FOR CONTRACT NO.: 05-0161E4

INFORMATION HANDOUT

WATER QUALITY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
CERTIFICATION NO. 32709WQ13

PERMITS

UNITED STATES ARMY CORPS OF ENGINEERS
PERMIT NO. SPN-2003-283460 S

AGREEMENTS

CALIFORNIA DEPARTMENT OF FISH AND GAME
CENTRAL REGION
(Prunedale Improvement Project- Russell-Espinosa)
STREAM ALTERATION AGREEMENT NO. 2009-0202-R4

(Prunedale Improvement Project- Blackie-Reese)
STREAM ALTERATION AGREEMENT NO. 2009-0203-R4

(Prunedale Improvement Project- San Miguel)
STREAM ALTERATION AGREEMENT NO. 2009-0204-R4

(Prunedale Improvement Project- Crazy Horse-Echo Valley)
STREAM ALTERATION AGREEMENT NO. 2009-0205-R4

UNITED STATES FISH AND WILDLIFE SERVICE (Biological Opinion)
NO. P52247

MATERIALS INFORMATION

STRUCTURE FOUNDATION REPORT

FOUNDATION REVIEW

INSTALLATION DETAILS
For Batterty Backup System (BBS)

CALIFORNIA DIVISION OF MINING AND TUNNELING UNIT
UNDERGROUND CLASSIFICATION
NOS. C191-053010T thru C217-053010T

ROUTE: 05-Mon-101-R146.8/159.7

California Regional Water Quality Control Board
Central Coast Region

Linda S. Adams
Secretary for Environmental Protection

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

Arnold Schwarzenegger
Governor

June 28, 2010

Karen Bewley
Karen_Bewley@dot.ca.gov
Caltrans
50 Higuera Street
San Luis Obispo, CA 93401

BY ELECTRONIC AND REGULAR MAIL

Dear Ms. Bewley:

WATER QUALITY CERTIFICATION NUMBER 32709WQ13 FOR THE PRUNEDALE IMPROVEMENT PROJECT, MONTEREYCOUNTY

Thank you for the opportunity to review your November 16, 2009 application for water quality certification of the Prunedale Improvement Project. The application was completed on April 12, 2010. The project appears to protect 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 Section 401 Water Quality Certification application and CEQA documents indicate that project activities may affect beneficial uses and water quality. The 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 anytime 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 Water Board will base enforcement actions on the date of certification. Any person affected by this 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.

If you have questions please contact **Jennifer Epp at (805) 594-6181** or via email at **jepp@waterboards.ca.gov** or Phil Hammer at (805) 549-3882. 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

S:\Shared\Section 401 Certification\Certifications\Monterey\Prunedale Improvement Project_final.doc

cc: Enclosures with

Bruce Henderson
U.S. Army Corps of Engineers
Ventura Office
Regulatory Section
2151 Allesandro Drive, Suite 110
Ventura, CA 93001

U.S. Army Corps of Engineers
San Francisco District
Regulatory Section
1455 Market Street, Floor 16
San Francisco, CA. 94103-1398

California Department of Fish and Game
Lake and Streambed Alteration
1234 East Shaw Street
Fresno, CA 93710

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

R9-WTR8-Mailbox@epa.gov

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

PROJECT: Prunedale Improvement Project
APPLICANT: Karen Bewley
Caltrans
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 the 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 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 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 $**11,813** which includes the $640 application fee.

REGIONAL WATER QUALITY CONTROL BOARD CONTACT PERSON:
Jennifer Epp
Central Coast Region, Region 3
(805) 594-6181
jepp@waterboards.ca.gov
Please refer to the above certification number when corresponding with the Water Board concerning this project.

WATER QUALITY CERTIFICATION:
I hereby issue an order certifying that any discharge from the Prunedale Improvement 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 Regional Water Quality Control Board's Water Quality Control Plan (Basin Plan).

for Michael Thomas

Roger W. Briggs
Executive Officer
Regional Water Quality Control Board

6-28-10
Date

Attachment 1

PROJECT INFORMATION AND CONDITIONS

Application Date	Received: November 16, 2009 Completed: April 12, 2010
Applicant	Karen Bewley -- Caltrans
Applicant Representatives	N/A
Project Name	Prunedale Improvement Project
Water Board Application Number	32709WQ13
Type of Project	Highway 101 road safety improvements
Project Location	City of Prunedale Longitude: 121° 66' Latitude: 36° 72'
County	Monterey
Receiving Water(s)	Prunedale Creek and Unnamed Drainages 309.20 Salinas Hydrologic Unit
Water Body Type	Creek, drainages
Designated Beneficial Uses	• Municipal and Domestic Supply • Protection of both recreation and aquatic life
Project Description (purpose/goal)	The purpose of the project is to improve safety along Route 101and intersecting local roadways, improve traffic flow along existing Route 101, and improve accessibility to area homes, businesses, and services. <u>The Central Coast Regional Water Quality Control Board (Water Board) understands that the project includes the following:</u> • Build a four-lane, fully access-controlled freeway on a new alignment between 0.3 kilometers north of the Boronda Road interchange and the intersection of Martine Road; • Construction of new interchanges at Russell/Espinosa Road and Crazy Horse/Echo Valley Road; • Improvement of the existing interchange at San Miguel Canyon Road; • Improvement and construction of local roads; and • Placement of median barriers at various locations.
Preliminary Water Quality Issues	The Water Board finds the project has the potential to cause sedimentation, siltation, and pollutant release to the creek/drainages. Erosion could be caused by the construction activities or by the new interchange construction project. 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 the construction of the new interchanges. The Water Board finds the project has the potential to adversely impact the California red-legged frog and the California tiger salamander and their habitat. The Water Board is finds the project has the potential to cause a loss of functional wetlands due to filling and grading activities, and the ability of the retention basins, bioswale, and mitigated wetlands to provide for the benefits of a naturally functioning wetland in capturing, storing, and filtering urban runoff while providing suitable habitat for wildlife.
Water Board Mitigation Requirements	<u>Mitigations that are required to comply with 401 Water Quality Certification are as follows:</u> • Caltrans must use silt fences and/or straw wattles around construction areas to control and eliminate erosion and sedimentation. • Erosion control measures shall be applied to all disturbed earth surfaces. • Seeding of entire slope with an approved grass seed mixture and placement of erosion control blankets over seeded areas shall be implemented for slope stabilization. • Any material stockpiled during construction shall be covered with plastic. • All construction vehicles and equipment used on site must be well maintained and checked daily for fuel and hydraulic fluid leaks or other problems that could result in spills of toxic materials. • The contractor must be required to have oil absorbent pads onsite in case a spill occurs. • Caltrans must designate a staging area for equipment/vehicle fueling and storage at least 100 feet away from waterways, in a location where fluid will not flow into waterways. • All vehicle fueling must occur at least 100 feet away from waterways, and in the designated staging area. • Stream diversion dams shall be constructed of sand bags wrapped in heavy plastic sheeting. • Sand bags shall be filled with clean gravel. • Water Board staff must 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 must inform

	Water Board staff of any modifications that interfere with compliance with this certification.
Area of Disturbance	Total Impacts: Approximately 1.75 acres permanent and 2.43 acres temporary Streambed: 0.52 acres permanent, 0.13 acres temporary Riparian: 0.13 acres permanent, 0.14 acres temporary (Jurisdictional) Wetland: 1.10 acres permanent, 2.16 acres temporary
Fill/Excavation Area	Approximately 1.75 acres of permanent fill and 2.43 acres of temporary fill
Dredge Volume	N/A
U.S. Army Corps of Engineers Permit No.	Individual Permit
Federal Public Notice	N/A
Dept. of Fish and Game Streambed Alteration Agreement	Streambed Alteration Agreement is pending. Final, signed copy will be forwarded immediately upon execution.
Possible Listed Species	California red-legged frog, California tiger salamander
Status of CEQA Compliance	EIR Lead Agency: Caltrans
Water Board Compensatory Mitigation Requirements	The project will include the following: To compensate for impacts caused by the Prunedale Improvement Project, the applicant shall preserve an off-site parcel containing wetlands as well as preserve and restore the impacted channel area and enhance surrounding riparian area (identified as Blackie/Reese 2, Crazy Horse 1, and Crazy Horse 2) as detailed in the Mitigation and Monitoring Proposal dated November 2009 and provided in the 401 Water Quality Certification application package. Compensatory mitigation includes on-site restoration/enhancement of 1.80 acres of seasonal wetlands and 0.82 acres and 660 linear feet of other waters. Compensatory mitigation also includes off-site preservation of 3.3 acres of wetlands and 0.32 acres of other waters.
Total Certification Fee	$11,813
Additional Conditions	Contact Water Board staff when project begins to allow for a site visit. Submit a signed copy of the Department of Fish and Game's streambed alteration agreement to the Water Board immediately upon execution and prior to any discharge to

	waters of the State. The Water Board requires visual monitoring and three reports for this project: • Visually inspect the site (and at least one reach upstream and downstream of project) after completion of the project and for two subsequent rainy seasons to ensure that the new structures are not causing excessive erosion or other water quality problems. If the project does cause water quality problems, contact the Water Board staff member overseeing the project. You 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 observations, and problems incurred and actions taken; include properly identified post-project photos. • Second and Third Report: Submit annual reports complete with photos of revegetation efforts by December 31 of each monitoring year. Annual reports must quantify growth and progress of restoration and determine to what extent performance criteria have been met. All areas of the revegetation site shall be assessed for percent cover, general health and stature, and signs of reproduction. The reports shall also include photographs of revegetation progress over time.

