostly deposited in a fluvial environment. Thickness highly variable, locally as much as 18 m thick. Deposits capped by moderately to fully completely well-developed soils, some with duripans; expansive soils are locally present. Low susceptibility to flooding and for liquefaction

Qoe

OLDER EOLIAN DEPOSITS--Semiconsolidated, moderately well sorted sand as much as 13 m thick deposited in a series of inland-migrating dune fields. Locally conformably overlying undifferentiated coastal terrace deposits and terrace deposits of Antioch. Capped by moderately well drained, maximally developed soils, some with duripans. Low susceptibility to flooding and for liquefaction

Qp

ALLUVIAL FAN DEPOSITS OF PLACENTIA--Semiconsolidated, moderately to poorly sorted sand, silt, and gravel; gravel content increases toward the head of the fan. Similar to alluvial fan deposits of Chualar, except capped by more well developed soils. Generally low susceptibility to flooding; low liquefaction susceptibility

Qa

AROMAS SAND (Pleistocene)--Heterogeneous sequence of mainly eolian and fluvial sand, silt, clay, and gravel. Slight angular unconformities present throughout the unit; older deposits more complexly folded and faulted than younger deposits. Total thickness may be greater than 250 m. Characterized by maximally developed soils, most with duripans. Low susceptibility to flooding and for liquefaction. Unit locally divided into:

Qae

Eolian deposits--Moderately well sorted sand as much as 60 m thick that contains no intervening fluvial deposits. Several sequences of eolian deposits may be present, each separated by paleosols. The upper 3-6 m of each dune sequence is oxidized and relatively well indurated, and all primary sedimentary structures have been destroyed by weathering; the lower parts of each dune sequence may be relatively unconsolidated below the weathering zone. Porosity and permeability, as well as degree of consolidation, are thus a function of the relative position within the weathering profile. Perched water tables may be present where eolian deposits overlie less permeable fluvial deposits; springs may develop in these areas, and slumps and landslides may develop as well. Severe erosion may occur within this unit when the weathering zone and its protective duripan are breached and the relatively unconsolidated sands are exposed, as evidenced by the extensive colluvial slopes that mantle much of the outcrop area

Qaf

Fluvial deposits--Semiconsolidated, moderately to poorly sorted silty clay, silt, sand, and gravel deposited by meandering and braided streams as well as alluvial fans. Includes beds of relatively well sorted gravel ranging from 3 to 30 m thick that are locally important as aquifers in the region. Locally includes buried soils high in expansive clays, which act as aquicludes. Landslides are common in this unit

Qgl

ALLUVIAL FAN DEPOSITS OF GLORIA--Moderately consolidated, deeply weathered, moderately to poorly sorted sand, silt and gravel, capped with moderately well drained, maximally developed soils with duripans. Low susceptibility to flooding and for liquefaction

pQ

SEDIMENTARY, IGNEOUS, AND METAMORPHIC ROCKS, UNDIVIDED--
Characterized by very low susceptibility for liquefaction

MATERIALS INFORMATION

[Foundation Report for Retaining Wall No. 2 \(Soil Nail Wall\) dated June 14, 2011.](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

Memorandum

Flex your power!

Be energy efficient!

To: FRITZ HOFFMAN
Branch Chief
Division of Engineering Services, Structure Design
Office of Bridge Design – Central, Branch 6

Date: June 14, 2011

File: 05-Mon-101-100.0/101.3
05-SBt-101-0.0/0.6
Retaining Wall No. 2
(Soil Nail Wall)
EA 05-315801

Attn: Richard Melko
Design Engineer

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

Subject: Foundation Report

Scope of Work

As per your request dated March 17, 2011, a Foundation Report (FR) is provided for Retaining Wall 2 as part of San Juan Road interchange project. The recommendations contained in this report are based on a review of published geotechnical/geologic literature, published maps, the results of a subsurface exploration performed at the proposed wall site, detailed analysis and our observations and engineering judgment.

This Foundation Report supersedes the Preliminary Foundation Report for Retaining Wall 2 dated September 30, 2010 and the Structure Preliminary Geotechnical Report dated August 10, 2009.

Project Description

The proposed project is located in the rolling hills northeast of Prunedale and west of San Juan Bautista in both Monterey and San Benito counties.

This project proposes to construct a new highway overcrossing for the San Juan Road and Highway 101 intersection. The proposed interchange project will improve the current at

grade crossings for San Juan Road, Dunbarton Road, and Cole Road by realigning the frontage roads to the new overcrossing. In addition, a new frontage road (Frontage Road East) will be constructed on the southeast side of the highway to provide access to the business and residential area at and near the Red Barn. In total, the proposed project will consist of a new San Juan Road highway overcrossing structure, new ramp connections, four new creek crossing structures, two culvert structures (pipe jacking), and new frontage road extensions which will require soil retaining structures.

On Frontage Road East, a retaining wall is required to develop the new alignment. The proposed retaining wall will be located approximately 500 feet southeast of the proposed overcrossing. Structures Design proposes to construct a new soil nail wall with a total length of approximately 580 feet and a maximum height of approximately 31 feet. The soil nail wall is proposed for Station 44+00 "FRE" at 28.0 feet right to Station 49+60 "FRE" at 28.0 feet right. The retaining wall alignment is from 44+00 "RW2" to 49+80.90 "RW2". The northern end of the wall will be designed to accommodate expected future expansion and will terminate at a height of approximately 22 feet. This section will then be backfilled with soil at 2:1 slope angle. The retaining wall will be designed with an architectural treatment consistent with the remainder of the project.

Soil nailing uses a top down construction technique where closely spaced steel bars or "nails" are installed as the excavation proceeds to reinforce and strengthen the slope or excavation. Soil nailing provides improved economy and lessened environmental impacts compared to conventional retaining walls, through the elimination of the need for a cut excavation and backfilling.

Pertinent Reports and Investigations

The following reports contain pertinent information that is directly related to this project site. These reports should be read to provide a full picture of the project area even though they do not discuss the soil nail wall directly. These reports discuss many points, which are relevant to any project constructed in the San Juan Road area.

The following publications were used to assist in the assessment of site conditions:

1. *California Seismic Hazard Map 1996*, Caltrans, Lalliana Mualchin, 1996.

2. *Map Showing Geology and Liquefaction Potential of Northern Monterey and Southern Santa Cruz Counties, CA.* Dupre and Tinsley, 1980.
3. *Preliminary Geotechnical Design Report* for 05-SBt-101-PM 0.4/1.4, 05-388200 by Geotechnical Services, dated September 2, 1998.
4. *Geotechnical Design Report* for 05-SBt-101-PM 0.4/1.4, 05-388200 by Geotechnical Services, dated June 10, 1999.
5. *Structure Foundation Report, Revision 2*, for Mon-101-PM 92.3/100.4, 05-0161B1, by Geotechnical Services, dated April 6, 2004.
6. *Preliminary Geotechnical Design Report* for 05-MON-101-PM 98.4, 05-0161E0 by Geotechnical Services, dated March 23, 2004.
7. *Geotechnical Design Report* for 05-MON-101-PM 98.4, 05-0161E0 by Geotechnical Services, dated June 16, 2008.
8. *Rippability Evaluation* for 05-MON-101-101.3 for 05-315800 by Geotechnical Services, dated August 30, 2009.

A subsurface investigation in the area of the proposed soil nail wall was conducted in December of 2010 to provide subsurface information.

Site Geology and Subsurface Conditions

Physical Setting

The project is located in the Coast Ranges Geomorphic Province of California in the Gabilan Range. The topography is semi-mountainous. The local terrain in the project limits consists of moderately sloped hills covered with grasslands and a mixture of heavy brush and trees.

The climate in the project area is warm and foggy and in the summers, while the winters are cool and moist. The mean annual precipitation is 18 inches. The mean annual temperature is about 57°. Winters are generally mild with occasional freezing temperatures overnight. Nearly all the precipitation accumulates during Pacific storms

between October and May, with the majority falling during winter months.

Vegetation in the project area primarily consists of grasses, brush, oaks and willows growing near water. Stands of willows were observed growing along all of the unnamed tributaries to the Elkhorn Slough while the majority of the project area consists of seasonal grasses.

Regional Geology

The project area lies within the central portion of the Coast Ranges Geomorphic Province, at the northern portion of the Salinas River Valley and is in the Gabilan Range. The project is bounded by the San Andreas Fault to the east, Monterey Bay and the Santa Lucia Range to the west, the Santa Cruz Mountains to the north and the Salinas Valley to the south.

The geologic units encountered in the highway in the project area are alluvial deposits, terrace deposits, colluvial and fluvial deposits.

The alluvial deposits consist of unconsolidated, heterogeneous, moderately-sorted silt and sand with discontinuous lenses of clay and silty clay. Locally this deposit may include large amounts of gravel.

The terrace deposits consist of weakly-consolidated to semi-consolidated, moderately to poorly-sorted silt, silty clay, sand and gravels mostly deposited in the fluvial environment. The colluvium deposits consist of unconsolidated, heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel deposited by slope wash and mass movement. Locally it includes numerous undifferentiated landslides and small alluvial fans.

The fluvial deposits consist of semi-consolidated, moderately to poorly-sorted silty clay, silt, sand and gravel deposited by meandering and braided streams as well as alluvial fans. The beds can include relatively well-sorted gravel.

The Soil Survey of Monterey County published by the US Department of Agriculture shows that in the project area, the soils consist mostly of Salinas Series, Santa Ynez Series and the Placentia Series. The Salinas series consist of well-drained soils that formed in mixed alluvium derived from sedimentary and granitic rocks on alluvial fans. The slopes are from 0 to 9 percent. The Santa Ynez series consists of moderately to well-drained soils that formed on terraces in alluvium derived from sandstone and granitic

rocks. The slopes are from 2 to 30 percent. The Placentia series consists of well-drained soils that formed in alluvium that was derived from granitic and schistose rocks on old alluvial fans and terraces. The slopes range from 0 to 30 percent.

Geotechnical Site Conditions

Subsurface soils encountered in the vicinity of the proposed Retaining Wall 2 are described below and the location of the borings is shown on the Attachment B.

In boring R-10-018, which is located at approximately Station 47+53 "FRE" at 6 feet right, the soils consisted of interbedded soils with varying contents of sands, silts and clay. From the ground surface to approximately 1.5 feet below the surface, the soils consisted of sandy lean clay topsoil. From 1.5 feet below the surface to 12.5 feet below the surface, the soil consisted of medium dense clayey sand. From 12.5 feet below the surface to 16.5 feet below the surface, a hard lean clay was encountered. From 16.5 feet below the surface to 23.0 feet below the surface, hard, sandy lean clay was encountered. From 23.0 feet to 30.3 feet, very dense silty sand and well-graded sand was found. A 5.0 foot layer of hard sandy lean clay was then encountered from 30.3 feet to 35.0 feet. From 35.0 feet to the bottom of the boring at 42.0 feet, the soil consisted mostly of very dense silty sand and well-graded sand.

Similar findings occurred in boring R-10-019, at approximate station 45+47 "FRE" at 16.0 feet left.

This is typical of terrace and alluvial deposits with laterally discontinuous, alternating layers of varying thickness and gradation of sands, silts, clays and some gravels.

Ground Water

Open observation wells were installed in borings R-10-018 and R-10-019. The purpose of the wells is to observe fluctuations in groundwater levels and determine if groundwater will influence construction and foundation design. Results of the groundwater-monitoring program are summarized in Table 1.

Table 1. Groundwater Elevations

<i>Location</i>	<i>Surface Elevation (Ft)</i>	<i>Date of Measurement</i>	<i>Depth to Groundwater (Ft)</i>	<i>Groundwater Elevation (Ft)</i>
R-10-018	211.8	2-2-11	38.7	173.1
		4-12-11	38.6	173.2
R-10-019	200.7	2-2-11	27.8	172.9
		4-12-11	27.7	173.0

A spring has been noted at the toe of the existing slope in the vicinity of Station 45+50 "RW2". In this area, groundwater was encountered at elevation 172.9. The bottom of the retaining wall in this location is approximately 191.6 feet. It is possible that groundwater will be encountered in the excavation of the benches during the top down construction or during the installation of the soil nails.

Other springs may be encountered during construction due to the geology of the site.

Corrosion Evaluation

The Department considers a site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil and/or water samples taken at the site: pH of less than 5.5 and a resistivity of less than 1000 ohm-cm. If the resistivity is less than 1000 ohm-cm, additional testing of chloride and sulphate is required. The site is then considered corrosive if chloride content is greater than 500 ppm, or sulphate content is greater than 2000 ppm.

Soil samples were obtained in each of the two borings and sent to the HQ Geotechnical Laboratory for corrosion potential evaluation. Based on the results of the corrosion analyses, the site is considered to be non-corrosive. Refer to Table 2 below for complete corrosion testing results.

Table 2. Corrosion Testing Summary

<i>Boring ID</i>	<i>Depth (ft)</i>	<i>pH</i>	<i>Resistivity ohm-cm</i>	<i>Chloride ppm</i>	<i>Sulphate ppm</i>	<i>Corrosive</i>
R-10-018	5.0–8.0	7.6	1110	-	-	NO
R-10-018	17.0–20.5	7.7	2110	-	-	NO
R-10-019	7.0-13.5	7.3	2030	-	-	NO
R-10-019	22.5-28.0	7.8	2480	-	-	NO

Seismicity

No known or potentially active faults, as classified by Caltrans, intersect the project area. Consequently, the potential for surface fault rupture is low and no mitigation efforts in regards to fault rupture are necessary.

The project area is located within a seismically active region of California. As determined by Caltrans, the following are the active and potentially active faults that have the greatest potential of influencing the site along with the Moment Magnitude, distance to the site and the expected peak ground accelerations. The distance to the fault is measured from the location of the proposed retaining wall. The faults and the fault characteristics are listed below in Table 3.

Table 3. Fault Information

<i>Fault</i>	<i>Magnitude</i>	<i>Distance</i>	<i>Peak Gound Acceleration</i>
Zayante- Vergales	7.0	1.4 mi	0.50g (gravity)
San Andreas	7.9	2.7 mi	0.48g (gravity)

Liquefaction is a loss of soil strength and stiffness due to an increase in excess pore water pressure during cyclic loading, such as occurs during an earthquake. Soils with liquefaction potential include loose cohesionless soils that may become saturated. Liquefaction susceptibility is considered low. Low ground water levels as well as the

medium-dense to dense soils encountered during the geotechnical foundation investigation confirm this finding.

Design Requirements and Approach

The design of the soil nail wall was performed using GoldNail software, developed by Golder Associates of Redmond, Washington. GoldNail is a slip-surface, limit equilibrium, slope-stability model based on satisfying overall limit equilibrium (translational and rotational) of individual free bodies defined by circular slip surfaces. This overall soil nail wall design approach is recommended in the FHWA publication *Soil Nail Walls*, Geotechnical Engineering Circular No. 7, Publication No. FHWA0-IF-03-017. The nail Service Load Design (SLD) method was used. The Strength Factors and Factors of Safety recommended in the FHWA manual for Group VII and Group I load combinations were used. The load combinations that controlled the design of the soil nail wall are as follows:

Group VII Strength Factors and Factors of Safety

Nail Head Strength =	0.89
Nail Tendon Tensile Strength =	0.73
Ground-Grout Pullout Resistance =	0.67
Minimum Global Soil Factor of Safety =	1.01

Group I Strength Factors and Factors of Safety

Nail Head Strength =	0.67
Nail Tendon Tensile Strength =	0.55
Ground-Grout Pullout Resistance =	0.5
Minimum Global Soil Factor of Safety =	1.35

The following design assumptions and approaches have been utilized:

- The maximum contributory area of the soil nail assembly ($S_v \times S_h$) $\leq 25 \text{ ft}^2$ where,
 S_v is the vertical spacing of the nails
 $S_{v,Max} = 5.0 \text{ ft}$

S_h is the horizontal spacing of the nails
 $S_{h,Max} = 5.0$ ft

- Diameter of the grout hole (D) = 0.5 ft
- The declination angle (θ) of the nails from the horizontal = 15°
- The following soil parameters have been utilized for the analysis of this wall:

Unit Weight = 120 lbs/ft³
Cohesion = 100 psf
Friction Angle = 33°
Design Nail Pullout Resistance = 2000 lbs/ft
Ultimate Nail Pullout Resistance = 3000 lbs/ft
Ultimate Bond Stress = 2000 psf

- The top nail profile line was assumed to be parallel to the OG line at the top of the wall, 2.0 feet below the top of cut. The bottom nail profile line shall be parallel to the bottom of the wall, 2.0 feet above the bottom of wall. The bottom of the wall is assumed to be 2.5 feet below finished grade. Equal vertical nail spacing not to exceed 5.0 for intermediate nails was assumed.
- When the wall height is less than 6.0 feet, the horizontal spacing shall be reduced to 4.0 feet and one soil nail shall be placed in the center of the vertical column.

Soil Nail Bars Grade and Bearing Plate Capacity

The following information is provided to the Office of Bridge Design for design of the wall facing.

From the stability analyses of the soil nail wall design, #10, Grade 75 bars conforming to ASTM Designation A615 are required. The tendon strength for this bar size is 95.3 kips. The maximum required nail tendon strength for the wall design was 56.6 kips. For bar

sizes that are unavailable in the designated steel grade, other steel grades with adjusted bar sizes that meet the minimum requirements may be used.

A maximum service nail head tension load of 22.2 kips was used for the wall facing design. The structural resistance for a permanent cast in place (CIP) concrete facing was calculated with the following assumptions:

- Thickness of permanent facing is 8 inches.
- Permanent facing reinforcement consists of No. 7 deformed bars spaced at 12 inches on center, placed both vertically and horizontally.
- Facing steel is placed in the center of CIP facing.
- Grade 60 reinforcing and head studs.
- 28 day concrete compressive strength equals or exceeds 4000 psi
- Horizontal soil nail spacing equals 5.0 feet
- Vertical soil nail spacing equals 5.0 feet
- Bearing Plate dimensions are 0.75 in. x 10 in. x 10 in.
- Headed Stud dimensions are 0.75 in. diameter body, 1.25 in. diameter head, 0.38 in. head thickness, 5 in. length, 6 in spacing.

The nominal head strength was calculated for facing flexure, facing punching shear, and headed stud tension strength criteria.

The design of the wall facing system is the responsibility of the Office of Bridge Design in consultation with the District Landscape Architect. A sculpted shotcrete finish facing or cast-in-place (CIP) concrete facing may be used for this wall.

Soil Nail Lengths

The design nail lengths (embedment depth) of the soil nails are shown in Table 4. Wall heights used for the design of the soil nail wall were obtained from the Profile Grade sheet for Retaining Wall No. 2 and cross sections that were provided by Design. Because of the variation in wall height and backslope height above the wall, the retaining wall is divided into segments. These segments are based on wall height and number of rows of nails which will be required, with each segment assigned a soil nail length (embedment depth).

Table 4. Soil Nail Lengths

Station Limits "RW2" Line	Wall Heights (ft)	Number of Rows	Nail Length (ft)
44+00 to 44+17	0-6	1	10
44+17 to 44+35	6-9	2	10
44+35 to 44+67	9-14	3	13
44+67 to 45+00	14-19	4	19
45+00 to 45+32	19-24	5	25
45+32 to 45+66	24-29	6	30
45+66 to 47+03	29-32	7	34
47+03 to 48+49	24-29	6	30
48+49 to 49+80.9	19-24	5	25

Soil Nail Wall Drainage

To prevent the build up of hydrostatic pore pressure behind the wall and facing, construction of a proper drainage system is critical. We recommend the following:

- Grade to drain the finished slopes immediately above the retaining wall.
- Place 2.0 foot wide prefabricated geocomposite drain strips vertically on 5.0 foot centers, prior to applying shotcrete. Geocomposite drains shall start 2.0 feet below the top of the cut and end at 0.5 feet below the weep hole inserts. This will reduce hydrostatic pressure, which may develop as a result of surface water infiltration from the top of the Soil Nailed Retaining Wall and from groundwater.
- Install PVC pipe weep holes through the shotcrete face at the base of each of the prefabricated drainage strips.

Stability Testing

Stability testing shall be performed by the contractor to verify the Contractor's proposed excavation lift height and exposure duration for the soil nail wall construction. The test consists of exposing a 20 foot bench of material to the Contractor's proposed lift height for the proposed exposure duration.

A minimum of one stability test shall be performed within each wall zone as defined in the following table:

Wall Zone	Beginning Station	End Station	Upper Elevation (ft)	Lower Elevation (ft)
1	44+00	45+32	221.9	187.3
2	45+32	47+03	224.7	198.7
3	47+03	49+80.9	222.6	197.4

The stability testing procedure described in the Special Provisions shall be followed.

Soil Nail Testing

The Contractor shall perform load testing of verification and proof soil nails. Verification tests are performed before excavation for wall construction and are meant to verify both the soil nail design and the Contractor's means and methods. Two verification soil nails shall be installed and tested for each soil nail wall zone listed. Proof test are performed during wall construction and are for quality control. The number of proof test nails is equal to eight percent of the total number of soil nails. Proof tests shall be performed at locations shown on the plans. When the wall Elevation View showing the location and total number of soil nails is completed, forward these sheets to Geotechnical Design-North so that the locations of the proof test nails can be selected. In addition to the proof test nails shown on the plans, the Engineer will select locations for an additional two percent of proof test nails.

The verification and proof testing procedure described in the Special Provisions shall be followed. When the Special Provisions have been prepared, please forward them to this office for review.

Construction Considerations

The holes made from the borings for the geotechnical exploration remained open for their full length following the extraction of the drill steel. Mud rotary drilling techniques were used for the geotechnical exploration. Depending on the drilling methods and rates used by the contractor, casing may be required to prevent caving in the formation material.

Excavation for the mass grading should be conducted in top-down manner and consist of bench and slopes in general agreement with Cal-OSHA requirements. Caving of surficial soils may occur during wall excavation. The surficial soil may be laid back at a stable slope angle to facilitate wall construction. Reconstructed permanent slopes above the wall shall not be steeper than 2H:1V.

It is unlikely utilities will be encountered during construction but potential conflicts with underground utilities should be cleared prior to the construction of the soil nail wall.

Seepage of water at the cut face may be encountered at isolated locations during construction. Local instability of the cut face may occur. The contractor must be prepared to take corrective measures to prevent excessive sloughing.

The project LOTB's have not been finalized. They will be sent electronically from the Graphics Section when they are completed.

Standard Special Provision S5-280, "Project Information", discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the addressee(s) of this report via electronic mail.

Data and information attached with the project plans are:

A. Log of Test Borings for Retaining Wall 2 (Soil Nail)

05-MON-101-100.0/101.3
05-SBt-101-0.0/0.6
EA 05-315801

June 14, 2011
Page 14

Data and information included in the Information Handout provided to the bidders and Contractors are:

A. Foundation Report for Retaining Wall 2 (Soil Nail) dated May 20, 2011

05-MON-101-100.0/101.3
05-SBt-101-0.0/0.6
EA 05-315801

June 14, 2011
Page 15

If you have any questions or comments, please contact Zeke De Llamas at (805) 549-3327, or Michael Finegan at (805) 549-3194.

Supervised by:



ZEKE DELLAMAS, P.E.
Transportation Engineer Civil
Geotechnical Design – North
Branch D

MICHAEL S. FINEGAN, P.E.
Branch Chief
Geotechnical Design – North
Branch D

- c: Project Manager - David Silberberger
Project Coordination Engineer – Andrew Tan
GS Corporate – Mark Willian
District Environmental Planning – Chuck Cesena
District Materials Engineer – Doug Lambert
Job File / Branch D Records
Roy Bibbens / GDN Records

05-MON-101-100.0/101.3
05-SBt-101-0.0/0.6
EA 05-315801

June 14, 2011
Page 16

LIST OF ATTACHMENTS

Title Sheet	Attachment A
Layout	Attachment B
Profile Grade	Attachment C
Boring Locations	Attachment D
Geologic Map	Attachment E

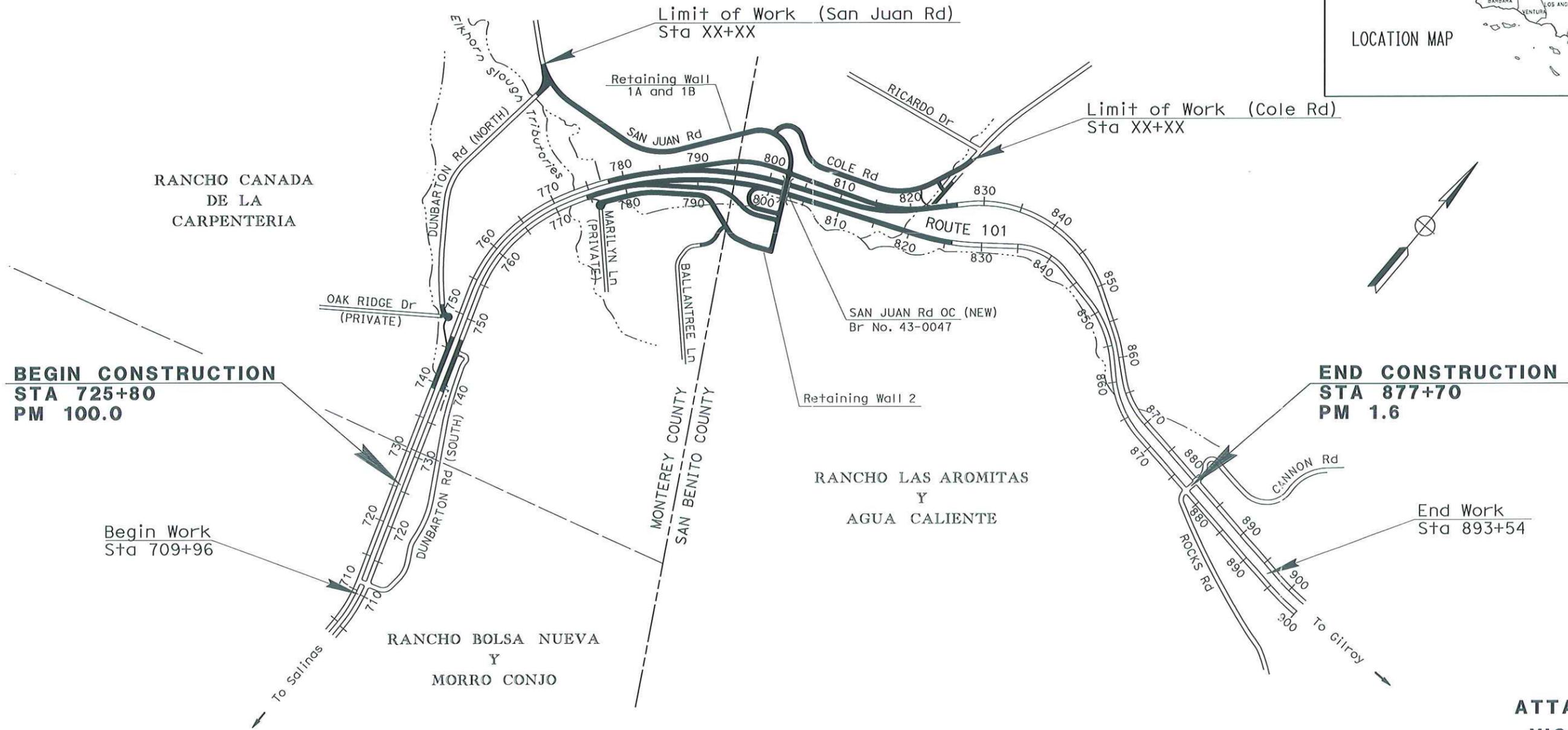
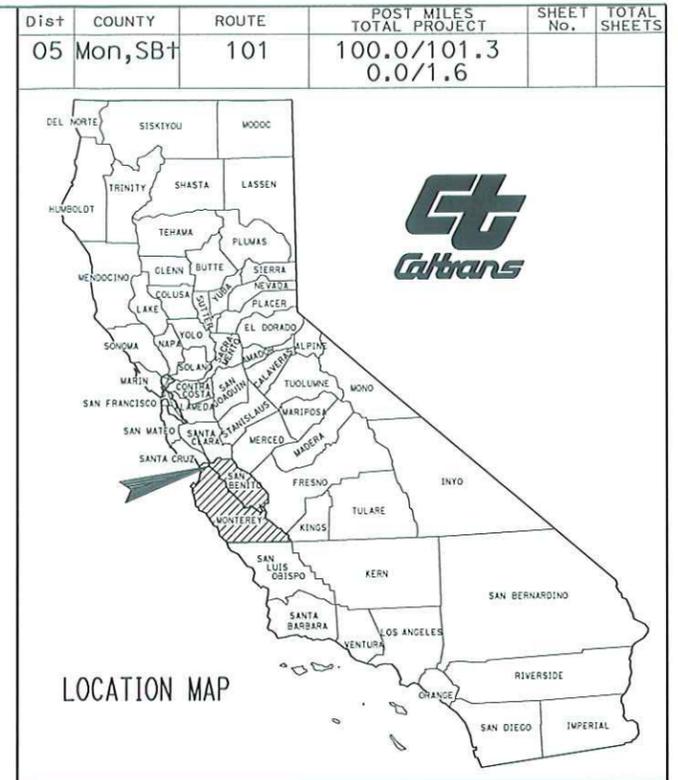
Vicinity Map

Attachment A

STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
 PROJECT PLANS FOR CONSTRUCTION ON
 STATE HIGHWAY

NEAR PRUNEDALE FROM 0.4 MILE SOUTH OF
 DUNBARTON ROAD (NORTH) IN MONTEREY COUNTY TO
 1.0 MILE NORTH OF COLE ROAD IN SAN BENITO COUNTY

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006



PROJECT MANAGER
 DAVID SILBERBERGER

DESIGN ENGINEER
 ERNIE PENUNA

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO CONTRACTORS."

NO SCALE

Layouts with Boring Locations

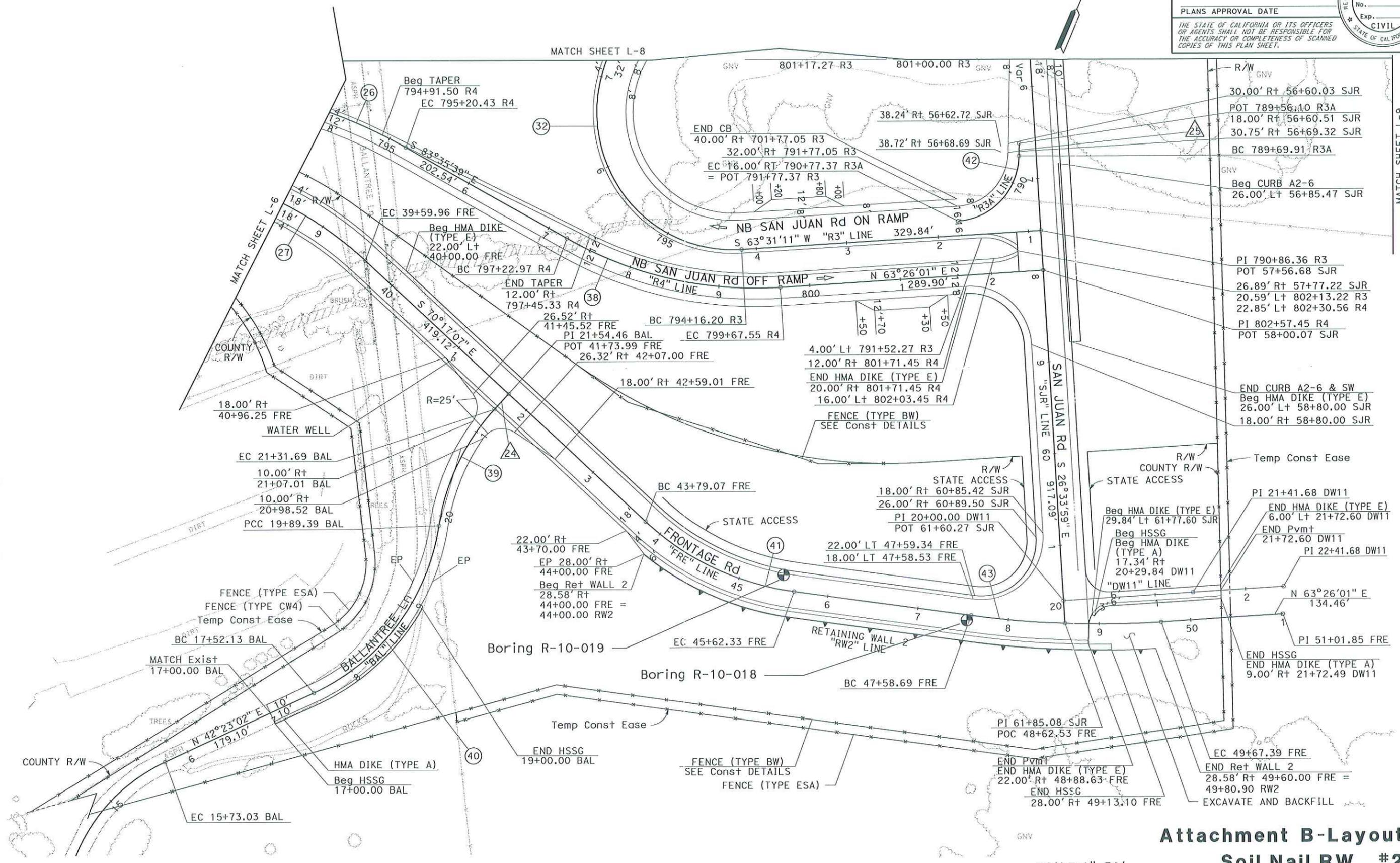
Attachment B

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
05	Mon,SB+	101	100.0/101.3, 0.0/1.6		
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.					



REVISOR: JOSEPH VALDIVIA
 DATE: [REDACTED]
 CALCULATED/DESIGNED BY: [REDACTED]
 CHECKED BY: [REDACTED]
 FUNCTIONAL SUPERVISOR: ERNIE PENUNA
 DEPARTMENT OF TRANSPORTATION
 06-DESIGN
 EtCortrans



SCALE: 1"=50'

**Attachment B-Layout
 Soil Nail RW #2**

LAST REVISION: DATE PLOTTED => 17-MAY-2011

Typical Cross Sections

Attachment C

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

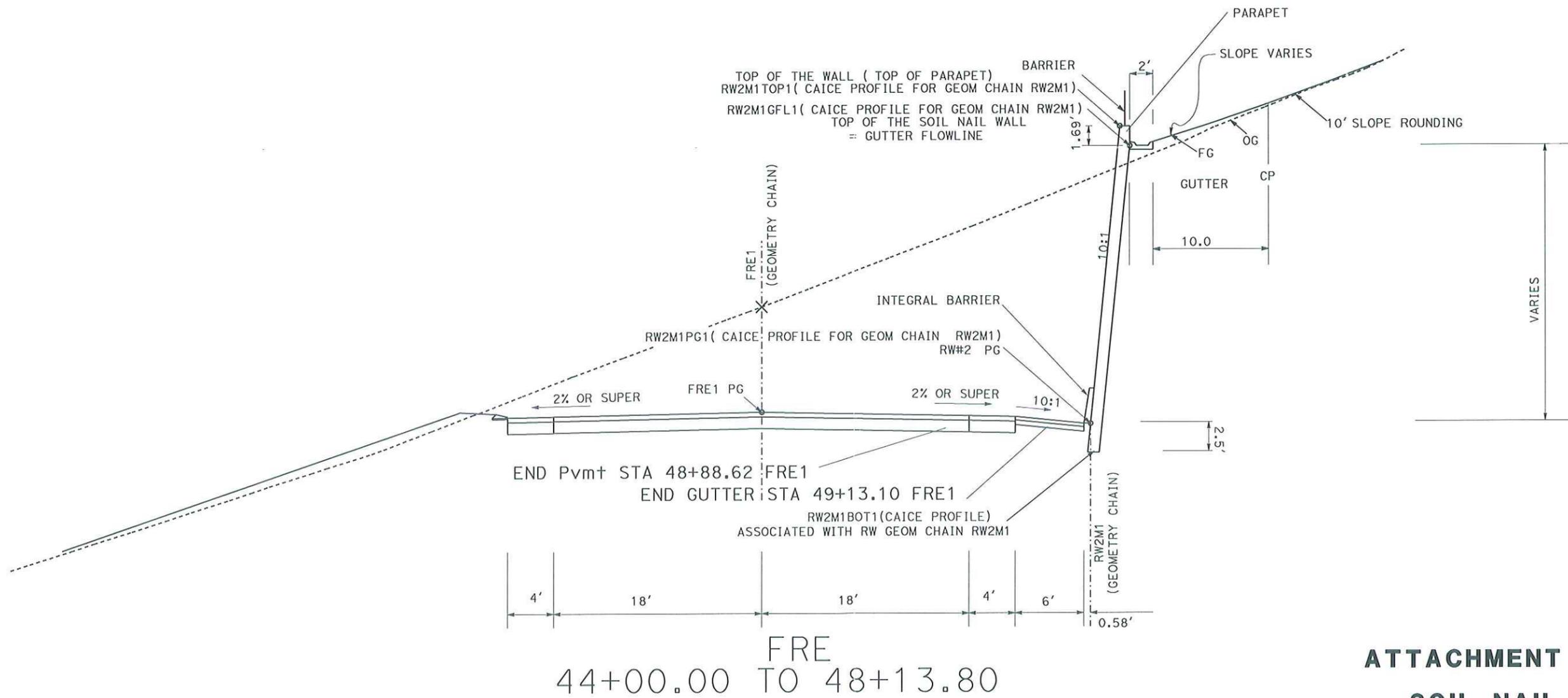
REGISTERED CIVIL ENGINEER DATE _____

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.

REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____
CIVIL
STATE OF CALIFORNIA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 Functional Supervisor: _____
 Calculated/Designed By: _____
 Checked By: _____
 Revised By: _____
 Date Revised: _____



ATTACHMENT C 1 OF 4
SOIL NAIL RW #2
TYPICAL CROSS SECTION

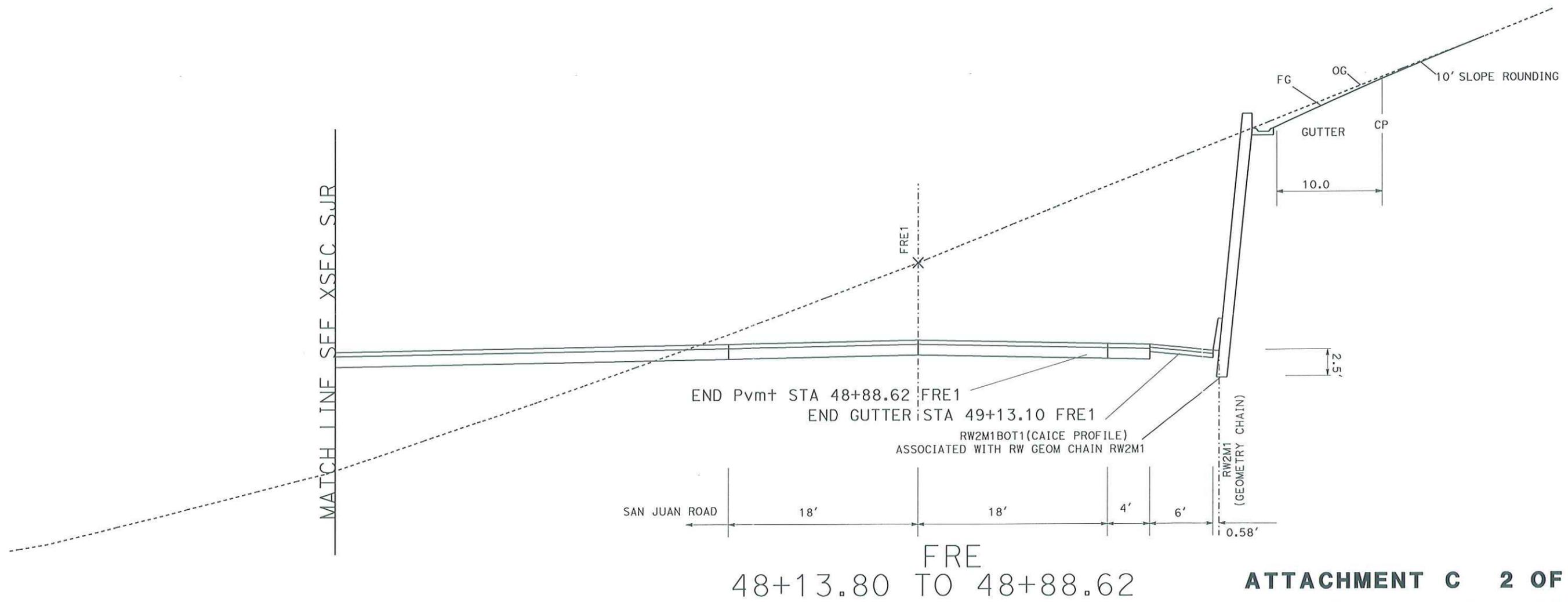
LAST REVISION DATE: 01/10/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 FUNCTIONAL SUPERVISOR
 CALCULATED BY
 DESIGNED BY
 CHECKED BY
 REVISED BY
 DATE REVISED

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

REGISTERED CIVIL ENGINEER DATE _____
 PLANS APPROVAL DATE _____

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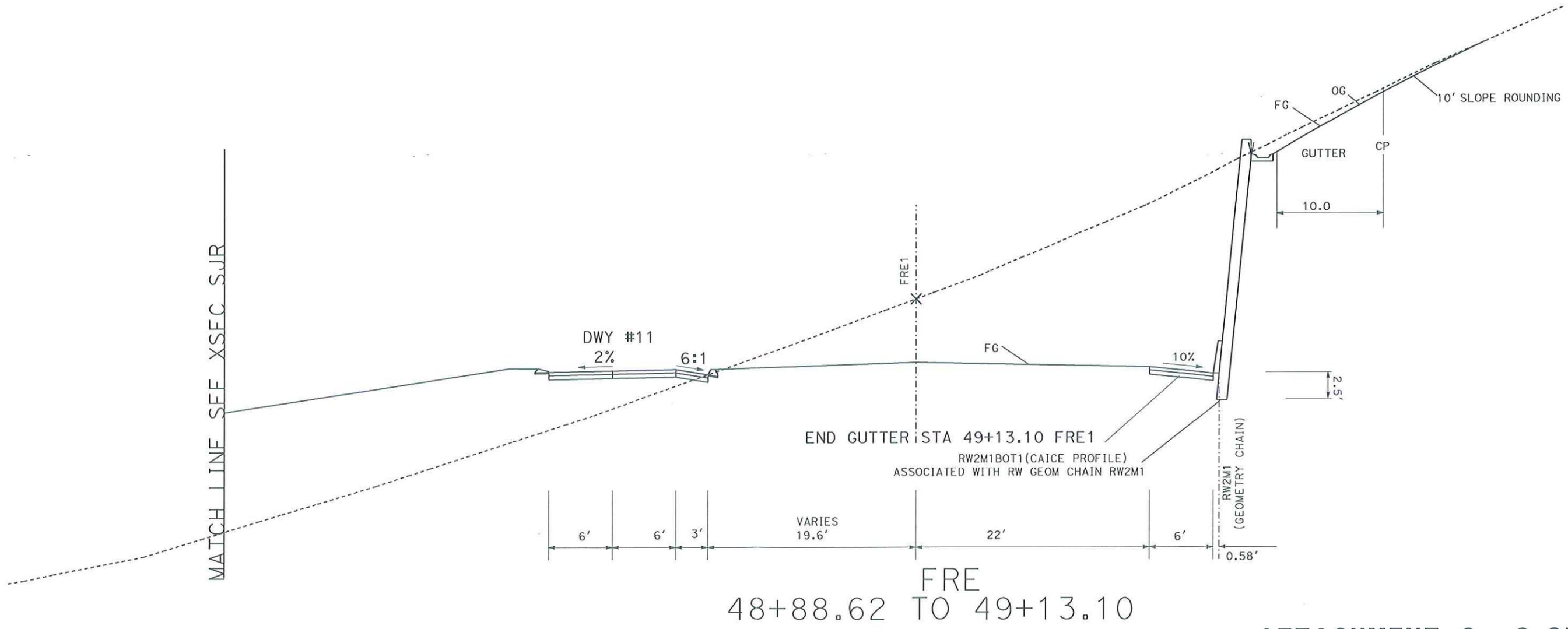
ATTACHMENT C 2 OF 4
SOIL NAIL RW #2
TYPICAL CROSS SECTION

LAST REVISION | DATE PLOTTED 25.10.2015 09:11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
REGISTERED CIVIL ENGINEER				DATE	
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>					



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR BY
St. Gobans		CHECKED BY	DATE REVISED



ATTACHMENT C 3 OF 4
SOIL NAIL RW #2
TYPICAL CROSS SECTION

LAST REVISION | DATE | BY | APPR | CHECKED | DATE

Retaining Wall Profile

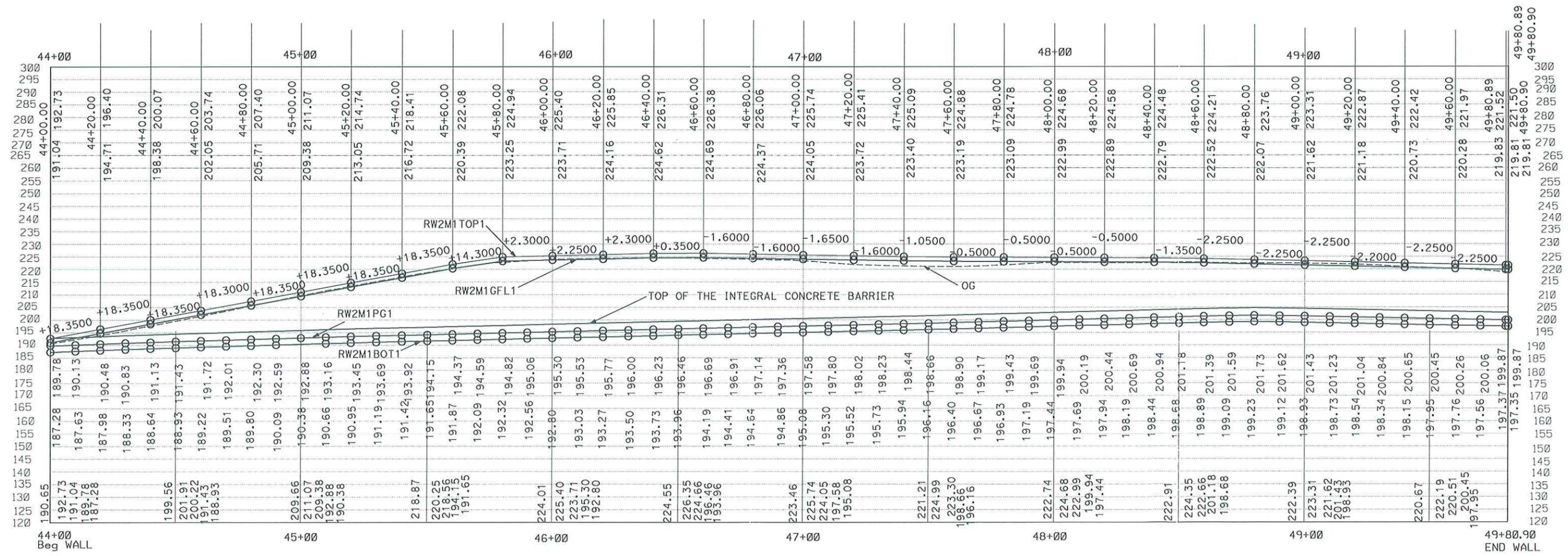
Attachment D

NOTES;

- RW2M1TOP1 - PER EMAIL APRIL 22,2011 UPDATED TOP OF THE WALL WITH 1.69 FT HEIGH PARAPET AT HA= RW2M1 STATIONING
- RW2M1GFL1 - PER EMAIL APRIL 22,2011UPDATED PROFILE GUTTER FL TOP OF THE WALL MINUS 1.69 FT
- RW2M1PG1 - HA STATIONING PER RW2M1, 0.583 FT FROM GUTTER FL=28 FT RT FROM FRE1
- RW2M1BOT1 - DESIGN BOTTOM PROFILE PER HA =RW2M1 STATIONING

CAICE INFO:

- RW2M1PG1 (CAICE PROFILE)
- RW2M1BOT1 (CAICE PROFILE)
- RW2M1GFL1 (CAICE PROFILE)
- RW2M1TOP1 (CAICE PROFILE)
- RW2M1 (CAICE GEOMETRY CHAIN)



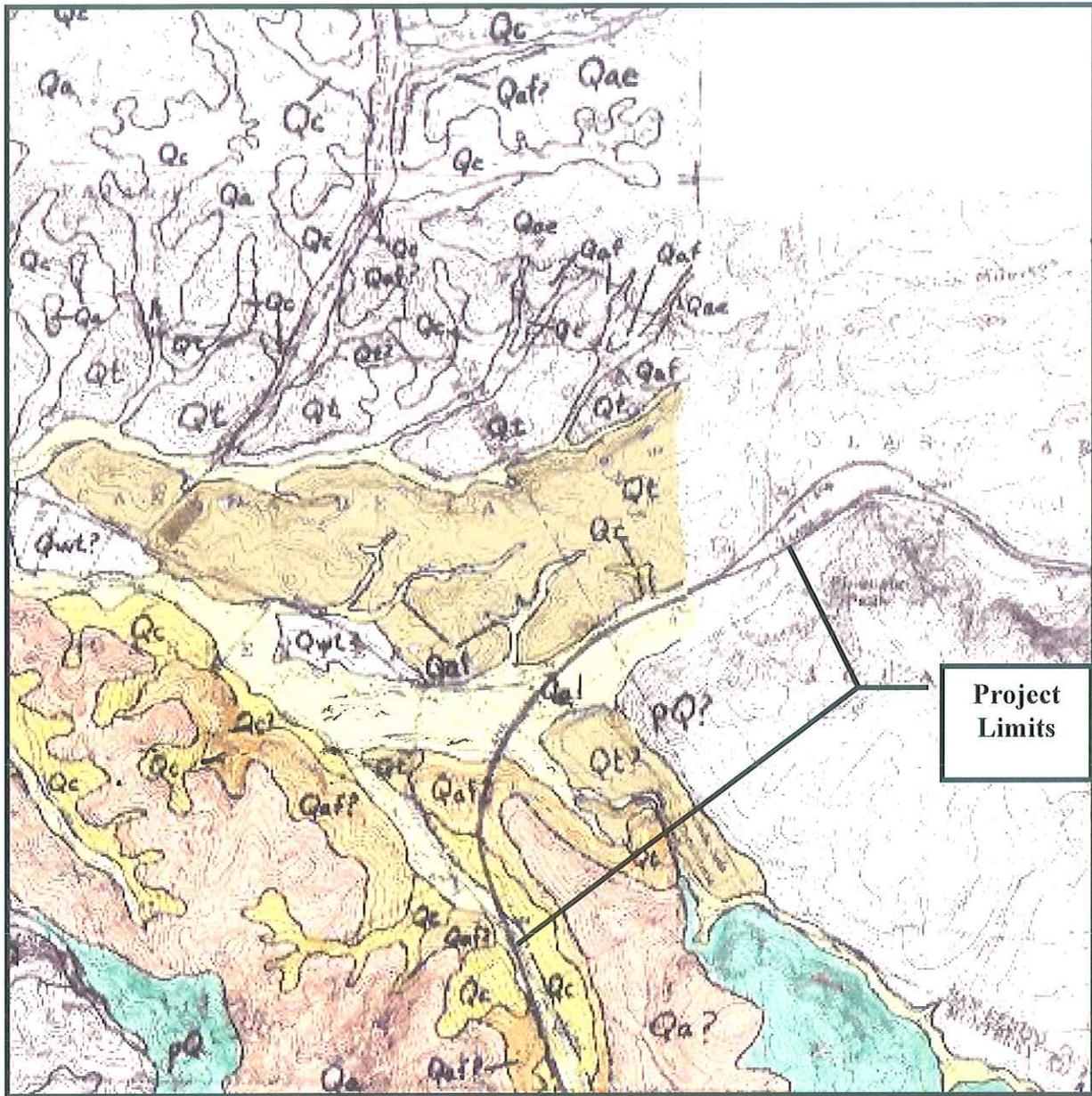
Sta 44+00.00 TO 49+80.90 (Ret WALL CENTERLINERW2M1)
 RETAINING WALL RW2

SCALE: H 1' = 20'
 V 1' = 20'

**ATTACHMENT D
 PROFILE
 RW2**

Geologic Map and Legend

Attachment E



SCALE 1:62 500



CONTOUR INTERVAL 20 FEET

DASHED LINES REPRESENT 10 FOOT CONTOURS

MOSS LANDING QUADRANGLE CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM 1929

GEOLOGIC MAP

Attachment E

This map is part of:
**Map Showing Geology and Liquefaction
 Potential of Northern Monterey and
 Southern Santa Cruz Counties, California**
 By: Dupre and Tinsley

GEOLOGIC LEGEND

Qb

BASIN DEPOSITS--Unconsolidated plastic clay and silty clay contain much organic material. Locally contain interbedded thin layers of silt and silty sand. Deposited in a variety of environments including estuaries, lagoons, tidal flats, marsh-filled sloughs, flood basins, and lakes. Thickness highly variable; may be as much as 30 m thick underlying some sloughs. High susceptibility to flooding. Moderate to high liquefaction susceptibility except where water table is more than 10 m below the surface. Highly expansive soils develop on these deposits

Qal

ALLUVIAL DEPOSITS, UNDIFFERENTIATED--Unconsolidated, heterogeneous, moderately sorted silt and sand with discontinuous lenses of clay and silty clay. Locally includes large amounts of gravel. May include deposits equivalent to both younger and older flood-plain deposits in areas where these were not differentiated. Thickness highly variable; may be more than 30 m thick near the coast. Variable permeability and porosity. Depth to water table highly variable. High susceptibility to flooding in areas where not incised by present stream. Liquefaction susceptibility moderate to high where water is close to surface

Qc

COLLUVIUM--Unconsolidated heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel, deposited by slope wash and mass movement. Minor fluvial reworking. Locally includes numerous undifferentiated landslides and small alluvial fans. Contacts generally gradational. Locally grades into fluvial deposits. Generally more than 2 m thick. Moderately well drained and permeable. Mostly moderately low liquefaction potential but can be moderately high locally. Slope stability relatively low; small landslides common where water is close to surface

Qch

ALLUVIAL FAN DEPOSITS OF CHUALAR--Weakly consolidated, moderately to poorly sorted sand, silt, and gravel deposited as a series of alluvial fans flanking the Salinas Valley. Depth to water table generally greater than 10 m because of ground-water pumping. Characterized by well-drained, medially developed soils. Relatively low susceptibility to flooding; low susceptibility for liquefaction

Qt

TERRACE DEPOSITS, UNDIFFERENTIATED--Weakly consolidated to semiconsolidated, moderately to poorly sorted silt, silty clay, sand, and gravels, mostly deposited in a fluvial environment. Thickness highly variable, locally as much as 18 m thick. Deposits capped by moderately to fully completely well-developed soils, some with duripans; expansive soils are locally present. Low susceptibility to flooding and for liquefaction

Qoe

OLDER EOLIAN DEPOSITS--Semiconsolidated, moderately well sorted sand as much as 13 m thick deposited in a series of inland-migrating dune fields. Locally conformably overlying undifferentiated coastal terrace deposits and terrace deposits of Antioch. Capped by moderately well drained, maximally developed soils, some with duripans. Low susceptibility to flooding and for liquefaction

Qp

ALLUVIAL FAN DEPOSITS OF PLACENTIA--Semiconsolidated moderately to poorly sorted sand, silt, and gravel; gravel content increases toward the head of the fan. Similar to alluvial fan deposits of Chualar, except capped by more well developed soils. Generally low susceptibility to flooding; low liquefaction susceptibility

Qa

AROMAS SAND (Pleistocene)--Heterogeneous sequence of mainly eolian and fluvial sand, silt, clay, and gravel. Slight angular unconformities present throughout the unit; older deposits more complexly folded and faulted than younger deposits. Total thickness may be greater than 250 m. Characterized by maximally developed soils, most with duripans. Low susceptibility to flooding and for liquefaction. Unit locally divided into:

Qae

Eolian deposits--Moderately well sorted sand as much as 60 m thick that contains no intervening fluvial deposits. Several sequences of eolian deposits may be present, each separated by paleosols. The upper 3-6 m of each dune sequence is oxidized and relatively well indurated, and all primary sedimentary structures have been destroyed by weathering; the lower parts of each dune sequence may be relatively unconsolidated below the weathering zone. Porosity and permeability, as well as degree of consolidation, are thus a function of the relative position within the weathering profile. Perched water tables may be present where eolian deposits overlie less permeable fluvial deposits; springs may develop in these areas, and slumps and landslides may develop as well. Severe erosion may occur within this unit when the weathering zone and its protective duripan are breached and the relatively unconsolidated sands are exposed, as evidenced by the extensive colluvial slopes that mantle much of the outcrop area

Qaf

Fluvial deposits--Semiconsolidated, moderately to poorly sorted silty clay, silt, sand, and gravel deposited by meandering and braided streams as well as alluvial fans. Includes beds of relatively well sorted gravel ranging from 3 to 30 m thick that are locally important as aquifers in the region. Locally includes buried soils high in expansive clays, which act as aquicludes. Landslides are common in this unit

Qgl

ALLUVIAL FAN DEPOSITS OF GLORIA--Moderately consolidated, deeply weathered, moderately to poorly sorted sand, silt and gravel, capped with moderately well drained, maximally developed soils with duripans. Low susceptibility to flooding and for liquefaction

pQ

SEDIMENTARY, IGNEOUS, AND METAMORPHIC ROCKS, UNDIVIDED--
Characterized by very low susceptibility for liquefaction

MATERIALS INFORMATION

[Cal-OSHA Division of Mining and Tunneling unit classification.](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

DEPARTMENT OF INDUSTRIAL RELATIONS
DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

2211 Park Towne Circle, Suite 2
Sacramento, California 95825



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

December 8, 2011

Department of Transportation
2015 Shields Avenue, Suite 100
Fresno, CA 93726

Attention: Michael Jurasius (via e-mail: michael_jurasius@dot.ca.gov)

Subject: Underground Classification #'s: C079-053-12T, C080-053-12T & C081-069-12T

San Juan Road Interchange

Mr. Jurasius:

The information provided to this office relative to the above project has been reviewed. On the basis of this analysis, Underground Classification of "Potentially Gassy with Special Conditions" has been assigned to the tunnel(s) identified on your submittal. Please retain the original Classification for your records and deliver a true and correct copy of the Classification to the tunnel contractor(s) 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 Prejob Conference with the Division prior to commencing any activity associated with boring of the tunnel(s).

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,

A handwritten signature in cursive script that reads "John R. Leahy".

John R. Leahy for Douglas Patterson
Senior Engineer

cc: N. McDougald
File



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C079-053-12T

DEPARTMENT OF TRANSPORTATION

NAME OF TUNNEL OR MINE AND COMPANY NAME

of 2015 Shields Ave., Ste. 100, Fresno, CA 93726

MAILING ADDRESS

at SAN JUAN ROAD INTERCHANGE BORE 1

LOCATION

has been classified as ***POTENTIALLY GASSY with Special Conditions***

CLASSIFICATION

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.

The 9-foot diameter by 188 feet long tunnel bore located beneath Highway 101 approximately 2,700 feet southwest of the San Juan Road overcrossing of Highway 101, Prunedale, Monterey County.

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

Date December 8, 2011



John R. Leahy for Douglas Patterson, Senior Engineer



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C080-053-12T

DEPARTMENT OF TRANSPORTATION

NAME OF TUNNEL OR MINE AND COMPANY NAME

of

2015 Shields Ave., Ste. 100, Fresno, CA 93726

MAILING ADDRESS

at

SAN JUAN ROAD INTERCHANGE BORE 2

LOCATION

has been classified as

POTENTIALLY GASSY with Special Conditions

CLASSIFICATION

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.

The 10-foot diameter by 110 feet long tunnel bore located beneath Highway 101 approximately 2,300 feet southwest of the San Juan Road overcrossing of Highway 101, Prunedale, Monterey County.

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

Date

December 8, 2011

John R. Leahy for Douglas Patterson, Senior Engineer



State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C081-069-12T

DEPARTMENT OF TRANSPORTATION

NAME OF TUNNEL OR MINE AND COMPANY NAME

of

2015 Shields Ave., Ste. 100, Fresno, CA 93726

MAILING ADDRESS

at

SAN JUAN ROAD INTERCHANGE BORE 3

LOCATION

has been classified as

POTENTIALLY GASSY with Special Conditions

CLASSIFICATION

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.

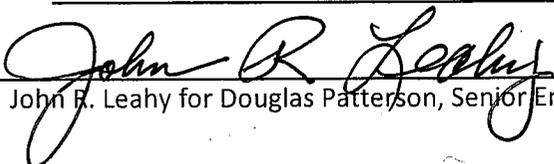
SPECIAL CONDITIONS

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.

The 36-inch diameter by 188 feet long tunnel bore located beneath Highway 101 approximately 1,000 feet northeast of the San Juan Road overcrossing of Highway 101, Prunedale, San Benito County.

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

Date December 8, 2011


John R. Leahy for Douglas Patterson, Senior Engineer

MATERIALS INFORMATION

[Geotechnical Design Report Dated December 20,2011](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

Memorandum

*Flex your power!
Be energy efficient!*

To: ERNIE PENUNA
Design Engineer, Branch U
Project Development Division

Date: December 20, 2011

File: 05-MON-101-100.0/101.3
05-SBT-101- 0.0/0.6
05-315801
Construct Interchange

Attn: Ivo Rummler
Design Engineer

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

Subject: Geotechnical Design Report

Introduction

A Geotechnical Design Report (GDR) is provided for the above referenced project. Proposed improvements will construct an interchange just north of the intersection of Highway 101 and San Juan Road. The project will improve the current at grade crossings for San Juan Road, Dunbarton Road, and Cole Road by realigning the frontage roads to the new overcrossing. Layouts and cross sections of the proposed improvements were provided by Design. Review of published geologic data and previous geotechnical reports, subsurface investigations, laboratory testing, and field reconnaissance was performed as part of the geotechnical investigation. Twenty power borings were completed in 2010 to provide subsurface information for this report.

The purpose of this report is to document subsurface geotechnical conditions, provide analyses of anticipated site conditions as they pertain to the project described herein, and to recommend design and construction criteria for the roadway portions of the project. This report also establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions. This report is intended for use by the project design engineer, construction personnel, bidders and contractors.

Pertinent Reports and Investigations

The following publications were used to assist in the assessment of site conditions:

1. *California Seismic Hazard Map 1996*, Caltrans, Lalliana Mualchin, 1996.

2. *Map Showing Geology and Liquefaction Potential of Northern Monterey and Southern Santa Cruz Counties, CA.* Dupre and Tinsley, 1980.
3. *Preliminary Geotechnical Design Report* for 05-SBt-101-PM 0.4/1.4, 05-388200 by Geotechnical Services, dated September 2, 1998.
4. *Geotechnical Design Report* for 05-SBt-101-PM 0.4/1.4, 05-388200 by Geotechnical Services, dated June 10, 1999.
5. *Structure Foundation Report, Revision 2*, for Mon-101-PM 92.3/100.4, 05-0161B1, by Geotechnical Services, dated April 6, 2004.
6. *Preliminary Geotechnical Design Report* for 05-MON-101-PM 98.4, 05-0161E0 by Geotechnical Services, dated March 23, 2004.
7. *Geotechnical Design Report* for 05-MON-101-PM 98.4, 05-0161E0 by Geotechnical Services, dated June 16, 2008.

Existing Facilities and Proposed Improvements

Route 101 between San Juan Road and Monterey/San Benito County Line is a rural four-lane expressway with partial access control. Traveled lanes are 12 feet wide, outside shoulder widths vary from 6 feet to 8 feet, and median widths vary from 16 feet to 22 feet with minimal shoulder width of 2 ft. The existing Right of Way is 200 feet. The posted speed is 55 mph within the project limits.

Route 101 between Monterey/San Benito County Line and Cole Road is a four-lane rural expressway with full access control. Travel lanes are 12 feet wide, shoulder widths vary from 2 feet to 10 feet, and median widths vary from 14 feet to 15 feet. The posted speed is 55 mph within the project limits. Northbound and southbound of Route 101 diverges from PM 0.3 to PM 1.0.

San Juan Road is a two-lane undivided county road that connects to Route 101 from the west to form a T-intersection. Traveled lanes are 12 feet wide and shoulder widths vary from 4 feet to 10 feet. There is an acceleration lane for eastbound (EB) traffic from San Juan Road to merge onto Southbound Route 101. Westbound San Juan Road to Northbound Route 101 has an acceleration lane to turn into after making the left turn from San Juan Road. Southbound Route 101 has a free-right-turn lane to Westbound San Juan Road.

Cole Road is a two-lane undivided county road that connects to southbound Route 101, from the west, to form a skewed-intersection. The further extension of Cole Road connects to northbound of Route 101 at a T-intersection.

Dunbarton Road intersects Route 101 south of the proposed project. It serves primarily as local residential traffic in the area and connects with San Juan Road to the west. Interregional motorists familiar with the area use Dunbarton Road as a northbound short cut to San Juan Road. The roadway in the project area was constructed under contract 5TC7, which extended from PM 99.55 in Monterey County to PM 4.88 in San Benito County. The plan approval date was May 20, 1946.

Route 101 through most of the project area was constructed on fill that was generated from the through cut that is located between Dunbarton Road and San Juan Road. All cut and fill slopes in the project area are shown on the as-built plans as having been constructed at a slope angle of 1.5:1 (V:H) to 1:2 (V:H) or flatter. The slopes are well vegetated and performing well with very little signs of erosion or instabilities with the exception of some slopes in the northwesterly portion of the project. Between San Juan Road and Cole Rd, a few small slope instabilities have been observed.

The project proposes to construct a new highway overcrossing for the San Juan Road intersection. The proposed interchange project will improve the current at grade crossings for San Juan Road, Dunbarton Road, and Cole Road by building new or realigning existing frontage roads to the new overcrossing. In addition, a new frontage road will also be constructed on the east side of the highway to provide access to the business and residential area at and near the Red Barn. In total, the proposed project will consist of a new highway overcrossing structure, new ramp connections, four new creek crossing structures, two culvert structures (pipe jacking), and four new frontage road extensions. In order to accommodate the frontage road extensions, multiple large cuts will be required. Two soil nail retaining walls are also proposed as part of these improvements.

To alleviate potential flooding issues near the existing San Juan Road intersection, two new culvert systems are proposed. Currently, two culverts carry the flow of the unnamed tributary drainages of the Elkhorn slough under the existing highway at two separate locations south of the San Juan Road intersection. Due to traffic volume constraints, these facilities will be replaced with new culvert systems that are jacked in place.

At Dunbarton Road it is proposed to eliminate the existing access to Route 101. Residents and through traffic will be directed to the proposed interchange for San Juan Road. To provide access to the existing residences that currently utilize Dunbarton Road or that have unrestricted access from Route 101, a new frontage road will be constructed. This frontage road will require the

construction of a bridge to span the existing unnamed tributary of the Elkhorn Slough. At the intersection of Dunbarton Road and San Juan Road, the project proposes to construct minor improvements that will require a small cut to the existing slope along San Juan Road.

At San Juan Road, the existing intersection is at grade. The proposed interchange is located approximately 1700 feet north. To create the new San Juan Road alignment to the proposed interchange, a through cut with soil nail retaining walls and a large fill sections will be required.

On the east side of the highway near the proposed overcrossing, the access to the business and the residential area will be realigned. The project will require a moderate cut and embankment construction. The cut slope will be retained with a soil nail wall. The new access road in will be located front of the existing business (Red Barn). This will require the construction of two new drainage structures over the existing unnamed drainage.

At Cole Road it is proposed to eliminate the existing at grade intersection with Route 101. Residents and through traffic will access Cole Road via the west side of the proposed interchange. In order to connect Cole Road to San Juan Road, Cole Road will need to be realigned and extended approximately 3000 feet. This extension will require multiple cuts and fills. From centerline, the largest cut proposed is approximately 30 feet and the largest fill is approximately 34 feet.

On the west side of the highway, in the southbound direction, the southbound on and off ramps will be constructed on fill slopes with proposed 2:1 slopes. On the east side of the highway, the proposed overcrossing structure will span the creek. In order to accommodate the new ramps,, an additional large box culvert is proposed.

Due to Right of Way concerns associated with some of the large cuts, two retaining walls have been proposed. The retaining walls will minimize the visual impacts and limit the right of way requirements. The proposed maximum wall heights vary for each wall. Retaining wall 1 is proposed as a three tier soil nail wall. It will be constructed along the realigned San Juan Road and extend for a distance of approximately 1380 feet. The maximum combined height is approximately 66 feet not including the parapets. Retaining wall 2 is proposed as a single tier soil nail wall to be located along the Frontage Road East. It will be approximately 560 feet in length with a maximum height of approximately 31.5 feet.

Physical Setting

The project is located in the Coast Ranges Geomorphic Province of California in the Gabilan Range. The topography is semi-mountainous. The local terrain in the project limits consists of moderately sloped hills covered with grasslands and a mixture of heavy brush and trees.

Climate

The climate in the project area is warm and foggy and in the summers, while the winters are cool and moist. The mean annual precipitation is 18 inches. The mean annual temperature is about 57 °. Winters are generally mild with occasional freezing temperatures overnight. Nearly all the precipitation accumulates during Pacific storms between October and May, with the majority falling during winter months.

Vegetation in the project area primarily consists of grasses, brush, oaks and willows growing near water. Stands of willows were observed growing along all of the unnamed tributaries to the Elkhorn Slough while the majority of the project area consists of seasonal grasses.

Drainage and Topography

Drainage in the project area is provided by the multiple unnamed tributaries of the Elkhorn slough. The slough is located approximately 5 miles west of the project and eventually drains into the Monterey Bay at Moss Landing.

The main branch of the tributary roughly parallels the highway on the northern portion of the project limits with multiple channels draining into it. This main branch then crosses under the highway just south of the Red Barn. Large trees, willows and tall weeds grow along the banks.

Several springs were observed within the project extents. At the proposed Frontage Road East, near "FRE" station 46+00 two springs were observed daylighting the hillside feeding a seasonal wetland. Another spring was noticed on the hill side along the proposed San Juan Road realignment near "SJR1" station 36+75. Although no other running water was observed, dense vegetation may be concealing groundwater at or near the surface in these hillside areas.

In the observation wells located in the low lying areas, water was encountered near the surface at depths varying from 3 feet to 11 feet. It is anticipated that water is likely to be encountered

during construction. After clearing and grubbing the existing ground, additional groundwater mitigation may be required.

Regional Geology

The project area occurs within the central portion of the Coast Ranges Geomorphic Province, at the northern portion of the Salinas River Valley and is in the Gabilan Range. The project is bounded by the San Andreas Fault to the east, Monterey Bay and the Santa Lucia Range to the west, Santa Cruz Mountains to the north and the Salinas Valley to the south.

The formations that underlie the highway in the project area are Alluvial Deposits, Terrace Deposits, Colluvium and Fluvial deposits.

The alluvial deposits consist of unconsolidated heterogeneous, moderately sorted silt and sand with discontinuous lenses of clay and silty clay. Locally this deposit may include large amounts of gravel.

The terrace deposits consist of weakly consolidated to semi consolidated, moderately to poorly sorted silt, silty clay, sand and gravels mostly deposited in the fluvial environment.

The colluvium deposit consist of unconsolidated, heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel deposited by slope wash and mass movement. Locally it includes numerous undifferentiated landslides and small alluvial fans.

The fluvial deposits consist of semi consolidated, moderately to poorly sorted silty clay, silt, sand and gravel deposited by meandering and braided streams as well as alluvial fans. The beds can include relatively well-sorted gravel.

Also occurring very near the project site is the Aromas Sand (Q_a) which consists of interbedded alluvial and eolian deposits. The Aromas Sand will exhibit engineering properties of both subunits. The eolian or dune deposits consist of well-graded sand. Severe erosion of exposed uncemented strata is a significant factor in the design of the proposed project. The fluvial unit of the Aromas Sand, which is a basal alluvial or stream deposited unit, consists of interbedded silty clay, silt, sand and gravel. The beds of well-graded gravel, which range in thickness from 3 to 30 meters, act as local aquifers that can transmit significant amounts of groundwater to cut faces or side hill embankments. Zones of well-cemented sand and fluvial soil contribute to perched groundwater conditions, springs and artesian conditions. Additionally, strata of expansive clay contribute to landslides being common on the natural slopes. In general, liquefaction

susceptibility is low in both deposits. Observed natural slopes in the Aromas Sand formation were gentle to moderately steep and appear to be stable. Deeply incised or “badland topography” develops on both natural and cut slopes where not protected from erosion.

Seismicity

The project area is located within a seismically active region of California. As determined by Caltrans, the following are the active and potentially active faults that have the greatest potential of influencing the site along with the Moment Magnitude, distance to the site and the expected peak ground accelerations. The distance to the fault is measured from the location of the proposed overcrossing. The faults and the fault characteristics are listed below in Table 1.

Table 1 *Fault Information*

<i>Fault Name</i>	<i>Fault Type</i>	<i>Moment magnitude of maximum credible earthquake</i>	<i>Rupture Distance (miles)</i>	<i>Peak ground acceleration T=0 sec (gravity)</i>
Zayante-Vergales	Strike Slip	7.0	1.4	0.50
San Andreas	Strike Slip	7.9	2.7	0.48

No known or potentially active faults, as classified by Caltrans, intersect the project area. Consequently, the potential for surface fault rupture is low and no mitigation efforts in regards to fault rupture are necessary.

Liquefaction is the significant loss of soil strength and stiffness that occurs during cyclic loading as a result of an increase in pore water pressure. Soils with a potential for liquefaction are loose sands and gravels with 35 percent fines or less that have the potential of being saturated. Based on the subsurface investigations within the proposed project limits, liquefaction potential is moderate in the alluvial soils where groundwater is close to the surface.

Soil Survey Mapping

The Soil Survey of Monterey County published by the US Department of Agriculture shows that in the project area, the soils consist mostly of Salinas Series, Santa Ynez series and the Placentia Series. The Salinas series consist of well-drained soils that formed in mixed alluvium derived from sedimentary and granitic rocks on alluvial fans. The slopes are from 0 to 9 percent. The Santa Ynez series consists of moderately to well-drained soils that formed on terraces in alluvium derived from sandstone and granitic rocks. The slopes are from 2 to 30 percent. The Placentia series consists of well-drained soils that formed in alluvium that was derived from granitic and schistose rocks on old alluvial fans and terraces. The slopes range from 0 to 30 percent

Exploration

Drilling and Sampling

Twenty rotary borings were completed for this project in 2010. Fifteen of the borings were 94 mm mud rotary borings (R-10-005 through R-10-013 and R-10-015 through R-10-020), and 5 borings were 6" auger (A-10-001 through A-10-004 and A-10-014). Refer to the Log of Test Borings in the plan set and the Boring Records attached to this report for specific information regarding boring locations and details.

SPT tests were performed during drilling; correlations between SPT blow counts and soil strength parameters for cohesionless soils were estimated for use in design.

Soil samples were sent to the District Materials Laboratory and Headquarters Geotechnical Testing Laboratory for mechanical analysis, moisture/density testing, Atterburg Limits, corrosion analysis, and undrained-consolidated triaxial shear with pore water measurement tests. The soil strength parameters obtained in the laboratory testing were compared to field observations and used to determine the recommended design strength parameters presented in the following sections. The summarized results of laboratory testing are attached for reference.

Groundwater monitoring wells were installed by placing 1.5 inch slotted PVC pipe in sand backfill and solid PVC pipe near the surface, with bentonite hole plug seal and a well cap to prevent surface water intrusion. Monitoring wells were installed in 11 selected locations to provide a complete data set from which to estimate the groundwater elevation throughout the project site and monitor fluctuations.

Geotechnical Testing

In Situ Testing

Correlations between in situ soil strength parameters and corrected Standard Penetration Test (STP) blow counts were used to approximate the friction angles of cohesionless soils. Estimated friction angles were then used to model cohesionless soils for bearing capacity, settlement, and slope stability analyses.

Laboratory Testing

Particle size analyses were performed on soil samples obtained from borings to determine the particle size distribution of the soils. Results of the soil gradations were used in conjunction with Atterburg Limits test results to identify potential hazards associated with low shear strength and long-term consolidation of fine-grained cohesive materials. Undrained-consolidated triaxial shear tests were also performed to estimate the internal friction angle and cohesion of soil samples proposed for use as embankment fill materials. The results of the laboratory testing are summarized in the attached Material Properties Summary.