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

REPLY TO

AUG 31 2010

Regulatory Division

SUBJECT: File Number SPN-2003-283460 S

Ms. Karen Bewley
Environmental Planner/Permit Coordinator
California Department of Transportation, District 5
50 Higuera Street
San Luis Obispo, CA 93401-5415

Dear Ms. Bewley:

Enclosed are two copies of a Department of the Army (DA) permit to construct the Prunedale Improvements Project, located on Highway 101, in the town of Prunedale, Monterey County, California.

You are advised that the Corps has established an Administrative Appeal Process, as described in our regulations at 33 C.F.R. Part 331 (65 Fed. Reg. 16486; March 28, 2000) and outlined in the enclosed flowchart and Notification of Administrative Appeal Options, Process, and Request for Appeal (NAO-RFA) form. The following two options are available to you in your evaluation of the enclosed permit:

1) You may sign and date both copies of the permit on the line designated for "Permittee". Your signature on the permit indicates that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions.: Both copies of the permit must be returned to this office for final authorization.

2) You may decline to sign the permit because you object to certain terms and conditions, and you may request that the permit be modified. If you decline the permit, you must return the permit to the District Engineer and may not proceed with your project until notified by the District Engineer. You must outline your objections to the terms and conditions of the permit by completing Section II of the NAO-RFA form. Your objections must be received by the District Engineer within sixty (60) days of the date of this letter, or you will forfeit your right to request changes to the terms and conditions of the permit.

Upon receipt of the completed NAO-RFA form, the District Engineer will evaluate your objections, and may: (a) modify the permit to address all of your objections, (b) modify the permit to address some of your objections, or (c) not modify the permit, having determined that the permit should be issued as previously written. In any of these three cases, the District Engineer will send you a final permit for your reconsideration, as well as a second NAO-RFA form. Should you decline the final proffered permit, you can appeal the declined permit by submitting the completed NAO-RFA form to the Division Engineer. The NAO-RFA form must be received by the Division Engineer within sixty (60) days of the date of the second transmittal letter, or you will forfeit your right to pursue an appeal.

If you fail to sign and return both copies of this permit or fail to request a modification of the permit within sixty (60) days from the date of this letter, your permit application may be withdrawn pursuant to our regulations at 33 C.F.R. Section 325.2(d)(5).

Should you have any questions regarding this matter, please call Andrea Meier of our Regulatory Division at (415) 503-6798 or email her at andrea.j.meier@usace.army.mil. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks

for Torrey A. DiCiro
Lieutenant Colonel, U.S. Army
Commanding

Enclosures

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: California Department of Transportation	File Number: SPN-2003-283460 S	Date: Aug 31, 2010
Attached is:		See Section below
X	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	FINAL PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps Regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the DISTRICT Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the initial proffered permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this Notice and return the Notice to the DISTRICT Engineer. Your objections must be received by the DISTRICT Engineer within 60 days of the date of this Notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your Notice, the DISTRICT Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the DISTRICT Engineer will send you a final proffered permit for your reconsideration, as indicated in Section B below.

B: FINAL PROFFERED PERMIT: You may accept or decline/appeal the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the DISTRICT Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the final proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this Notice and sending the form to the DIVISION (not District) Engineer (address on reverse). This Notice must be received by the DIVISION (not District) Engineer within 60 days of the date of this Notice.

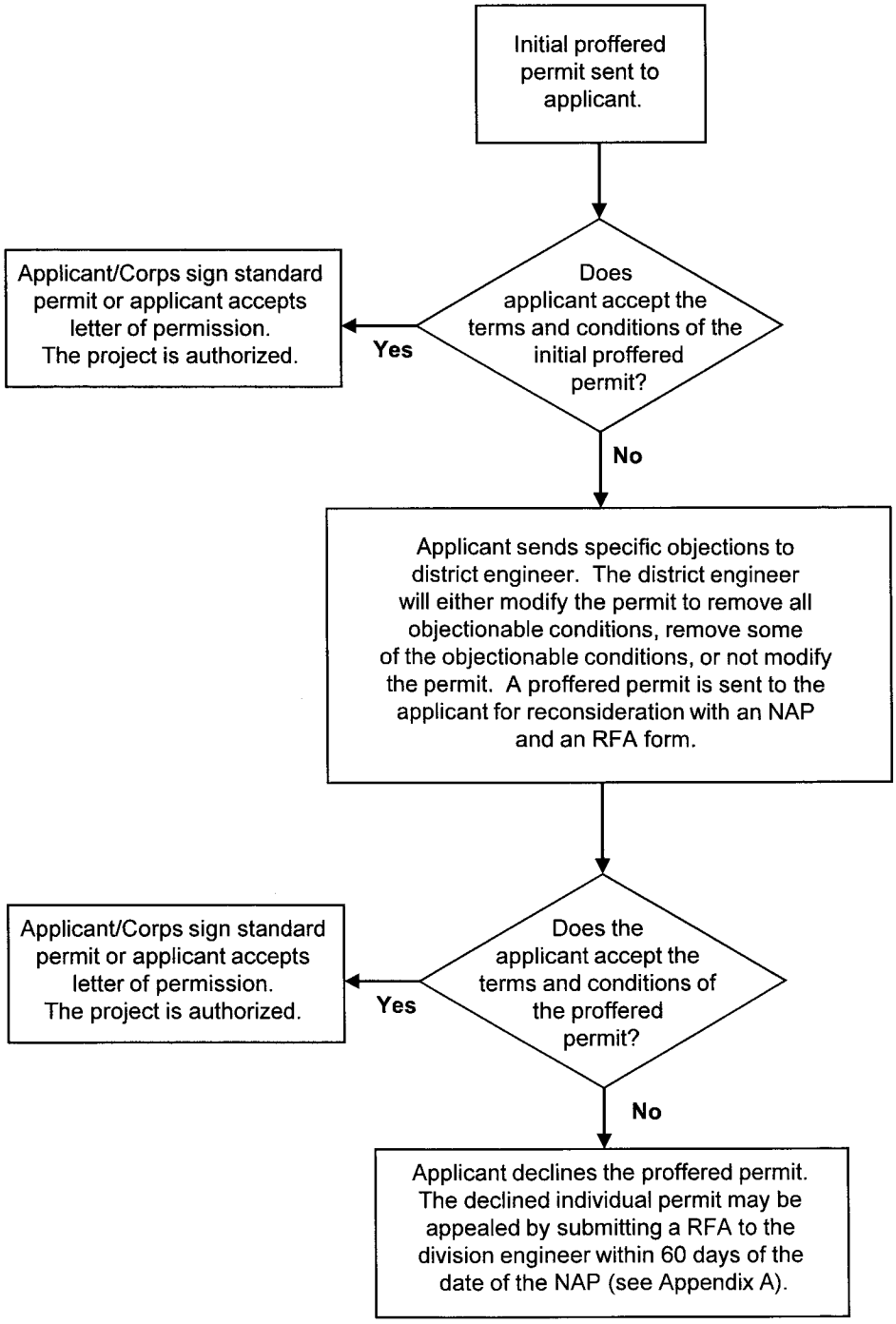
C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this Notice and sending the Notice to the DIVISION (not District) Engineer (address on reverse). This Notice must be received by the DIVISION (not District) Engineer within 60 days of the date of this Notice.