Geotechnical Conditions

The information presented in the following sections presents the geotechnical and groundwater conditions to be used in the design and analysis of the proposed improvements.

Site Geology

Lithology

Samples recovered from mud rotary borings consisted of laterally discontinuous alternating layers of varying thickness of sands, silts, and clays. Soils encountered within the project extents are indicative of alluvial, colluvial, and terrace deposition environments. Soils formations encountered during subsurface investigations appear to match the formations shown on the geologic map.

Groundwater Conditions

Monitoring wells were installed in selected borings to obtain a representative groundwater profile and monitor seasonal fluctuations in groundwater levels. Groundwater is likely to be

encountered during construction. Results of the monitoring well readings are presented in the following table.

Table 2 *Groundwater Monitoring Well*

<i>Location</i>	<i>Surface Elevation (Ft)</i>	<i>Date of Measurement</i>	<i>Depth to Groundwater (Ft)</i>	<i>Groundwater Elevation (Ft)</i>
A-10-001	247.2	7-22-10	Dry	-
		11-3-10	Dry	-
		2-2-11	Dry	-
		4-12-11	Dry	-
A-10-002	248.2	7-22-10	Dry	-
		11-3-10	Dry	-
		2-2-11	Dry	-
		4-12-11	Dry	-
A-10-003	253.2	7-27-10	Dry	-
		11-3-10	Dry	-
		2-2-11	Dry	-
		4-12-11	Dry	-
R-10-015	199.0	2-2-11	35.4	163.6
		4-12-11	7.7	191.3
R-10-017	270.6	2-2-11	Dry	-
		4-12-11	Dry	-
R-10-018	211.8	2-2-11	38.7	173.1
		4-12-11	38.6	173.2
R-10-019	200.7	2-2-11	2	172.9
		4-12-11	7.8	173.0
R-10-008	170.4	7-27-10	18.9	151.5
		11-3-10	27.0	143.4
		2-2-11	2.3	168.1
		4-12-11	2.6	167.8

<i>Location</i>	<i>Surface Elevation (Ft)</i>	<i>Date of Measurement</i>	<i>Depth to Groundwater (Ft)</i>	<i>Groundwater Elevation (Ft)</i>
R-10-010	163.7	8-4-10	11.4	152.3
		11-3-10	13.5	150.2
		2-2-11	9.5	154.2
		4-12-11	6.9	156.8
R-10-011	159.6	8-4-10	10.5	149.1
		11-3-10	12.5	147.1
		2-2-11	7.6	152.0
		4-12-11	6.1	153.5
R-10-005	189.2	7-22-10	20.7	168.5
		11-3-10	22.4	166.8
		2-2-11	21.2	168.0
		4-12-11	18.5	170.7

Corrosion

The Department considers a site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil and/or water samples taken at the site: The Department considers a site to be corrosive to foundation elements if one or more of the following conditions exist for the representative soil and/or water samples taken at the site: pH of less than 5.5 and a resistivity of less than 1000 ohm-cm. If the resistivity is less than 1000 ohm-cm, additional testing of chloride and sulphate is required. The site is then considered corrosive if chloride content is greater than 500 ppm, or sulphate content is greater than 2000 ppm.

Soil samples were obtained in borings near the proposed retaining walls, overcrossing structure and near proposed drainage structures. Based on the results of the corrosion analyses, the site is considered to not be corrosive. A summary of the corrosion analyses is included as part of Material Property Summary which is attached to this report.

Geotechnical Analysis and Design

The following sections provide a summary of the recommendations for geotechnical and structural design as determined from the geotechnical investigation and analysis results.

Cuts and Excavations

Cut slopes shall have minimum slope angles of 2:1 (H:V). Cuts at these slope angles or flatter in these soil conditions are also highly susceptible to surface erosion. An active role by the Landscape Architecture Branch will be required to develop sufficient erosion control measures.

It is anticipated that contour grading and slope rounding will be incorporated into the project where appropriate. This will help assure the proposed project is compatible with the surrounding environment and will minimize erosion and top of cut recession.

Based on the results of a refraction seismic study, the earthwork factor is estimated to be 1.04. A factor of 1.0 indicates no volumetric change. A factor greater than 1.0 indicates that material will be compacted in the embankment to a state less dense than the natural state before excavation.

Embankments

To meet slope stability requirements, it is recommended to construct embankment fill slopes with slope face inclinations of 2:1 or flatter. Embankments at this slope angle or flatter will be stable and can be vegetated with grasses and trees which are important in these soil conditions to prevent surface erosion. Some keying and benching of the existing slopes to receive fill will be required.

It is assumed that the fill material to be used in the embankment construction will be generated from cut slopes within this project. This material is generally cohesionless with poor to fair compaction characteristics and low to moderate shear strength. Even with slope inclinations of 2:1, this material is highly susceptible to erosion. An aggressive revegetation program, possibly including irrigation, will be required on both cut and fill slopes. An active role by the Landscape Architecture Branch will be required to develop sufficient erosion control measures.

Settlement

Due to the heterogeneous nature of the soils throughout the project extents, settlement analyses were performed at several embankments assuming soil profiles encountered in the borings. Settlement was calculated at the approach and departure embankment of the proposed San Juan Overcrossing and at three tallest embankments encountered on the proposed Cole Road extension.

The maximum calculated short-term settlement that is expected to occur beneath the approximately 30-foot high approach embankment at the San Juan Road Overcrossing abutment 1 is 5.5 inches and 6.2 inches at abutment 3. Settlement was estimated using correlations to SPT blow counts in cohesionless soils using Hough's method. All of the calculated settlement is expected to occur immediately; A 30 day fill delay period is recommended after construction of these embankments at the proposed overcrossing. Significant long-term consolidation is not expected to occur beneath the proposed approach embankment fill due to the absence of thick, continuous layers of under consolidated or normally consolidated clays.

The maximum calculated short-term settlement that is expected to occur beneath the 34 foot high roadway embankment at Sta 21+80 "Cole Road" is 1.2 inches. At Sta 28+40 "Cole Road", the settlement is calculated to be 1.5 inches. At Sta 43+00 "Cole Road", the settlement is calculated to be 2.1 inches. Settlement was estimated using correlations to SPT blow counts in cohesionless soils using Hough's method. All of the calculated settlement is expected to occur immediately; no surcharge loading or fill waiting period is required. Significant long-term consolidation is not expected to occur beneath the proposed embankment fills due to the absence of thick, continuous layers of under consolidated or normally consolidated clays.

Culvert Foundations

Several drainage systems are proposed to be modified or included as part of this project. In total, six main significant drainage structures have been analyzed.

Drainage System 5: At this location, a new 9 foot diameter reinforced concrete pipe will be jacked under the highway roadbed adjacent to the existing reinforced concrete box culvert. The existing headwalls and wingwalls will be removed and replaced. The new Type A Wingwall height at the inlet is 15 feet and is 16 feet at the outlet. Based on a boring completed near the inlet of this facility, it is anticipated that the bottom of the footing will be founded in a medium dense silty sand. No observation well was installed in this boring but groundwater is likely to be encountered during the construction of this drainage system. A working platform described in the Construction Considerations section of this report should be constructed under the headwalls

and wingwalls to provide a dry working surface and to prevent erosion of the concrete by groundwater intrusion prior to the concrete curing.

Drainage System 8: In this location, it is proposed to construct a new 10 foot by 9 foot reinforced concrete box adjacent to the existing drainage facility which is a 8 foot by 7 foot reinforced concrete box. A portion of this new system will be built using the cut and cover method and the portion of the new facility under the highway segment will be jacked. At the downstream end, the existing facility will be extended. The existing headwall and wingwalls will be removed and new Type A Wingwalls will be installed at the entrance and exit points. The proposed headwall and wingwall heights for both the upstream and downstream facilities will be 14 feet. Due to access constraints, no boring was completed for this facility. From observed and recorded groundwater data in the vicinity, it is anticipated ground water will be encountered during the construction of this facility. A working platform described in the Construction Considerations section of this report should be constructed under the headwalls and wingwalls to provide a dry working surface and to prevent erosion of the concrete by groundwater intrusion prior to the concrete curing.

Drainage System 35: This drainage system, as proposed, will be a triple 14 foot by 11 foot by 499 foot long RCB. As shown, this system will be built in two stages which will facilitate the diversion of the creek. Type A headwalls and wingwalls 16.0 feet in height will be utilized at both the upstream and downstream entrance and exit points. Based on the boring which was completed in the vicinity, it is anticipated that the footing will be founded in loose silty sand. From multiple readings of the observation well installed in this boring, it is likely that ground water will be encountered. Water was observed on April 12, 2011 at 6.1 feet below the ground surface. Based on this data, it is possible that the bottom of footing may be in excess of 10 feet lower than the observed water elevation. A working platform described in the Construction Considerations section of this report should be constructed under the headwalls, wingwalls and the RCB to provide a dry working surface and to prevent erosion of the concrete by groundwater intrusion prior to the concrete curing.

Drainage System 51: At this location, a new double 7 foot by 7 foot by 212 foot RCB is proposed to allow for the realignment of Cole Road. As proposed, the headwall and wingwall on the upstream end will be 10 feet tall. On the downstream end, the headwall and wingwalls are proposed to be 12 feet high. Based on the boring which was completed in the vicinity of this system, it is anticipated the bottom of the footing will be founded in dense silty sand. An observation well was installed in this boring. Water was observed 18.5 feet below the ground surface on April 12, 2011. Although the bottom of the footing is above the observed groundwater elevation, it is possible that groundwater may be encountered. If this occurs, a working

platform described in the Construction Considerations section of this report should be constructed under the headwalls, wingwalls and the RCB to provide a dry working surface and to prevent erosion of the concrete by groundwater intrusion prior to the concrete curing.

Construction Considerations

Pumping soils are likely to be encountered during excavations for embankment construction and placement of the multiple drainage facilities throughout the project. If pumping soils are encountered, it is recommended to construct a working platform. To construct this platform, it is recommended sub-excavate an additional 1.5 feet and replace the removed material with Class 1 Type B permeable material as specified in Section 68 of the Standard Special Provisions. This permeable material shall be encapsulated in a separation and stabilization fabric meeting the Class B3 specification of Section 88 of the Standard Special Provisions. Supplemental funds should be allocated to cover the cost of the purchase and installation of the fabric and permeable material.

Recommendations and Specifications

Refer to the preceding sections for detailed recommendations regarding construction techniques and specifications. The following list summarizes the recommendations provided in this report:

- Roadway cut slopes shall not exceed 2:1 slope angles.
- Roadway embankment fills up shall not exceed 2:1 slope angles. Embankment fill slopes higher than 45 feet shall not exceed 2.5:1 slope angles.
- Aggressively re-vegetate all exposed slopes to increase resistance to slope instabilities due to high susceptibility to erosion of site soils.
- Notify Geotechnical Staff if unexpected groundwater or other geotechnical conditions not addressed in this report are encountered during construction. A member of the Geotechnical Staff will recommend mitigation after observation and analysis.

If you have any questions or comments, please contact Zeke De Llamas at (805) 549-3327 or Michael Finegan at (805) 549-3194.



A handwritten signature in black ink, appearing to read "Zeke Dellamas".

ZEKE DELLAMAS, PE
Transportation Engineer
Geotechnical Design – North
Branch D



A handwritten signature in black ink, appearing to read "Michael S. Finegan".

MICHAEL S. FINEGAN, PE
Branch Chief
Geotechnical Design – North
Branch D

- c: David Silberberger, Project Manger
GS Archive
District Construction RE Pending File
District Materials Engineer, Glenn Johnson
Job File / Branch D Records

LIST OF ATTACHMENTS

Vicinity Map	Attachment A
Layouts with Boring Locations	Attachment B
Geologic Map and Legend	Attachment C
Boring Records	Attachment D
Materials Properties Summary	Attachment E

Vicinity Map

Attachment A

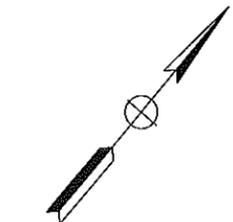
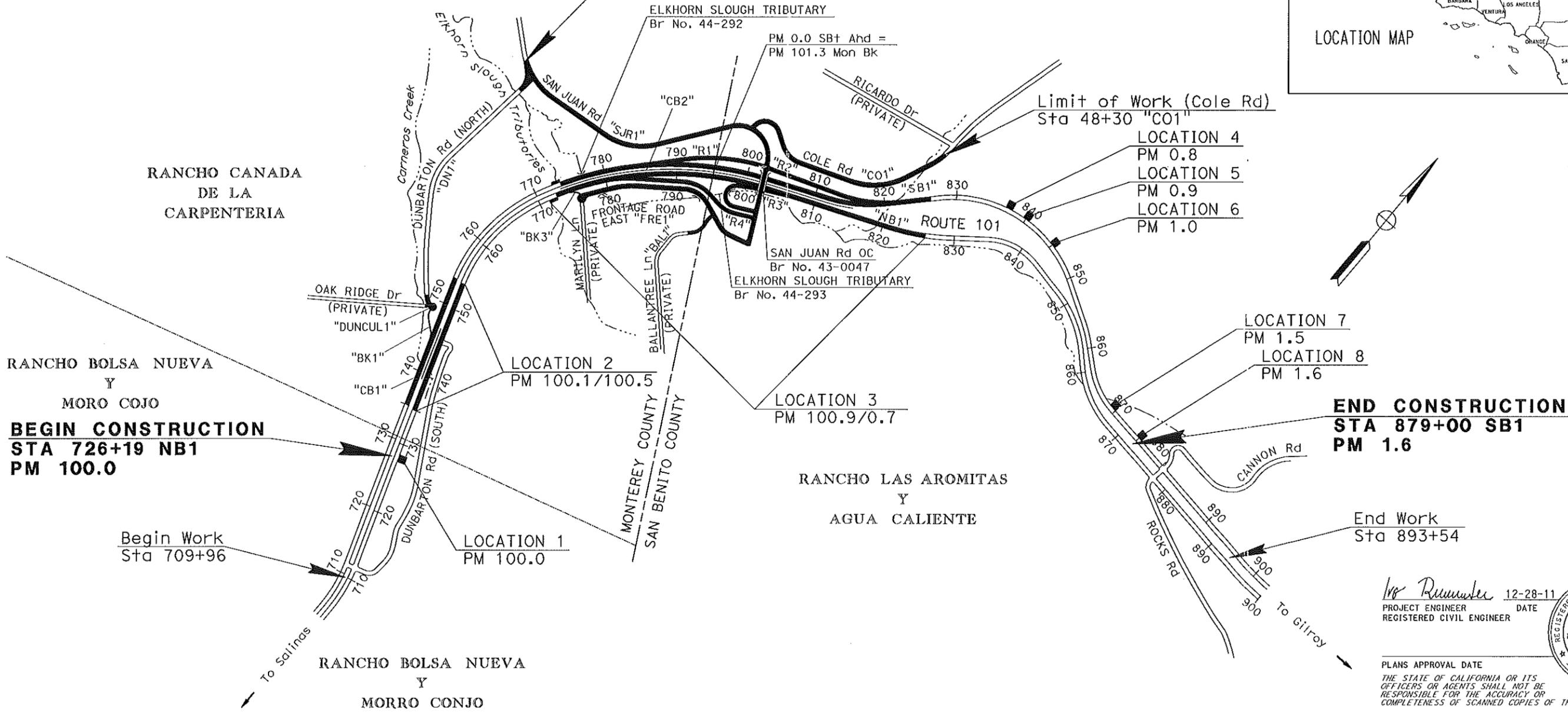
STATE OF CALIFORNIA
 DEPARTMENT OF TRANSPORTATION
**PROJECT PLANS FOR CONSTRUCTION ON
 STATE HIGHWAY**

**IN MONTEREY AND SAN BENITO COUNTIES NEAR PRUNEDA
 AT VARIOUS LOCATIONS FROM 0.4 MILE SOUTH OF
 DUNBARTON ROAD (NORTH) TO CANNON ROAD**



TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2006

Limit of Work (San Juan Rd)
 Sta 9+00 "SJR1"



PROJECT MANAGER
 DAVID SILBERBERGER

DESIGN ENGINEER
 ERNIE PENUNA

RANCHO BOLSA NUEVA
 Y
 MORO COJO
BEGIN CONSTRUCTION
STA 726+19 NB1
PM 100.0

Begin Work
 Sta 709+96

LOCATION 1
 PM 100.0

LOCATION 2
 PM 100.1/100.5

LOCATION 3
 PM 100.9/0.7

LOCATION 4
 PM 0.8
 LOCATION 5
 PM 0.9
 LOCATION 6
 PM 1.0

LOCATION 7
 PM 1.5
 LOCATION 8
 PM 1.6

END CONSTRUCTION
STA 879+00 SB1
PM 1.6

End Work
 Sta 893+54

Ivo Rummel 12-28-11
 PROJECT ENGINEER DATE
 REGISTERED CIVIL ENGINEER



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.

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES)
 OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

ATTACHMENT A
 NO SCALE

CONTRACT No.	05-315804
PROJECT ID	050000495

Layouts with Boring Locations

Attachment B

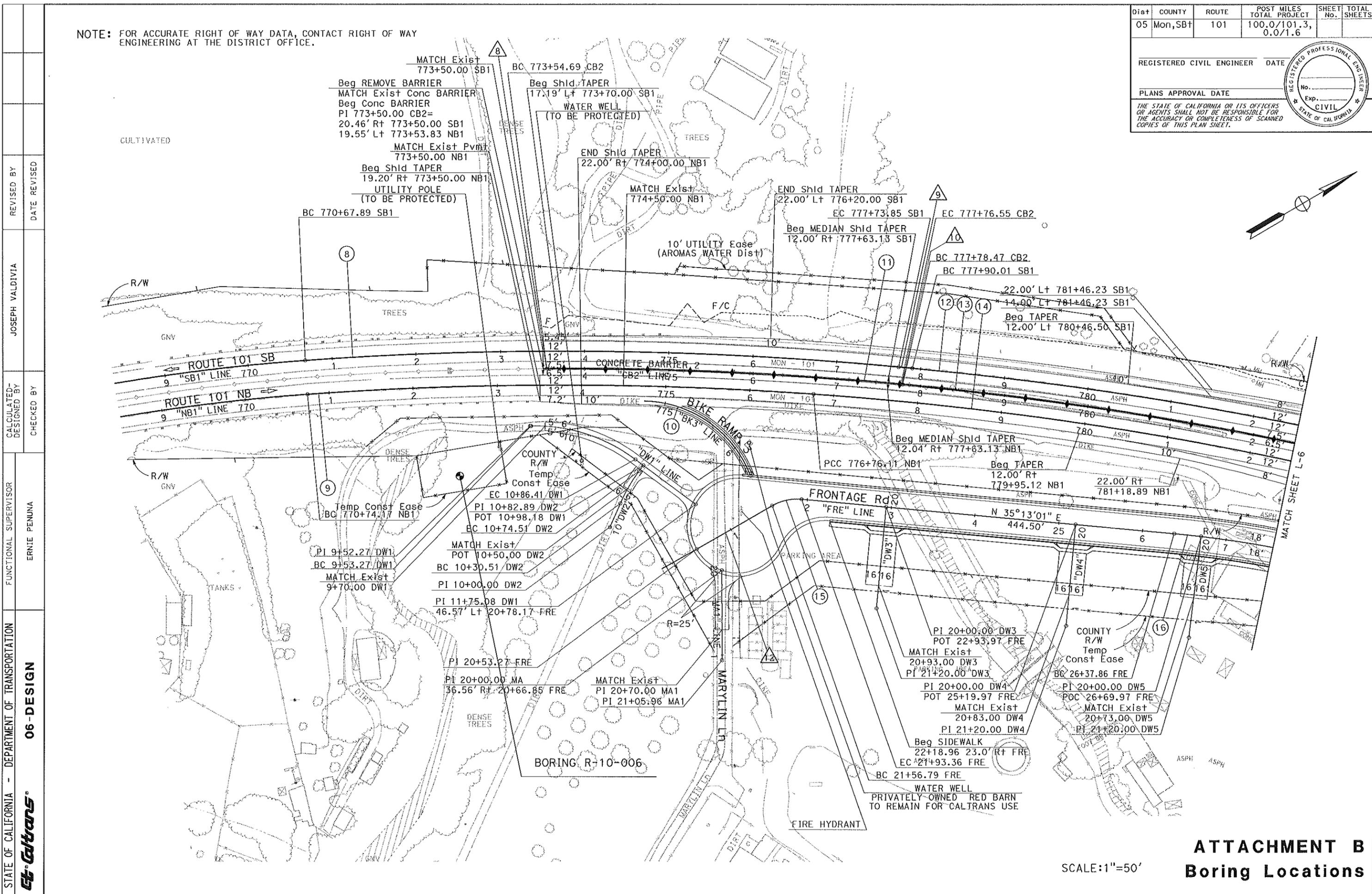
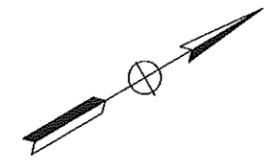
NOTE: FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon,SB1	101	100.0/101.3, 0.0/1.6		

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.



REVISED BY
DATE REVISED

JOSEPH VALDIVIA

CALCULATED BY
DESIGNED BY
CHECKED BY

FUNCTIONAL SUPERVISOR
ERNIE PENUNA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
06-DESIGN
Caltrans

SCALE: 1"=50'

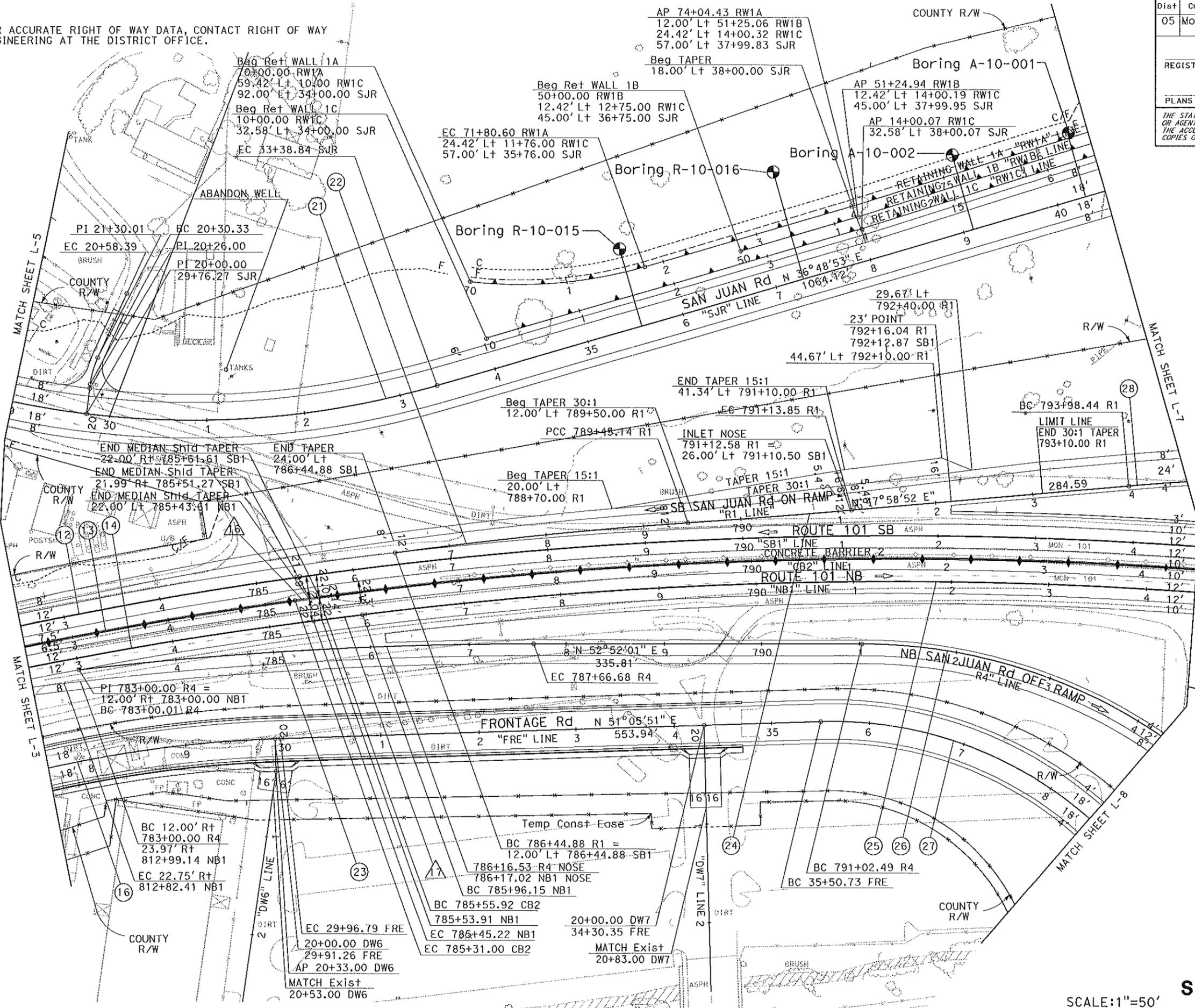
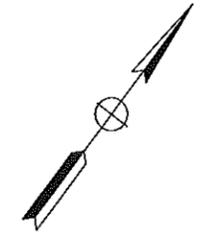
ATTACHMENT B
Boring Locations

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
05	Mon,SB+	101	100.0/101.3, 0.0/1.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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Caltrans
 06-DESIGN
 ERNIE PENUNA
 FUNCTIONAL SUPERVISOR
 CHECKED BY
 JOSEPH VALDIVIA
 DESIGNED BY
 REVISOR BY
 DATE REVISOR

SCALE: 1"=50'

Attachment B
Soil Nail Wall No. 1
LAYOUT

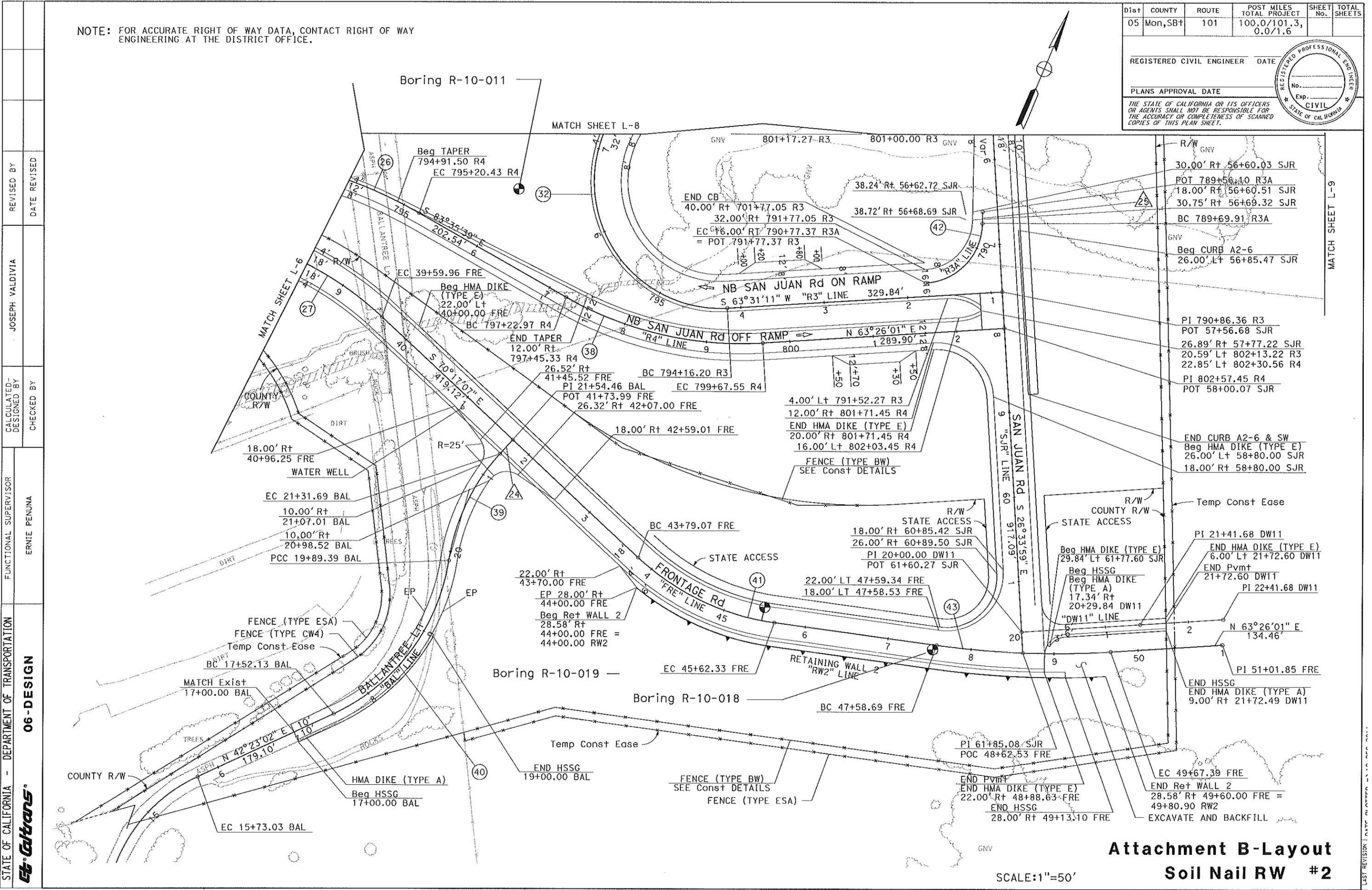
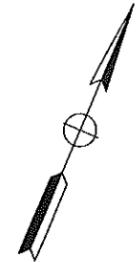
LAST REVISION DATE DRAWN BY DATE

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
05	Mon, SBT	101	100.0/101.3, 0.0/1.6		

REGISTERED CIVIL ENGINEER	DATE
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06 - DESIGN
 FUNCTIONAL SUPERVISOR: ERNIE PENUNA
 CALCULATED/DESIGNED BY: JOSEPH VALDIVIA
 CHECKED BY:
 REVISOR: DATE
 DATE REVISOR: DATE

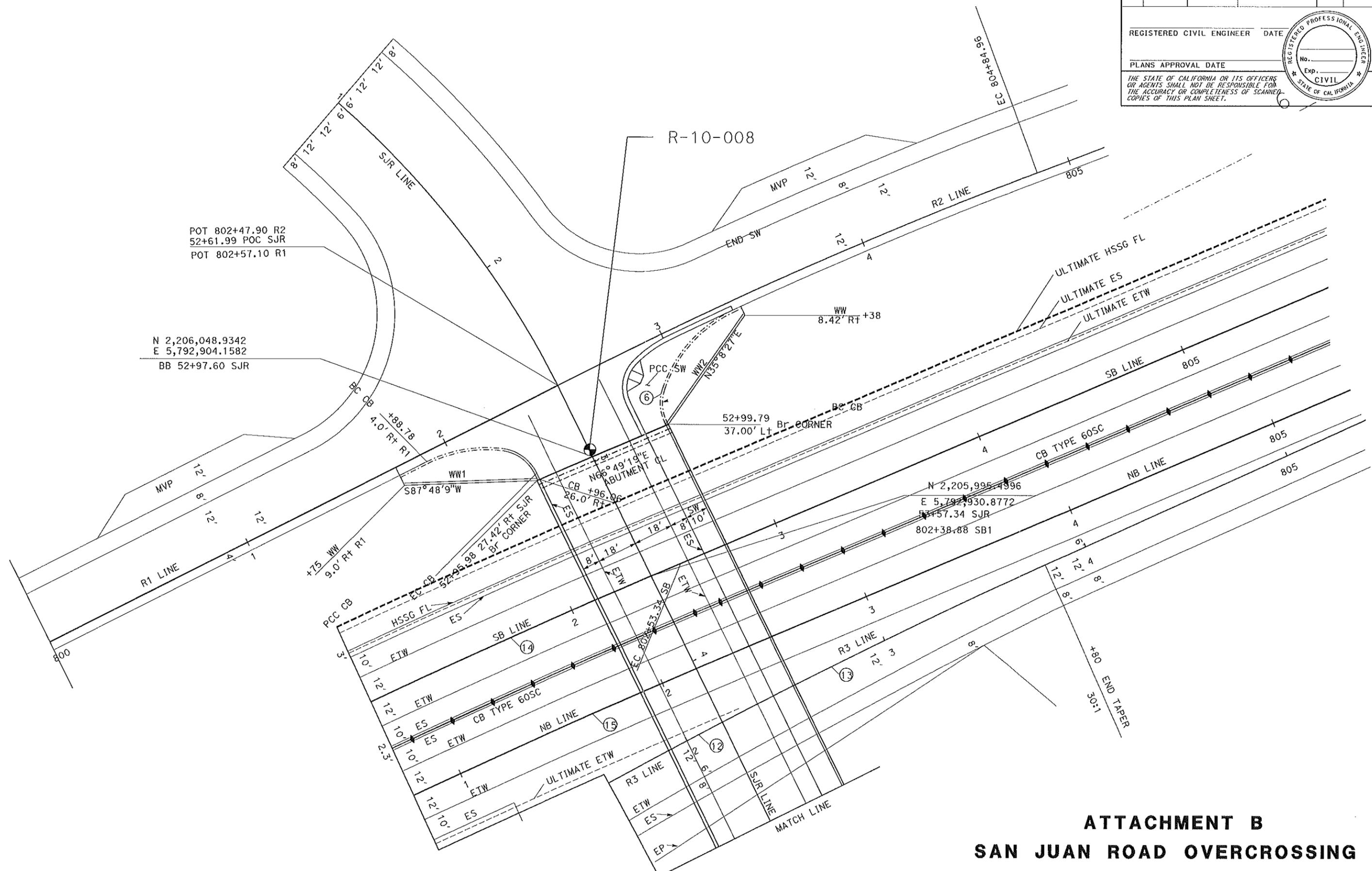
**Attachment B-Layout
Soil Nail RW #2**

SCALE: 1"=50'

LAST REVISION DATE: 11/15/2011

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
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 CALCULATED-DESIGNED BY
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 REVISED BY
 DATE REVISED

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
REGISTERED CIVIL ENGINEER			DATE		
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>					



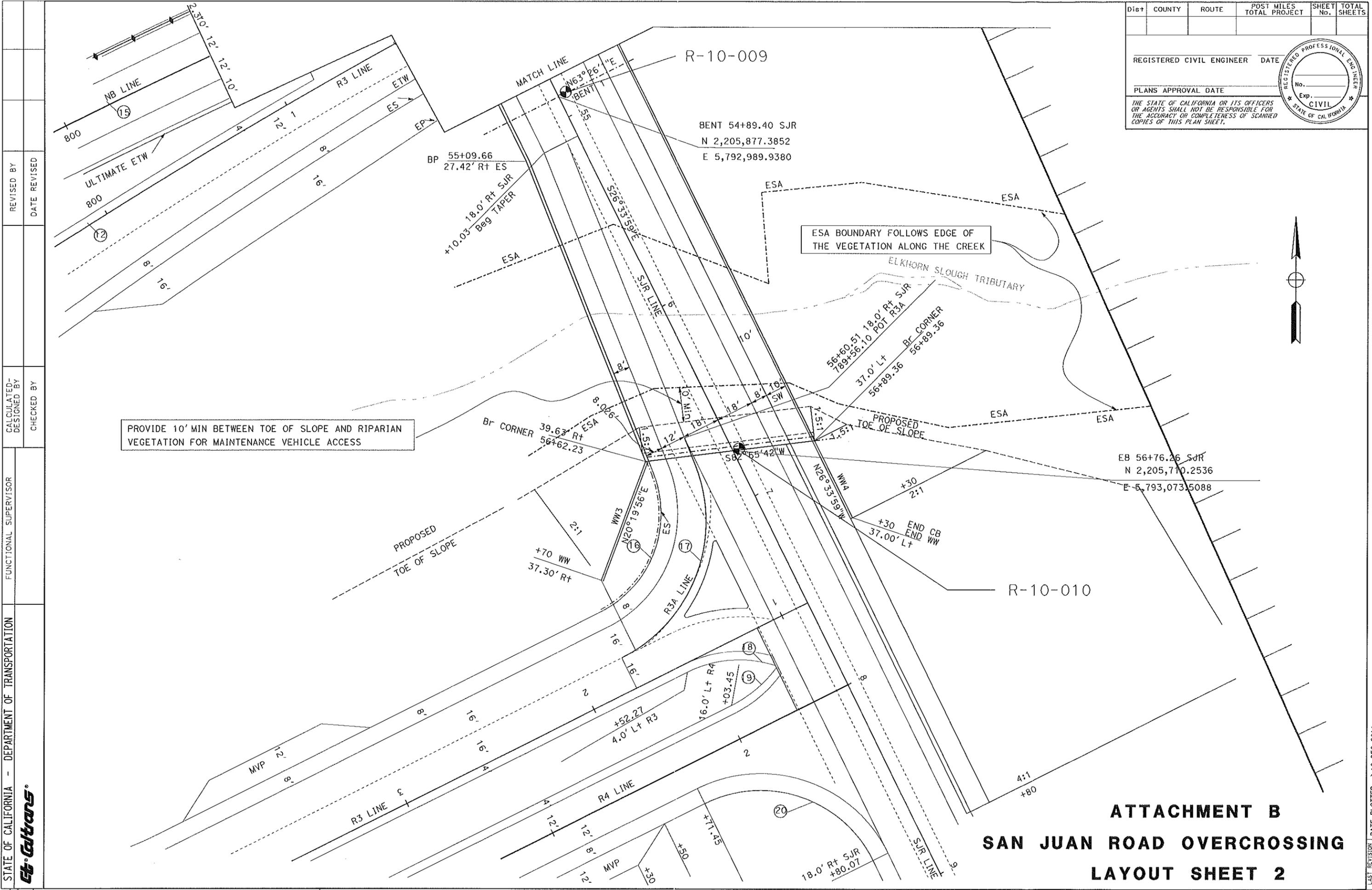
ATTACHMENT B
SAN JUAN ROAD OVERCROSSING
LAYOUT SHEET 1

LAST REVISION: 10/11/11 BY: [unreadable]

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

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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PROVIDE 10' MIN BETWEEN TOE OF SLOPE AND RIPARIAN VEGETATION FOR MAINTENANCE VEHICLE ACCESS

ESA BOUNDARY FOLLOWS EDGE OF THE VEGETATION ALONG THE CREEK

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 REVISIONS: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20
 REVISION BY: _____ DATE: _____
 CALCULATED/DESIGNED BY: _____ CHECKED BY: _____
 FUNCTIONAL SUPERVISOR: _____