D: APPROVED JURISDICTIONAL DETERMINATION (JD): You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this Notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this Notice and sending the Notice to the DIVISION (not District) Engineer (address on reverse). This Notice must be received by the DIVISION Engineer within 60 days of the date of this Notice. JD appeals based on NEW information must be submitted to the DISTRICT Engineer within 60 days of the date of this Notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION (JD): You do not need to respond to the Corps regarding the preliminary JD. The preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps District for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

Applicant Options with Initial Proffered Permit



Appendix B

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

REPLY TO

DEPARTMENT OF THE ARMY PERMIT

PERMITTEE: Karen Bewley
Environmental Planner/Permit Coordinator
California Department of Transportation, District 5
50 Higuera Street
San Luis Obispo, CA 93401-5415

PERMIT NO.: SPN-2003-283460 S

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: The project will remove cross traffic with high collision rates by constructing new interchanges and improvements at four locations along Highway 101 in the City of Prunedale, Monterey County, California. The four locations where work will occur are at Russell Road/Espinosa Road, Blackie Road/Reese Circle, Crazy Horse Road/Echo Valley Road, and San Miguel Canyon Road. At Russell/Espinosa, you will be constructing an undercrossing of the highway. At Blackie/Reese, you will be constructing an overcrossing of the highway and moving the alignment of Blackie Road the south to meet the new overcrossing. At San Miguel Canyon Road, the existing overcrossing will be widened. An overcrossing will be constructed over Highway 101 for Crazy Horse Canyon Road/Echo Valley Road. Other improvements along Highway 101 include widening frontage roads and eliminating uncontrolled access points.

The project would permanently impact 1.10 acres of wetlands and 0.65 acres of other waters of the U.S. A majority of the wetland impacts will occur in the Crazy Horse Canyon Road Area. A majority of the impacts to other waters of the U.S. will occur in the Russell/Espinosa Road area where the waters are primarily ditches.

The project shall be constructed in with the project drawings in Enclosure 6 that include:

- "PIP Drawings", sheets 1 through 27, dated July 29, 2010
- "Drainage and Contour Grading Plan", sheets D-1 and D-2, revised September 22, 2009
- "Drainage and Contour Grading Plan", sheet D-3, D-7, and D-10 through D-19, revised April 1, 2009
- "Drainage and Contour Grading Plan", sheet D-4 and D-6, revised September 15, 2009
- "Drainage and Contour Grading Plan", sheet D-5, revised September 17, 2009
- "Drainage and Contour Grading Plan", sheet D-8 and D-9, revised August 31, 2009
- "Drainage and Contour Grading Plan", sheet D-20, revised September 28, 2009
- "Blackie Road Work and Prunedale Creek Restoration", sheets 1 and 2, dated July 29, 2010
- "Cross Road – Detail Drawing", dated July 29, 2010
- "Pollock Lane – Detail Drawing", dated July 29, 2010

PROJECT LOCATION: The project is located along Highway 101 in Monterey County in the town of Prunedale, beginning at Boronda Road at the north end of Salinas and ending north of Prunedale at Dunbarton Road.

PERMIT CONDITIONS:

GENERAL CONDITIONS:

1. The time limit for completing the work authorized ends on August 31, 2020. 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. 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.

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 enclosed U.S. Fish and Wildlife Service (USFWS) BO dated October 17, 2005 (see Enclosure 1), 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. 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, 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, 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 authority to determine compliance with the terms and conditions of their BO and with the ESA.

2. You shall adhere to the terms and conditions of the June 28, 2010, Clean Water Act Section 401 Water Quality Certification (see Enclosure 2), issued by the Central Coast Regional Water Quality Control Board (ID number 32709WQ13).

3. 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.

4. To mitigate for the permanent loss of 1.10 acres of jurisdictional wetlands and 0.65 acres of other waters of the U.S., you shall:

a. Restore and enhance 1.80 acres of jurisdictional wetlands and 0.80 acres of jurisdictional other waters of the U.S. on-site in the Prunedale Improvements Project corridor as shown on the "On-Site Mitigation Planting Plans for the Prunedale Improvements Project", sheets PP-1 through PP-6, dated August 9, 2010 (see Enclosure 3). This includes the restoration of 0.26 acres of Prunedale Creek along Blackie Road. This mitigation shall be constructed concurrently or prior to the project to minimize temporal impacts to waters of the U.S.

(i) To insure long-term viability of the on-site restored and enhanced areas, you shall establish a Caltrans Expenditure Authorization account (also referred to as an EA) to provide for maintenance and monitoring of the on-site restoration and enhancement areas. You shall provide written confirmation that this account has been established to the Corps 30 days prior to the start of construction of this project.

(ii) To protect the on-site restoration and enhancement areas, you shall designate those areas as Environmentally Sensitive Areas (ESAs) within your right-of-way and provide our office written confirmation that these areas are designated ESA areas within 30 days of the start of construction.

(iii) You shall install barb wire fencing and appropriate signage along the on-site restoration areas on Prunedale Creek and Crazy Horse Canyon Road, indicated at TFESA on the "On-Site Mitigation Planting Plans for the Prunedale Improvements Project", sheets PP-1, PP-5 and PP-6, dated August 9, 2010 (see Enclosure 3). All fencing surrounding mitigation areas shall allow unrestricted visibility of these areas to discourage vandalism or disposing of trash or other debris in these areas.

(iv) You shall develop a mitigation and monitoring plan (plan) for the on-site restoration areas, including the Prunedale Creek restoration area. A draft plan shall be provided to our office by October 1, 2010. Written approval of a final mitigation and monitoring plan must be received prior to commencement of work. The plan must demonstrate that the project will result in a no net loss of 1.1 acres of seasonal wetlands and 0.65 acres of other waters of the U.S.

There will be 1.80 acres of seasonal wetlands restored and 0.80 acres of wasters of the U.S. restored. The mitigation goal is the presence of 2.60 acres of wetlands and other waters in the areas shown on the "On-Site Mitigation Planting Plans for the Prunedale Improvements Project", sheets PP-1 through PP-6, dated August 9, 2010 (see Enclosure 3).

The plan shall include objectives; site selection criteria; baseline information; mitigation work plan; a maintenance plan; ecological performance standards; monitoring requirements; a long-term management plan; and an adaptive management plan as required by the joint U.S. Army Corps of Engineers and U.S. Environmental Protection Agency, April 10, 2008, Compensatory Mitigation Rule (33 CFR 332). An excerpt of the requirements for mitigation and monitoring plans is provided for your convenience (see Enclosure 4). The purpose of this requirement is to insure replacement of functions and values of the aquatic environment that would be lost through project implementation.

These areas shall be monitored for a minimum of 5 years. The riparian and wetland sites shall achieve 75% vegetative cover or similar coverage to that of an appropriate reference site with similar habitat types. Target species shall include *Eleocharis macrostachya*, *Juncus effusus*, *Juncus occidentalis*, *Scirpus cernuus*, *Scirpus microcarphus*, *Platnus racemosa*, *Populus trichocarpus*, and *Salix lucida*.

If a reference site is used to determine success criteria, it must be approved by the Corps in writing along with the mitigation and monitoring plan. The mitigation plan will not be deemed successful until the success criteria have been met and you have received written verification of mitigation success from this office.

b. Preserve 3.30 acres of wetlands and 0.33 acres of other waters of the U.S. at the 167-acre Elkhorn Slough mitigation site located northeast of the intersection of Paradise Road and Castroville Boulevard, as shown on the "Off-Site Preserve Map for the Prunedale Improvements Project" and the Elkhorn Slough Preserve Site – Extent of Waters of the U.S.", dated August 9, 2010 (see Enclosure 5). Section 3.4 referring to a "Proposed Mitigation Bank" in the "Mitigation and Monitoring Proposal, state Route 101, Prunedale Improvements Project, Monterey County", dated November 2009, is hereby deleted. Long-term stewardship of the Elkhorn Slough preserve area shall be provided by the California Department of Fish and Game.

(i) The mitigation plan must be prepared in accordance with the Corps Mitigation Rule (33 CFR 332) and demonstrate that the wetlands on the preserve site meet all of the preservation criteria specified in 33 CFR Section 332.3(h) (see Enclosure 4). This explanation shall be submitted to the Corps by October 1, 2010.

(ii) You shall establish a fully-funded endowment to provide for maintenance and monitoring of the preserve area. A draft of the property analysis record (PAR) and estimate of the endowment shall be provided to our office by October 1, 2010. A final endowment shall be approved by the Corps in writing and funded prior to construction of this project.

(iii) You shall, prior to construction, provide written confirmation that the Elkhorn Slough site was transferred to the California Department of Fish and Game and that the area is protected as an ecological reserve under Section 630 of Title 14 of the California Code of Regulations. Listing under Title 14 will protect the preserve area as wetland preserve and wildlife habitat in perpetuity.

(iv) You shall develop a final comprehensive mitigation and monitoring plan, which must be approved by the Army Corps of Engineers prior to initiation of construction authorized by this permit.

(v) You shall provide our office with an operations and management plan for the site prior to construction.

(vi) To insure mitigation success, you shall monitor the preserve at Elkhorn Slough for five (5) years. This period shall commence upon completion of the transfer of the site to the California Department of Fish and Game. The mitigation plan will not be deemed successful until you have demonstrated that the site has maintained the functions and values of the wetlands and other waters preserved and you have received written verification of mitigation success from this office.

5. The restoration and enhancement of the on-site mitigation areas, including Prunedale Creek at Blackie Road, shall be completed concurrently with project construction. In no case shall the establishment of the preserve at the Whitehead Property at Elkhorn Slough be delayed beyond the start of construction.

6. You shall submit annual monitoring reports to this office by October 1 of each year. The first annual monitoring report for the Elkhorn Slough site is due October 1, 2012. The first annual monitoring report for the on-site restoration and enhancement areas shall be due on October 1 no more than two years after construction on the project begins. Your monitoring reports should follow the format described in Regulatory Guidance Letter 06-03, dated August 3, 2006.

7. Your responsibility to complete the required compensatory mitigation as set forth in Special Condition 4 will not be considered fulfilled until you have demonstrated mitigation success and have received written verification from the U.S. Army Corps of Engineers.

8. In the event of any unanticipated discoveries of potential cultural/historic resources, you shall immediately halt work in the vicinity of the discovery and contact the appropriate regulatory authorities. You shall complete consultation pursuant to 36 CFR 800 to the satisfaction of the SHPO prior to resuming work.

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.

Richard Krumholz 8/31/2010

(PERMITTEE) (DATE)

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

Jane M. Hicks 8/31/10

Torrey A. DiCiro (DATE)
Lieutenant Colonel, U.S. Army
District Commander

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)

AGREEMENT

California Fish and Game Code Section 1602
Stream Alteration Agreement No. 2009-0202-R4
California Department of Transportation
Two Unnamed Drainages – Monterey County
Prunedale Improvement Project Russell-Espinosa
05-MON-101 PM R91.2-100.4 EA 05-0161E0

Parties:

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

California Department of Transportation
Karen Bewley
50 Higuera Street
San Luis Obispo, California 93401

WHEREAS:

1. Ms. Karen Bewley, representing the California Department of Transportation (referred to as "Caltrans") on November 16, 2009, notified ("Notification" No. 2009-0202-R4) the Department of Fish and Game ("Department") of their intent to divert or obstruct the natural flow of, or change the bed or banks of, or use materials from two unnamed drainages which feed into Santa Rita Creek in Monterey County, waters over which the Department asserts jurisdiction pursuant to Division 2, Chapter 6 of the California Fish and Game Code.

2. Caltrans may not commence any activity that is subject to Fish and Game Code Sections 1600 et seq., until the Department has found that such Project shall not substantially adversely affect an existing fish or wildlife resource or until the Department's proposals, or the decisions of a panel of arbitrators, have been incorporated into such projects.

3. Fish and Game Code Sections 1600 et seq., make provisions for the negotiation of agreements regarding the delineation and definition of appropriate activities, Project modifications, and/or specific measures necessary to protect fish and wildlife resources.

4. The Department has determined that without the protective features identified in this Agreement, the activities proposed in the Notification could substantially adversely affect fish and wildlife.

NOW THEREFORE, IT IS AGREED THAT:

1. The receipt of this document ("Agreement"), by Caltrans, satisfies the Department's requirement to notify Caltrans of the existence of an existing fish and wildlife resource that may be substantially adversely affected by the Project that is described in the Notification.

2. The contents of this Agreement constitute the Department's proposals as to measures necessary to protect fish and wildlife resources, and satisfy the Department's requirement to submit these proposals to Caltrans.

3. The signature of Caltrans' representative on this Agreement constitutes Caltrans' commitment to incorporate the Department's proposals into the Project that is described in the Notification.

4. This Agreement does not exempt Caltrans from complying with all other applicable local, State, and Federal law or other legal obligations.

5. This Agreement, alone, does not constitute or imply the approval or endorsement of a Project, or of specific Project features, by the Department, beyond the Department's limited scope of responsibility, established by Code Sections 1600 et seq. This Agreement does not therefore assure concurrence, by the Department, with the issuance of permits from this or any other agency. Independent review and recommendations shall be provided by the Department as appropriate on those projects where local, State, or Federal permits or environmental reports are required.

6. This Agreement does not authorize the "take" (defined in Fish and Game Code Section 86 as hunt, pursue, catch, capture, kill; or attempt to hunt, pursue, catch, capture, or kill) of State-listed threatened or endangered species. If the Operator, in the performance of the agreed work, discovers the presence of a listed species in the Project work area, work shall stop immediately. Caltrans shall not resume activities authorized by this Agreement until such time as valid "take" permits are obtained from the Department, pursuant to Fish and Game Code Sections 2081(a) and 2081(b), as appropriate.

7. To the extent that the Provisions of this Agreement provide for the diversion of water, they are agreed to with the understanding that Caltrans possesses the legal right to so divert such water.

8. To the extent that the Provisions of this Agreement provide for activities that require Caltrans to trespass on another owner's property, they are agreed to with the understanding that Caltrans possesses the legal right to so trespass.

9. To the extent that the Provisions of this Agreement provide for activities that are subject to the authority of other public agencies, said activities are agreed to with the understanding that all appropriate permits and authorizations shall be obtained prior to commencing agreed activities.

10. All Provisions of this Agreement remain in force throughout the term of the Agreement. Any Provision of the Agreement may be amended at any time, provided such amendment is agreed to in writing by both parties. Mutually approved amendments become part of the original Agreement and are subject to all previously negotiated Provisions. The Agreement may be terminated by either party, subject to 30 days written notification.

11. Caltrans shall provide a copy of the Agreement to the Project supervisors and all contractors and subcontractors. Copies of the Agreement shall be available at work sites during all periods of active work and shall be presented to Department personnel upon demand.

12. Caltrans agrees to provide the Department access to the Project site at any time to ensure compliance with the terms, conditions, and Provisions of this Agreement.

13. Caltrans and any contractor or subcontractor, working on activities covered by this Agreement, are jointly and separately liable for compliance with the Provisions of this Agreement. Any violation of the Provisions of this Agreement is cause to stop all work immediately until the problem is reconciled. Failure to comply with the Provisions and requirements of this Agreement may result in prosecution.

14. Caltrans assumes responsibility for the restoration of any fish and wildlife habitat which may be impaired or damaged either directly or, incidental to the Project, as a result of failure to properly implement or complete the mitigation features of this Agreement, or from activities which were not included in the Caltrans' Notification.

15. It is understood that the Department enters into this Agreement for purposes of establishing protective features for fish and wildlife, in the event that a Project is implemented. The decision to proceed with the Project is the sole responsibility of Caltrans, and is not required by this Agreement. It is agreed that all liability and/or incurred costs, related to or arising out of Caltrans' Project and the fish and wildlife protective conditions of this Agreement, remain the sole responsibility of Caltrans. Caltrans agrees to hold harmless and defend the Department against any related claim made by any party or parties for personal injury or other damage.

16. The terms, conditions, and Provisions contained herein constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that Caltrans is precluded from doing other activities at the site. However, activities not specifically agreed to and resolved by this Agreement are subject to separate notification pursuant to Fish and Game Code Sections 1600 et seq.

California Environmental Quality Act (CEQA) Compliance: In approving this Agreement, the Department is independently required to assess the applicability of CEQA. The features of this Agreement shall be considered as part of the overall Project description. Caltrans' concurrence signature on this Agreement serves as confirmation to the Department that the activities that shall be conducted under the terms of this Agreement are consistent with the Project described in Notification No. 2009-0202-R4. Caltrans submitted an Environmental Impact Report dated March 2006, State Clearinghouse Number 2004091124, for the parent Project, the Prunedale Improvement Project (PIP). Due to the large total number of 1600 jurisdictional locations (26), this Project has been divided into four areas for the purpose of the Stream Alteration Agreements. This Agreement will address the southern most area "Russell-Espinosa" which contains the first two locations.