**ATTACHMENT B
 SAN JUAN ROAD OVERCROSSING
 LAYOUT SHEET 2**

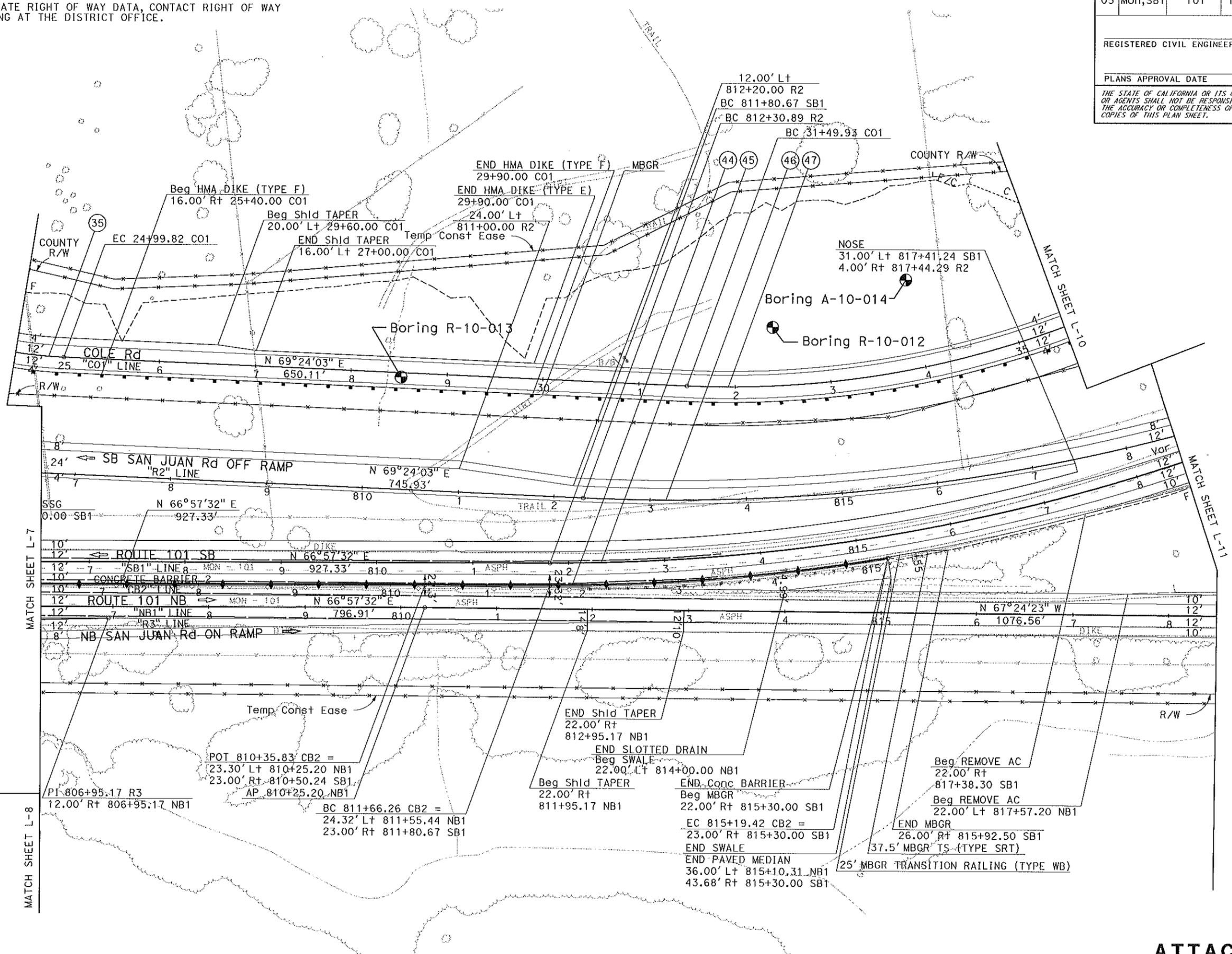
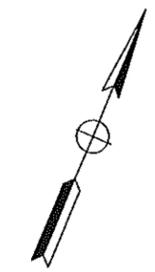
NOTE: FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon, SB+	101	100.0/101.3, 0.0/1.6		

REGISTERED CIVIL ENGINEER DATE _____

PLANS APPROVAL DATE _____

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
06-DESIGN
Ernst & Young

REVISOR: JOSEPH VALDIVIA
 DATE: _____

CALCULATED-DRAWN BY: _____
 CHECKED BY: _____

FUNCTIONAL SUPERVISOR: ERNIE PENUNA

ATTACHMENT B

SCALE: 1"=50'

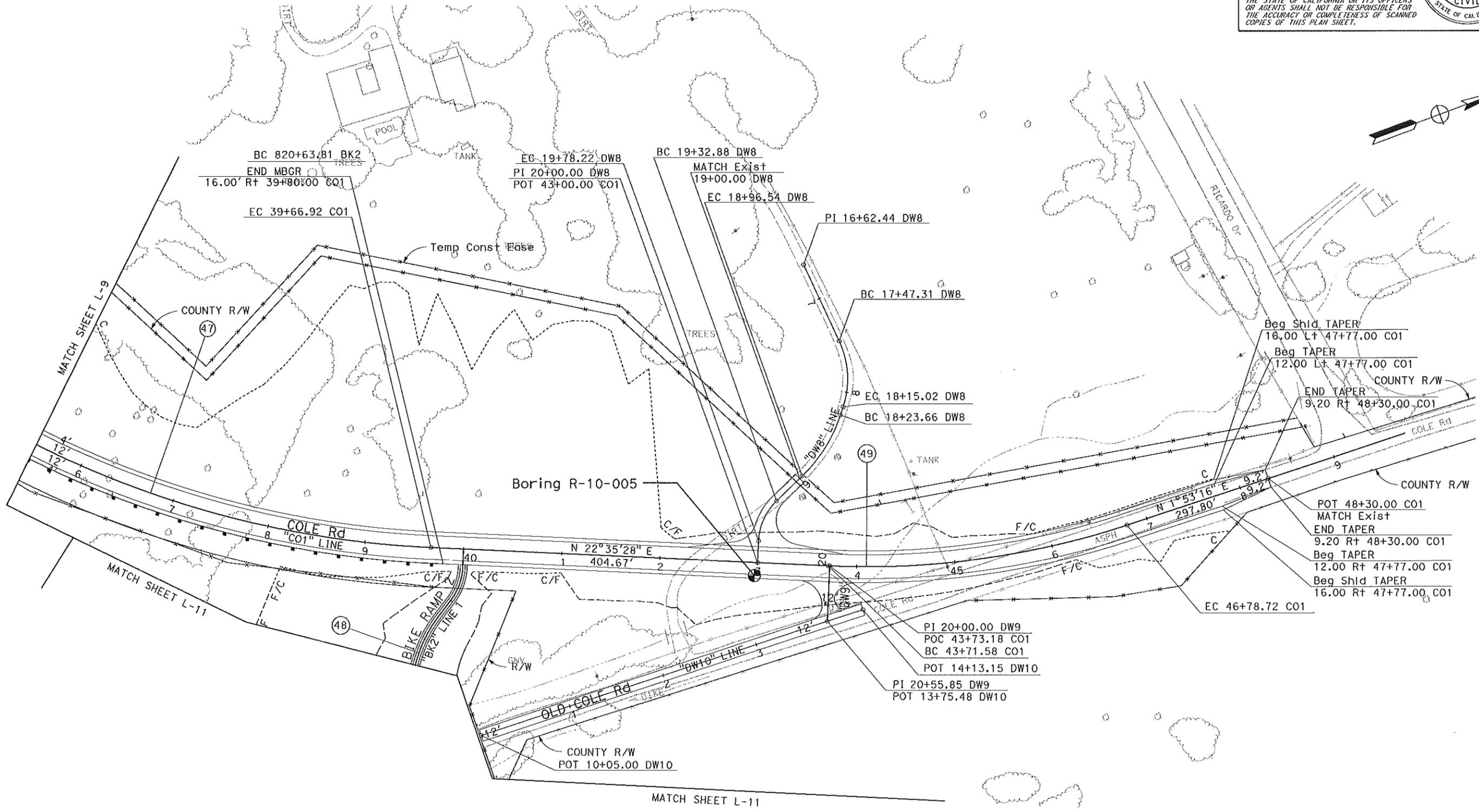
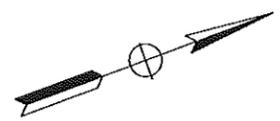
LAST REVISION DATE BY APPROV. DATE BY

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
05	Mon, SB+	101	100.0/101.3, 0.0/1.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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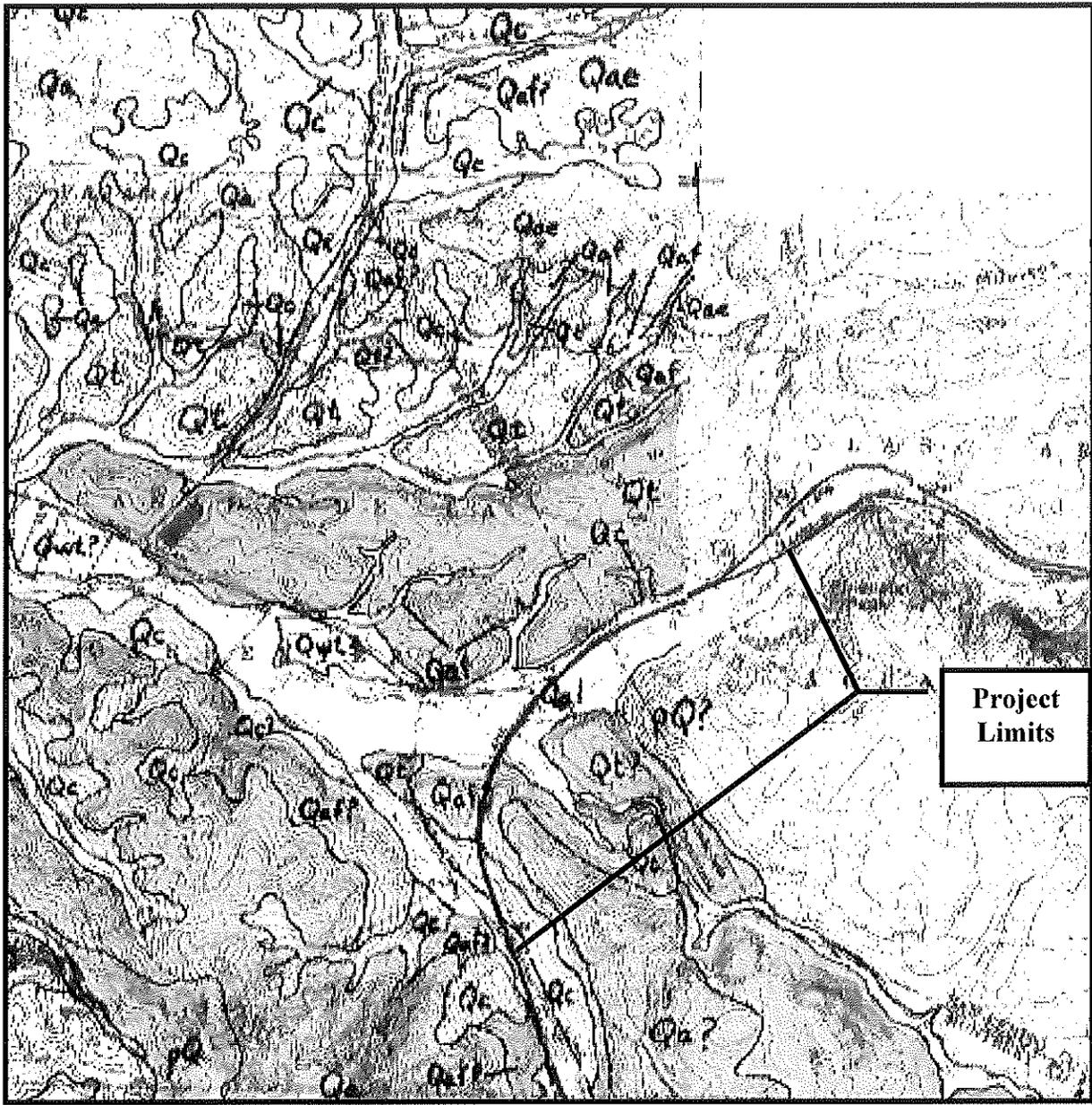


STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
 06 - DESIGN
 FUNCTIONAL SUPERVISOR: ERNIE PENUNA
 CALCULATED/DESIGNED BY: JOSEPH VALDIVIA
 REVISOR: [blank]
 DATE REVISOR: [blank]

ATTACHMENT B
Boring Locations
 SCALE: 1"=50'
 LAST REVISION: [blank]

Geologic Map and Legend

Attachment C



SCALE 1:62 500



CONTOUR INTERVAL 20 FEET

DASHED LINES REPRESENT 10 FOOT CONTOURS

MOSS LANDING QUADRANGLE CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM 1929

GEOLOGIC MAP

Attachment C

This map is part of:
**Map Showing Geology and Liquefaction
 Potential of Northern Monterey and
 Southern Santa Cruz Counties, California**
 By: Dupre and Tinsley

GEOLOGIC LEGEND

Qb

BASIN DEPOSITS--Unconsolidated plastic clay and silty clay contain much organic material. Locally contain interbedded thin layers of silt and silty sand. Deposited in a variety of environments including estuaries, lagoons, tidal flats, marsh-filled sloughs, flood basins, and lakes. Thickness highly variable; may be as much as 30 m thick underlying some sloughs. High susceptibility to flooding. Moderate to high liquefaction susceptibility except where water table is more than 10 m below the surface. Highly expansive soils develop on these deposits

Qal

ALLUVIAL DEPOSITS, UNDIFFERENTIATED--Unconsolidated, heterogeneous, moderately sorted silt and sand with discontinuous lenses of clay and silty clay. Locally includes large amounts of gravel. May include deposits equivalent to both younger and older flood-plain deposits in areas where these were not differentiated. Thickness highly variable; may be more than 30 m thick near the coast. Variable permeability and porosity. Depth to water table highly variable. High susceptibility to flooding in areas where not incised by present stream. Liquefaction susceptibility moderate to high where water is close to surface

Qc

COLLUVIUM--Unconsolidated heterogeneous deposits of moderately to poorly sorted silt, sand, and gravel, deposited by slope wash and mass movement. Minor fluvial reworking. Locally includes numerous undifferentiated landslides and small alluvial fans. Contacts generally gradational. Locally grades into fluvial deposits. Generally more than 2 m thick. Moderately well drained and permeable. Mostly moderately low liquefaction potential but can be moderately high locally. Slope stability relatively low; small landslides common where water is close to surface

Qch

ALLUVIAL FAN DEPOSITS OF CHUALAR--Weakly consolidated, moderately to poorly sorted sand, silt, and gravel deposited as a series of alluvial fans flanking the Salinas Valley. Depth to water table generally greater than 10 m because of ground-water pumping. Characterized by well-drained, medially developed soils. Relatively low susceptibility to flooding; low susceptibility for liquefaction

Qt

TERRACE DEPOSITS, UNDIFFERENTIATED--Weakly consolidated to semiconsolidated, moderately to poorly sorted silt, silty clay, sand, and gravels, mostly deposited in a fluvial environment. Thickness highly variable, locally as much as 18 m thick. Deposits capped by moderately to fully completely well-developed soils, some with duripans; expansive soils are locally present. Low susceptibility to flooding and for liquefaction

Qoe

OLDER EOLIAN DEPOSITS--Semiconsolidated, moderately well sorted sand as much as 13 m thick deposited in a series of inland-migrating dune fields. Locally conformably overlying undifferentiated coastal terrace deposits and terrace deposits of Antioch. Capped by moderately well drained, maximally developed soils, some with duripans. Low susceptibility to flooding and for liquefaction

Qp

ALLUVIAL FAN DEPOSITS OF PLACENTIA--Semiconsolidated, moderately to poorly sorted sand, silt, and gravel; gravel content increases toward the head of the fan. Similar to alluvial fan deposits of Chualar, except capped by more well developed soils. Generally low susceptibility to flooding; low liquefaction susceptibility

Qa

AROMAS SAND (Pleistocene)--Heterogeneous sequence of mainly eolian and fluvial sand, silt, clay, and gravel. Slight angular unconformities present throughout the unit; older deposits more complexly folded and faulted than younger deposits. Total thickness may be greater than 250 m. Characterized by maximally developed soils, most with duripans. Low susceptibility to flooding and for liquefaction. Unit locally divided into:

Qae

Eolian deposits--Moderately well sorted sand as much as 60 m thick that contains no intervening fluvial deposits. Several sequences of eolian deposits may be present, each separated by paleosols. The upper 3-6 m of each dune sequence is oxidized and relatively well indurated, and all primary sedimentary structures have been destroyed by weathering; the lower parts of each dune sequence may be relatively unconsolidated below the weathering zone. Porosity and permeability, as well as degree of consolidation, are thus a function of the relative position within the weathering profile. Perched water tables may be present where eolian deposits overlie less permeable fluvial deposits; springs may develop in these areas, and slumps and landslides may develop as well. Severe erosion may occur within this unit when the weathering zone and its protective duripan are breached and the relatively unconsolidated sands are exposed, as evidenced by the extensive colluvial slopes that mantle much of the outcrop area

Qaf

Fluvial deposits--Semiconsolidated, moderately to poorly sorted silty clay, silt, sand, and gravel deposited by meandering and braided streams as well as alluvial fans. Includes beds of relatively well sorted gravel ranging from 3 to 30 m thick that are locally important as aquifers in the region. Locally includes buried soils high in expansive clays, which act as aquicludes. Landslides are common in this unit

Qgl

ALLUVIAL FAN DEPOSITS OF GLORIA--Moderately consolidated, deeply weathered, moderately to poorly sorted sand, silt and gravel, capped with moderately well drained, maximally developed soils with duripans. Low susceptibility to flooding and for liquefaction

pQ

SEDIMENTARY, IGNEOUS, AND METAMORPHIC ROCKS, UNDIVIDED--
Characterized by very low susceptibility for liquefaction

Boring Records

Attachment D

LOGGED BY Z. Dellamas	BEGIN DATE 7-13-10	COMPLETION DATE 7-13-10	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 2207439.4 ft / 5794566.8 ft	HOLE ID R-10-005
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 13.2' Rt Sta 42+97.1 CO1		SURFACE ELEVATION 189.22 ft	
DRILLING METHOD Rotary Wire-Line	DRILL RIG Acker MP8		BOREHOLE DIAMETER 3.7 in	
SAMPLER TYPE(S) AND SIZE(S) (ID) Other, SPT (1.4")	SPT HAMMER TYPE Boart/Longyear Automatic 140#, 30" drop		HAMMER EFFICIENCY, ERI 74%	
BOREHOLE BACKFILL AND COMPLETION Observation Well, Backfilled w/ Sand, plugged w/ Bentonite		GROUNDWATER DURING DRILLING READINGS	AFTER DRILLING (DATE) 18.5 ft on 4-12-11	TOTAL DEPTH OF BORING 41.5 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
187.22	0		SILTY SAND (SM); dense; dark brown; moist; mostly medium and fine SAND; few low plasticity fines.												
185.22	4														
183.22	6				7	11	28								
181.22	8														
179.22	10		Light brown.												
177.22	12														
175.22	14		Poorly graded SAND (SP); medium dense; light brown; moist; mostly medium SAND; few low plasticity fines.												
173.22	16		Dense; grayish brown.												
171.22	18		SILTY SAND with GRAVEL (SM); dense; light brown; moist; mostly medium SAND; little low plasticity fines; little fine GRAVEL, oxide staining.												
169.22	20		Brownish yellow.												
167.22	22		Loose.												
165.22	24		CLAYEY SAND (SC); loose; brown; moist; mostly medium SAND; little medium plasticity fines.												
	25		Poorly graded SAND (SP); medium dense; brown; moist; mostly medium SAND; few low plasticity fines.												

(continued)

CALTRANS BORING RECORD MET-ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-005
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801
PROJECT OR BRIDGE NAME San Juan Road				
BRIDGE NUMBER	PREPARED BY Z. Dellamas	DATE 9-7-10	SHEET 1 of 2	

CALTRANS BORING RECORD MIETHENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
163.22	25		Poorly graded SAND (SP) (continued).			5 6 8	14								
161.22	28														
159.22	30		Very dense.			4	42								
	31		Few fine GRAVEL.			19 23									
157.22	32		Well-graded SAND with GRAVEL (SW); very dense; brown; moist; mostly SAND, from coarse to fine; little GRAVEL, from coarse to fine.												
155.22	34		Well-graded GRAVEL (GW); very dense; brown; moist; mostly GRAVEL, from coarse to fine; few SAND, from coarse to fine.												
153.22	35		SILTY SAND (SM); very dense; greenish gray; moist; mostly fine SAND; little low plasticity fines.			9 16 25	41								
147.22	42		Bottom of borehole at 41.5 ft bgs			10 20 37	57								
145.22	44														
143.22	46														
141.22	48														
139.22	50														
137.22	52														
135.22	54														



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-005	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-7-10	SHEET 2 of 2

LOGGED BY Z. Dellamas	BEGIN DATE 7-13-10	COMPLETION DATE 7-13-10	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 2203943.9 ft / 5790893.5 ft	HOLE ID R-10-006
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 105' Rt Sta 772+52.8 NB1		SURFACE ELEVATION 150.26 ft	
DRILLING METHOD Rotary Wire-Line	DRILL RIG Acker MP8		BOREHOLE DIAMETER 3.7 in	
SAMPLER TYPE(S) AND SIZE(S) (ID) Other, SPT (1.4")	SPT HAMMER TYPE Boart/Longyear Automatic 140#, 30" drop		HAMMER EFFICIENCY, ERI 74%	
BOREHOLE BACKFILL AND COMPLETION Backfilled	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS		TOTAL DEPTH OF BORING 40.8 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	ROD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		ORGANIC SOIL with SAND (OL/OH); medium dense; very dark brown; moist; mostly fines; some SAND, from coarse to fine.												
148.26	2		SILTY SAND (SM); medium dense; dark brown; moist; mostly SAND, from coarse to fine; some low plasticity fines.												
146.26	4		CLAYEY SAND (SC); medium dense; dark brown; moist; mostly fine SAND; some medium plasticity fines.												
144.26	6					4 6 9	15								
142.26	8														
140.26	10		Well-graded SAND with SILT (SW-SM); medium dense; dark brown; moist; mostly SAND, from coarse to fine; few low plasticity fines.												
138.26	12		CLAYEY SAND (SC); loose; dark brown; moist; mostly fine SAND; little low plasticity fines.			4 3 2	5								
136.26	14														
134.26	16		SILTY SAND (SM); medium dense; brown; moist; mostly fine SAND; little low plasticity fines. Oxidation staining, 16'-17'. Mostly SAND, from coarse to fine.			2 3 7	10								
132.26	18														
130.26	20														
128.26	22		Gray; mostly fine SAND.			0 0 9	9								
126.26	24		Well-graded SAND with SILT and GRAVEL (SW-SM); dense; grayish brown; moist; mostly SAND, from coarse				10								

(continued)

CALTRANS BORING RECORD METH-ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-006	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-9-10	SHEET 1 of 2

CALTRANS BORING RECORD MET+ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
124.26	25		to fine; few low plasticity fines; little GRAVEL, from coarse to fine; little cobbles to 6".		2	10									
	26		CLAYEY SAND with GRAVEL (SC); dense; brownish yellow; moist; mostly SAND, from coarse to fine; little medium plasticity fines; little GRAVEL, from coarse to fine; little cobbles.		3										
	27		Black; cobble to 3".		7										
122.26	28		Very dense; brownish yellow; moist; little low plasticity fines;.												
	29														
120.26	30					20	30								
	31		Dark yellowish brown.			15									
	32					15									
118.26	33														
	34														
116.26	35		Dense.			11	46								
	36					18									
	37					28									
114.26	38														
	39														
112.26	40		Very dense; increasing coarse GRAVEL.			25	54								
	41					24									
	42					30									
	43		Bottom of borehole at 40.8 ft bgs												
108.26	44														
	45														
106.26	46														
	47														
104.26	48														
	49														
102.26	50														
	51														
98.26	52														
	53														
96.26	54														
	55														



Department of Transportation
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 Geotechnical Services
 Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-006	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-9-10	SHEET 2 of 2

LOGGED BY Z. Dellamas	BEGIN DATE 7-14-10	COMPLETION DATE 7-14-10	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 2206330.1 ft / 5792908.4 ft	HOLE ID R-10-007
DRILLING CONTRACTOR Caltrans			BOREHOLE LOCATION (Offset, Station, Line) 42' Rt Sta 21+69.2 CO1	SURFACE ELEVATION 186.69 ft
DRILLING METHOD Rotary Wire-Line			DRILL RIG Acker MP8	BOREHOLE DIAMETER 3.7 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Other, SPT (1.4")			SPT HAMMER TYPE Boart/Longyear Automatic 140#, 30" drop	HAMMER EFFICIENCY, ERI 74%
BOREHOLE BACKFILL AND COMPLETION Backfilled w/ Sand, plugged w/ Bentonite			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS	TOTAL DEPTH OF BORING 60.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
184.69	0		CLAYEY SAND with GRAVEL (SC); medium dense; dark brown; moist; mostly medium SAND; little medium plasticity fines; little GRAVEL, from coarse to fine.												
182.69	4		SILTY SAND (SM); medium dense; yellowish brown; moist; mostly medium to fine SAND; few fine GRAVEL.			7	26								
180.69	5					12									
178.69	8														
176.69	9		Well-graded SAND with SILT (SW-SM); medium dense; yellowish brown; moist; mostly SAND, from coarse to fine; little nonplastic fines; little fine GRAVEL.			8	20								
174.69	10		Little GRAVEL, from coarse to fine, subrounded to rounded.			11									
172.69	14		Well-graded SAND (SW); very dense; dark yellowish brown; moist; mostly SAND, from coarse to fine; few fine GRAVEL.			15	56								
170.69	15					25									
168.69	16		SANDY lean CLAY (CL); hard; yellowish brown; moist; mostly medium plasticity fines; some SAND, from coarse to fine; few fine GRAVEL; PP>4.5.												
166.69	19		Well-graded SAND (SW); very dense; yellowish brown; moist; mostly SAND, from coarse to fine; trace nonplastic fines; few fine GRAVEL.			15	56								
164.69	20					25									
162.69	24		Few GRAVEL, from coarse to fine.			15	71								
	24					31									
	25		SILTY SAND (SM); very dense; light gray; moist; mostly			40									

(continued)

CALTRANS BORING RECORD MIET-HENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040803.GLB 12/19/11



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-007
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801
PROJECT OR BRIDGE NAME San Juan Road				
BRIDGE NUMBER	PREPARED BY Z. Dellamas	DATE 9-13-10	SHEET 1 of 3	

CALTRANS BORING RECORD MET+ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
160.69	25		SAND, from coarse to fine; little low plasticity fines.												
	26														
	27		Yellowish brown.												
158.69	28														
	29					7	59								
	27					27									
	30		Lean CLAY (CL); hard; dark yellowish brown; moist; mostly medium plasticity fines; PP>4.5.			32									
156.69	30														
	31		CLAYEY SAND (SC); very dense; yellowish red; moist; mostly SAND, from coarse to fine; some medium plasticity fines.												
154.69	32														
	33														
	34					22	66								
152.69	34					26									
	35					40									
150.69	36														
	37														
148.69	38														
	39					16									
	32					32									
146.69	40					50/5"									
	41														
144.69	42														
	43														
142.69	44		Trace fine GRAVEL.			10	44								
	45					20									
	44					24									
140.69	46														
	47														
138.69	48														
	49		Brown.			7	58								
	23					23									
	35					35									
136.69	50														
	51														
134.69	52		Poorly graded SAND (SP); very dense; brown; moist; mostly fine SAND; few coarse SAND; few non plastic fines; trace fine GRAVEL.												
	53														
132.69	54					25	70								
	30					30									
	40					40									

(continued)

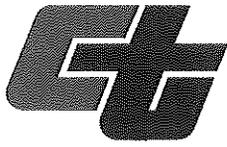


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REPORT TITLE BORING RECORD				HOLE ID R-10-007	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-13-10	SHEET 2 of 3

CALTRANS BORING RECORD MET-ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
130.69	56	[Dotted pattern]	Poorly graded SAND (SP) <i>(continued)</i> .												
128.69	58														
126.69	60		Few fine GRAVEL.			22 36 50	86								
	60		Bottom of borehole at 60.0 ft bgs												
	61														
	62														
	63														
	64														
	65														
	66														
	67														
	68														
	69														
	70														
	71														
	72														
	73														
	74														
	75														
	76														
	77														
	78														
	79														
	80														
	81														
	82														
	83														
	84														
	85														



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REPORT TITLE BORING RECORD				HOLE ID R-10-007	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-13-10	SHEET 3 of 3

LOGGED BY Z. Dellamas	BEGIN DATE 7-28-10	COMPLETION DATE 7-28-10	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 2205523.3 ft / 5792529.6 ft	HOLE ID R-10-011
DRILLING CONTRACTOR Caltrans			BOREHOLE LOCATION (Offset, Station, Line) 83.6' Lt Sta 796+10.4 R4	SURFACE ELEVATION 159.63 ft
DRILLING METHOD Rotary Wire-Line			DRILL RIG Acker MP8	BOREHOLE DIAMETER 3.7 in
SAMPLER TYPE(S) AND SIZE(S) (ID) Other, SPT (1.4")			SPT HAMMER TYPE Boart/Longyear Automatic 140#, 30" drop	HAMMER EFFICIENCY, ERI 74%
BOREHOLE BACKFILL AND COMPLETION Observation Well, Backfilled w/ Sand, plugged w/ Bentonite			GROUNDWATER DURING DRILLING READINGS	AFTER DRILLING (DATE) 6.1 ft on 4-12-11
				TOTAL DEPTH OF BORING 51.8 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		ORGANIC SOIL with SAND (OL/OH); medium stiff; black; moist; mostly low plasticity fines; little fine SAND; PP=0.5-1.5 tsf.												
157.63	2														
155.63	4		SILTY CLAY (CL-ML); medium dense; dark brown; moist; mostly medium plasticity fines; few SAND.												
153.63	6					5 8 8	16								
151.63	8		SANDY lean CLAY (CL); very stiff; varies from dark brown to dark yellowish brown; moist; mostly medium plasticity fines; some fine SAND; PP=3.0 tsf.												
149.63	10		SILTY SAND (SM); loose; dark yellowish brown; moist; mostly fine SAND; little low plasticity fines.												
147.63	12					2 3 3	6								
145.63	14														
143.63	16		Well-graded SAND (SW); loose; pale brown; moist; mostly SAND, from coarse to fine; few low plasticity fines.												
141.63	18					5 4 3	7								
139.63	20														
137.63	22		Medium dense.			3 6 10	16								
135.63	24														
	25														

(continued)

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REPORT TITLE BORING RECORD				HOLE ID R-10-011
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801
PROJECT OR BRIDGE NAME San Juan Road				
BRIDGE NUMBER	PREPARED BY Z. Dellamas	DATE 9-7-10	SHEET 1 of 2	

CALTRANS BORING RECORD MET-ENG FIXED SAN JUAN ROAD, GP, J CALTRANS LIBRARY 040808.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
133.63	26	[Diagonal Hatching]	SANDY lean CLAY (CL); hard; dark yellowish brown; moist; mostly medium to low plasticity fines; some fine SAND.		6 12 16	28									
131.63	28	[Diagonal Hatching]	SILT (ML); very dense; dark yellowish brown; moist; mostly low plasticity fines.												
129.63	30	[Diagonal Hatching]	Lean CLAY with SAND (CL); hard; dark yellowish brown; moist; mostly medium plasticity fines; little medium to fine SAND.		16 22 24	46									
127.63	32	[Diagonal Hatching]	Trace fine GRAVEL.												
125.63	34	[Diagonal Hatching]													
123.63	36	[Diagonal Hatching]	Little fine GRAVEL.		14 25 50/5.5'										
121.63	38	[Diagonal Hatching]													
119.63	40	[Diagonal Hatching]	SILTY SAND (SM); very dense; greenish gray; moist; mostly SAND, from coarse to fine; few fine GRAVEL; little low plasticity fines.		43 50/2"										
117.63	42	[Diagonal Hatching]	Well-graded SAND (SW); very dense; greenish gray; moist; mostly SAND, from coarse to fine; few fine GRAVEL; few nonplastic fines.												
115.63	44	[Diagonal Hatching]													
113.63	46	[Diagonal Hatching]			32 50/4"										
111.63	48	[Diagonal Hatching]													
109.63	50	[Diagonal Hatching]	SILTY CLAY (CL-ML); hard; dark brown; moist; mostly medium plasticity fines; few fine SAND.												
107.63	52	[Diagonal Hatching]	Lean CLAY (CL); hard; dark brown; moist; mostly medium plasticity fines; few fine SAND.		18 27 42	69									
105.63	54	[Diagonal Hatching]	Bottom of borehole at 51.8 ft bgs												



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-011	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-7-10	SHEET 2 of 2

LOGGED BY Z. Dellamas	BEGIN DATE 8-3-10	COMPLETION DATE 8-3-10	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 2206678.2 ft / 5793914.1 ft	HOLE ID R-10-012
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 60.6' Lt Sta 32+42.0 CO1		SURFACE ELEVATION 250.16 ft	
DRILLING METHOD Rotary Wire-Line	DRILL RIG Acker MP8		BOREHOLE DIAMETER 3.7 in	
SAMPLER TYPE(S) AND SIZE(S) (ID) Other, SPT (1.4")	SPT HAMMER TYPE Boart/Longyear Automatic 140#, 30" drop		HAMMER EFFICIENCY, ERI 74%	
BOREHOLE BACKFILL AND COMPLETION Backfilled	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS		TOTAL DEPTH OF BORING 54.5 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM); dark brown; moist; mostly fine SAND; little nonplastic fines.												
248.16	2		Poorly graded SAND (SP); dense; dark yellowish brown; moist; mostly medium SAND; few nonplastic fines.												
	3		6" alternating layers of well graded SAND at 2' & 3'.			9	35								
246.16	4					13									
	5					22									
244.16	6		SILTY SAND (SM); dense; dark yellowish brown; moist; mostly fine SAND; little nonplastic fines; moderate to weak cementation.												
	7														
242.16	8					9	36								
	9					14									
240.16	10					22									
	11														
238.16	12														
	13														
236.16	14					8	38								
	15					12									
234.16	16		SILT with SAND (ML); dense; dark yellowish brown; moist; mostly low plasticity fines; little fine SAND; weak cementation.												
	17														
232.16	18					11	38								
	19					16									
230.16	20		SILTY SAND (SM); dense; dark yellowish brown; moist; mostly fine SAND; little nonplastic fines; moderate cementation.			22									
	21		Poorly graded SAND (SP); dense; yellowish brown; moist; mostly fine SAND; few nonplastic fines; weak cementation.												
228.16	22														
	23														
226.16	24					10	39								
	25					17									
						22									

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Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-012	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER	PREPARED BY Z. Dellamas	DATE 9-1-10	SHEET 1 of 2		

CALTRANS BORING RECORD MET+ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
224.16	25		Poorly graded SAND (SP) (continued).												
222.16	28					10	35								
	29		SILT with SAND (ML); dense; yellowish brown; moist; mostly low plasticity fines; little fine SAND; weak cementation.			15									
	20					20									
218.16	32		SILTY SAND (SM); dense; yellowish brown; moist; mostly fine SAND; little to some low plasticity fines; weak cementation.												
	33		Poorly graded SAND (SP); very dense; yellowish brown; moist; mostly fine SAND; few low plasticity fines.			14	59								
216.16	34					28									
	35					31									
212.16	38					11	52								
	39		SILTY SAND (SM); very dense; grayish brown; moist; mostly medium to fine SAND; little low plasticity fines; moderate to weak cementation.			23									
	40					29									
208.16	42		Well-graded SAND with GRAVEL (SW); very dense; yellowish brown; moist; mostly SAND, from coarse to fine; few medium plasticity fines; little subrounded to subangular GRAVEL.			24	92								
	43					42									
206.16	44		Grayish brown; no GRAVEL.			50									
	45														
204.16	46														
	47		Lean CLAY (CL); hard; yellowish brown; moist; mostly medium plasticity fines; few fine SAND; PP=4.5 tsf.												
202.16	48		Well-graded SAND (SW); very dense; yellowish brown; moist; mostly SAND, from coarse to fine; few medium plasticity fines; moderate to weak cementation.			28									
	49		Grayish brown.			50/5"									
200.16	50														
198.16	52														
	53														
196.16	54					50/6"									
	55		Bottom of borehole at 54.5 ft bgs												



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-012	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-1-10	SHEET 2 of 2

LOGGED BY Z. Dellamas	BEGIN DATE 8-3-10	COMPLETION DATE 8-4-10	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 2206478.5 ft / 5793579.1 ft	HOLE ID R-10-013
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 4.6' Rt Sta 28+52.1 CO1		SURFACE ELEVATION 187.58 ft	
DRILLING METHOD Rotary Wire-Line	DRILL RIG Acker MP8		BOREHOLE DIAMETER 3.7 in	
SAMPLER TYPE(S) AND SIZE(S) (ID) Other, SPT (1.4")	SPT HAMMER TYPE Boart/Longyear Automatic 140#, 30" drop		HAMMER EFFICIENCY, ERI 74%	
BOREHOLE BACKFILL AND COMPLETION Observation Well, Backfilled w/ Sand, plugged w/ Bentonite		GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS		TOTAL DEPTH OF BORING 61.8 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0		SILTY SAND (SM); medium dense; dark brown; moist; mostly fine SAND; little low plasticity fines.												
185.58	2		Yellowish brown.												
183.58	4														
181.58	6		Poorly graded SAND (SP); medium dense; dark yellowish brown; moist; mostly medium to fine SAND; few nonplastic fines.			6 11 13	24								
179.58	8		SILTY SAND (SM); medium dense; dark yellowish brown; moist; mostly medium to fine SAND; little low plasticity fines; weak cementation.												
177.58	10		Grayish brown.												
175.58	11		Well-graded SAND (SW); medium dense; grayish brown; moist; mostly SAND, from coarse to fine; few nonplastic fines; trace fine GRAVEL.			2 3 7	10								
173.58	13		CLAYEY SAND (SC); medium dense; dark yellowish brown; moist; mostly SAND, from coarse to fine; little medium plasticity fines; trace fine GRAVEL.												
171.58	16		Well-graded SAND with GRAVEL (SW); very dense; dark yellowish brown; moist; mostly SAND, from coarse to fine; few nonplastic fines; little GRAVEL, from coarse to fine.			29 35 50/3.5"									
169.58	18														
167.58	20														
165.58	21					25 50/6"									
163.58	22		Well-graded SAND (SW); very dense; yellowish brown; moist; mostly SAND, from coarse to fine; few nonplastic fines; few fine GRAVEL.												
	23														
	24														
	25														