The Department, as a CEQA Responsible Agency, shall make findings and submit a Notice of Determination to the State Clearinghouse upon signing this Agreement.

This Agreement contains a Monitoring and Reporting Program (MRP), to incorporate monitoring and reporting requirements for the activities authorized in this Agreement.

Project Location: The work authorized by this Agreement will occur adjacent to the existing State Route (SR) 101 between Post Mile (PM) 91.7 and 92.0 where it intersects a channelized unnamed drainage that feeds into a tributary to Santa Rita Creek (identified in Caltrans plans as OW 2) and a manmade drainage that feeds into OW 2 which runs parallel to SR 101 (identified in Caltrans plans as OW 3) in the Los Gatos aka Santa Rita and the Bolsa de las Escorpinas Landgrants in Monterey County (**Figure 1**). The spatial relationship between Russell-Espinosa and the other three areas of the PIP is shown in **Figure 2**.

Project Description: Caltrans' Notification includes Fish and Game Notification Form FG2023 and supporting documents. The Notification comprises Caltrans' Project description, and it is used as the basis for establishing the protective Provisions that are included in this Agreement. Any changes or additions to the Project as described in the Notification shall require additional consultation and protective Provisions. The Department's concurrence with Caltrans' CEQA Determination is based upon Caltrans' commitment to full implementation of the Provisions of this Agreement. Caltrans has proposed the following scope of work. The bulleted items comprise the activities authorized by this Agreement.

- Location 1 – the proposed project will culvert approximately 528 feet of OW 2, an unnamed channelized drainage, and place Rock Slope Protection at the outlet.

- Location 2 – the proposed project will fill approximately 553.5 feet of OW 3, a manmade roadside drainage ditch which feeds into OW 2. Design plans for SR 101 include appropriate drainage for the improvements and the loss if this drainage will not cause flooding elsewhere.

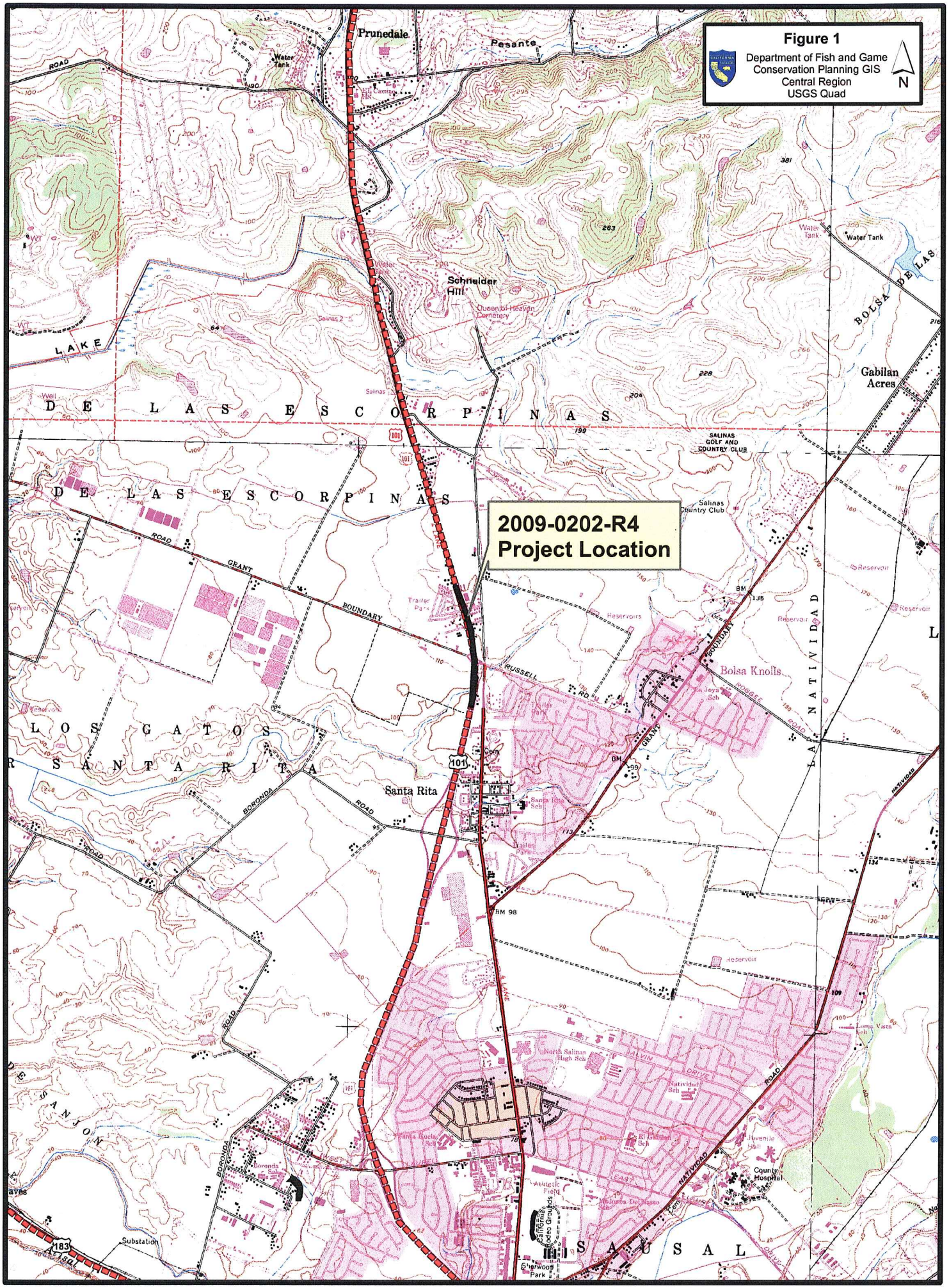


Figure 1
Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad
N
2009-0202-R4
Project Location
Prunedale
Pesante
Water Tank
Schneider Hill
Queen of Heaven Cemetery
LAKE
DE LAS ESCORPINAS
BOLSA DE LAS
Gabilan Acres
SALINAS GOLF AND COUNTRY CLUB
Salinas Country Club
GRANT
BOUNDARY
RUSSELL
Bolsa Knolls
LA NATIVIDAD
LOS GATOS
SANTA RITA
Santa Rita
BORONDA
ROAD
BM 98
North Salinas High Sch
Natividad Sch
Juvenile Hall
County Hospital
Boronda Sch
Substation
Sherwood Park
SAUSAL

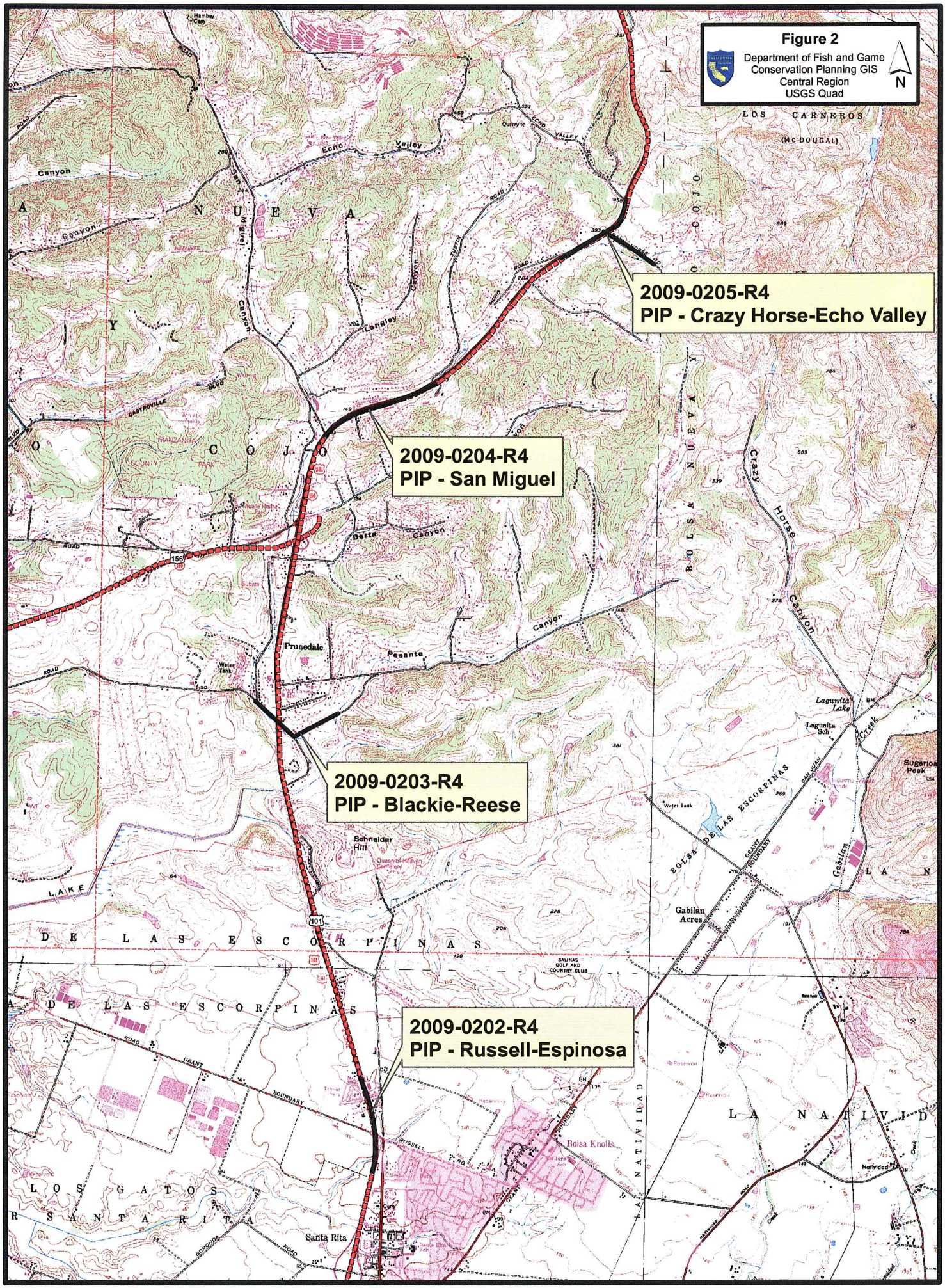


Figure 2
Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad
N
2009-0205-R4
PIP - Crazy Horse-Echo Valley
2009-0204-R4
PIP - San Miguel
2009-0203-R4
PIP - Blackie-Reese
2009-0202-R4
PIP - Russell-Espinosa
LOS CARNEROS
(McDOUGAL)
Echo Valley
Canyon
Langley
Prunedale
Pesante
Berta Canyon
Crazy Horse Canyon
Lagunita Lake
Lagunita Sch
Sugarloaf Peak
Schneider Hill
Gabilan Acres
Bolsa Knolls
Santa Rita
Natividad
LOS GATOS
LA NATIVIDAD
BOLSA DE LAS ESCORPINAS
DE LAS ESCORPINAS
GALINAS GOLF AND COUNTRY CLUB
GRANT BOUNDARY
RUSSELL ROAD
LAKE

- Project impacts at Russell-Espinosa include permanent impacts to 0.33 acres. There is no riparian vegetation in or along either drainage; no trees within the Departments jurisdiction will be removed in the Russell-Espinosa area.

- Compensation measures for the entire PIP include planting and restoration on-site and the preservation of an off-site parcel within the watershed. To stabilize soil and prevent erosion, 3.4 acres of native seed would be planted on site. The PIP Project requires 3.3 acres of wetland, 0.33 acres of other "Waters of the United States," 33.12 acres of oak woodland, and 24.95 acres of maritime chaparral from the off-site parcel. The remaining resources on the parcel would be available as potential credits for future projects.

Plant and Animal Species of Concern: This Agreement is intended to avoid, minimize, and mitigate adverse impacts to the fish and wildlife resources that occupy the area of the two unnamed drainages and the immediate adjacent riparian habitat. The protective measures described in this agreement must be implemented in order to avoid impacts, within the area covered by this Agreement, to the following species: Species of Special Concern burrowing owl (*Athene cunicularia*), as well as the other birds, mammals, fish, reptiles, amphibians, invertebrates, and plants that comprise the local riparian ecosystem. Departmental files contain lists of species that could be subject to potential generated impacts from this Project.

PROVISIONS:

General

1. The Notification, together with all supporting documents, is hereby incorporated into this Agreement to describe the location and features of the proposed Project. Caltrans agrees that all work shall be done as described in the Notification and supporting documents, incorporating all wildlife resource protection features, mitigation measures, and Provisions as described in this Agreement. Caltrans further agrees to notify the Department of any modifications that need to be made to the Project plans submitted to the Department. At the discretion of the Department, modifications may be deemed minor, requiring an amendment to this Agreement, or substantial requiring the submission of a new notification application. If the latter is the case, this Agreement becomes null and void. Failure to notify the Department of changes to the original plans or subsequent amendments to this Agreement may result in the Department suspending or canceling this Agreement.

2. Before the start of construction/work activities covered under this Agreement, all workers shall have received training from Caltrans' staff, or approved alternate trainer, on the content of this Agreement, the resources at stake, and the legal consequences of non-compliance.

3. When known, prior to beginning work, Caltrans shall provide a construction/work schedule to the Department (fax to Laura Peterson-Diaz, Environmental Scientist, at

(559) 243-4020). Please reference the Agreement number. Caltrans shall also notify the Department upon the completion of the activities covered by this Agreement.

4. Agreed activities within the bed, bank, or channel may commence any time after the Department has signed this Agreement. This Agreement shall remain in effect for five (5) years beginning on the date signed by the Department. If the Project is not completed prior to the expiration date defined above, Caltrans shall contact the Department to negotiate a new expiration date and any new requirements.

Flagging/Fencing

5. Within the riparian corridor, Caltrans shall identify the upstream and downstream limits of the minimum work area required, access routes, the Project footprint, plus all Environmentally Sensitive Areas (ESA). These boundaries shall be defined by the Caltrans' Project engineer and biologist, and flagged/fenced prior to the beginning of construction. These limits shall not extend beyond Caltrans' right-of-way and/or the construction easement, and shall be confined to the minimal area needed to accomplish the proposed work. Flagging/fencing shall be maintained in good repair for the duration of construction in the area under 1602 jurisdiction.

Wildlife

6. An approved biologist shall perform general wildlife surveys of the Project area (including access routes and storage areas) prior to Project construction start with special attention being paid to the sensitive species noted above and shall report any possible adverse affect to fish and wildlife resources not originally reported. If the survey shows presence of any wildlife species which could be impacted, Caltrans shall contact the Department and mitigation, specific to each incident, shall be developed. 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 may need to be conducted, before work can begin.

7. If work is done between March 1 and September 1, then in order to protect nesting birds, an approved biologist shall survey for nesting activity in and adjacent to the defined "work area", before construction begins. If any nesting activity is observed, which could be disturbed by the proposed scope of work, Caltrans shall contact the Department and mitigation, specific to each incident, shall be developed.

8. Burrowing owls: If any ground-disturbing activities will occur during the burrowing owl nesting season (approximately February 1 through August 31), the Department recommends that a pre-construction site survey be conducted by a qualified biologist no more than 30 days before the onset of any ground-disturbing activities. If signs (i.e., pellets, feathers, tracks or scat) of burrowing owls are observed at burrow

entrances within 300 feet of the defined work area, a qualified biologist shall perform a Phase III Burrowing Owl Survey as described in the 1997 California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines.

The Department's Staff Report on Burrowing Owl Mitigation (CDFG 1995) recommends that impacts to occupied burrows be avoided by implementation of a no-construction buffer zone of a minimum distance of 250 feet, unless a qualified biologist approved by the department verifies through non-invasive methods that either 1) the birds have not begun egg laying and incubation; or 2) that juveniles form the occupied burrows are foraging independently and are capable of independent survival. Failure to implement this buffer zone could cause adult burrowing owls to abandon the nest, cause eggs or young to be directly impacted (crushed), and/or result in reproductive failure.

If burrowing owls occupy the site, during the non-breeding season, a passive relocation effort may be instituted.

9. If any wildlife is encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed.

Vegetation

10. For this Project, no riparian trees or shrubs with trunks greater than or equal to four (4) inches in diameter at breast height (DBH) will be removed. The riparian vegetation is sparse in the Project area, none the less; precautions shall be taken to avoid any unnecessary damage to any native vegetation by people or equipment for the duration of the Project.