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CALTRANS BORING RECORD MET-HENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-013	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-1-10	SHEET 1 of 3

CALTRANS BORING RECORD MET+ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	ROD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
161.58	25		Sandstone cobble. Grayish brown.		12	59									
	26		Well-graded SAND (SW) (continued).		27										
	27		Lean CLAY (CL); hard; brown; moist; mostly medium plasticity fines; few SAND, from coarse to fine; PP=4.5 tsf.		32										
159.58	28		CLAYEY SAND (SC); very dense; yellowish brown; moist; mostly SAND, from coarse to fine; some medium plasticity fines.												
	29														
157.58	30		Well-graded SAND (SW); very dense; yellowish brown; moist; mostly SAND, from coarse to fine; few nonplastic fines.												
	31				18	50/5.75'									
155.58	32														
	33														
153.58	34														
	35														
151.58	36		Well-graded SAND with GRAVEL (SW); very dense; dark yellowish brown; moist; mostly SAND, from coarse to fine; little GRAVEL, from coarse to fine.		31	40	50/3.5'								
	37														
149.58	38														
	39														
147.58	40														
	41				24	44	50/4"								
145.58	42		SILTY SAND (SM); very dense; grayish brown; moist; mostly SAND, from coarse to fine; little nonplastic fines.												
	43														
143.58	44														
	45														
141.58	46		SILT (ML); very dense; grayish brown; moist; mostly nonplastic fines; few fine SAND.		20	39	50/5.5'								
	47														
139.58	48														
	49														
137.58	50		Well-graded SAND with SILT (SW-SM); very dense; yellowish brown; moist; mostly SAND, from coarse to fine; few nonplastic fines.												
	51		SILT (ML); very dense; grayish brown; moist; mostly nonplastic fines; trace fine SAND.		13	27	63								
135.58	52		Lean CLAY (CL); hard; dark yellowish brown; moist; mostly medium plasticity fines; little fine SAND; PP=4.5 tsf.		36										
	53		CLAYEY SAND (SC); very dense; dark yellowish brown; moist; mostly SAND, from coarse to fine; some medium plasticity fines.												
133.58	54														
	55														

(continued)

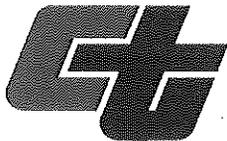


Department of Transportation
 Division of Engineering Services
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 Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-013	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-1-10	SHEET 2 of 3

CALTRANS BORING RECORD METH-ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040806.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks	
131.58	56	[Diagonal hatching pattern]	CLAYEY SAND (SC) (continued).			20	74									
	57		Lean CLAY (CL); hard; dark brown; moist; mostly medium plasticity fines; few fine SAND; PP=4.5 tsf.			27										
129.58	58						47									
127.58	60	[Diagonal hatching pattern]	CLAYEY SAND with GRAVEL (SC); very dense; dark yellowish brown; moist; mostly SAND, from coarse to fine; little medium plasticity fines; little fine GRAVEL.													
	61						22									
125.58	62		Bottom of borehole at 61.8 ft bgs			37										
	63					50/4"										
123.58	64															
	65															
121.58	66															
	67															
119.58	68															
	69															
117.58	70															
	71															
115.58	72															
	73															
113.58	74															
	75															
111.58	76															
	77															
109.58	78															
	79															
107.58	80															
	81															
105.58	82															
	83															
103.58	84															
	85															



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID R-10-013	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER		PREPARED BY Z. Dellamas		DATE 9-1-10	SHEET 3 of 3

LOGGED BY Z. Dellamas	BEGIN DATE 8-4-10	COMPLETION DATE 8-4-10	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 2206777.8 ft / 5794022.3 ft	HOLE ID A-10-014
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Offset, Station, Line) 92' Lt Sta 33+97.3 CO1		SURFACE ELEVATION 260.69 ft	
DRILLING METHOD Hollow-Stem Auger	DRILL RIG Acker MP8		BOREHOLE DIAMETER 6 in	
SAMPLER TYPE(S) AND SIZE(S) (ID) Other, SPT (1.4")	SPT HAMMER TYPE Boart/Longyear Automatic 140#, 30" drop		HAMMER EFFICIENCY, ERI 74%	
BOREHOLE BACKFILL AND COMPLETION Backfilled with auger Cuttings	GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS		TOTAL DEPTH OF BORING 50.5 ft	

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
0	0														
258.69	1		SILTY SAND (SM); medium dense; yellowish brown; dry; mostly fine SAND; little low plasticity fines.												
256.69	4				9	18									
	5				7										
	11				11										
254.69	6														
252.69	8														
250.69	9		Poorly graded SAND (SP); medium dense; light yellowish brown; moist; mostly fine SAND; few nonplastic fines.		6	20									
	10				9										
	11				11										
248.69	12		SILTY SAND (SM); medium dense; yellowish brown; moist; mostly fine SAND; little low plasticity fines.												
246.69	13		Lean CLAY (CL); stiff; yellowish brown; moist; mostly medium plasticity fines; few fine SAND; PP=3.5-4.5 tsf.												
	14														
	15				8	15									
	16				6										
	17				9										
244.69	18														
242.69	19														
240.69	20		PP=3.0 tsf.												
	21				11	40									
	22				17										
	23				23										
238.69	24														
236.69	24		SILTY SAND (SM); dense; yellowish brown; moist; mostly fine SAND; little low plasticity fines.			38									
	25														

(continued)

CALTRANS BORING RECORD MET+ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11



Department of Transportation
Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID A-10-014
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801
PROJECT OR BRIDGE NAME San Juan Road				
BRIDGE NUMBER	PREPARED BY Z. Dellamas	DATE 9-2-10	SHEET 1 of 2	

CALTRANS BORING RECORD METH-ENG FIXED SAN JUAN ROAD.GPJ CALTRANS LIBRARY 040808.GLB 12/19/11

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows per 6 in.	Blows per foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
234.69	25		SILTY SAND (SM) (continued).	X	14 16 22										
232.69	28		Well-graded SAND with GRAVEL (SW); very dense; yellowish brown; dry; mostly SAND, from coarse to fine; few nonplastic fines; some GRAVEL, from coarse to fine.	X	13 35 50/5"										
228.69	32			X	17 19 23	42									
226.69	34		Poorly graded SAND (SP); very dense; dark yellowish brown; moist; mostly fine SAND; few nonplastic fines.	X	20 25 32	57									
224.69	36			X	13 17 27	44									
222.69	38		Well-graded SAND (SW); very dense; yellowish brown; moist; mostly SAND, from coarse to fine; few nonplastic fines; few fine GRAVEL; moderate cementation.	X	23 39 50/4.5'										
218.69	42			X											
216.69	44														
214.69	46														
212.69	48														
210.69	50														
	51		Bottom of borehole at 50.5 ft bgs												
208.69	52														
206.69	54														
	55														



Department of Transportation
 Division of Engineering Services
 Geotechnical Services
 Office of Geotechnical Design - North

REPORT TITLE BORING RECORD				HOLE ID A-10-014	
DIST. 05	COUNTY Monterey	ROUTE 101	POSTMILE D100.0/D101.3	EA 05-05-315801	
PROJECT OR BRIDGE NAME San Juan Road					
BRIDGE NUMBER	PREPARED BY Z. Dellamas		DATE 9-2-10	SHEET 2 of 2	

Material Properties Summary

Attachment E

05-Mon/SBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	A-10-001	A-10-001	A-10-001	A-10-001	A-10-001	A-10-001
DATE SAMPLED	5/25/2010	5/25/2010	5/25/2010	5/25/2010	5/25/2010	5/25/2010	5/25/2010
STATION	40+29.7	40+29.7	40+29.7	40+29.7	40+29.7	40+29.7	40+29.7
LINE	SJR1	SJR1	SJR1	SJR1	SJR1	SJR1	SJR1
DISTANCE FROM LINE (Rt. OR Lt.)	66.7' Lt	66.7' Lt	66.7' Lt	66.7' Lt	66.7' Lt	66.7' Lt	66.7' Lt
DEPTH OR ELEVATION (FEET)	9.0 - 10.5	19.0 - 20.5	15.5 - 24.0	39.0 - 40.5	59.0 - 60.5		
USCS CLASSIFICATION							
3	100	100	100	100	100	100	100
2 1/2	100	100	100	100	100	100	100
2	100	100	100	100	100	100	100
1 1/2	100	100	100	100	100	100	100
1	100	100	100	100	100	100	100
3/4	100	100	100	100	100	100	100
1/2	100	100	100	100	100	100	100
3/8	100	100	100	100	99	99	100
4	100	100	100	100	99	99	99
8	99	100	100	100	94	94	97
16	99	100	100	99	88	88	94
30	98	100	100	98	82	82	89
50	94	99	92	92	65	65	81
100	84	97	83	44	44	44	70
200	71	92	72	33	33	33	55
5 µm	27	38	30	10	10	10	19
1 µm	18	23	22	6	6	6	12
IN-PLACE DENSITY (DRY WT. lb/cu ft)			123.7				
IN-PLACE MOISTURE (PERCENT)							
SPECIFIC GRAVITY							
LIQUID LIMIT		35	31				25
PLASTICITY INDEX		17	17				9
SAND EQUIVALENT							
EFFECTIVE STRESS							
FRICITION ANGLE (DEGREES)			35				
COHESION (psf)			0				
TOTAL STRESS							
FRICITION ANGLE (DEGREES)			27.2				
COHESION (psf)			26				
RESISTIVITY (ohm-cm)	816					6110	
pH	7.5					6.49	
SULFATES (ppm)	15						
CHLORIDES (ppm)	350						
CORROSION							

05-Mon/GBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	A-10-002	5/26/2010	A-10-002	5/26/2010	A-10-002	5/26/2010
DATE SAMPLED		5/26/2010		5/26/2010		5/26/2010	
STATION		39+09.9		39+09.9		39+09.9	
LINE		SJR1		SJR1		SJR1	
DISTANCE FROM LINE (Rt. OR Lt.)		78.2' Lt		78.2' Lt		78.2' Lt	
DEPTH OR ELEVATION (FEET)		14.0 - 15.5		39.0 - 40.5		64.0 - 65.5	
USCS CLASSIFICATION							
	3	100		100		100	
	2 1/2	100		100		100	
	2	100		100		100	
	1 1/2	100		100		100	
	1	100		100		100	
	3/4	100		100		100	
	1/2	100		100		100	
	3/8	100		100		100	
	4	100		100		100	
	8	100		99		99	
	16	99		98		98	
	30	97		96		92	
	50	94		92		75	
	100	90		79		52	
	200	77		57		39	
	5 µm	32		17		17	
	1 µm	23		10		11	
IN-PLACE DENSITY (DRY WT. lb/cu ft)							
IN-PLACE MOISTURE (PERCENT)							
SPECIFIC GRAVITY							
LIQUID LIMIT							
PLASTICITY INDEX							
SAND EQUIVALENT							
EFFECTIVE STRESS							
FRICITION ANGLE (DEGREES)							
COHESION (psf)							
TOTAL STRESS							
FRICITION ANGLE (DEGREES)							
COHESION (psf)							
RESISTIVITY (ohm-cm)		611		3927		3697	
pH		6.1		6.88		7.18	
SULFATES (ppm)		55					
CHLORIDES (ppm)		440					
CORROSION							

DFSCRIPTION
 SIEVE ANALYSIS
 CLASSIFICATION
 TEST SUMMARY
 SOIL STRENGTH
 Direct Shear Test
 CORROSION

05-Mom/SBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	A-10-004	A-10-004	A-10-004	A-10-004	A-10-004
BORING OR SAMPLE No.	6/8/2010	6/8/2010	6/8/2010	6/8/2010	6/8/2010
DATE SAMPLED	43+16.6	43+16.6	43+16.6	43+16.6	43+16.6
STATION	SJR1	SJR1	SJR1	SJR1	SJR1
LINE	4.5' Lt	4.5' Lt	4.5' Lt	4.5' Lt	4.5' Lt
DISTANCE FROM LINE (Rt. OR Lt.)	9.0 - 10.5	34.0 - 35.5	35.5 - 44.0	69.0 - 70.5	
DEPTH OR ELEVATION (FEET)	USCS CLASSIFICATION				
USCS CLASSIFICATION	100	100	100	100	100
3	100	100	100	100	100
2 1/2	100	100	100	100	100
2	100	100	100	100	100
1 1/2	100	100	100	100	100
1	100	100	100	100	100
3/4	100	100	100	100	100
1/2	100	100	100	100	100
3/8	100	100	100	100	100
4	100	100	100	98	98
8	100	100	99	99	90
16	99	100	98	98	78
30	97	99	95	95	64
50	93	98	89	89	51
100	87	95	78	78	41
200	72	86	69	69	34
5 µm	34	34	39	39	13
1 µm	24	23	28	28	10
IN-PLACE DENSITY (DRY WT. lb/cu ft)			122.6		
IN-PLACE MOISTURE (PERCENT)					
SPECIFIC GRAVITY					
LIQUID LIMIT		30		36	
PLASTICITY INDEX		14		22	
SAND EQUIVALENT					
EFFECTIVE STRESS					
FRICITION ANGLE (DEGREES)			22.1		
COHESION (psf)			0		
TOTAL STRESS					
FRICITION ANGLE (DEGREES)			9.2		
COHESION (psf)			220		
RESISTIVITY (ohm-cm)	662				6386
pH	5.15				7.68
SULFATES (ppm)	14				
CHLORIDES (ppm)	400				
CORROSION					
SOIL STRENGTH					
CLASSIFICATION					
TEST SUMMARY					

05-Mon/ SBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	R-10-006	R-10-006
DATE SAMPLED	7/13/2010	7/13/2010	
STATION	772+52.8	772+52.8	
LINE	NB1	NB1	NB1
DISTANCE FROM LINE (Rt. OR Lt.)	105.1 Rt	105.1 Rt	105.1 Rt
DEPTH OR ELEVATION (FEET)	5.0-6.5	5.0-6.5	15.0-16.5
USCS CLASSIFICATION			
	3		
	2 1/2		
	2		
	1 1/2		
	1		
	3/4		
	1/2		
	3/8		
	4		
	8		
	16		
	30		
	50		
	100		
	200		
	5 µm		
	1µm		
CLASSIFICATION	IN-PLACE DENSITY (DRY WT. lb/cu ft)		
TEST SUMMARY	IN-PLACE MOISTURE (PERCENT)		
	SPECIFIC GRAVITY		
	LIQUID LIMIT		
	PLASTICITY INDEX		
	SAND EQUIVALENT		
	EFFECTIVE STRESS		
	FRICTION ANGLE (DEGREES)		
	COHESION (psf)		
	TOTAL STRESS		
	FRICTION ANGLE (DEGREES)		
	COHESION (psf)		
SOIL STRENGTH	RESISTIVITY (ohm-cm)	1763	3697
Direct Shear Test	pH	6.14	6.39
	SULFATES (ppm)		
	CHLORIDES (ppm)		
CORROSION			

05-Mon/SBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

BORING OR SAMPLE No.	R-10-008	R-10-008	R-10-008	R-10-008
DATE SAMPLED	7/14/2010	7/14/2010	7/14/2010	7/14/2010
STATION	52+94.3	52+94.3	52+94.3	52+94.3
LINE	SJR1	SJR1	SJR1	SJR1
DISTANCE FROM LINE (Rt. OR Lt.)	0.4' Lt	0.4' Lt	0.4' Lt	0.4' Lt
DEPTH OR ELEVATION (FEET)	20.0 - 21.5	45.0 - 46.0	55.0-56.5	80.0 -81.5
USCS CLASSIFICATION				
3	100	100	100	100
2 1/2	100	100	100	100
2	100	100	100	100
1 1/2	100	100	100	100
1	100	100	100	100
3/4	100	100	100	100
1/2	100	100	100	100
3/8	100	100	100	100
4	100	100	100	100
8	99	99	98	98
16	95	97	93	93
30	90	94	85	85
50	84	88	77	77
100	78	76	69	69
200	64	60	60	60
5 µm	24	21	32	32
1µm	16	8	19	19
IN-PLACE DENSITY (DRY WT. lb/cu ft)				
IN-PLACE MOISTURE (PERCENT)				
SPECIFIC GRAVITY				
LIQUID LIMIT		27	39	36
PLASTICITY INDEX		12	22	19
SAND EQUIVALENT				
EFFECTIVE STRESS				
FRICITION ANGLE (DEGREES)				
COHESION (psf)				
TOTAL STRESS				
FRICITION ANGLE (DEGREES)				
COHESION (psf)				
RESISTIVITY (ohm-cm)	1416			1434
pH	6.77			6.69
SULFATES (ppm)				
CHLORIDES (ppm)				
CORROSION				

DESCRIPTION

SIEVE ANALYSIS

CLASSIFICATION
 TEST SUMMARY

SOIL STRENGTH
 Direct Shear Test

05-Mon/SBT-101
05-315801
San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.		R-10-009		R-10-009		R-10-009	
	DATE SAMPLED	STATION	7/20/2010	7/20/2010	7/20/2010	7/20/2010	7/20/2010	7/20/2010
STATION		54+88.8	54+88.8	54+88.8	54+88.8	54+88.8	54+88.8	54+88.8
LINE		SJR1	SJR1	SJR1	SJR1	SJR1	SJR1	SJR1
DISTANCE FROM LINE (Rt. OR Lt.)		4.2 Lt	4.2 Lt	4.2 Lt	4.2 Lt	4.2 Lt	4.2 Lt	4.2 Lt
DEPTH OR ELEVATION (FEET)		9.5 - 11.0	29.5 - 31.0	34.5 - 36.0	34.5 - 36.0	34.5 - 36.0	34.5 - 36.0	44.5 - 46.0
USCS CLASSIFICATION								
SIEVE ANALYSIS	3	100	100	100	100	100	100	100
	2 1/2	100	100	100	100	100	100	100
	2	100	100	100	100	100	100	100
	1 1/2	100	100	100	100	100	100	100
	1	100	100	100	100	100	100	100
	3/4	100	100	100	100	100	100	100
	1/2	100	100	100	100	100	100	100
	3/8	100	100	100	100	100	100	100
	4	100	100	100	100	99	98	100
	8	97	97	97	97	98	98	100
	16	93	92	92	92	96	96	99
	30	88	85	85	85	92	92	97
	50	78	74	74	74	87	87	94
	100	61	54	54	54	81	81	87
	200	49	30	30	30	71	71	74
5 µm	13	6	6	6	22	22	40	
1 µm	8	1	1	1	8	8	26	
IN-PLACE DENSITY (DRY WT. lb/cu ft)								
IN-PLACE MOISTURE (PERCENT)								
SPECIFIC GRAVITY								
LIQUID LIMIT				NP	NP	34	45	
PLASTICITY INDEX				NP	NP	19	26	
SAND EQUIVALENT								
EFFECTIVE STRESS								
FRICITION ANGLE (DEGREES)								
COHESION (psf)								
TOTAL STRESS								
FRICITION ANGLE (DEGREES)								
COHESION (psf)								
RESISTIVITY (ohm-cm)		1596			1198		845	
pH		7.1			7.08		7.2	
SULFATES (ppm)							9	
CHLORIDES (ppm)							12	
CORROSION								

CLASSIFICATION
TEST SUMMARY
SOIL STRENGTH
Direct Shear Test

05-Mon/ SBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	R-10-011	R-10-011
	DATE SAMPLED	7/28/2010	7/28/2010
STATION	796+10.4	796+10.4	796+10.4
LINE	R4	R4	R4
DISTANCE FROM LINE (Rt. OR Lt.)	83.6' Lt	83.6' Lt	83.6' Lt
DEPTH OR ELEVATION (FEET)	5.3-6.8	5.3-6.8	15.3-16.8
USCS CLASSIFICATION			
SIEVE ANALYSIS	3		
	2 1/2		
	2		
	1 1/2		
	1		
	3/4		
	1/2		
	3/8		
	4		
	8		
	16		
	30		
	50		
	100		
200			
5 µm			
1 µm			
CLASSIFICATION TEST SUMMARY	IN-PLACE DENSITY (DRY WT. lb/cu ft)		
	IN-PLACE MOISTURE (PERCENT)		
	SPECIFIC GRAVITY		
	LIQUID LIMIT		
	PLASTICITY INDEX		
	SAND EQUIVALENT		
	EFFECTIVE STRESS		
	FRICITION ANGLE (DEGREES)		
	COHESION (psf)		
	TOTAL STRESS		
SOIL STRENGTH Direct Shear Test	FRICITION ANGLE (DEGREES)		
	COHESION (psf)		
	RESISTIVITY (ohm-cm)	1112	3911
	pH	7.91	7.18
CORROSION	SULFATES (ppm)		
	CHLORIDES (ppm)		

05-Mon/BBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	A-10-014
	DATE SAMPLED	8/4/2010
	STATION	33+97.3
	LINE	CO1
	DISTANCE FROM LINE (Rt. OR Lt.)	92.0' Lt
	DEPTH OR ELEVATION (FEET)	10.5 - 19.0
	USCS CLASSIFICATION	
SIEVE ANALYSIS	3	100
	2 1/2	100
	2	100
	1 1/2	100
	1	100
	3/4	100
	1/2	100
	3/8	100
	4	100
	8	100
	16	100
	30	99
	50	97
	100	88
	200	75
5 μm	39	
1 μm	29	
CLASSIFICATION	IN-PLACE DENSITY (DRY WT. lb/cu ft)	119.4
TEST SUMMARY	IN-PLACE MOISTURE (PERCENT)	
	SPECIFIC GRAVITY	
	LIQUID LIMIT	33
	PLASTICITY INDEX	20
	SAND EQUIVALENT	
SOIL STRENGTH C _u	EFFECTIVE STRESS	
	FRICITION ANGLE (DEGREES)	25.5
	COHESION (psf)	131
	TOTAL STRESS	
	FRICITION ANGLE (DEGREES)	7.3
CORROSION	COHESION (psf)	528
	RESISTIVITY (ohm-cm)	
	pH	
	SULFATES (ppm)	
	CHLORIDES (ppm)	

05-Mon/ SBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	R-10-015	R-10-015
DATE SAMPLED	11/30/2010	11/30/2010	11/30/2010
STATION	35+56.6	35+56.6	35+56.6
LINE	SJR	SJR	SJR
DISTANCE FROM LINE (Rt. OR Lt.)	81.3' Lt	81.3' Lt	81.3' Lt
DEPTH OR ELEVATION (FEET)	6.0-10.0	22.5-29.0	
USCS CLASSIFICATION			
3	100	100	100
2 1/2	100	100	100
2	100	100	100
1 1/2	100	100	100
1	100	100	100
3/4	100	100	100
1/2	100	100	100
3/8	98	99	99
4	75	79	79
8	71	79	79
16	67	79	79
30	62	78	78
50	55	77	77
100	44	63	63
200	34	46	46
5 µm			
1 µm			
IN-PLACE DENSITY (DRY WT. lb/cu ft)			
IN-PLACE MOISTURE (PERCENT)			
SPECIFIC GRAVITY			
LIQUID LIMIT	29	28	28
PLASTICITY INDEX	14	17	17
SAND EQUIVALENT			
EFFECTIVE STRESS			
FRICTION ANGLE (DEGREES)			
COHESION (psf)			
TOTAL STRESS			
FRICTION ANGLE (DEGREES)			
COHESION (psf)			
RESISTIVITY (ohm-cm)	1400	1230	1230
pH	5.6	6.7	6.7
SULFATES (ppm)			
CHLORIDES (ppm)			
CORROSION			
Direct Shear Test			
SOIL STRENGTH			
CLASSIFICATION			
TEST SUMMARY			

05-Mon/BBT-101
 05-315801
 San Juan Road

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	R-10-016	R-10-016	R-10-016	R-10-016
DATE SAMPLED		12/1/2010	12/1/2010	12/1/2010	12/1/2010
STATION		37+29.3	37+29.3	37+29.3	37+29.3
LINE		SJR	SJR	SJR	SJR
DISTANCE FROM LINE (Rt. OR Lt.)		112.5' Lt	112.5' Lt	112.5' Lt	112.5' Lt
DEPTH OR ELEVATION (FEET)		7.0-15.0	22.5-30.0	22.5-29.0	22.5-29.0
USCS CLASSIFICATION					
3		100	100	100	100
2 1/2		100	100	100	100
2		100	100	100	100
1 1/2		100	100	100	100
1		100	100	100	100
3/4		100	100	100	99
1/2		97	100	100	98
3/8		94	96	96	96
4		82	65	89	89
8		66	64	79	79
16		47	64	61	61
30		33	62	39	39
50		21	60	12	12
100		15	47	5	5
200		11	31	3.6	3.6
5 µm					
1 µm					
CLASSIFICATION					
IN-PLACE DENSITY (DRY WT. lb/cu ft)					
IN-PLACE MOISTURE (PERCENT)					
SPECIFIC GRAVITY					
LIQUID LIMIT			23	26	26
PLASTICITY INDEX			18	17	17
SAND EQUIVALENT					
EFFECTIVE STRESS					
FRICTION ANGLE (DEGREES)					
COHESION (psf)					
TOTAL STRESS					
FRICTION ANGLE (DEGREES)					
COHESION (psf)					
RESISTIVITY (ohm-cm)		12800	6070	22900	22900
pH		6.3	7.1	6.9	6.9
SULFATES (ppm)					
CHLORIDES (ppm)					
CORROSION					

MATERIALS INFORMATION

[Aerially Deposited Lead Site Investigation Report dated January 2008](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

AERIALLY DEPOSITED LEAD SITE INVESTIGATION REPORT



State Route 101 San Juan Road Interchange
PM 100.0 to 101.3
San Benito & Monterey Counties, California

PREPARED FOR:

**CALIFORNIA DEPARTMENT OF TRANSPORTATION – DISTRICT 5
CENTRAL REGION ENVIRONMENTAL ANALYSIS
50 HIGUERA
SAN LUIS OBISPO, CALIFORNIA 93401**



PREPARED BY:

**GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742**



GEOCON

**GEOCON PROJECT NO. S9200-06-16
TASK ORDER NO. 16, EA NO. 05-315800**

JANUARY 2008



Project No. S9200-06-16
January 18, 2008

Mr. Isaac Leyva
California Department of Transportation - District 5
Central Region Environmental Analysis
50 Higuera
San Luis Obispo, California 93401

Subject: STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE PM 100.0 TO 101.3
SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA
CONTRACT NO. 06A1141
TASK ORDER NO. 16, EA NO. 05-315800
AERIALY DEPOSITED LEAD SITE INVESTIGATION REPORT

Dear Mr. Leyva:

In accordance with California Department of Transportation (Caltrans) Contract No. 06A1141, Task Order Number 16, and Expense Authorization 05-315800, Geocon Consultants, Inc. has performed environmental engineering services for the subject project. The Site consists of Caltrans right-of-way planned for roadway improvements along State Route 101 from Post Mile 100.0 to 101.3 in San Benito and Monterey Counties, California. The accompanying report summarizes the services performed, including the advancement of 22 hand-auger borings for aerially deposited lead sampling and laboratory testing.

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.

Please contact us if there are any questions concerning the contents of this report or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.


for Chris Giuntoli, CAC, REA
Senior Project Scientist

CG:JEJ:jaj

(5 + 2 CD) Addressee


John E. Juhrend, PG, CEC
Project Manager



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- B. Lead Statistics and Regression Analysis Results

AERIALLY DEPOSITED LEAD SITE INVESTIGATION REPORT

1.0 INTRODUCTION

This Aerially Deposited Lead (ADL) Site Investigation report for the State Route 101 (SR-101) San Juan Road Interchange Post Mile (PM) 100.0 to 101.3 project was prepared by Geocon Consultants, Inc. under California Department of Transportation (Caltrans) Contract No. 06A1141, Task Order Number (TO) 16, and Expense Authorization (EA) 05-315800.

1.1 Project Description and Proposed Improvements

The project area consists of the unpaved southbound median and shoulder areas of SR-101 from PM 100.0 to 101.3 (the Site) in San Benito and Monterey Counties, California. Proposed improvements include northbound and southbound shoulder widening and construction of a new SR-101/San Juan Road Interchange. The approximate project location is depicted on the Vicinity Map, Figure 1 and Site Plans, Figures 2a through 2e.

1.2 General Objectives

The purpose of the scope of services outlined in TO No. 16 was to evaluate whether impacts due to aerial lead deposition from motor vehicle exhaust exist in the surface and near surface soils within the project boundaries. The investigative results will be used by Caltrans to inform the construction contractor(s) if lead-impacted soil is present within the project boundaries for health, safety, management and disposal evaluation purposes.

2.0 BACKGROUND

2.1 Potential Lead Soil Impacts

Ongoing testing by Caltrans throughout California has indicated that ADL exists along major freeway routes due to emissions from vehicles powered by leaded gasoline. Caltrans reports that total lead concentrations in soil adjacent to the freeways have typically ranged between 50 and 700 milligrams per kilogram (mg/kg). At sites where soil has not been disturbed, the aerially deposited lead is generally limited to the upper 2 feet (ft) of soil within unpaved shoulder and median areas.

2.2 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 may have 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 TTLC value for lead is 1,000 mg/kg. The STLC and TCLP values for lead are both 5.0 milligrams per liter (mg/l).

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 corrosivity. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

The Department of Toxic Substances Control (DTSC) regulates and interprets hazardous waste laws in California. DTSC generally considers excavated or transported materials that exhibit "hazardous waste" characteristics to be a "waste" requiring proper management, treatment and disposal. Soil that contains lead above hazardous waste thresholds and is left in-place would not be necessarily classified by DTSC as a "waste." The DTSC has provided site-specific determinations that "movement of wastes within an area of contamination does not constitute "land disposal" and, thus, does not trigger hazardous waste disposal requirements." Therefore, lead-impacted soil that is scarified in-place, moisture-conditioned, and recompacted during roadway improvement activities might not be considered a "waste." DTSC should be consulted to confirm waste classification. It is noted that in addition to DTSC regulations, health and safety requirements and other local agency requirements may also apply to the handling and disposal of lead-impacted soil.

3.0 SCOPE OF SERVICES

We performed the following scope of services as requested by Caltrans in TO No. 16:

3.1 Pre-field Activities

- Conducted a TO meeting on July 6, 2007, to discuss the TO scope of services. Caltrans representative Issac Leyva and Geocon representative Chris Giuntoli attended the meeting. The purpose of the TO meeting was to identify and observe the project boundaries and conditions.

The project boundaries were further clarified and defined to include segments of Caltrans right-of-way located within San Benito County by Caltrans representative Bill Arkfeld.

- Prepared a *Workplan* dated August 2, 2007, which describes the requested scope of services and quality assurance/quality control (QA/QC) sampling and laboratory procedures.
- Prepared a *Health and Safety Plan* dated July 16, 2007, to provide guidelines on the use of personal protective equipment and the health and safety procedures implemented during the field activities.
- Provided 48-hour notification to Underground Service Alert prior to job site mobilization.
- Retained the services of Creek Environmental Laboratories, Inc. (Creek) to perform the chemical analysis of soil samples.
- Retained the services of D & M Traffic Services to perform shoulder closure traffic control in accordance with District 5 Special Provisions.

3.2 Field Activities

The field activities consisted of collecting soil samples along the unpaved southbound and northbound shoulders of SR-101 between PM 100.0 and 101.3. On August 2, 2007, 48 soil samples were collected from seven hand-auger borings (SB1 through SB7). On August 29, 2007, 97 soil samples were collected from 15 hand-auger borings (SB8 through SB10, SB12, SB13, and NB1, NB2, NB3A, NB3B, and NB4 through NB9). The soil borings were excavated to an approximate maximum depth of 3.25 ft. A total of 145 soil samples were collected at general depths of 0.0 to 0.25 foot, 0.5 to 0.75 foot, 1.0 to 1.25 ft, 1.5 to 1.75 ft, 2.0 to 2.25 ft, 2.5 to 2.75 ft, and 3.0 to 3.25 ft.

Refusal conditions were encountered at soil borings SB5, SB9, NB3A, and NB5 and soil samples were not collected from all sample intervals at these borings. Additionally, soil boring location SB-11 was eliminated in the field at the request of Caltrans representative Bill Arkfeld.

4.0 INVESTIGATIVE METHODS

4.1 Boring Location Rationale

The soil boring locations were designated by Caltrans in the vicinity of proposed improvements. Borings SB1 through SB10, SB12, and SB13 were advanced along the unpaved shoulder of southbound SR-101. Borings NB1 through NB9 were advanced along the unpaved shoulder of northbound SR-101 at locations where sufficient road shoulder access was available to safely collect the soil samples. The approximate soil boring locations are depicted on Figures 2a through 2e.

On September 12, 2007, the coordinates of each boring location were determined using a differential global positioning system (GPS). The GPS equipment was utilized to locate the horizontal position of each location with an error of no more than 3.0 ft. The latitude and longitude of the boring locations are summarized in Table 1.

4.2 Aerially Deposited Lead Sampling Procedures

A total of 145 soil samples were collected from 22 hand-auger borings excavated at the Site. Sample interval depths were measured in the field using a tape measure, and soil samples were collected into both wide-mouth glass jars and Ziploc® re-sealable plastic bags. The soil samples collected into Ziploc® re-sealable plastic bags were field-homogenized within the sample bags and labeled. The soil samples were delivered to Creek for analytical testing under chain-of-custody (COC) documentation.

QA/QC procedures were performed during the field exploration activities. These procedures included decontamination of sampling equipment before each boring was advanced and providing COC documentation for each sample submitted to the laboratory. The soil sampling equipment was cleansed between each boring by washing the equipment with an Alconox™ solution followed by a double rinse with deionized water. The field sampling activities were performed under the supervision of Geocon's field manager.

The hand-auger borings were backfilled with the excess soil cuttings generated at each boring. The decontamination water was discharged to the ground surface away from surface water bodies or storm drain inlets.

4.3 Traffic Control

Traffic control services were provided by D & M Traffic Services. Shoulder closures were established in the areas where samples were being collected in accordance with District 5 Special Provisions.

4.4 Laboratory Analyses

The soil samples collected within the project boundaries were submitted to Creek for the following analyses under ten-day turn-around-time (TAT). The laboratory was instructed to homogenize the soil samples prior to analysis in accordance with Contract 06A1141 requirements.

- A total of 145 soil samples were analyzed for total lead following United States Environmental Protection Agency (EPA) Test Method 6010B.
- A total of 46 soil samples with total lead concentrations greater than or equal to 50 mg/kg (ten times the STLC value for lead of 5.0 mg/l) were further analyzed for soluble (WET) lead by EPA Test Method 6010B.
- Eight soil samples with soluble (WET) lead concentrations greater than 5.0 mg/l (STLC value for lead) were further analyzed for TCLP soluble lead by EPA Test Method 1311.
- A total of 15 randomly selected soil samples were analyzed for soil pH by EPA Test Method 9045.

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 the spike made at ten times the detection limit or at the analyte level.

Prior to submitting the soil samples to the laboratory, the COC documentation was reviewed for accuracy and completeness. Reproductions of the laboratory reports and chain-of-custody documentation are presented in Appendix A.

5.0 FIELD OBSERVATIONS AND INVESTIGATIVE RESULTS

5.1 Site Conditions

Soil encountered during the excavation of borings generally consisted of silty sand and sand to the maximum depth explored of approximately 3.25 ft. Groundwater was not encountered during the excavation of the soil borings.

5.2 Soil Analytical Results

A summary of the soil analytical results are presented in Table 2. The laboratory reports and COC documentation are presented in Appendix A.

Total lead was detected in each of the 145 soil samples analyzed at concentrations ranging from 1.7 to 690 mg/kg. Forty-six of the 145 soil samples had reported total lead concentrations greater than or equal to 50 mg/kg (ten times the STLC value for lead of 5.0 mg/l).

WET soluble lead was reported for each of the 46 soil samples analyzed at concentrations ranging from 1.4 to 37 mg/l. Sixteen of the 46 soil samples had soluble (WET) lead concentrations greater than the STLC value for lead of 5.0 mg/l, and eight of these samples were analyzed for soluble lead using TCLP. TCLP soluble lead was reported for the eight soil samples analyzed at concentrations ranging from 0.12 to 1.3 mg/l.

Soil pH values ranged from 5.6 to 8.2.

5.3 Laboratory Quality Assurance/Quality Control

We reviewed the analytical laboratory quality assurance/quality control (QA/QC) data provided with the laboratory report. These data show acceptable non-detect results and surrogate recoveries for the method blanks and acceptable recoveries and relative percent differences (RPDs) for the matrix spikes

and matrix spike duplicates (MS/MSDs) except for the August 17, 2007, matrix spike (MS) for lead. The August 17, 2007, MS recovery for sample 07-C9966 (SB-5-0.5) was outside the QC limit due to a high level of lead in the soil sample. The results were reported on the basis of acceptable laboratory control sample analysis. Creek addresses this out of QC limit instance in Case Narrative O4121 included in the analytical report stating, "Sample 07-C9966 was spiked with 50 mg/kg lead. The sample and its duplicate had a native concentration of 170 and 210 mg/kg of lead respectively. The spike amount was too insignificant for such high native concentration to give a meaningful recovery." Based on the laboratory QA/QC data, no additional qualification of the data presented herein is necessary, and the data are of sufficient quality for the purposes of this report.

5.4 Statistical Evaluation for Lead Detected in Soil Samples

Statistical analysis was performed on two separate sample populations since lead levels were generally higher in soil samples collected from the southbound SR-101 borings as compared to the northbound SR-101 borings. Sample Population A consists of soil samples collected from borings SB1 through SB10, SB12, and SB13. Sample Population B consists of soil samples collected from borings NB1, NB2, NB3A, NB3B, and NB4 through NB9.

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 soluble lead concentrations exists that would allow the prediction of soluble 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 Total Lead Distribution

The presence of non-detects and/or low concentrations in total lead data sets can strongly skew sample data towards low values. In these cases, the data are often lognormally distributed or non-parametric and classical statistical methods do not work properly since they assume that the data exhibit an underlying normal distribution. Consequently, it is necessary to apply the appropriate method when determining the UCLs on the true total lead means.