Vehicles

11. Construction vehicles and heavy equipment access to the stream banks and bed shall be limited to predetermined ingress and egress corridors and shall be restricted to the dry portions of the channel. All other areas adjacent to the work site shall be considered an ESA and shall remain off-limits to construction equipment.

Pollution

12. Caltrans and all contractors and subcontractors shall be subject to the pollution protective and other features of Department of Transportation Standard Specifications Section 7-1.01G and Fish and Game Code Sections 5650 and 12015. In addition, all Project-generated debris, building materials, and rubbish shall be removed from the river and from areas where such materials could be washed into it.

13. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than 75 feet from the stream channel and banks. 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 life. Stationary equipment such as cranes, drill rig, pile driver and similar equipment, located within or adjacent to the stream, shall be positioned over drip-pans.

14. If a spill should occur, cleanup shall begin immediately. The Department shall be notified as soon as possible by Caltrans and shall be consulted regarding further cleanup procedures.

15. 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. Excavated materials shall not be stockpiled in a location where they could discharge into the channel without implementing management measures to prevent accidental discharge into the stream.

Erosion

16. All disturbed soils shall be stabilized to reduce erosion potential, both during and following construction. Erosion control Best Management Practices (BMPs) shall be applied to all disturbed areas.

Fill/Spoil

17. 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.

18. Fill shall be limited to the minimal amount necessary to accomplish the agreed activities. Excess fill material shall be moved off-site at Project completion.

19. All cleared debris shall be removed from the normal high water areas of a stream or channel and shall not be redeposited within the flood plain. Spoil sites shall not be located within a stream or wetland, where spoil could be washed back into a stream, or where it covers aquatic or riparian vegetation.

Restoration

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

21. Caltrans shall make the final contour of the site match the adjacent slope of the land and provide the appropriate surface water drainage. All areas subject to temporary ground disturbance, including storage and staging areas, temporary roads, pipeline corridors, etc., shall be recontoured, if necessary, and revegetated to promote restoration of the area.

22. All areas subject to ground disturbance on the bank shall be stabilized. Planting, seeding with native species, and mulching is conditionally acceptable. Where suitable vegetation cannot reasonably be expected to become established, non-erodible material shall be used for such stabilization. Any installation of non-erodible material, not included in the original Project description, shall be coordinated with the Department. Coordination may include the negotiation of additional Agreement Provisions for this activity.

MONITORING AND REPORTING PROGRAM (MRP):

PURPOSE

The purpose of the MRP is to ensure that the protective measures required by the Department are properly implemented, and to monitor the effectiveness of those measures.

OBLIGATIONS OF THE OPERATOR

Caltrans shall have primary responsibility for monitoring compliance with all protective measures included as "Provisions" in this Agreement. Protective measures must be implemented within the time periods indicated in the Agreement and the program described below.

Caltrans shall submit the following Reports to the Department:

- Verification of employee training (Provision 2).
- Construction/work schedule (Provision 3).
- Wildlife survey results (Provisions 6, 7, and 8).
- A Final Project Report submitted 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. "Before and After" photo documentation of the Project site shall be required.

In addition to the above monitoring and reporting requirements, the Department requires as part of this MRP that Caltrans:

- Immediately notify the Department in writing if monitoring reveals that any of the protective measures were not implemented during the period indicated in this program, or if it anticipates that measures will not be implemented within the time period specified.

- Immediately notify the Department 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.

VERIFICATION OF COMPLIANCE:

The Department shall verify compliance with protective measures to ensure the accuracy of Caltrans' monitoring and reporting efforts. The Department may, at its sole discretion, review relevant Project documents maintained by Caltrans, interview Caltrans' employees and agents, inspect the Project area, and take other actions to assess compliance with or effectiveness of protective measures for the Project.

CONCURRENCE:

APPROVED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on 6/10, 2010.

Jeffrey R. Single, Ph.D.
Regional Manager
Central Region

ACKNOWLEDGMENT

The undersigned acknowledges receipt of this Agreement and, by signing, accepts and agrees to comply with all terms and conditions contained herein. The undersigned also acknowledges that adequate funding shall be made available to implement the measures required by this Agreement.

By: _____ Date: 6/14/2010

Karen Bewley
California Department of Transportation

AGREEMENT

California Fish and Game Code Section 1602
Stream Alteration Agreement No. 2009-0203-R4
California Department of Transportation
Prunedale Creek, Pesante Creek and Unnamed Drainages – Monterey County
Prunedale Improvement Project Blackie-Reese
05-SLO-101 PM R91.2-100.4 EA 05-0161E0

Parties:

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

California Department of Transportation
Karen Bewley
50 Higuera Street
San Luis Obispo, California 93401

WHEREAS:

1. Ms. Karen Bewley, representing the California Department of Transportation (referred to as "Caltrans") on November 16, 2009, notified ("Notification" No. 2009-0203-R4) the Department of Fish and Game ("Department") of their intent to divert or obstruct the natural flow of, or change the bed or banks of, or use materials from Prunedale Creek, Pesante Creek, and unnamed drainages in Monterey County, waters over which the Department asserts jurisdiction pursuant to Division 2, Chapter 6 of the California Fish and Game Code.

2. Caltrans may not commence any activity that is subject to Fish and Game Code Sections 1600 et seq., until the Department has found that such Project shall not substantially adversely affect an existing fish or wildlife resource or until the Department's proposals, or the decisions of a panel of arbitrators, have been incorporated into such projects.

3. Fish and Game Code Sections 1600 et seq., make provisions for the negotiation of agreements regarding the delineation and definition of appropriate activities, Project modifications and/or specific measures necessary to protect fish and wildlife resources.

4. The Department has determined that without the protective features identified in this Agreement, the activities proposed in the Notification could substantially adversely affect fish and wildlife.

NOW THEREFORE, IT IS AGREED THAT:

1. The receipt of this document ("Agreement"), by Caltrans, satisfies the Department's requirement to notify Caltrans of the existence of an existing fish and wildlife resource that may be substantially adversely affected by the Project that is described in the Notification.

2. The contents of this Agreement constitute the Department's proposals as to measures necessary to protect fish and wildlife resources, and satisfy the Department's requirement to submit these proposals to Caltrans.

3. The signature of Caltrans' representative on this Agreement constitutes Caltrans' commitment to incorporate the Department's proposals into the Project that is described in the Notification.

4. This Agreement does not exempt Caltrans from complying with all other applicable local, State, and Federal law or other legal obligations.

5. This Agreement, alone, does not constitute or imply the approval or endorsement of a Project, or of specific Project features, by the Department, beyond the Department's limited scope of responsibility, established by Code Sections 1600 et seq. This Agreement does not therefore assure concurrence, by the Department, with the issuance of permits from this or any other agency. Independent review and recommendations shall be provided by the Department as appropriate on those projects where local, State, or Federal permits or environmental reports are required.

6. This Agreement does not authorize the "take" (defined in Fish and Game Code Section 86 as hunt, pursue, catch, capture, kill; or attempt to hunt, pursue, catch, capture, or kill) of State-listed threatened or endangered species. If the Operator, in the performance of the agreed work, discovers the presence of a listed species in the Project work area, work shall stop immediately. Caltrans shall not resume activities authorized by this Agreement until such time as valid "take" permits are obtained from the Department, pursuant to Fish and Game Code Sections 2081(a) and 2081(b), as appropriate.

7. To the extent that the Provisions of this Agreement provide for the diversion of water, they are agreed to with the understanding that Caltrans possesses the legal right to so divert such water.

8. To the extent that the Provisions of this Agreement provide for activities that require Caltrans to trespass on another owner's property, they are agreed to with the understanding that Caltrans possesses the legal right to so trespass.

9. To the extent that the Provisions of this Agreement provide for activities that are subject to the authority of other public agencies, said activities are agreed to with the understanding that all appropriate permits and authorizations shall be obtained prior to commencing agreed activities.

10. All Provisions of this Agreement remain in force throughout the term of the Agreement. Any Provision of the Agreement may be amended at any time, provided such amendment is agreed to in writing by both parties. Mutually approved amendments become part of the original Agreement and are subject to all previously negotiated Provisions. The Agreement may be terminated by either party, subject to 30 days written notification.

11. Caltrans shall provide a copy of the Agreement to the Project supervisors and all contractors and subcontractors. Copies of the Agreement shall be available at work sites during all periods of active work and shall be presented to Department personnel upon demand.

12. Caltrans agrees to provide the Department access to the Project site at any time to ensure compliance with the terms, conditions, and Provisions of this Agreement.