5.4.2 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*. The bootstrap results are included in Appendix B. The calculated UCLs and statistical results are summarized in the tables below:

**Sample Population A
(SB1 through SB10, SB12, and SB13)**

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 to 0.25	179.7	190.0	142.4	15	320
0.5 to 0.75	233.0	254.4	159.2	18	650
1.0 to 1.25	195.0	213.3	125.4	4.2	690
1.5 to 1.75	38.2	41.5	27.2	1.9	84
2.0 to 2.25	107.5	118.8	57.8	3.2	450
2.5 to 2.75	29.7	32.5	19.5	2.6	96
3.0 to 3.25	22.8	24.9	14.8	3.0	66

**Sample Population B
(NB1, NB2, NB3A, NB3B, and NB4 through NB9)**

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 to 0.25	96.7	103.5	72.1	3.9	200
0.5 to 0.75	189.9	204.3	128.5	5.9	440
1.0 to 1.25	86.8	94.1	61.8	2.5	180
1.5 to 1.75	29.7	32.1	21.4	2.0	71
2.0 to 2.25	17.1	18.7	11.3	2.1	48
2.5 to 2.75	39.9	45.1	23.9	1.7	110
3.0 to 3.25	40.5	44.7	25.3	2.6	110

5.4.3 Correlation of Total and Soluble Lead

Total and corresponding soluble (WET) lead concentrations are bivariate data with a linear structure. This linear structure should allow for the prediction of soluble lead (WET) concentrations based on the UCLs calculated above in Section 5.4.2.

To estimate the degree of interrelation between total and corresponding soluble (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 46 (x , y) data points (i.e., soil samples analyzed for both total lead [x] and soluble [WET] lead [y]) and equaled 0.934. A *correlation coefficient* greater than or equal to 0.8 is an acceptable indicator that a correlation exists.

For the *correlation coefficient* that indicates a linear relationship between total and soluble (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 $y = 0.0532(x)$, where x represents total lead concentrations and y represents predicted soluble lead (WET) concentrations.

This equation was used to estimate the expected WET soluble lead concentrations for the 90% UCLs calculated in Section 5.4.2. Regression analysis results and a scatter plot depicting the (x , y) data points along with the regression line are included in Appendix B. The predicted WET soluble lead concentrations are summarized in Sections 6.1 and 6.2.

6.0 CONCLUSIONS AND RECOMMENDATIONS

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.

If soil within the project limits is scarified in-place, moisture-conditioned, and recompacted during roadway improvement activities, it may not be considered a "waste."

6.1 Sample Population A - Southbound SR-101 (SB Samples)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the calculated total lead UCLs and the relationship between total and soluble (WET) lead. The 90% UCL-predicted soluble (WET) lead calculations are summarized in Table 3a.

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 ft	206.4	11.0	222.2	Hazardous
Underlying Soil (1.0 to 3.25 ft)	84.8	4.5	93.0	Non-Hazardous

90% UCL applicable for waste classification; 95% UCL applicable for risk assessment

Based on the above table, soil generated from excavations to 1.0 foot would be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil would require offsite disposal as a hazardous waste.

Based on the TCLP soluble lead results of less than 5.0 mg/l, soil generated along southbound SR-101 will not require disposal as a RCRA hazardous waste.

6.2 Sample Population B - Northbound SR-101 (NB Samples)

The following table summarizes the predicted soluble (WET) lead concentrations and the waste classification for excavated soil based on the calculated total lead UCLs and the relationship between total and soluble (WET) lead. The 90% UCL-predicted soluble (WET) lead calculations are summarized in Table 3b.

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 2.0 ft	100.8	5.4	108.5	Hazardous
Underlying Soil (2.0 to 3.25 ft)	30.9	1.6	34.5	Non-Hazardous
0 to 2.5 ft	84.0	4.5	90.5	Non-Hazardous
Underlying Soil (2.0 to 3.25 ft)	40.1	2.1	45.0	Non-Hazardous

90% UCL applicable for waste classification; 95% UCL applicable for risk assessment

Based on the above table, soil generated from excavations to 2.0 ft would be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is greater than the lead STLC of 5.0 mg/l. Consequently, the top 2.0 ft of excavated soil would require offsite disposal as a hazardous waste. Underlying soil (i.e., deeper than 2.0 ft bgs) could be reused or disposed as non-hazardous soil with respect to lead content.

If excavations are 2.5 ft or greater in depth and the excavated soil is managed as a whole, soil generated from excavations to 2.5 ft or greater would not be classified as a California hazardous waste since the 90% UCL-predicted soluble (WET) lead concentration is less than the lead STLC of 5.0 mg/l. Consequently, excavated soil can be reused or disposed as non-hazardous with respect to lead content.

Based on the TCLP soluble lead results of less than 5.0 mg/l, soil generated along northbound SR-101 will not require disposal as a RCRA hazardous waste.

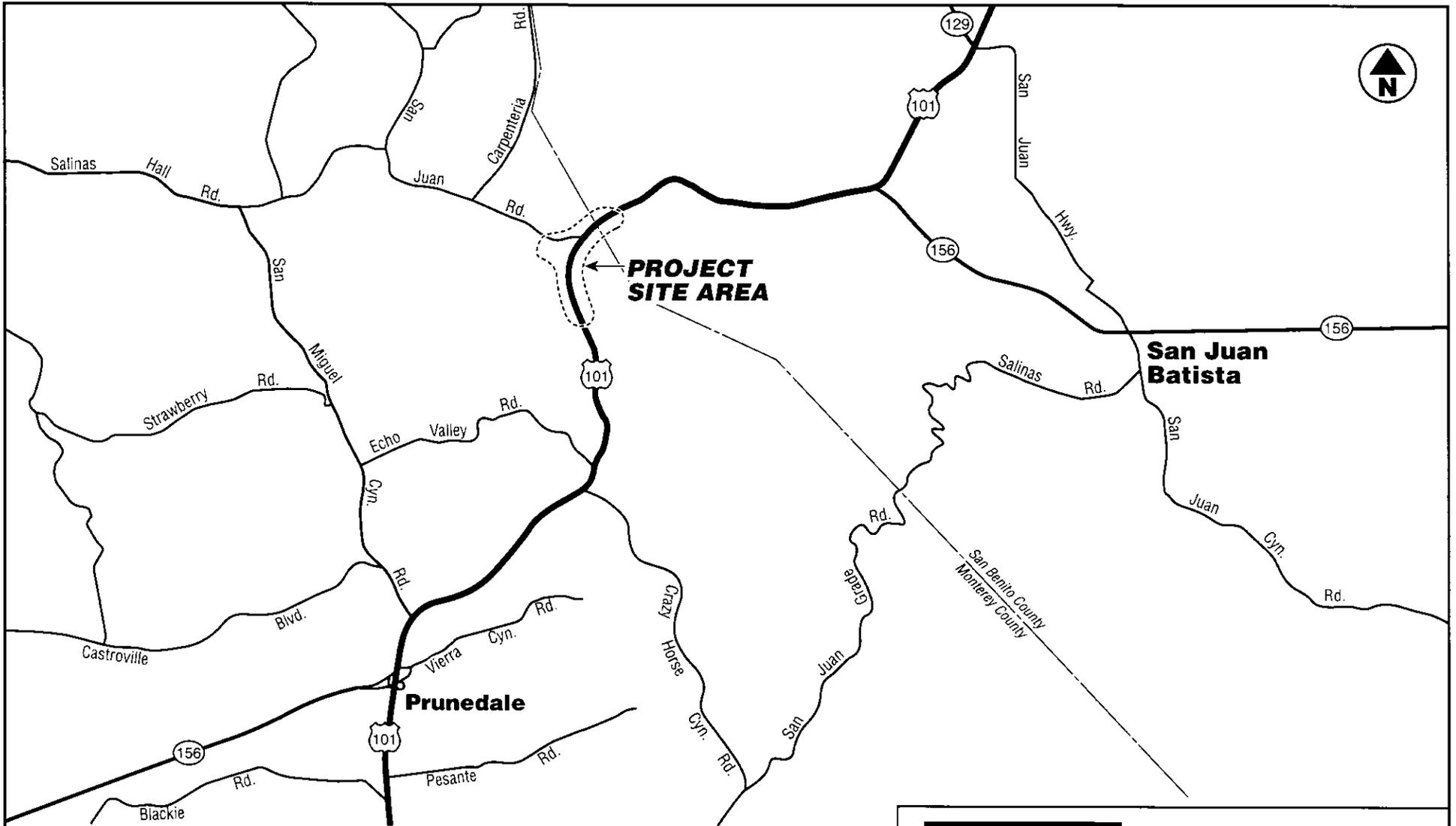
6.3 Worker Protection

Per Caltrans requirements, the contractor(s) should prepare a project-specific Lead Compliance Plan (CCR Title 8, Section 1532.1, the "Lead in Construction" standard) to minimize worker exposure to lead-impacted soil. 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 lead-impacted soil.

7.0 REPORT LIMITATIONS

This report has been prepared exclusively for Caltrans. 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. We 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.



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SR 101 San Juan Road Interchange PM 100.0 to 101.3

Monterey & San Benito
Counties, California

VICINITY MAP

GEOCON Proj. No. S9200-06-16

Task Order No. 16

January 2008

Figure 1

LEGEND:

● Boring Location



Matchline

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San Benito & Monterey
Counties, California

SITE PLAN

GEOCON Proj. No. S9200-06-16

Task Order No. 16

January 2008

Figure 2a

LEGEND:

● Boring Location

Matchline

Matchline

SB-7

SB-6

NB-3A

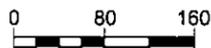
NB-3B

SB-5

NB-4

SB-4

NB-5



SCALE: feet
(1" = 160')

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San Benito & Monterey
Counties, California

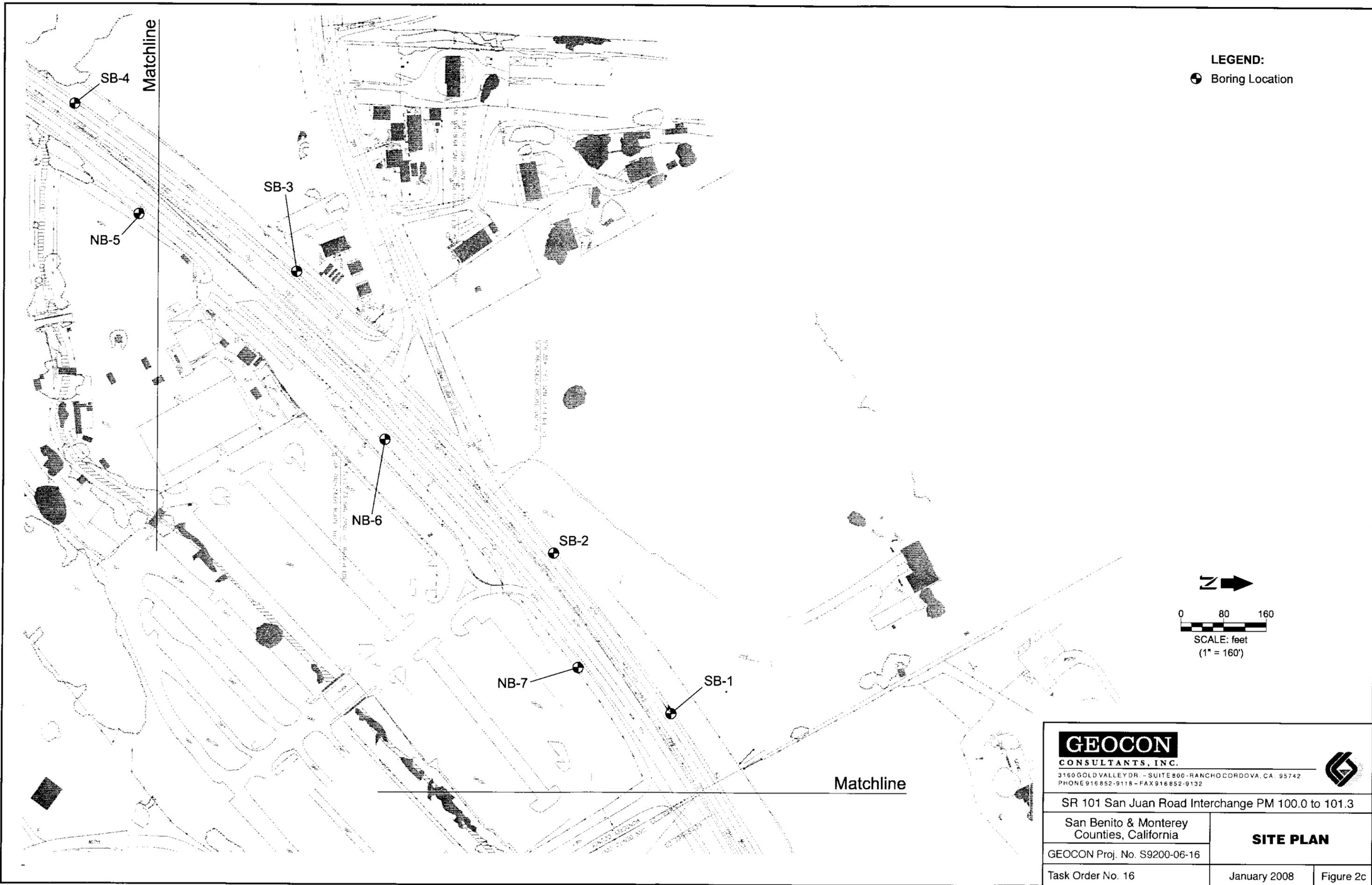
SITE PLAN

GEOCON Proj. No. S9200-06-16

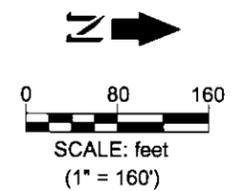
Task Order No. 16

January 2008

Figure 2b



LEGEND:
 ⊕ Boring Location



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San Benito & Monterey Counties, California		SITE PLAN
GEOCON Proj. No. S9200-06-16		
Task Order No. 16	January 2008	

Matchline

LEGEND:

● Boring Location

SB-12

NB-8

Matchline

SB-13



0 80 160

SCALE: feet
(1" = 160')

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San Benito & Monterey
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Figure 2d

Matchline

LEGEND:

⊕ Boring Location

SB-13

NB-9



SCALE: feet
(1" = 160')

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SR 101 San Juan Road Interchange PM 100.0 to 101.3

San Benito & Monterey
Counties, California

SITE PLAN

GEOCON Proj. No. S9200-06-16

Task Order No. 16

January 2008

Figure 2e

TABLE 1
 SUMMARY OF SOIL BORING COORDINATES
 STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

BORING	NORTHING	EASTING
SB1	5,792,160.175	2,205,582.931
SB2	5,791,862.292	2,205,361.837
SB3	5,791,339.432	2,204,877.803
SB4	5,791,028.595	2,204,459.865
SB5	5,790,828.634	2,204,153.055
SB6	5,790,445.342	2,203,081.824
SB7	5,790,437.911	2,202,644.607
SB8	5,790,565.696	2,202,084.222
SB9	5,790,760.825	2,201,543.008
SB10	5,791,126.339	2,200,428.110
SB11	NS	NS
SB12	5,792,911.773	2,206,007.095
SB13	5,793,742.746	2,206,356.966
NB1	5,791,134.754	2,200,722.967
NB2	5,790,943.433	2,201,290.017
NB3A	5,790,514.312	2,202,843.565
NB3B	5,790,524.274	2,202,956.553
NB4	5,790,931.450	2,204,153.772
NB5	5,791,233.494	2,204,582.061
NB6	5,791,651.441	2,205,044.943
NB7	5,792,075.415	2,205,408.712
NB8	5,793,172.526	2,206,018.569
NB9	5,794,048.813	2,206,386.734

Notes: Northing and Easting shown in feet, NAD 83 (Zone 4)
 NS - Not Sampled; Proposed boring location was eliminated in the field by Caltrans representative on August 29, 2007.

TABLE 2
SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS
STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

SAMPLE ID	SAMPLE DEPTH (ft)	TOTAL LEAD (mg/kg)	SOLUBLE WET LEAD (mg/l)	TCLP (mg/l)	SOIL pH
SB1-0	0	43	---	---	---
SB1-0.5	0.5	20	---	---	8.1
SB1-1.0	1.0	53	2.3	---	---
SB1-1.5	1.5	7.9	---	---	---
SB1-2.0	2.0	6.5	---	---	---
SB1-2.5	2.5	10	---	---	---
SB1-3.0	3.0	5.7	---	---	---
SB2-0	0	15	---	---	---
SB2-0.5	0.5	18	---	---	---
SB2-1.0	1.0	24	---	---	---
SB2-1.5	1.5	84	5.8	---	---
SB2-2.0	2.0	450	36	0.58	6.6
SB2-2.5	2.5	96	7.0	---	---
SB2-3.0	3.0	5.6	---	---	---
SB3-0	0	36	---	---	---
SB3-0.5	0.5	22	---	---	---
SB3-1.0	1.0	12	---	---	---
SB3-1.5	1.5	10	---	---	---
SB3-2.0	2.0	31	---	---	---
SB3-2.5	2.5	27	---	---	---
SB3-3.0	3.0	66	3.6	---	7.8
SB4-0	0	320	14	0.26	---
SB4-0.5	0.5	25	---	---	---
SB4-1.0	1.0	51	1.4	---	---
SB4-1.5	1.5	4.8	---	---	---
SB4-2.0	2.0	7.9	---	---	---
SB4-2.5	2.5	5.5	---	---	---
SB4-3.0	3.0	8.8	---	---	---
SB5-0	0	320	24	1.3	---
SB5-0.5	0.5	170	14	---	---
SB5-1.0	1.0	260	9.3	---	7.9
SB5-1.5	1.5	25	---	---	---
SB5-2.0	2.0	14	---	---	---
SB5-2.5	2.5	37	---	---	---
SB6-0	0	120	7.8	---	---
SB6-0.5	0.5	520	26	0.12	---
SB6-1.0	1.0	240	13	---	---
SB6-1.5	1.5	80	5.4	---	---
SB6-2.0	2.0	33	---	---	---
SB6-2.5	2.5	12	---	---	---
SB6-3.0	3.0	5.1	---	---	---
SB7-0	0	180	14	---	---
SB7-0.5	0.5	150	7.6	---	---
SB7-1.0	1.0	10	---	---	---
SB7-1.5	1.5	4.3	---	---	7.8
SB7-2.0	2.0	3.2	---	---	---
SB7-2.5	2.5	2.6	---	---	---
SB7-3.0	3.0	39	---	---	---

TABLE 2
SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS
STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

SAMPLE ID	SAMPLE DEPTH (ft)	TOTAL LEAD (mg/kg)	SOLUBLE WET LEAD (mg/l)	TCLP (mg/l)	SOIL pH
SB8-0	0	140	6.3	---	---
SB8-0.5	0.5	150	10	---	---
SB8-1.0	1.0	100	5.9	---	---
SB8-1.5	1.5	34	---	---	---
SB8-2.0	2.0	9.2	---	---	5.6
SB8-2.5	2.5	6.8	---	---	---
SB8-3.0	3.0	7.0	---	---	---
SB9-0	0	140	5.7	---	---
SB9-0.5	0.5	71	2.5	---	---
SB9-1.0	1.0	41	---	---	---
SB10-0	0	25	---	---	---
SB10-0.5	0.5	43	---	---	---
SB10-1.0	1.0	20	---	---	7.6
SB10-1.5	1.5	1.9	---	---	---
SB10-2.0	2.0	70	2.4	---	---
SB10-2.5	2.5	12	---	---	---
SB10-3.0	3.0	4.1	---	---	---
SB12-0	0	180	5.2	---	---
SB12-0.5	0.5	71	3.6	---	---
SB12-1.0	1.0	4.2	---	---	---
SB12-1.5	1.5	6.9	---	---	---
SB12-2.0	2.0	4.3	---	---	---
SB12-2.5	2.5	3.1	---	---	---
SB12-3.0	3.0	3.0	---	---	---
SB13-0	0	190	9.0	---	---
SB13-0.5	0.5	650	37	0.72	---
SB13-1.0	1.0	690	35	0.42	---
SB13-1.5	1.5	40	---	---	6.2
SB13-2.0	2.0	6.5	---	---	---
SB13-2.5	2.5	3.0	---	---	---
SB13-3.0	3.0	3.3	---	---	---
NB1-0	0	76	2.9	---	---
NB1-0.5	0.5	190	7.0	---	7.5
NB1-1.0	1.0	66	2.9	---	---
NB1-1.5	1.5	23	---	---	---
NB1-2.0	2.0	6.8	---	---	---
NB1-2.5	2.5	4.9	---	---	---
NB1-3.0	3.0	4.7	---	---	---
NB2-0	0	12	---	---	---
NB2-0.5	0.5	30	---	---	---
NB2-1.0	1.0	15	---	---	---
NB2-1.5	1.5	12	---	---	---
NB2-2.0	2.0	7.6	---	---	8.0
NB2-2.5	2.5	7.7	---	---	---
NB2-3.0	3.0	29	---	---	---

TABLE 2
 SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS
 STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

SAMPLE ID	SAMPLE DEPTH (ft)	TOTAL LEAD (mg/kg)	SOLUBLE WET LEAD (mg/l)	TCLP (mg/l)	SOIL pH
NB3A-0	0	200	7.3	---	---
NB3A-0.5	0.5	440	15	0.23	---
NB3A-1.0	1.0	180	12	---	---
NB3A-1.5	1.5	22	---	---	---
NB3A-2.0	2.0	10	---	---	---
NB3A-2.5	2.5	75	2.7	---	---
NB3B-0	0	110	5.0	---	---
NB3B-0.5	0.5	50	1.7	---	---
NB3B-1.0	1.0	32	---	---	---
NB3B-1.5	1.5	12	---	---	---
NB3B-2.0	2.0	7.4	---	---	---
NB3B-2.5	2.5	5.9	---	---	7.5
NB3B-3.0	3.0	5.9	---	---	---
NB4-0	0	52	1.9	---	---
NB4-0.5	0.5	30	---	---	---
NB4-1.0	1.0	28	---	---	---
NB4-1.5	1.5	14	---	---	---
NB4-2.0	2.0	5.9	---	---	---
NB4-2.5	2.5	1.8	---	---	---
NB4-3.0	3.0	35	---	---	---
NB5-0	0	10	---	---	---
NB5-0.5	0.5	5.9	---	---	---
NB5-1.0	1.0	30	---	---	8.2
NB5-1.5	1.5	6.9	---	---	---
NB6-0	0	3.9	---	---	---
NB6-0.5 *	0.5	---	---	---	---
NB6-1.0	1.0	2.5	---	---	---
NB6-1.5	1.5	2.0	---	---	---
NB6-2.0	2.0	2.1	---	---	---
NB6-2.5	2.5	2.2	---	---	---
NB6-3.0	3.0	8.2	---	---	7.8
NB7-0	0	27	---	---	---
NB7-0.5	0.5	43	---	---	7.8
NB7-1.0	1.0	100	3.9	---	---
NB7-1.5	1.5	48	---	---	---
NB7-2.0	2.0	48	---	---	---
NB7-2.5	2.5	110	4.9	---	---
NB7-3.0	3.0	110	4.6	---	---
NB8-0	0	110	7.4	---	---
NB8-0.5	0.5	290	12	0.21	---
NB8-1.0	1.0	160	9.6	---	---
NB8-1.5	1.5	71	3.9	---	---
NB8-2.0	2.0	12	---	---	---
NB8-2.5	2.5	6.0	---	---	---
NB8-3.0	3.0	7.0	---	---	---

TABLE 2
 SUMMARY OF LEAD AND SOIL pH ANALYTICAL RESULTS
 STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

SAMPLE ID	SAMPLE DEPTH (ft)	TOTAL LEAD (mg/kg)	SOLUBLE WET LEAD (mg/l)	TCLP (mg/l)	SOIL pH
NB9-0	0	120	7.2	---	---
NB9-0.5	0.5	78	2.5	---	---
NB9-1.0	1.0	4.8	---	---	---
NB9-1.5	1.5	3.3	---	---	7.1
NB9-2.0	2.0	2.2	---	---	---
NB9-2.5	2.5	1.7	---	---	---
NB9-3.0	3.0	2.6	---	---	---

Notes:
 WET = Waste Extraction Test using citric acid as the extraction fluid
 TCLP = Toxicity Characteristic Leaching Procedure
 mg/kg = Milligrams per kilogram
 mg/l = Milligrams per liter
 * = Sample container broken upon receipt by laboratory; sample not analyzed.
 --- = Not analyzed

TABLE 3a
 SUMMARY OF STATISTICAL ANALYSIS - SOUTHBOUND SR-101
 STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA
 SOUTHBOUND (SB) SAMPLES

TOTAL LEAD UCLs (mg/kg)

Sample Interval	90% UCL	95% UCL
0 to 0.25 ft	179.7	190.0
0.5 to 0.75 ft	233.0	254.4
1.0 to 1.25 ft	195.0	213.3
1.5 to 1.75 ft	38.2	41.5
2.0 to 2.25 ft	107.5	118.8
2.5 to 2.75 ft	29.7	32.5
3.0 to 3.25 ft	22.8	24.9

Excavation Scenarios

Excavation Depth	90% UCL		95% UCL
	Total Lead (mg/kg)	Soluble (WET) Lead * (mg/l)	Total Lead (mg/kg)
0 to 0.25 ft	179.7	9.6	190.0
<i>Underlying Soil (0.25 to 3.25 ft)</i>	117.4	6.2	128.0
0 to 0.5 ft	179.7	9.6	190.0
<i>Underlying Soil (0.5 to 3.25 ft)</i>	111.8	5.9	122.4
0 to 0.75 ft	197.5	10.5	211.5
<i>Underlying Soil (0.75 to 3.25 ft)</i>	99.7	5.3	109.2
0 to 1.0 ft	206.4	11.0	222.2
<i>Underlying Soil (1.0 to 3.25 ft)</i>	84.8	4.5	93.0
0 to 1.25 ft	204.1	10.9	220.4
<i>Underlying Soil (1.25 to 3.25 ft)</i>	71.1	3.8	78.0
0 to 1.5 ft	202.6	10.8	219.2
<i>Underlying Soil (1.5 to 3.25 ft)</i>	53.4	2.8	58.6
0 to 1.75 ft	179.1	9.5	193.8
<i>Underlying Soil (1.75 to 3.25 ft)</i>	55.9	3.0	61.5
0 to 2.0 ft	161.5	8.6	174.8
<i>Underlying Soil (2.0 to 3.25 ft)</i>	59.4	3.2	65.5
0 to 2.25 ft	155.5	8.3	168.6
<i>Underlying Soil (2.25 to 3.25 ft)</i>	47.4	2.5	52.2
0 to 2.5 ft	150.7	8.0	163.6
<i>Underlying Soil (2.5 to 3.25 ft)</i>	27.4	1.5	30.0
0 to 2.75 ft	139.7	7.4	151.7
<i>Underlying Soil (2.75 to 3.25 ft)</i>	26.3	1.4	28.7

TABLE 3a
 SUMMARY OF STATISTICAL ANALYSIS - SOUTHBOUND SR-101
 STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA
 SOUTHBOUND (SB) SAMPLES

TOTAL LEAD UCLs (mg/kg)

Sample Interval	90% UCL	95% UCL
0 to 0.25 ft	179.7	190.0
0.5 to 0.75 ft	233.0	254.4
1.0 to 1.25 ft	195.0	213.3
1.5 to 1.75 ft	38.2	41.5
2.0 to 2.25 ft	107.5	118.8
2.5 to 2.75 ft	29.7	32.5
3.0 to 3.25 ft	22.8	24.9

Excavation Scenarios

Excavation Depth	90% UCL		95% UCL
	Total Lead (mg/kg)	Soluble (WET) Lead * (mg/l)	Total Lead (mg/kg)
0 to 3.0 ft	130.5	6.9	141.8
<i>Underlying Soil (3.0 to 3.25 ft)</i>	22.8	1.2	24.9
0 to 3.25 ft	122.2	6.5	132.8

Notes:

UCL = Upper Confidence Level (90% UCL applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = Soluble (WET) lead concentrations were predicted using slope of the regression line, where y = predicted soluble (WET) lead and x = total lead

$$\text{Regression Line Slope: } y = 0.0532 x$$

TABLE 3b
 SUMMARY OF STATISTICAL ANALYSIS - NORTHBOUND SR-101
 STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA
 NORTHBOUND (NB) SAMPLES

TOTAL LEAD UCLs (mg/kg)

Sample Interval	90% UCL	95% UCL
0 to 0.25 ft	96.7	103.5
0.5 to 0.75 ft	189.9	204.3
1.0 to 1.25 ft	86.8	94.1
1.5 to 1.75 ft	29.7	32.1
2.0 to 2.25 ft	17.1	18.7
2.5 to 2.75 ft	39.9	45.1
3.0 to 3.25 ft	40.5	44.7

Excavation Scenarios

Excavation Depth	90% UCL		95% UCL
	Total Lead (mg/kg)	Soluble (WET) Lead * (mg/l)	Total Lead (mg/kg)
0 to 0.25 ft	96.7	5.1	103.5
<i>Underlying Soil (0.25 to 3.25 ft)</i>	72.0	3.8	78.1
0 to 0.5 ft	96.7	5.1	103.5
<i>Underlying Soil (0.5 to 3.25 ft)</i>	69.8	3.7	75.8
0 to 0.75 ft	127.8	6.8	137.1
<i>Underlying Soil (0.75 to 3.25 ft)</i>	57.7	3.1	62.9
0 to 1.0 ft	143.3	7.6	153.9
<i>Underlying Soil (1.0 to 3.25 ft)</i>	43.1	2.3	47.2
0 to 1.25 ft	132.0	7.0	141.9
<i>Underlying Soil (1.25 to 3.25 ft)</i>	37.6	2.0	41.3
0 to 1.5 ft	124.5	6.6	134.0
<i>Underlying Soil (1.5 to 3.25 ft)</i>	30.6	1.6	33.8
0 to 1.75 ft	110.9	5.9	119.4
<i>Underlying Soil (1.75 to 3.25 ft)</i>	30.7	1.6	34.1
0 to 2.0 ft	100.8	5.4	108.5
<i>Underlying Soil (2.0 to 3.25 ft)</i>	30.9	1.6	34.5
0 to 2.25 ft	91.5	4.9	98.5
<i>Underlying Soil (2.25 to 3.25 ft)</i>	34.4	1.8	38.4
0 to 2.5 ft	84.0	4.5	90.5
<i>Underlying Soil (2.5 to 3.25 ft)</i>	40.1	2.1	45.0
0 to 2.75 ft	80.0	4.3	86.4
<i>Underlying Soil (2.75 to 3.25 ft)</i>	40.2	2.1	44.9

TABLE 3b
 SUMMARY OF STATISTICAL ANALYSIS - NORTHBOUND SR-101
 STATE ROUTE 101 SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA
 NORTHBOUND (NB) SAMPLES

TOTAL LEAD UCLs (mg/kg)

Sample Interval	90% UCL	95% UCL
0 to 0.25 ft	96.7	103.5
0.5 to 0.75 ft	189.9	204.3
1.0 to 1.25 ft	86.8	94.1
1.5 to 1.75 ft	29.7	32.1
2.0 to 2.25 ft	17.1	18.7
2.5 to 2.75 ft	39.9	45.1
3.0 to 3.25 ft	40.5	44.7

Excavation Scenarios

Excavation Depth	90% UCL		95% UCL
	Total Lead (mg/kg)	Soluble (WET) Lead * (mg/l)	Total Lead (mg/kg)
0 to 3.0 ft	76.7	4.1	83.0
<i>Underlying Soil (3.0 to 3.25 ft)</i>	40.5	2.2	44.7
0 to 3.25 ft	73.9	3.9	80.0

Notes:

UCL = Upper Confidence Level (90% UCL applicable for waste classification; 95% UCL applicable for risk assessment)

mg/kg = milligrams per kilogram

mg/l = milligrams per liter

* = Soluble (WET) lead concentrations were predicted using slope of the regression line, where y = predicted soluble (WET) lead and x = total lead

Regression Line Slope: $y = 0.0532 x$

MATERIALS INFORMATION

[Supplemental Site Investigation Report dated January 2012](#)

ROUTE: 05-MON/SBT-101-100.0/101.3/0.0/1.6

SUPPLEMENTAL AERIALY DEPOSITED LEAD SITE INVESTIGATION REPORT

State Route 101/San Juan Road
Interchange Project "05-MON-101"
San Benito and
Monterey Counties, California

PREPARED FOR:

**CALIFORNIA DEPARTMENT OF TRANSPORTATION
DISTRICT 5
50 HIGUERA STREET
SAN LUIS OBISPO, CALIFORNIA 93401**



PREPARED BY:

**GEOCON CONSULTANTS, INC.
3160 GOLD VALLEY DRIVE, SUITE 800
RANCHO CORDOVA, CALIFORNIA 95742**



**GEOCON PROJECT NO. S9525-06-40
TASK ORDER NO. 40, EA 05-315800
E-FIS 05 0000 0495 0
CONTRACT NO 06A1580**

JANUARY 2012



Project No. S9525-06-40
January 31, 2012

Mr. Isaac Leyva
California Department of Transportation - District 5
50 Higuera Street
San Luis Obispo, California 93401

Subject: SUPPLEMENTAL SITE INVESTIGATION REPORT
ROUTE 101/SAN JUAN ROAD INTERCHANGE
POST MILE 100.0 TO 101.3
MONTEREY COUNTY, CALIFORNIA
CONTRACT NO. 06A1580, TASK ORDER NO. 40,
EA NO. 05-0000-0495-0 (05-315800)

Dear Mr. Leyva:

In accordance with the California Department of Transportation (Caltrans) Contract No. 06A1580 and Task Order 40 (TO-40), we are submitting this report for supplemental site investigation services performed along United States Route 101 (US-101) from Post Mile (PM) 100.0 to 101.3 just south of the town of Aromas in Monterey County, California. This report describes the scope of services requested by Caltrans and outlines procedures and methods employed by Geocon to complete the project.

PROJECT LOCATION AND BACKGROUND

The project area consists of the unpaved southbound median and shoulder areas of US-101 from PM 100.0 to 101.3 in Monterey County, California. Proposed improvements include northbound and southbound shoulder widening and construction of a new US-101/San Juan Road Interchange. The approximate project location is depicted on the Vicinity Map, Figure 1.

In August 2007, Geocon collected soil samples from along the unpaved southbound and northbound shoulders of US-101. Twenty-two hand auger borings were advanced and 145 soil samples were collected to evaluate whether impacts due to aerially deposited lead (ADL) from motor vehicle exhaust exist in the surface and near surface soils within the project boundaries.

Total lead was reported in the 145 soil samples analyzed at concentrations ranging from 1.7 to 690 milligrams per kilogram (mg/kg). Sixteen of the 46 soil samples had soluble lead concentrations greater than the California Soluble Threshold Limit Concentration (STLC) of 5.0 milligrams per liter (mg/l). Soil pH values ranged from 5.6 to 8.2.

Based on the 2007 data, soil generated from excavations to 1.0 foot along the southbound shoulder and to 2.0 feet along the northbound shoulder would be classified as a California hazardous waste since the 90% upper confidence level (UCL)-predicted soluble lead concentrations were greater than the lead STLC of 5.0 mg/l. Consequently, the top 1.0 foot of excavated soil from the southbound shoulder and the top 2.0 feet from the northbound shoulder would require offsite disposal as a hazardous waste.

Based on the Toxicity Characteristic Leaching Procedure (TCLP) soluble lead results of less than 5.0 mg/l, soil generated along southbound and northbound US-101 would not require disposal as a Resource, Conservation, and Recovery Act (RCRA) hazardous waste.

The August 2007 sampling is documented in the *Aerially Deposited Lead Site Investigation Report*, dated January 18, 2008.

PURPOSE

Subsequent to the August 2007 sampling, the Department of Toxic Substances Control (DTSC) issued a statewide Variance effective July 1, 2009, regarding the reuse of ADL-impacted soils within Caltrans right-of-way. Accordingly, the purpose of the supplemental sampling was to establish if soil along the southbound and northbound shoulder that was previously characterized as a California hazardous waste would qualify for reuse within Caltrans right-of-way under the DTSC Variance.

HAZARDOUS WASTE DETERMINATION

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 “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 representative total metal content exceeds the respective Total Threshold Limit Concentration (TTLC); or 2) the representative soluble metal content exceeds the respective STLC based on the standard Waste Extraction Test (WET). A waste may have 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 representative soluble metal content exceeds the Federal regulatory level based on the TCLP. The TTLC value for lead is 1,000 mg/kg. The STLC and TCLP values for lead are both 5.0 milligrams per liter (mg/l).

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 corrosivity. Waste that is classified as either California hazardous or RCRA hazardous requires management as a hazardous waste.

The DTSC regulates and interprets hazardous waste laws in California. DTSC generally considers excavated or transported materials that exhibit “hazardous waste” characteristics to be a “waste” requiring proper management, treatment and disposal. Soil that contains lead above hazardous waste thresholds and is left in-place would not be necessarily classified by DTSC as a “waste.” The DTSC has provided site-specific determinations that “movement of wastes within an area of contamination does not constitute “land disposal” and, thus, does not trigger hazardous waste disposal requirements.” Therefore, lead-impacted soil that is scarified in-place, moisture-conditioned, and recompacted during roadway improvement activities might not be considered a “waste.” DTSC should be consulted to confirm waste classification. It is noted that in addition to DTSC regulations, health and safety requirements and other local agency requirements may also apply to the handling and disposal of lead-impacted soil.

DTSC VARIANCE

Under the Variance, soil that is classified as a non-RCRA hazardous waste, based primarily on ADL content, may be suitable for reuse within Caltrans right-of-way. ADL soil that is classified as a RCRA hazardous waste is not eligible for reuse under the Variance and must be disposed of as a RCRA hazardous waste (Caltrans Type Z-3).

ADL soil reused under the Variance must always be at least 5 feet above the highest groundwater elevation and, depending on lead concentrations, must be covered with at least one foot of non-hazardous soil or a pavement structure. The ADL soil may not be placed in areas where it might contact groundwater or surface water (such as streams and rivers), and must be buried in locations that are protected from erosion that may result from storm water run-on and run-off.

Review of the statewide Variance indicates the following conditions regarding the reuse and management of ADL-impacted soil as fill material for construction and maintenance operations. If ADL soil meets the Variance criteria but is not intended to be reused within Caltrans right-of-way, then the excavated soil must be disposed of as a California hazardous waste (Caltrans Type Z-2). A copy of the Variance is attached.

Caltrans Type Y-1

ADL soil exhibiting a total lead concentration less than or equal to 1,411 milligrams per kilogram (mg/kg), a DI-WET (WET using deionized water as extractant) soluble lead concentration less than or equal to 1.5 milligrams per liter (mg/l), and a pH value greater than or equal to 5.5 may be reused within the same Caltrans corridor and must be covered with at least one foot of non-hazardous soil.

Caltrans Type Y-2

ADL soil exhibiting a total lead concentration less than or equal to 1,411 mg/kg, a DI-WET soluble lead concentration less than or equal to 1.5 mg/l, and a pH value greater than 5 and less than 5.5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

ADL soil exhibiting a total lead concentration less than or equal to 1,411 mg/kg, a DI-WET soluble lead concentration greater than 1.5 mg/l and less than or equal to 150 mg/l, and a pH value greater than 5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

ADL soil exhibiting a total lead concentration greater than 1,411 mg/kg and less than or equal to 3,397 mg/kg, a DI-WET soluble lead concentration less than or equal to 150 mg/l, and a pH value greater than 5 may be reused within the same Caltrans corridor and must be covered and protected from infiltration by a pavement structure.

Caltrans Type Z-2

ADL soil exhibiting a total lead concentration greater than 3,397 mg/kg, a DI-WET soluble lead concentration greater than 150 mg/l, or a pH value less than or equal to 5 is not eligible for reuse under the Variance and must be disposed of as a California hazardous waste.

Caltrans Type Z-3

ADL soil exhibiting a TCLP soluble lead concentration greater than or equal to 5 mg/l is not eligible for reuse under the Variance and must be disposed of as a RCRA hazardous waste.

A copy of the DTSC Variance is included as Appendix A.

SCOPE OF SERVICES

Outlined below is a summary of the scope of services performed by Geocon under TO No. 40.

- Advanced auger borings at 20 of the same locations as those advanced during the 2007 investigation.
- Collected 40 soil samples for total lead analysis, of which 15 samples were further analyzed for DI-WET soluble lead.
- Delivered samples to Advanced Technology Laboratories (ATL) under chain-of-custody protocol.

Soil Sample Methodology and Analysis

On December 14, 2011, we advanced soil borings at 20 of the same sample locations along the southbound and northbound shoulders. Soil samples were collected for laboratory analysis by manually advancing an approximately 4-inch-diameter hand-auger bucket to depths of 0.25 and 0.5 foot, and then emptying the contents of the bucket from the target sample depths into a plastic Ziploc bag. Each sample bag was labeled with the sample location, depth, collection date, and time. The boring locations were previously recorded using differential global positioning system equipment, and boring coordinates are summarized on Table 1. Boring locations are depicted on the Site Plans, Figures 2a to 2e.

The hand-auger equipment was cleaned between each sample interval using a non-phosphate detergent and deionized water rinse. Soil cuttings generated during the advancement of the hand-auger borings were used to backfill and compact each borehole, and decontamination fluids were discharged to ground surface near each sample location.

The soil samples were submitted under chain-of-custody protocol to Advanced Technology Laboratories, a state of California-certified laboratory, located in Signal Hill, California. The soil samples collected from the 20 borings were analyzed for total lead following EPA Test Method 6010B. Fifteen soil samples contained total lead equal to or greater than 50 mg/kg (i.e., 10 times the lead STLC of 5 mg/l) and were further analyzed for DI-WET lead.

Soil Sample Results

Total lead was reported at concentrations ranging from <1.0 mg/kg to 710 mg/kg.

DI-WET lead was reported in four samples at concentration ranging from 0.58 to 0.64 mg/l. DI-WET lead was not detected above the laboratory reporting limit of 0.50 mg/l in the other 11 samples analyzed.

Soil sample results from the 2007 and 2011 investigations are summarized in Table 2; the analytical laboratory report from the December 2011 sampling is included as Appendix B.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the 2007 and 2011 investigations, soil excavated from the top 1.0 foot along the southbound shoulder and from the top 2.0 feet from along the northbound shoulder would be classified as a California hazardous waste. Based on the reported DI-WET and pH results, excavated soil may be reused onsite (as Caltrans Type Y-1) in accordance with the DTSC Variance by placing the excavated soil under clean fill or pavement. Based on the TCLP lead results, excavated soil would not be classified as a RCRA hazardous waste.

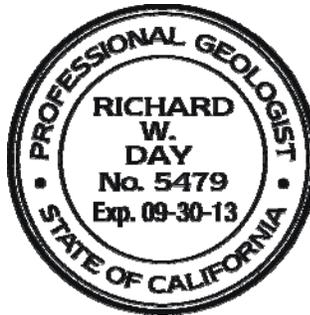
Please contact us if you have any questions concerning the supplemental sampling results or if we may be of further service.

Sincerely,

GEOCON CONSULTANTS, INC.

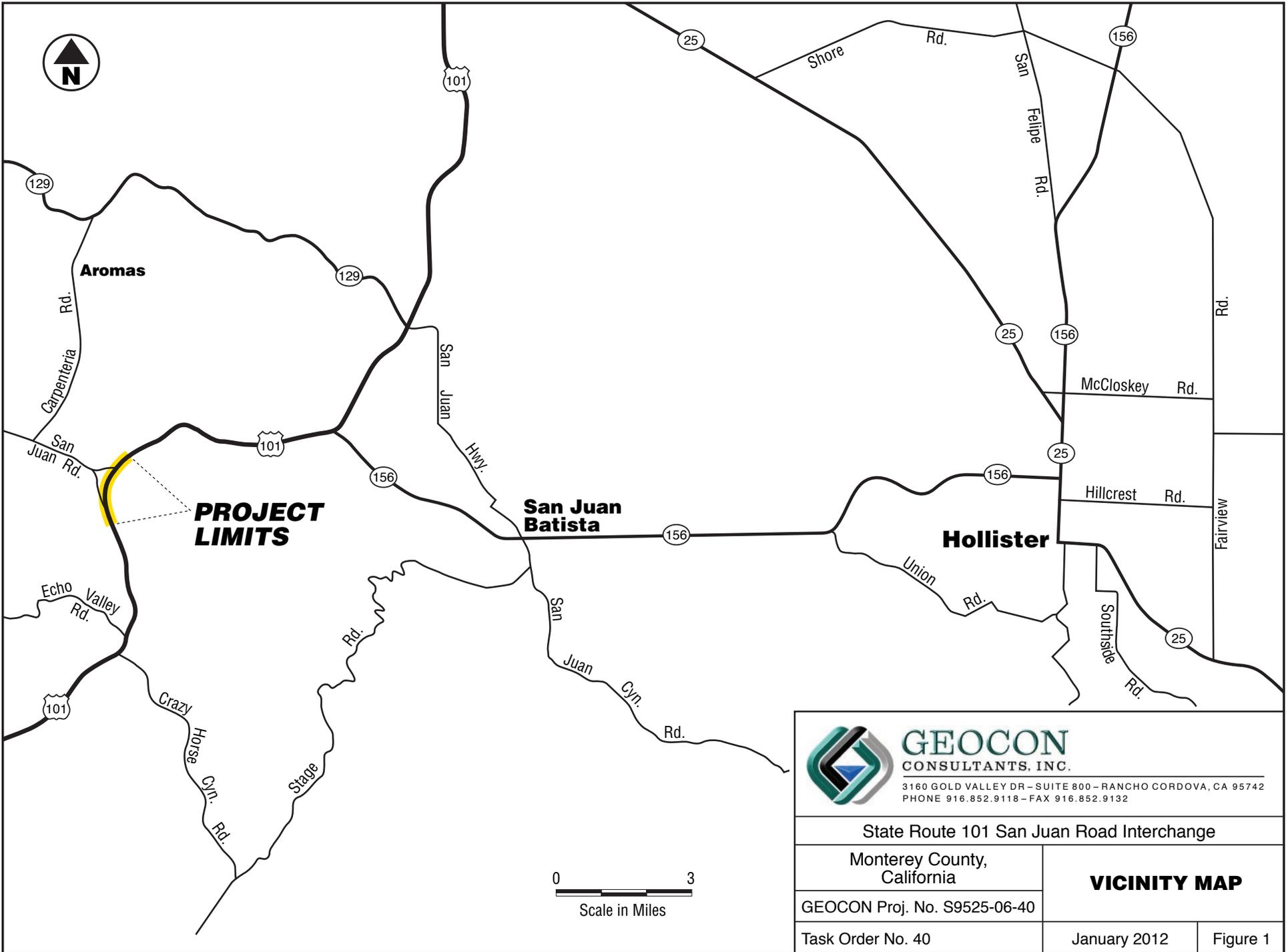


Richard Day, CEG, CHG
Senior Geologist



(7 + 2 CDs) Addressee

Attachments: Figure 1, Vicinity Map
Figure 2a-2e, Site Plans
Table 1, Sample Coordinates
Table 2, Summary of Lead and pH Results
Appendix A, DTSC Variance
Appendix B, Analytical Laboratory Report



GEOCON
CONSULTANTS, INC.

3160 GOLD VALLEY DR - SUITE 800 - RANCHO CORDOVA, CA 95742
PHONE 916.852.9118 - FAX 916.852.9132

State Route 101 San Juan Road Interchange

Monterey County,
California

VICINITY MAP

GEOCON Proj. No. S9525-06-40

Task Order No. 40

January 2012

Figure 1

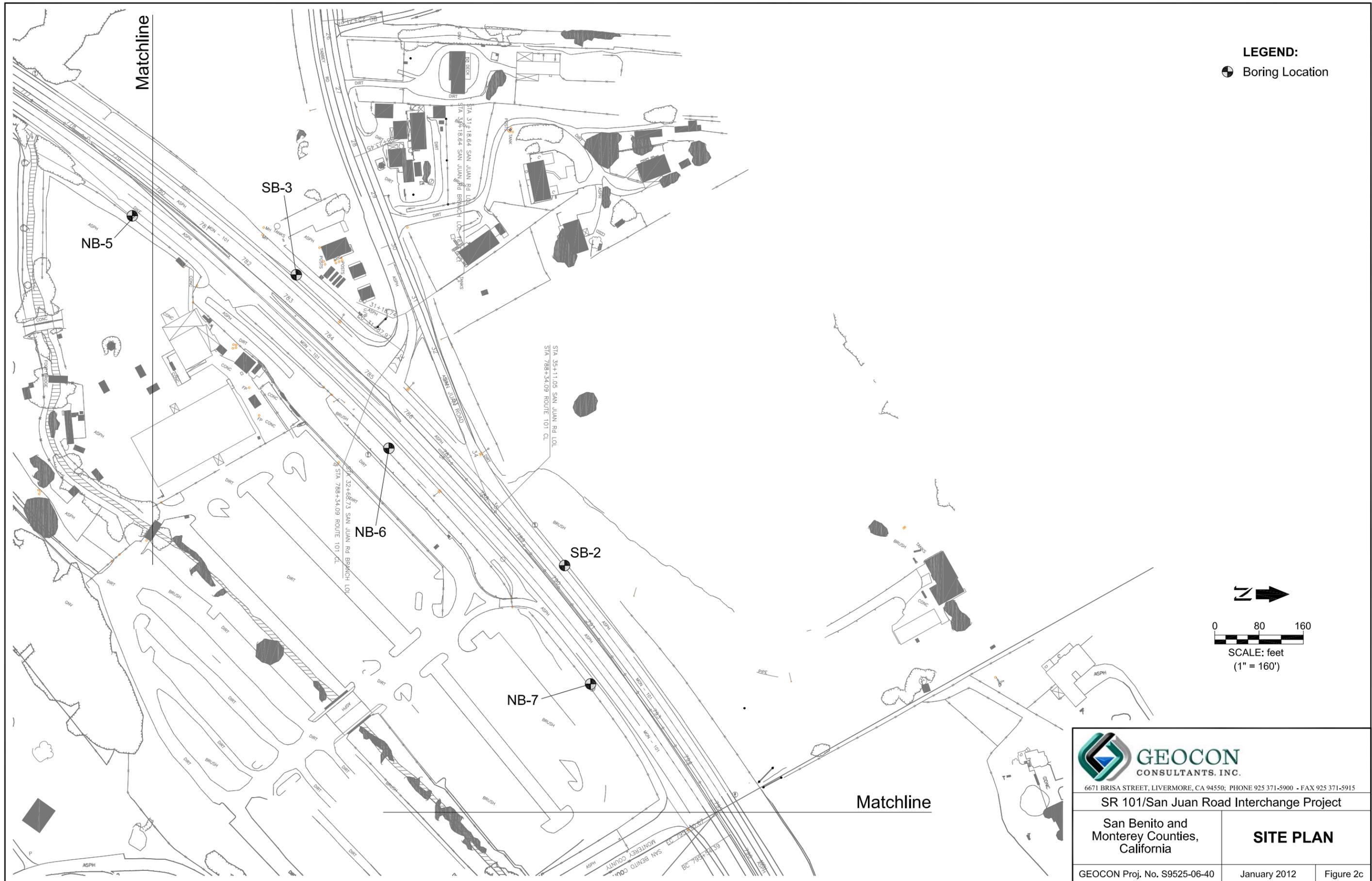
LEGEND:
 ● Boring Location

Matchline

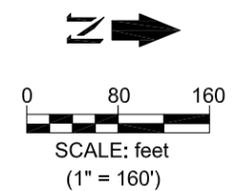
Matchline



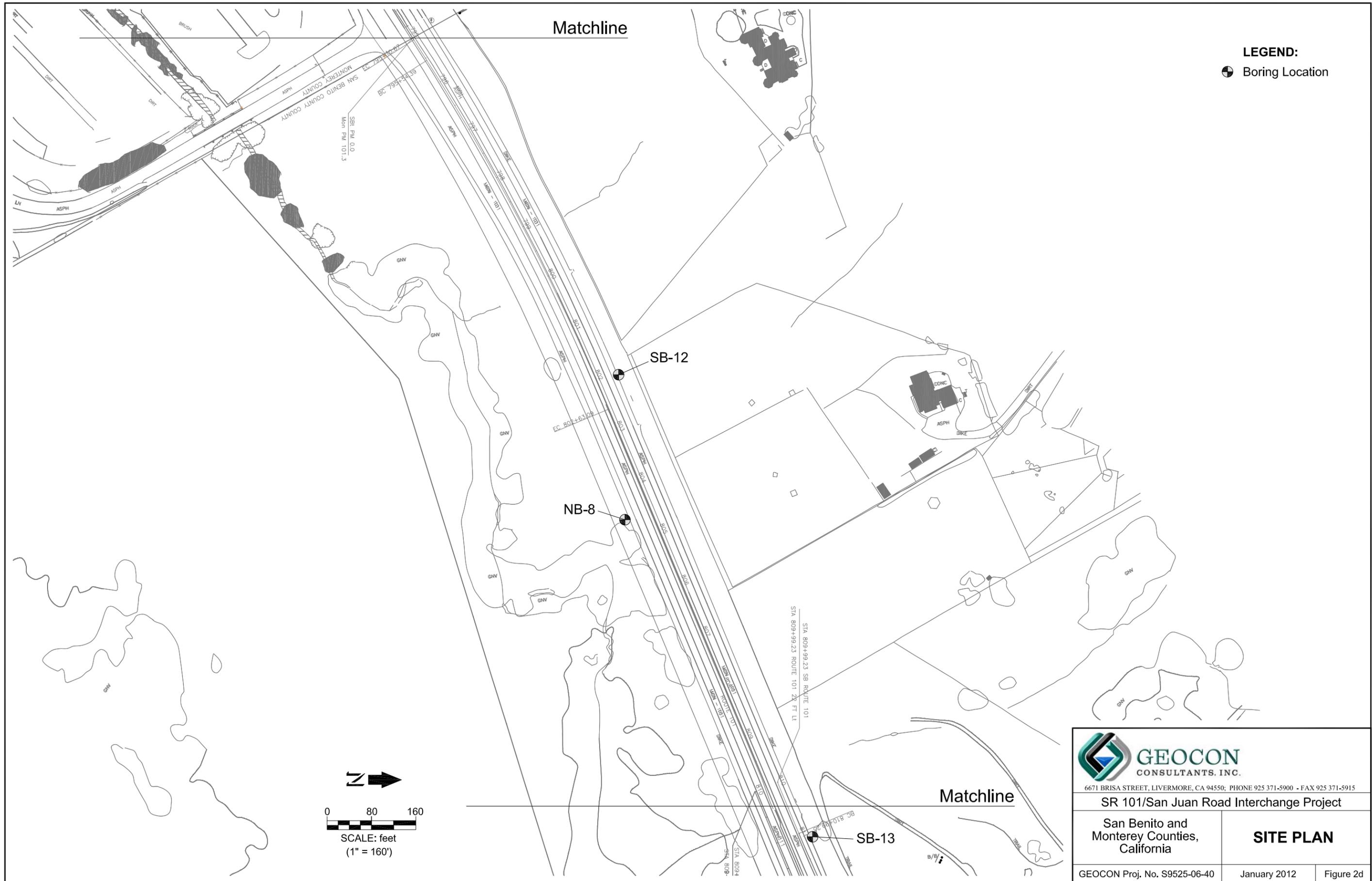
 GEOCON CONSULTANTS, INC. <small>6671 BRISA STREET, LIVERMORE, CA 94550; PHONE 925 371-5900 - FAX 925 371-5915</small>	
SR 101/San Juan Road Interchange Project	
San Benito and Monterey Counties, California	SITE PLAN
<small>GEOCON Proj. No. S9525-06-40</small>	<small>January 2012</small>
<small>Figure 2b</small>	



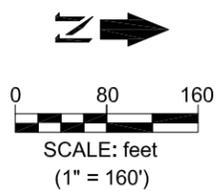
LEGEND:
 ● Boring Location



 <p>6671 BRISA STREET, LIVERMORE, CA 94550; PHONE 925 371-5900 - FAX 925 371-5915</p>	
<p align="center">SR 101/San Juan Road Interchange Project</p>	
<p align="center">San Benito and Monterey Counties, California</p>	<p>SITE PLAN</p>
<p>GEOCON Proj. No. S9525-06-40</p>	<p>January 2012</p>
<p align="right">Figure 2c</p>	



LEGEND:
 ● Boring Location



 <p>6671 BRISA STREET, LIVERMORE, CA 94550; PHONE 925 371-5900 - FAX 925 371-5915</p>	
<p align="center">SR 101/San Juan Road Interchange Project</p>	
<p align="center">San Benito and Monterey Counties, California</p>	<p>SITE PLAN</p>
<p>GEOCON Proj. No. S9525-06-40</p>	<p>January 2012 Figure 2d</p>

Matchline

LEGEND:
● Boring Location

SB-13

NB-9

STA 809+98.23 SB ROUTE 101
STA 809+99.23 SB ROUTE 101 22 FT RT

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TABLE 1
 SAMPLE COORDINATES
 STATE ROUTE 101/SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

Boring	Northing	Easting
SB1	5,792,160.175	2,205,582.931
SB2	5,791,862.292	2,205,361.837
SB3	5,791,339.432	2,204,877.803
SB4	5,791,028.595	2,204,459.865
SB5	5,790,828.634	2,204,153.055
SB6	5,790,445.342	2,203,081.824
SB7	5,790,437.911	2,202,644.607
SB8	5,790,565.696	2,202,084.222
SB9	5,790,760.825	2,201,543.008
SB10	5,791,126.339	2,200,428.110
SB11	NS	NS
SB12	5,792,911.773	2,206,007.095
SB13	5,793,742.746	2,206,356.966
NB1	5,791,134.754	2,200,722.967
NB2	5,790,943.433	2,201,290.017
NB3A	5,790,514.312	2,202,843.565
NB3B	5,790,524.274	2,202,956.553
NB4	5,790,931.450	2,204,153.772
NB5	5,791,233.494	2,204,582.061
NB6	5,791,651.441	2,205,044.943
NB7	5,792,075.415	2,205,408.712
NB8	5,793,172.526	2,206,018.569
NB9	5,794,048.813	2,206,386.734

Notes: Northing and Easting shown in feet, NAD 83 (Zone 4)
 NS - Not Sampled; Proposed boring location was eliminated in the field
 by Caltrans representative on August 29, 2007.

TABLE 2
 SUMMARY OF LEAD AND pH RESULTS
 STATE ROUTE 101/SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

Sample ID	Sample Depth (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP (mg/l)	Soil pH
SB1-0	0 to 0.5	43	---	---	---	---
SB1-0.5	0.5 to 1	20	---	---	---	8.1
SB1-1.0	1 to 1.5	53	2.3	---	---	---
SB1-1.5	1.5 to 2	7.9	---	---	---	---
SB1-2.0	2 to 2.5	6.5	---	---	---	---
SB1-2.5	2.5 to 3	10	---	---	---	---
SB1-3.0	3 to 3.5	5.7	---	---	---	---
SB2-0.25*	0 to 0.25	17	---	---	---	---
SB2-0.5*	0.25 to 0.5	25	---	---	---	---
SB2-0	0 to 0.5	15	---	---	---	---
SB2-0.5	0.5 to 1	18	---	---	---	---
SB2-1.0	1 to 1.5	24	---	---	---	---
SB2-1.5	1.5 to 2	84	5.8	---	---	---
SB2-2.0	2 to 2.5	450	36	---	0.58	6.6
SB2-2.5	2.5 to 3	96	7.0	---	---	---
SB2-3.0	3 to 3.5	5.6	---	---	---	---
SB3-0.25*	0 to 0.25	33	---	---	---	---
SB3-0.5*	0.25 to 0.5	19	---	---	---	---
SB3-0	0 to 0.5	36	---	---	---	---
SB3-0.5	0.5 to 1	22	---	---	---	---
SB3-1.0	1 to 1.5	12	---	---	---	---
SB3-1.5	1.5 to 2	10	---	---	---	---
SB3-2.0	2 to 2.5	31	---	---	---	---
SB3-2.5	2.5 to 3	27	---	---	---	---
SB3-3.0	3 to 3.5	66	3.6	---	---	7.8
SB4-0	0 to 0.5	320	14	---	0.26	---
SB4-0.5	0.5 to 1	25	---	---	---	---
SB4-1.0	1 to 1.5	51	1.4	---	---	---
SB4-1.5	1.5 to 2	4.8	---	---	---	---
SB4-2.0	2 to 2.5	7.9	---	---	---	---
SB4-2.5	2.5 to 3	5.5	---	---	---	---
SB4-3.0	3 to 3.5	8.8	---	---	---	---
SB5-0.25*	0 to 0.25	330	---	<0.50	---	---
SB5-0.5*	0.25 to 0.5	280	---	<0.50	---	---
SB5-0	0 to 0.5	320	24	---	1.3	---
SB5-0.5	0.5 to 1	170	14	---	---	---
SB5-1.0	1 to 1.5	260	9.3	---	---	7.9
SB5-1.5	1.5 to 2	25	---	---	---	---
SB5-2.0	2 to 2.5	14	---	---	---	---
SB5-2.5	2.5 to 3	37	---	---	---	---
SB6-0.25*	0 to 0.25	160	---	<0.50	---	---
SB6-0.5*	0.25 to 0.5	270	---	<0.50	---	---
SB6-0	0 to 0.5	120	7.8	---	---	---
SB6-0.5	0.5 to 1	520	26	---	0.12	---
SB6-1.0	1 to 1.5	240	13	---	---	---
SB6-1.5	1.5 to 2	80	5.4	---	---	---
SB6-2.0	2 to 2.5	33	---	---	---	---
SB6-2.5	2.5 to 3	12	---	---	---	---
SB6-3.0	3 to 3.5	5.1	---	---	---	---

TABLE 2
 SUMMARY OF LEAD AND pH RESULTS
 STATE ROUTE 101/SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

Sample ID	Sample Depth (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP (mg/l)	Soil pH
SB7-0.25*	0 to 0.25	290	---	<0.50	---	---
SB7-0.5*	0.25 to 0.5	210	---	0.64	---	---
SB7-0	0 to 0.5	180	14	---	---	---
SB7-0.5	0.5 to 1	150	7.6	---	---	---
SB7-1.0	1 to 1.5	10	---	---	---	---
SB7-1.5	1.5 to 2	4.3	---	---	---	7.8
SB7-2.0	2 to 2.5	3.2	---	---	---	---
SB7-2.5	2.5 to 3	2.6	---	---	---	---
SB7-3.0	3 to 3.5	39	---	---	---	---
SB8-0.25*	0 to 0.25	9.4	---	---	---	---
SB8-0.5*	0.25 to 0.5	110	---	0.58	---	---
SB8-0	0 to 0.5	140	6.3	---	---	---
SB8-0.5	0.5 to 1	150	10	---	---	---
SB8-1.0	1 to 1.5	100	5.9	---	---	---
SB8-1.5	1.5 to 2	34	---	---	---	---
SB8-2.0	2 to 2.5	9.2	---	---	---	5.6
SB8-2.5	2.5 to 3	6.8	---	---	---	---
SB8-3.0	3 to 3.5	7.0	---	---	---	---
SB9-0.25*	0 to 0.25	26	---	---	---	---
SB9-0.5*	0.25 to 0.5	57	---	<0.50	---	---
SB9-0	0 to 0.5	140	5.7	---	---	---
SB9-0.5	0.5 to 1	71	2.5	---	---	---
SB9-1.0	1 to 1.5	41	---	---	---	---
SB10-0.25*	0 to 0.25	41	---	---	---	---
SB10-0.5*	0.25 to 0.5	29	---	---	---	---
SB10-0	0 to 0.5	25	---	---	---	---
SB10-0.5	0.5 to 1	43	---	---	---	---
SB10-1.0	1 to 1.5	20	---	---	---	7.6
SB10-1.5	1.5 to 2	1.9	---	---	---	---
SB10-2.0	2 to 2.5	70	2.4	---	---	---
SB10-2.5	2.5 to 3	12	---	---	---	---
SB10-3.0	3 to 3.5	4.1	---	---	---	---
SB12-0.25*	0 to 0.25	170	---	<0.50	---	---
SB12-0.5*	0.25 to 0.5	710	---	0.60	---	---
SB12-0	0 to 0.5	180	5.2	---	---	---
SB12-0.5	0.5 to 1	71	3.6	---	---	---
SB12-1.0	1 to 1.5	4.2	---	---	---	---
SB12-1.5	1.5 to 2	6.9	---	---	---	---
SB12-2.0	2 to 2.5	4.3	---	---	---	---
SB12-2.5	2.5 to 3	3.1	---	---	---	---
SB12-3.0	3 to 3.5	3.0	---	---	---	---
SB13-0.25*	0 to 0.25	110	---	<0.50	---	---
SB13-0.5*	0.25 to 0.5	580	---	0.59	---	---
SB13-0	0 to 0.5	190	9.0	---	---	---
SB13-0.5	0.5 to 1	650	37	---	0.72	---
SB13-1.0	1 to 1.5	690	35	---	0.42	---
SB13-1.5	1.5 to 2	40	---	---	---	6.2
SB13-2.0	2 to 2.5	6.5	---	---	---	---
SB13-2.5	2.5 to 3	3.0	---	---	---	---
SB13-3.0	3 to 3.5	3.3	---	---	---	---

TABLE 2
 SUMMARY OF LEAD AND pH RESULTS
 STATE ROUTE 101/SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

Sample ID	Sample Depth (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP (mg/l)	Soil pH
NB1-0.25*	0 to 0.25	34	---	---	---	---
NB1-0.5*	0.25 to 0.5	24	---	---	---	---
NB1-0	0 to 0.5	76	2.9	---	---	---
NB1-0.5	0.5 to 1	190	7.0	---	---	7.5
NB1-1.0	1 to 1.5	66	2.9	---	---	---
NB1-1.5	1.5 to 2	23	---	---	---	---
NB1-2.0	2 to 2.5	6.8	---	---	---	---
NB1-2.5	2.5 to 3	4.9	---	---	---	---
NB1-3.0	3 to 3.5	4.7	---	---	---	---
NB2-0.25*	0 to 0.25	10	---	---	---	---
NB2-0.5*	0.25 to 0.5	12	---	---	---	---
NB2-0	0 to 0.5	12	---	---	---	---
NB2-0.5	0.5 to 1	30	---	---	---	---
NB2-1.0	1 to 1.5	15	---	---	---	---
NB2-1.5	1.5 to 2	12	---	---	---	---
NB2-2.0	2 to 2.5	7.6	---	---	---	8.0
NB2-2.5	2.5 to 3	7.7	---	---	---	---
NB2-3.0	3 to 3.5	29	---	---	---	---
NB3A-0.25*	0 to 0.25	47	---	---	---	---
NB3A-0.5*	0.25 to 0.5	69	---	<0.50	---	---
NB3A-0	0 to 0.5	200	7.3	---	---	---
NB3A-0.5	0.5 to 1	440	15	---	0.23	---
NB3A-1.0	1 to 1.5	180	12	---	---	---
NB3A-1.5	1.5 to 2	22	---	---	---	---
NB3A-2.0	2 to 2.5	10	---	---	---	---
NB3A-2.5	2.5 to 3	75	2.7	---	---	---
NB3B-0.25*	0 to 0.25	17	---	---	---	---
NB3B-0.5*	0.25 to 0.5	2.7	---	---	---	---
NB3B-0	0 to 0.5	110	5.0	---	---	---
NB3B-0.5	0.5 to 1	50	1.7	---	---	---
NB3B-1.0	1 to 1.5	32	---	---	---	---
NB3B-1.5	1.5 to 2	12	---	---	---	---
NB3B-2.0	2 to 2.5	7.4	---	---	---	---
NB3B-2.5	2.5 to 3	5.9	---	---	---	7.5
NB3B-3.0	3 to 3.5	5.9	---	---	---	---
NB4-0.25*	0 to 0.25	33	---	---	---	---
NB4-0.5*	0.25 to 0.5	42	---	---	---	---
NB4-0	0 to 0.5	52	1.9	---	---	---
NB4-0.5	0.5 to 1	30	---	---	---	---
NB4-1.0	1 to 1.5	28	---	---	---	---
NB4-1.5	1.5 to 2	14	---	---	---	---
NB4-2.0	2 to 2.5	5.9	---	---	---	---
NB4-2.5	2.5 to 3	1.8	---	---	---	---
NB4-3.0	3 to 3.5	35	---	---	---	---
NB5-0.25*	0 to 0.25	37	---	---	---	---
NB5-0.5*	0.25 to 0.5	52	---	<0.50	---	---
NB5-0	0 to 0.5	10	---	---	---	---
NB5-0.5	0.5 to 1	5.9	---	---	---	---
NB5-1.0	1 to 1.5	30	---	---	---	8.2
NB5-1.5	1.5 to 2	6.9	---	---	---	---

TABLE 2
 SUMMARY OF LEAD AND pH RESULTS
 STATE ROUTE 101/SAN JUAN ROAD INTERCHANGE POST MILE 100.0 TO 101.3
 SAN BENITO AND MONTEREY COUNTIES, CALIFORNIA

Sample ID	Sample Depth (ft)	Total Lead (mg/kg)	WET Lead (mg/l)	DI-WET Lead (mg/l)	TCLP (mg/l)	Soil pH
NB6-0.25*	0 to 0.25	28	---	---	---	---
NB6-0.5*	0.25 to 0.5	<1.0	---	---	---	---
NB6-0	0 to 0.5	3.9	---	---	---	---
NB6-1.0	1 to 1.5	2.5	---	---	---	---
NB6-1.5	1.5 to 2	2.0	---	---	---	---
NB6-2.0	2 to 2.5	2.1	---	---	---	---
NB6-2.5	2.5 to 3	2.2	---	---	---	---
NB6-3.0	3 to 3.5	8.2	---	---	---	7.8
NB7-0.25*	0 to 0.25	7.2	---	---	---	---
NB7-0.5*	0.25 to 0.5	7.0	---	---	---	---
NB7-0	0 to 0.5	27	---	---	---	---
NB7-0.5	0.5 to 1	43	---	---	---	7.8
NB7-1.0	1 to 1.5	100	3.9	---	---	---
NB7-1.5	1.5 to 2	48	---	---	---	---
NB7-2.0	2 to 2.5	48	---	---	---	---
NB7-2.5	2.5 to 3	110	4.9	---	---	---
NB7-3.0	3 to 3.5	110	4.6	---	---	---
NB8-0.25*	0 to 0.25	5.0	---	---	---	---
NB8-0.5*	0.25 to 0.5	37	---	---	---	---
NB8-0	0 to 0.5	110	7.4	---	---	---
NB8-0.5	0.5 to 1	290	12	---	0.21	---
NB8-1.0	1 to 1.5	160	9.6	---	---	---
NB8-1.5	1.5 to 2	71	3.9	---	---	---
NB8-2.0	2 to 2.5	12	---	---	---	---
NB8-2.5	2.5 to 3	6.0	---	---	---	---
NB8-3.0	3 to 3.5	7.0	---	---	---	---
NB9-0.25*	0 to 0.25	17	---	---	---	---
NB9-0.5*	0.25 to 0.5	53	---	<0.50	---	---
NB9-0	0 to 0.5	120	7.2	---	---	---
NB9-0.5	0.5 to 1	78	2.5	---	---	---
NB9-1.0	1 to 1.5	4.8	---	---	---	---
NB9-1.5	1.5 to 2	3.3	---	---	---	7.1
NB9-2.0	2 to 2.5	2.2	---	---	---	---
NB9-2.5	2.5 to 3	1.7	---	---	---	---
NB9-3.0	3 to 3.5	2.6	---	---	---	---

Notes:

Initial soil sampling performed in August 2007

* = Supplemental soil sample collected on December 14, 2011

WET = Waste Extraction Test using citric acid as the extraction fluid

DI-WET = Waste Extraction Test using dionized water as the extraction fluid

TCLP = Toxicity Characteristic Leaching Procedure

mg/kg = Milligrams per kilogram

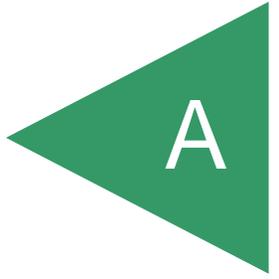
mg/l = Milligrams per liter

--- = Not analyzed

< = Not detected at or above stated laboratory reporting limit

APPENDIX

A





*California Environmental Protection Agency
Department of Toxic Substances Control*

VARIANCE

Applicant Names:

Variance No. V09HQSCD006

State of California
Department of Transportation
(Caltrans)
1120 N Street
Sacramento, California 95814

Effective Date: July 1, 2009

Expiration Date: July 1, 2014

Modification History:

Pursuant to California Health and Safety Code, Section 25143, the Department of Toxic Substances Control hereby issues the attached Variance consisting of 9 pages to the Department of Transportation.

A handwritten signature in black ink that reads "Beverly Rikala".

Beverly Rikala
Team Leader, Operating Facilities Team
Department of Toxic Substances Control

Date: 6/30/09

VARIANCE

1. INTRODUCTION.

a) Pursuant to Health and Safety Code, section 25143, the California Department of Toxic Substances Control (DTSC) grants this variance to the applicant below for waste considered to be hazardous solely because of its lead concentrations and as further specified herein.

b) DTSC hereby grants this variance only from the requirements specified herein and only in accordance with all terms and conditions specified herein.

2. IDENTIFYING INFORMATION.

APPLICANT/OWNER/OPERATOR

State of California
Department of Transportation, (Caltrans)
All Districts

3. TYPE OF VARIANCE.

Generation, Manifest, Transportation, Storage and Disposal.

4. ISSUANCE AND EXPIRATION DATES.

DATE ISSUED: July 1, 2009 EXPIRATION DATE: July 1, 2014

5. APPLICABLE STATUTES AND REGULATIONS. The hazardous waste that is the subject of this variance is fully regulated under Health and Safety Code, section 25100, et seq. and California Code of Regulations, title 22, division 4.5 except as specifically identified in Section 8 of this variance.

6. DEFINITION. For purposes of this variance, "lead-contaminated soil(s)" shall mean soil that meets the criteria for hazardous waste but contains less than 3397 mg/kg total lead and is hazardous primarily because of aeriially-deposited lead contamination associated with exhaust emissions from the operation of motor vehicles.

7. FINDINGS/DETERMINATIONS. DTSC has determined that the variance applicant meets the requirements set forth in Health and Safety Code, section 25143 for a variance from specific regulatory requirements as outlined in Section 8 of this variance. The specific determinations and findings made by DTSC are as follows:

a) Caltrans intends to excavate, stockpile, transport, bury and cover large volumes of soil associated with highway construction projects. In the more urbanized highway corridors around the State this soil is contaminated with lead, primarily due to historic emissions from automobile exhausts. In situ sampling and laboratory testing has shown that some of the soil contains concentrations of lead in excess of State regulatory thresholds, and thus any generated waste from disturbance of the soil

would be regulated as hazardous waste. Such soil contains a Total Threshold Limit Concentration (TTLC) of 1000 milligrams per kilogram (mg/kg) or more lead and/or it meets or exceeds the Soluble Threshold Limit Concentration (STLC) for lead of 5 milligrams per liter (mg/l). A Human Health Risk Assessment prepared for this variance concludes that soil contaminated with elevated concentrations of lead can be managed in a way that presents no significant risk to human health.

b) The lead-contaminated soil will be placed only in Caltrans' right-of-way. Depending on concentration levels, the wastes will be covered with a minimum thickness of one (1) foot of non-hazardous soil or asphalt/concrete cover and will always be at least five (5) feet above the highest groundwater elevation. Caltrans will assure that proper health and safety procedures will be followed for workers, including any persons engaged in maintenance work in areas where the waste has been buried and covered.

c) DTSC finds and requires that the lead-contaminated soil excavated, stockpiled, transported, buried and covered pursuant to this variance is a non-RCRA hazardous waste, and that the waste management activity is insignificant as a potential hazard to human health and safety and the environment, when managed in accordance with the conditions, limitations and other requirements specified in this variance.

8. PROVISIONS WAIVED.

Provided Caltrans meets the terms and conditions of this variance, DTSC waives the hazardous waste management requirements of Health and Safety Code, Chapter 6.5 and California Code of Regulations, title 22 for the lead-contaminated soil that Caltrans reuses in projects that would require Caltrans to obtain a permit for a disposal facility and any other generator requirements that concern the transportation, manifesting, storage and land disposal of hazardous waste.

9. SPECIFIC CONDITIONS, LIMITATIONS AND OTHER REQUIREMENTS.

In order for the provisions discussed in section 8 to be waived, lead-contaminated soil must not exceed the contaminant concentrations discussed below and Caltrans management practices must meet all the following conditions:

a) Caltrans implementation of this variance shall comply with all applicable state laws and regulations for water quality control, water quality control plans, waste discharge requirements (including storm water permits), and others issued by the State Water Resources Control Board (SWRCB) and/or a California Regional Water Quality Control Board (RWQCB). Caltrans shall provide written notification to the appropriate RWQCB at least 30 days prior to advertisement for bids of projects that involve invocation of this variance, or as otherwise negotiated with the SWRCB or appropriate RWQCB.

b) The waivers in this variance shall only be applied to lead-contaminated soil that is not a RCRA hazardous waste and is hazardous primarily because of aerially-

deposited lead contamination associated with exhaust emissions from the operation of motor vehicles. The variance is not applicable to any other hazardous waste.

c) Soil containing 1.5 mg/l extractable lead or less (based on a modified waste extraction test using deionized water as the extractant) and 1411 mg/kg or less total lead may be used as fill provided that the lead-contaminated soil is placed a minimum of five (5) feet above the maximum historic water table elevation and covered with at least one (1) foot of nonhazardous soil that will be maintained by Caltrans to prevent future erosion.

d) Soil containing 150 mg/L extractable lead or less (based on a modified waste extraction test using deionized water as the extractant) and 3397 mg/kg or less total lead may be used as fill provided that the lead-contaminated soils are placed a minimum of five (5) feet above the maximum historic water table elevation and protected from infiltration by a pavement structure which will be maintained by Caltrans.

e) Lead-contaminated soil with a pH less than 5.5 but greater than 5.0 shall only be used as fill material under the paved portion of the roadway. Lead-contaminated soil with a pH at or less than 5.0 shall be managed as a hazardous waste.

f) For each project that has the potential to generate waste by disturbing lead-contaminated soil (as defined in 6), Caltrans shall conduct sampling and analysis to adequately characterize the soils containing aerially deposited lead in the areas of planned excavation along the project route. Such sampling and analysis shall include the Toxicity Characteristic Leaching Procedure (TCLP) as prescribed by the United States Environmental Protection Agency to determine whether concentrations of contaminants in soil exceed federal criteria for classification as a hazardous waste.

g) Lead-contaminated soil managed pursuant to this variance shall not be moved outside the designated corridor boundaries (see paragraph t) below. All lead-contaminated soil not buried and covered within the same Caltrans corridor where it originated is not eligible for management under this variance and shall be managed as a hazardous waste.

h) Lead-contaminated soil managed pursuant to this variance shall not be placed in areas where it would become in contact with groundwater or surface water (such as streams and rivers).

i) Lead-contaminated soil managed pursuant to this variance shall be buried and covered only in locations that are protected from erosion that may result from storm water run-on and run-off.

j) The lead-contaminated soil shall be buried and covered in a manner that will prevent accidental or deliberate breach of the asphalt, concrete, and/or cover soil.

k) The presence of lead-contaminated soil shall be incorporated into the projects' as-built drawings. The as-built drawings shall be annotated with the location, representative analytical data, and volume of lead-contaminated soil. The as-built drawings shall also state the depth of the cover. These as-built drawings shall be retained by Caltrans.

l) Caltrans shall ensure that no other hazardous wastes, other than the lead-contaminated hazardous waste soil, are placed in the burial areas.

m) Lead-contaminated soil shall not be buried within ten (10) feet of culverts or locations subject to frequent worker exposure.

n) Excavated lead-contaminated soil not placed into the designated area (fill area, roadbed area) by the end of the working day shall be stockpiled and covered with sheets of polyethylene or at least one foot of non-hazardous soil. The lead-contaminated soil, while stockpiled or under transport, shall be protected from contacting surface water and from being dislodged or transported by wind or storm water. The stockpile covers shall be inspected at least once a week and within 24 hours after rainstorms. If the lead-contaminated soil is stockpiled for more than 4 days from the time of excavation, Caltrans shall restrict public access to the stockpile by using barriers that meet the safety requirements of the construction zone. The lead-contaminated soil shall be stockpiled for no more than 90 days from the time the soil is first excavated. If the contaminated soil is stockpiled beyond the 90 day limit Caltrans shall:

1. notify DTSC in writing of the 90 day exceedance and expected date of removal;
2. perform weekly inspections of the stockpiled material to ensure that there is adequate protection from run-on, runoff, public access, and wind dispersion; and
3. notify DTSC on weekly basis of the stockpile status until the stockpile is removed.

The lead-contaminated soil shall be stockpiled for no more than 180 days from the time the soil is first excavated.

o) Caltrans shall ensure that all stockpiling of lead-contaminated soil remains within the project area of the specified corridor. Stockpiling of lead-contaminated soil within the specified corridor, but outside the project area, is prohibited.

p) Caltrans shall conduct confirmatory sampling of any stockpile area in areas not known or expected to contain lead-contaminated soil after removal of the lead-contaminated soil to ensure that contamination has not been left behind or has not migrated from the stockpiled material to the surrounding soils.

q) Caltrans shall stockpile lead-contaminated soil only on high ground (i.e. no sump areas or low points) so that stockpiled soil will not come in contact with surface

water run-on or run-off.

r) Caltrans shall not stockpile lead-contaminated soil in environmentally and ecologically sensitive areas.

s) Caltrans shall ensure that storm/rain run-off that has come into contact with stockpiled lead-contaminated soil will not flow to storm drains, inlets, or waters of the State.

t) Caltrans may dispose of the lead-contaminated soil only within the operating right-of-way of an existing highway, as defined in Streets and Highways Code, section 23. Caltrans may move lead-contaminated soil from one Caltrans project to another Caltrans project only if the lead-contaminated soil remains within the same designated corridor.

Caltrans shall record any movement of lead-contaminated soil by using a bill of lading. The bill of lading must contain: 1) the US DOT description including shipping name, hazard class and ID number; 2) handling codes; 3) quantity of material; 4) volume of material; 5) date of shipment; 6) origin and destination of shipment; and 7) any specific handling instructions. The bill of lading shall be referenced in and kept on file with the project's as-built drawings. The lead-contaminated soil must be kept covered during transportation.

u) For each specific corridor where this variance is to be implemented, all of the following information shall be submitted in writing to DTSC at least five (5) days before construction of any project begins:

1. plan drawing designating the boundaries of the corridor where lead-contaminated soils will be excavated, stockpiled, buried and covered;
2. a list of the Caltrans projects that the corridor encompasses;
3. a list of Caltrans contractors that will be conducting any phase of work on any project affected by this variance;
4. duration of corridor construction;
5. location where sampling and analytical data used to make lead concentration level determinations are kept (e.g. a particular Caltrans project file);
6. name and phone number (including area code) of project resident engineer and project manager;
7. location where Caltrans and contractor health and safety plan and records are kept;

8. location of project special provisions (including page or section number) for soil excavation, transportation, stockpile, burial and placement of cover material;

9. location of project drawings (including drawing page number) for soil excavation, burial and placement of cover in plan and cross section (for example, "The project plans are located at the resident engineer's office located at 5th and Main Streets, City of Fresno, See pages xxxxx of contract xxx");

10. updated information if a Caltrans project within the corridor is added, changed or deleted; and

11. type of environmental document prepared for each project, date of adoption, document title, Clearing House number and where the document is available for review. A copy of the Caltrans Categorical Exemption, Categorical Exclusion Form, or if filed, the Notice of Exemption for any project shall be submitted to the DTSC Headquarters Project Manager.

v) Changes in location of lead-contaminated soil placement, quantities or protection measures (field changes) shall be noted in the resident engineer's project log within five (5) days of the field change.

w) Caltrans shall ensure that field changes are in compliance with the requirements of this variance.

x) Operational procedures described in the California Environmental Quality Act (CEQA) Special Initial Study shall be followed by Caltrans for activities conducted under this variance.

y) Caltrans shall implement appropriate health and safety procedures to protect its employees and the public, and to prevent or minimize exposure to potentially hazardous wastes. A project-specific health and safety plan must be prepared and implemented. The monitoring and exposure standards shall be based on construction standards for exposure to lead in California Code of Regulations, title 8, section 1532.1.

z) Caltrans shall provide a district Coordinator for this variance. This Coordinator will be the primary point of contact for information flowing to, or received from, DTSC regarding any matter or submission under this variance. Caltrans shall promptly notify DTSC of the name of Coordinator and any change in the Coordinator.

aa) Caltrans shall conduct regular inspections, consistent with Caltrans' Maintenance Division's current Pavement Inspection and Slope Inspection programs, of the locations where lead-contaminated soil has been buried and/or covered pursuant to this variance. If site inspection reveals deterioration of cover so that conditions in the variance are not met, Caltrans shall repair or replace the cover.

bb) Caltrans shall develop and implement a record keeping mechanisms to record and retain permanent records of all locations where lead-contaminated soil has been buried per this variance. The records shall be made available to DTSC.

cc) If areas subject to the terms of this variance are sold, relinquished or abandoned (including roadways), all future property owners shall be notified in writing in advance by Caltrans of the requirements of this variance, and Caltrans shall provide the owner with a copy of the variance. A copy of such a notice shall be sent to DTSC and contain the corridor location and project. Caltrans shall also disclose to DTSC and the new owner the location of areas where lead-contaminated soil has been buried. Future property owners shall be subject to the same requirements as Caltrans.

dd) For the purposes of informing the public about instances where the variance is implemented, Caltrans shall:

1. maintain current fact sheets at all Caltrans resident engineer offices and the Caltrans District office. Caltrans shall make the fact sheets available to anyone expressing an interest in variance-related work.
2. maintain a binder(s) containing copies of all reports submitted to DTSC at the District office. Caltrans shall ensure that the binders are readily accessible to the public.
3. carry out the following actions when it identifies additional projects:
 - (A) notify the public via a display advertisement in a newspaper of general circulation in that area.
 - (B) update and distribute the fact sheet to the mailing list and repository locations.

ee) Lead-contaminated soil may be buried only in areas where access is limited or where lead-contaminated soil is covered and contained by a pavement structure.

ff) Dust containing lead-contaminated soil must be controlled. Water or dust palliative may be applied to control dust. If visible dust migration occurs, all excavation, stockpiling and truck loading and burying must be stopped. The granting of this variance confers no relief on Caltrans from compliance with the laws, regulations and requirements enforced by any local air district or the California Air Resources Board.

gg) Sampling and analysis is required to show the lead-contaminated soil meets the variance criteria. All sampling and analysis must be conducted in accordance with the appropriate methods specified in U.S. EPA SW-846.

hh) DTSC retains the right to require Caltrans or any future owner to remove, and properly dispose of, lead-contaminated soil in the event DTSC determines it is necessary for protection of public health, safety or the environment.

ii) DTSC finds that some projects involving lead-contaminated soil are joint projects between Caltrans and other government entities. In these joint projects, Caltrans may not be the lead agency implementing the project although Caltrans is still involved if the project occurs on its right-of-way.

Caltrans may invoke this variance for joint projects where Caltrans and local government entity are involved provided that 1) the project is within the Caltrans Right-of-Way; 2) Caltrans reviews/ oversees all phases of the project including design, contracting, environmental assessment, construction, operation, and maintenance; and 3) Caltrans oversees the project to verify all variance conditions are complied with. Caltrans will be fully responsible for the variance notification and implementation in these joint projects.

jj) All correspondence shall be directed to the following office:

Hazardous Waste Permitting
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95826

Attn: Caltrans Lead Variance Notification Unit

10. DISCLAIMER.

a) The issuance of this variance does not relieve Caltrans of the responsibility for compliance with Health and Safety Code, chapter 6.5, or the regulations adopted thereunder, and any other laws and regulations other than those specifically identified in Section 8 of this variance. Caltrans is subject to all terms and conditions herein. The granting of this variance confers no relief from compliance with any federal, State or local requirements other than those specifically provided herein.

b) The issuance of this variance does not release Caltrans from any liability associated with the handling of hazardous waste, except as specifically provided herein and subject to all terms and conditions of this variance.

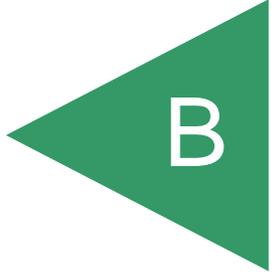
11. VARIANCE MODIFICATION OR REVOCATION. This variance is subject to review at the discretion of DTSC and may be modified or revoked by DTSC upon change of ownership and at any other time pursuant to Health and Safety Code, section 25143.
12. CEQA DETERMINATION. DTSC adopted a Negative Declaration on June 30, 2009.

Approved:

6/30/09
Date

Beverly Rikala
Beverly Rikala
Operating Facilities Team
Department of Toxic Substances Control

APPENDIX



January 05, 2012

Luann Beadle
Geocon Consultants, Inc.
6671 Brisa Street
Livermore, CA 94550
Tel: (925) 371-5900
Fax: (925) 371-5915



Re: ATL Work Order Number : 1100723

Client Reference : HWY 101 @ SAN JUAN RD., S9525-06-40

Enclosed are the results for sample(s) received on December 16, 2011 by Advanced Technology Laboratories. The sample(s) are tested for the parameters as indicated on the enclosed chain of custody in accordance with applicable laboratory certifications. The laboratory results contained in this report specifically pertains to the sample(s) submitted.

Thank you for the opportunity to serve the needs of your company. If you have any questions, please feel free to contact me or your Project Manager.

Sincerely,

A handwritten signature in black ink, appearing to read "E. Rodriguez".

Eddie Rodriguez
Laboratory Director

The cover letter and the case narrative are an integral part of this analytical report and its absence renders the report invalid. The report cannot be reproduced without written permission from the client and Advanced Technology Laboratories.



Geocon Consultants, Inc.
6671 Brisa Street
Livermore , CA 94550

Project Number : HWY 101 @ SAN JUAN RD., S9525-06-40
Report To : Luann Beadle
Reported : 01/05/2012

SUMMARY OF SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB-2-0.25	1100723-01	Soil	12/14/11 9:31	12/16/11 9:54
SB-3-0.25	1100723-02	Soil	12/14/11 9:36	12/16/11 9:54
SB-5-0.25	1100723-03	Soil	12/14/11 9:42	12/16/11 9:54
SB-6-0.25	1100723-04	Soil	12/14/11 9:50	12/16/11 9:54
SB-7-0.25	1100723-05	Soil	12/14/11 9:54	12/16/11 9:54
SB-8-0.25	1100723-06	Soil	12/14/11 10:11	12/16/11 9:54
SB-9-0.25	1100723-07	Soil	12/14/11 10:17	12/16/11 9:54
SB-10-0.25	1100723-08	Soil	12/14/11 10:21	12/16/11 9:54
SB-12-0.25	1100723-09	Soil	12/14/11 10:27	12/16/11 9:54
SB-13-0.25	1100723-10	Soil	12/14/11 10:34	12/16/11 9:54
SB-2-0.5	1100723-11	Soil	12/14/11 9:31	12/16/11 9:54
SB-3-0.5	1100723-12	Soil	12/14/11 9:36	12/16/11 9:54
SB-5-0.5	1100723-13	Soil	12/14/11 9:42	12/16/11 9:54
SB-6-0.5	1100723-14	Soil	12/14/11 9:50	12/16/11 9:54
SB-7-0.5	1100723-15	Soil	12/14/11 9:54	12/16/11 9:54
SB-8-0.5	1100723-16	Soil	12/14/11 10:11	12/16/11 9:54
SB-9-0.5	1100723-17	Soil	12/14/11 10:17	12/16/11 9:54
SB-10-0.5	1100723-18	Soil	12/14/11 10:21	12/16/11 9:54
SB-12-0.5	1100723-19	Soil	12/14/11 10:27	12/16/11 9:54
SB-13-0.5	1100723-20	Soil	12/14/11 10:34	12/16/11 9:54
NB-1-0.25	1100723-21	Soil	12/14/11 10:49	12/16/11 9:54
NB-2-0.25	1100723-22	Soil	12/14/11 10:57	12/16/11 9:54
NB-3A-0.25	1100723-23	Soil	12/14/11 11:01	12/16/11 9:54
NB-3B-0.25	1100723-24	Soil	12/14/11 11:02	12/16/11 9:54
NB-4-0.25	1100723-25	Soil	12/14/11 11:14	12/16/11 9:54
NB-5-0.25	1100723-26	Soil	12/14/11 11:17	12/16/11 9:54
NB-6-0.25	1100723-27	Soil	12/14/11 11:21	12/16/11 9:54
NB-7-0.25	1100723-28	Soil	12/14/11 11:24	12/16/11 9:54
NB-8-0.25	1100723-29	Soil	12/14/11 11:25	12/16/11 9:54
NB-9-0.25	1100723-30	Soil	12/14/11 11:27	12/16/11 9:54
NB-1-0.5	1100723-31	Soil	12/14/11 10:49	12/16/11 9:54
NB-2-0.5	1100723-32	Soil	12/14/11 10:57	12/16/11 9:54
NB-3A-0.5	1100723-33	Soil	12/14/11 11:01	12/16/11 9:54
NB-3B-0.5	1100723-34	Soil	12/14/11 11:02	12/16/11 9:54
NB-4-0.5	1100723-35	Soil	12/14/11 11:14	12/16/11 9:54



Geocon Consultants, Inc.

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NB-5-0.5	1100723-36	Soil	12/14/11 11:17	12/16/11 9:54
NB-6-0.5	1100723-37	Soil	12/14/11 11:21	12/16/11 9:54
NB-7-0.5	1100723-38	Soil	12/14/11 11:24	12/16/11 9:54
NB-8-0.5	1100723-39	Soil	12/14/11 11:25	12/16/11 9:54
NB-9-0.5	1100723-40	Soil	12/14/11 11:27	12/16/11 9:54



Geocon Consultants, Inc.
6671 Brisa Street
Livermore , CA 94550

Project Number : HWY 101 @ SAN JUAN RD., S9525-06-40
Report To : Luann Beadle
Reported : 01/05/2012

Lead by ICP-AES EPA 6010B

Analyte: Lead

Analyst: ICP

Laboratory ID	Client Sample ID	Result	Units	PQL	MDL	Dilution	Batch	Prepared	Date/Time	
									Analyzed	Notes
1100723-01	SB-2-0.25	17	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:37	
1100723-02	SB-3-0.25	33	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:37	
1100723-03	SB-5-0.25	330	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:38	
1100723-04	SB-6-0.25	160	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:39	
1100723-05	SB-7-0.25	290	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:39	
1100723-06	SB-8-0.25	9.4	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:41	
1100723-07	SB-9-0.25	26	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:42	
1100723-08	SB-10-0.25	41	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:43	
1100723-09	SB-12-0.25	170	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:45	
1100723-10	SB-13-0.25	110	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:45	
1100723-11	SB-2-0.5	25	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:46	
1100723-12	SB-3-0.5	19	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:47	
1100723-13	SB-5-0.5	280	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:47	
1100723-14	SB-6-0.5	270	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:49	
1100723-15	SB-7-0.5	210	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:50	
1100723-16	SB-8-0.5	110	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:51	
1100723-17	SB-9-0.5	57	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:51	
1100723-18	SB-10-0.5	29	mg/kg	1.0	NA	1	B1L0728	12/21/2011	12/23/11 10:52	
1100723-19	SB-12-0.5	710	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 10:58	
1100723-20	SB-13-0.5	580	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 10:59	
1100723-21	NB-1-0.25	34	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:00	
1100723-22	NB-2-0.25	10	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:00	
1100723-23	NB-3A-0.25	47	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:01	
1100723-24	NB-3B-0.25	17	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:03	
1100723-25	NB-4-0.25	33	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:04	
1100723-26	NB-5-0.25	37	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:04	
1100723-27	NB-6-0.25	28	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:05	
1100723-28	NB-7-0.25	7.2	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:07	
1100723-29	NB-8-0.25	5.0	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:09	
1100723-30	NB-9-0.25	17	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:10	



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Report To : Luann Beadle

Reported : 01/05/2012

1100723-31	NB-1-0.5	24	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:10
1100723-32	NB-2-0.5	12	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:11
1100723-33	NB-3A-0.5	69	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:12
1100723-34	NB-3B-0.5	2.7	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:12
1100723-35	NB-4-0.5	42	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:13
1100723-36	NB-5-0.5	52	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:15
1100723-37	NB-6-0.5	ND	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:16
1100723-38	NB-7-0.5	7.0	mg/kg	1.0	NA	1	B1L0733	12/21/2011	12/23/11 11:16
1100723-39	NB-8-0.5	37	mg/kg	1.0	NA	1	B1L0734	12/21/2011	12/23/11 11:21
1100723-40	NB-9-0.5	53	mg/kg	1.0	NA	1	B1L0734	12/21/2011	12/23/11 11:21

STLC-DI Lead by AA (Direct Aspiration) EPA 7420

Analyte: Lead

Analyst: VV

Laboratory ID	Client Sample ID	Result	Units	PQL	MDL	Dilution	Batch	Prepared	Date/Time		Notes
									Analized		
1100723-03	SB-5-0.25	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:27		
1100723-04	SB-6-0.25	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:27		
1100723-05	SB-7-0.25	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:27		
1100723-09	SB-12-0.25	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:28		
1100723-10	SB-13-0.25	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:29		
1100723-13	SB-5-0.5	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:29		
1100723-14	SB-6-0.5	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:29		
1100723-15	SB-7-0.5	0.64	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:31		
1100723-16	SB-8-0.5	0.58	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:31		
1100723-17	SB-9-0.5	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:32		
1100723-19	SB-12-0.5	0.60	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:32		
1100723-20	SB-13-0.5	0.59	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:33		
1100723-33	NB-3A-0.5	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:34		
1100723-36	NB-5-0.5	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:34		
1100723-40	NB-9-0.5	ND	mg/L	0.50	NA	1	B2A0062	01/03/2012	01/05/12 13:34		



Geocon Consultants, Inc.
 6671 Brisa Street
 Livermore, CA 94550

Project Number : HWY 101 @ SAN JUAN RD., S9525-06-40

Report To : Luann Beadle

Reported : 01/05/2012

QUALITY CONTROL SECTION

Lead by ICP-AES EPA 6010B - Quality Control

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec % Rec	RPD Limits	RPD RPD	RPD Limit	Notes
Batch B1L0728 - EPA 3050 Modified									
Blank (B1L0728-BLK1)					Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	ND	1.0			NR				
Blank (B1L0728-BLK2)					Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	ND	1.0			NR				
LCS (B1L0728-BS1)					Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	280	1.0	250		111	80 - 120			
Duplicate (B1L0728-DUP1)					Source: 1100723-18 Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	29	1.0		29	NR		0.182	20	
Duplicate (B1L0728-DUP2)					Source: 1100723-08 Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	36	1.0		41	NR		13.1	20	
Matrix Spike (B1L0728-MS1)					Source: 1100723-18 Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	250	1.0	250	29	88.3	46 - 116			
Matrix Spike (B1L0728-MS2)					Source: 1100723-08 Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	260	1.0	250	41	89.5	46 - 116			
Matrix Spike Dup (B1L0728-MSD1)					Source: 1100723-18 Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	240	1.0	250	29	86.4	46 - 116	1.92	20	
Batch B1L0733 - EPA 3050 Modified									
Blank (B1L0733-BLK1)					Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	ND	1.0			NR				
Blank (B1L0733-BLK2)					Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	ND	1.0			NR				
LCS (B1L0733-BS1)					Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	270	1.0	250		107	80 - 120			
Duplicate (B1L0733-DUP1)					Source: 1100723-38 Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	11	1.0		7.0	NR		45.7	20	R
Duplicate (B1L0733-DUP2)					Source: 1100723-28 Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	7.0	1.0		7.2	NR		3.58	20	
Matrix Spike (B1L0733-MS1)					Source: 1100723-38 Prepared: 12/21/2011 Analyzed: 12/23/2011				
Lead	190	1.0	250	7.0	74.2	46 - 116			
Matrix Spike (B1L0733-MS2)					Source: 1100723-28 Prepared: 12/21/2011 Analyzed: 12/23/2011				



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Project Number : HWY 101 @ SAN JUAN RD., S9525-06-40

Report To : Luann Beadle

Reported : 01/05/2012

Lead by ICP-AES EPA 6010B - Quality Control (cont'd)

Analyte	Result (mg/kg)	PQL (mg/kg)	Spike Level	Source Result	% Rec % Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B1L0733 - EPA 3050 Modified (continued)									
Matrix Spike (B1L0733-MS2) - Continued									
									Source: 1100723-28 Prepared: 12/21/2011 Analyzed: 12/23/2011
Lead	210	1.0	250	7.2	81.9	46 - 116			
Matrix Spike Dup (B1L0733-MSD1)									
									Source: 1100723-38 Prepared: 12/21/2011 Analyzed: 12/23/2011
Lead	170	1.0	250	7.0	67.0	46 - 116	9.89	20	
Batch B1L0734 - EPA 3050 Modified									
Blank (B1L0734-BLK1)									
									Prepared: 12/21/2011 Analyzed: 12/23/2011
Lead	ND	1.0					NR		
LCS (B1L0734-BS1)									
									Prepared: 12/21/2011 Analyzed: 12/23/2011
Lead	280	1.0	250		110	80 - 120			
Duplicate (B1L0734-DUP1)									
									Source: 1100723-40 Prepared: 12/21/2011 Analyzed: 12/23/2011
Lead	58	1.0		53	NR		8.54	20	
Matrix Spike (B1L0734-MS1)									
									Source: 1100723-40 Prepared: 12/21/2011 Analyzed: 12/23/2011
Lead	260	1.0	250	53	81.7	46 - 116			
Matrix Spike Dup (B1L0734-MSD1)									
									Source: 1100723-40 Prepared: 12/21/2011 Analyzed: 12/23/2011
Lead	290	1.0	250	53	96.3	46 - 116	13.2	20	
Batch S1L0396 - B1L0734									
Instrument Blank (S1L0396-IBL1)									
									Prepared: 12/23/2011 Analyzed: 12/23/2011
Lead	ND	0.005					NR		



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Project Number : HWY 101 @ SAN JUAN RD., S9525-06-40
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STLC-DI Lead by AA (Direct Aspiration) EPA 7420 - Quality Control

Analyte	Result (mg/L)	PQL (mg/L)	Spike Level	Source Result	% Rec	% Rec Limits	RPD	RPD Limit	Notes
Batch B2A0062 - STLC DI Extraction									
Blank (B2A0062-BLK1)					Prepared: 1/3/2012 Analyzed: 1/5/2012				
Lead	ND	0.50					NR		
Blank (B2A0062-BLK2)					Prepared: 1/3/2012 Analyzed: 1/5/2012				
Lead	ND	0.50					NR		
LCS (B2A0062-BS1)					Prepared: 1/3/2012 Analyzed: 1/5/2012				
Lead	5.0	0.05	5.00		99.1	80 - 120			
Duplicate (B2A0062-DUP1)					Prepared: 1/3/2012 Analyzed: 1/5/2012				
Lead	0.28	0.50		0.39	NR		32.2	20	R
Duplicate (B2A0062-DUP2)					Prepared: 1/3/2012 Analyzed: 1/5/2012				
Lead	0.28	0.50		0.33	NR		17.5	20	
Matrix Spike (B2A0062-MS1)					Prepared: 1/3/2012 Analyzed: 1/5/2012				
Lead	5.2	0.05	5.00	0.39	95.2	80 - 120			
Matrix Spike (B2A0062-MS2)					Prepared: 1/3/2012 Analyzed: 1/5/2012				
Lead	5.0	0.05	5.00	0.33	93.1	80 - 120			
Matrix Spike Dup (B2A0062-MSD1)					Prepared: 1/3/2012 Analyzed: 1/5/2012				
Lead	5.3	0.05	5.00	0.39	97.3	80 - 120	1.95	20	



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Reported : 01/05/2012

Notes and Definitions

R RPD value outside acceptance criteria. Calculation is based on raw values.
ND Analyte not detected at or above reporting limit
PQL Practical Quantitation Limit
MDL Method Detection Limit
NR Not Reported
RPD Relative Percent Difference

CHAIN OF CUSTODY RECORD

Page 1 of 4

FOR LABORATORY USE ONLY:



**Advanced Technology
Laboratories**

3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport

Client
ATL
CA OverN
FEDEX
Other: GSJ

11.4

Sample Condition Upon Receipt

1. CHILLED Y N 4. SEALED Y N
2. HEADSPACE (VOA) Y N 5. # OF SPLS MATCH COC Y N
3. CONTAINER INTACT Y N 6. PRESERVED Y N

Client: GEOCON CONSULTANTS, INC.

Address: 6671 Brisa Street

TEL: (925) 371-5900

Attn: L. BEADLE

City Livemore

State CA

Zip Code 94550

FAX: (925) 371-5915

Project Name: Hwy 101 @ San Juan Rd.

Project #: 59525-06-40

Sampler: D. WATTS (Printed Name)

(Signature)

Relinquished by: (Signature and Printed Name) [Signature]

Date: 12/14/11

Time: 1600

Received by: (Signature and Printed Name) GSJ

Date: 12/14/11

Time: 1600

Relinquished by: (Signature and Printed Name)

Date:

Time:

Received by: (Signature and Printed Name) [Signature]

Date: 12/14/11

Time: 9:58

Relinquished by: (Signature and Printed Name)

Date:

Time:

Received by: (Signature and Printed Name)

Date:

Time:

I hereby authorize ATL to perform the work indicated below:

Project Mgr / Submitter:

D. WATTS 12/14/11
Print Name Date

[Signature]
Signature

Send Report To:

Attn:

Co: SAME AS ABOVE

Address:

City _____ State _____ Zip _____

Bill To:

Attn:

Co: SAME AS ABOVE

Address:

City _____ State _____ Zip _____

Special Instructions/Comments:

RUN DI-WETS ON ANY SAMPLE WITH A Pb TLC ≥ 50 mg/Kg

Sample/Records - Archival & Disposal

Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.

Storage Fees (applies when storage is requested):

- Sample : \$2.00 / sample / mo (after 45 days)
- Records : \$1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested

- 8091A (Pesticides)
- 8092 (PCB)
- 8200g (Volatiles)
- 8270C (BVA)
- 80109 (Total Metal) - Pb
- 80158 (GRO) / BTEX
- 80159 (DRO)
- 8021 (BTX)
- TITLE 22 / CAM 17 (8010 / 7000)

SPECIFY APPROPRIATE MATRIX

- SOIL
- WATER
- GROUND WATER
- WASTEWATER

Container(s)

TAT # Type

QA/QC

RTNE
CT

SWRCB
Logcode _____

OTHER _____

REMARKS

ITEM	LAB USE ONLY:		Sample Description			
	Batch #:	Lab No.	Sample I.D. / Location	Date	Time	
		<u>110723-01</u>	<u>5B-2-0.25</u>	<u>12/14/11</u>	<u>0931</u>	
		<u>2</u>	<u>-3-</u>		<u>0936</u>	
		<u>3</u>	<u>-5-</u>		<u>0942</u>	
		<u>4</u>	<u>-6-</u>		<u>0950</u>	
		<u>5</u>	<u>-7-</u>		<u>0954</u>	
		<u>6</u>	<u>-8-</u>		<u>1011</u>	
		<u>7</u>	<u>-9-</u>		<u>1017</u>	
		<u>8</u>	<u>-10-</u>		<u>1021</u>	
		<u>9</u>	<u>-12-</u>		<u>1027</u>	
		<u>10</u>	<u>-13-</u>		<u>1034</u>	

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr

B= Emergency Next workday

C= Critical 2 Workdays

D= Urgent 3 Workdays

E= Routine 7 Workdays

Preservatives:

H=Hcl N=HNO₃ S=H₂SO₄ C=4°C

Z=Zn(AC)₂ O=NaOH T=Na₂S₂O₃

Container Types: T=Tube V=VOA L=Liter P=Pin J=Jar B=Tedlar G=Glass P=Plastic M=Metal

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY:



**Advanced Technology
Laboratories**

3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

P.O.#: _____
Logged By: _____ Date: _____

Method of Transport
Client
ATL
CA OverN
FEDEX
Other: _____

Sample Condition Upon Receipt
1. CHILLED Y N 4. SEALED Y N
2. HEADSPACE (VOA) Y N 5. # OF SPLS MATCH COC Y N
3. CONTAINER INTACT Y N 6. PRESERVED Y N

Client: **GEOCON CONSULTANTS, INC.** Address: **6671 Brisa Street** TEL: **(925) 371-5900**
Attn: _____ City: **Livermore** State: **CA** Zip Code: **94550** FAX: **(925) 371-5915**

Project Name: SEE Pg 1 Project #: _____ Sampler: _____ (Printed Name) _____ (Signature)
Relinquished by: _____ Date: 12/14/11 Time: 1600 Received by: _____ Date: 12/14/11 Time: 1600
Relinquished by: _____ Date: _____ Time: _____ Received by: Margo Date: 12/14/11 Time: 9:54
Relinquished by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
SEE Pg 1
Print Name _____ Date _____
Signature _____

Send Report To:
Attn: _____
Co: **SAME AS ABOVE**
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: **SAME AS ABOVE**
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
SEE Pg 1

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.
Storage Fees (applies when storage is requested):
• Sample : \$2.00 / sample / mo (after 45 days)
• Records : \$1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested	SPECIFY APPROPRIATE MATRIX				TAT	#	Type	PRESERVATION	QA/QC
	SOIL	WATER	GROUND WATER	WASTEWATER					RTNE <input type="checkbox"/>
8091A (Pesticides)								CT <input checked="" type="checkbox"/>	
8092 (PCBs)								SWRCB <input type="checkbox"/>	
8200 (Volatiles)								Logcode _____	
8270C (BVA)								OTHER _____	
80109 (Total Metal) - Pb								REMARKS	
80158 (GRO) / BTEX									
80158 (DRO)									
8021 (BTEX)									
TITLE 22 / CAM 17 (6010 / 7000)									

ITEM	LAB USE ONLY:		Sample Description		
	Batch #:	Lab No.	Sample I.D. / Location	Date	Time
		110729- N	NB-1-0.25	12/14/11	1049
		32	- 2 -		1057
		23	- 3A -		1101
		24	- 3B -		1102
		25	- 4 -		1114
		26	- 5 -		1117
		27	- 6 -		1121
		28	- 7 -		1124
		29	- 8 -		1125
		30	- 9 -		1127

• TAT starts 8 a.m. following day if samples received after 3 p.m.
TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays
Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal
Preservatives: H=Hcl N=HNO₃ S=H₂SO₄ C=4°C Z=Zn(AC)₂ O=NaOH T=Na₂S₂O₃

CHAIN OF CUSTODY RECORD

FOR LABORATORY USE ONLY:



**Advanced Technology
Laboratories**

3275 Walnut Avenue
Signal Hill, CA 90755
(562) 989-4045 • Fax (562) 989-4040

P.O.#: _____

Logged By: _____ Date: _____

Method of Transport

- Client
- ATL
- CA OverN
- FEDEX
- Other: _____

Sample Condition Upon Receipt

- 1. CHILLED Y N 4. SEALED Y N
- 2. HEADSPACE (VOA) Y N 5. # OF SPLS MATCH COC Y N
- 3. CONTAINER INTACT Y N 6. PRESERVED Y N

Client: **GEOCON CONSULTANTS, INC.** Address: **6671 Brisa Street** TEL: **(925) 371-5900**

Attn: _____ City: **Livemore** State: **CA** Zip Code: **94550** FAX: **(925) 371-5915**

Project Name: **SEE Pg 1** Project #: _____ Sampler: _____ (Printed Name) _____ (Signature)

Relinquished by: (Signature and Printed Name) **WHT** Date: **12/14/11** Time: **1600** Received by: (Signature and Printed Name) **GSO** Date: **12/14/11** Time: **1600**

Relinquished by: (Signature and Printed Name) _____ Date: _____ Time: _____ Received by: (Signature and Printed Name) **MAG** Date: **12/10/11** Time: **0954**

Relinquished by: (Signature and Printed Name) _____ Date: _____ Time: _____ Received by: (Signature and Printed Name) _____ Date: _____ Time: _____

I hereby authorize ATL to perform the work indicated below:
Project Mgr /Submitter:
SEE Pg 1
Print Name _____ Date _____
Signature _____

Send Report To:
Attn: _____
Co: **SAME AS ABOVE**
Address _____
City _____ State _____ Zip _____

Bill To:
Attn: _____
Co: **SAME AS ABOVE**
Address _____
City _____ State _____ Zip _____

Special Instructions/Comments:
SEE Pg 1

Sample/Records - Archival & Disposal
Unless otherwise requested by client, all samples will be disposed 45 days after receipt and records will be disposed 1 year after submittal of final report.
Storage Fees (applies when storage is requested):
• Sample : \$2.00 / sample / mo (after 45 days)
• Records : \$1.00 / ATL workorder / mo (after 1 year)

Circle or Add Analysis(es) Requested	SPECIFY APPROPRIATE MATRIX				PRESERVATION	QA/QC
	SOIL	WATER	GROUND WATER	WASTEWATER		
8091A (Pesticides)					RTNE <input type="checkbox"/> CT <input checked="" type="checkbox"/> SWRCB <input type="checkbox"/> Logcode _____ OTHER _____	
8092 (PCB)						
8280B (Volatiles)						
8270C (BVA)						
8010B (Total Metal) - Pb						
8015B (GRO) / BTEX						
8015B (DRO)						
8021 (BTEX)						
TITLE 22 / CAM 17 (6010 / 7000)						

ITEM	LAB USE ONLY:		Sample Description			
	Batch #:	Lab No.	Sample I.D. / Location	Date	Time	
		1100727-7	NB-1-0.5	12/14/11	1049	
		72	-2-		1057	
		99	-3A-		1101	
		31	-3B-		1102	
		78	-4-		1114	
		74	-5-		1117	
		78	-6-		1121	
		78	-7-		1124	
		79	-8-		1125	
		78	-9-		1127	

Container(s)	TAT	#	Type	REMARKS

• TAT starts 8 a.m. following day if samples received after 3 p.m.

TAT: A= Overnight ≤ 24 hr B= Emergency Next workday C= Critical 2 Workdays D= Urgent 3 Workdays E= Routine 7 Workdays

Preservatives: H=Hcl N=HNO₃ S=H₂SO₄ C=4°C Z=Zn(AC)₂ O=NaOH T=Na₂S₂O₃

Container Types: T=Tube V=VOA L=Liter P=Pint J=Jar B=Tedlar G=Glass P=Plastic M=Metal