13. Caltrans and any contractor or subcontractor, working on activities covered by this Agreement, are jointly and separately liable for compliance with the Provisions of this Agreement. Any violation of the Provisions of this Agreement is cause to stop all work immediately until the problem is reconciled. Failure to comply with the Provisions and requirements of this Agreement may result in prosecution.

14. Caltrans assumes responsibility for the restoration of any fish and wildlife habitat which may be impaired or damaged either directly or, incidental to the Project, as a result of failure to properly implement or complete the mitigation features of this Agreement, or from activities which were not included in the Caltrans' Notification.

15. It is understood that the Department enters into this Agreement for purposes of establishing protective features for fish and wildlife, in the event that a Project is implemented. The decision to proceed with the Project is the sole responsibility of Caltrans, and is not required by this Agreement. It is agreed that all liability and/or incurred costs, related to or arising out of Caltrans' Project and the fish and wildlife protective conditions of this Agreement, remain the sole responsibility of Caltrans. Caltrans agrees to hold harmless and defend the Department against any related claim made by any party or parties for personal injury or other damage.

16. The terms, conditions, and Provisions contained herein constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that Caltrans is precluded from doing other activities at the site. However, activities not specifically agreed to and resolved by this Agreement are subject to separate notification pursuant to Fish and Game Code Sections 1600 et seq.

California Environmental Quality Act (CEQA) Compliance: In approving this Agreement, the Department is independently required to assess the applicability of CEQA. The features of this Agreement shall be considered as part of the overall Project description. Caltrans' concurrence signature on this Agreement serves as confirmation to the Department that the activities that shall be conducted under the terms of this Agreement are consistent with the Project described in Notification No. 2009-0203-R4. Caltrans submitted an Environmental Impact Report dated March 2006, State Clearinghouse Number 2004091124, for the parent Project, the Prunedale Improvement Project (PIP). Due to the large total number of 1600 jurisdictional locations (26), this Project has been divided into four areas for the purpose of the Stream Alteration Agreements. This Agreement will address the area known as "Blackie-Reese" which includes locations 3 through 10.

The Department, as a CEQA Responsible Agency, shall make findings and submit a Notice of Determination to the State Clearinghouse upon signing this Agreement.

This Agreement contains a Monitoring and Reporting Program (MRP), to incorporate monitoring and reporting requirements for the activities authorized in this Agreement.

Project Location: The work authorized by this Agreement will occur adjacent to the existing State Route (SR) 101 at eight locations between Post Mile (PM) 94.1 and 94.4 along Prunedale Creek, Pesante Creek, and unnamed drainages in Bolsa Nueva Moro Cojo Landgrant in Monterey County (**Figure 1**). The spatial relationship between Blackie-Reese and the other three areas of the PIP is shown in **Figure 2**.

Project Description: Caltrans' Notification includes Fish and Game Notification Form FG2023 and supporting documents. The Notification comprises Caltrans' Project description, and it is used as the basis for establishing the protective Provisions that are included in this Agreement. Any changes or additions to the Project as described in the Notification shall require additional consultation and protective Provisions. The Department's concurrence with Caltrans' CEQA Determination is based upon Caltrans' commitment to full implementation of the Provisions of this Agreement. Caltrans has proposed the following scope of work. The bulleted items comprise the activities authorized by this Agreement.

- Location 3 – To accommodate the extension of Prunedale South Road, the Project would culvert a small, unnamed drainage identified in Caltrans' plans as OW 11. Rock Slope Protection (RSP) would be placed at the outlet to dissipate hydrologic energy and prevent erosion. Thirty-six willow plantings will be installed at this outlet to enhance the drainage and create riparian vegetation.

- Location 4 – The extension of Prunedale South Road would also require an existing culvert that conveys Prunedale Creek (OW 12) to be replaced with a larger and longer box culvert at the proposed intersection of Blackie Road and Prunedale South Road. RSP would be placed at the culvert inlet and outlet.

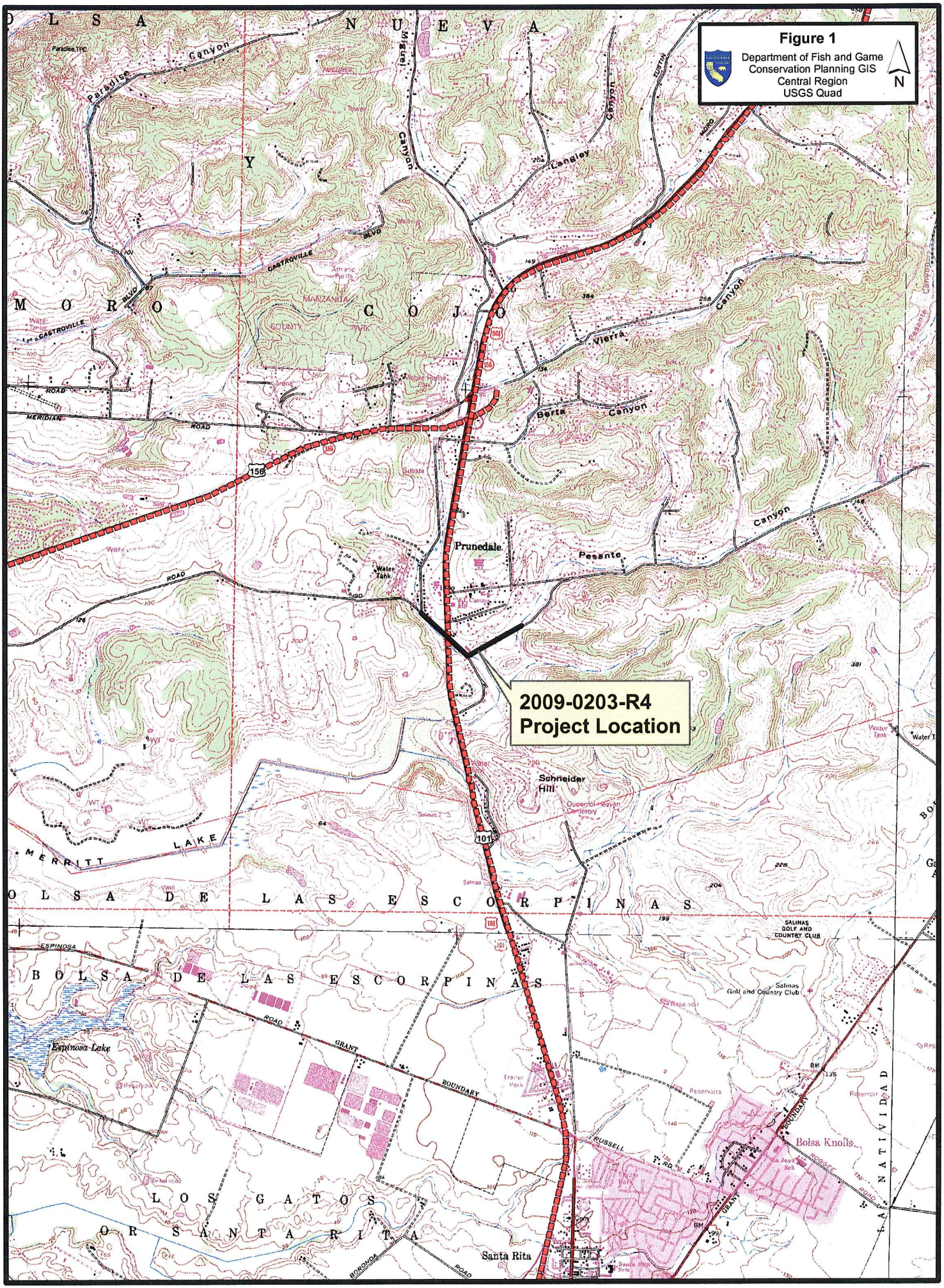


Figure 1
Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad
N
2009-0203-R4
Project Location
Prunedale
Paradise Canyon
Langley Canyon
Vierra Canyon
Berta Canyon
Pesante Canyon
Schneider Hill
MORO COJO
BOLSA DE LAS ESCORPINAS
LOS GATOS
OR SANTA RITA
LA NATIVIDAD
MERRITT LAKE
Espinosa Lake
Bolsa Knolls
Santa Rita
CASTROVILLE BLVD
MERIDIAN ROAD
ESPINOSA ROAD
GRANT BOUNDARY
RUSSELL RD
BOSONDA ROAD
156
101

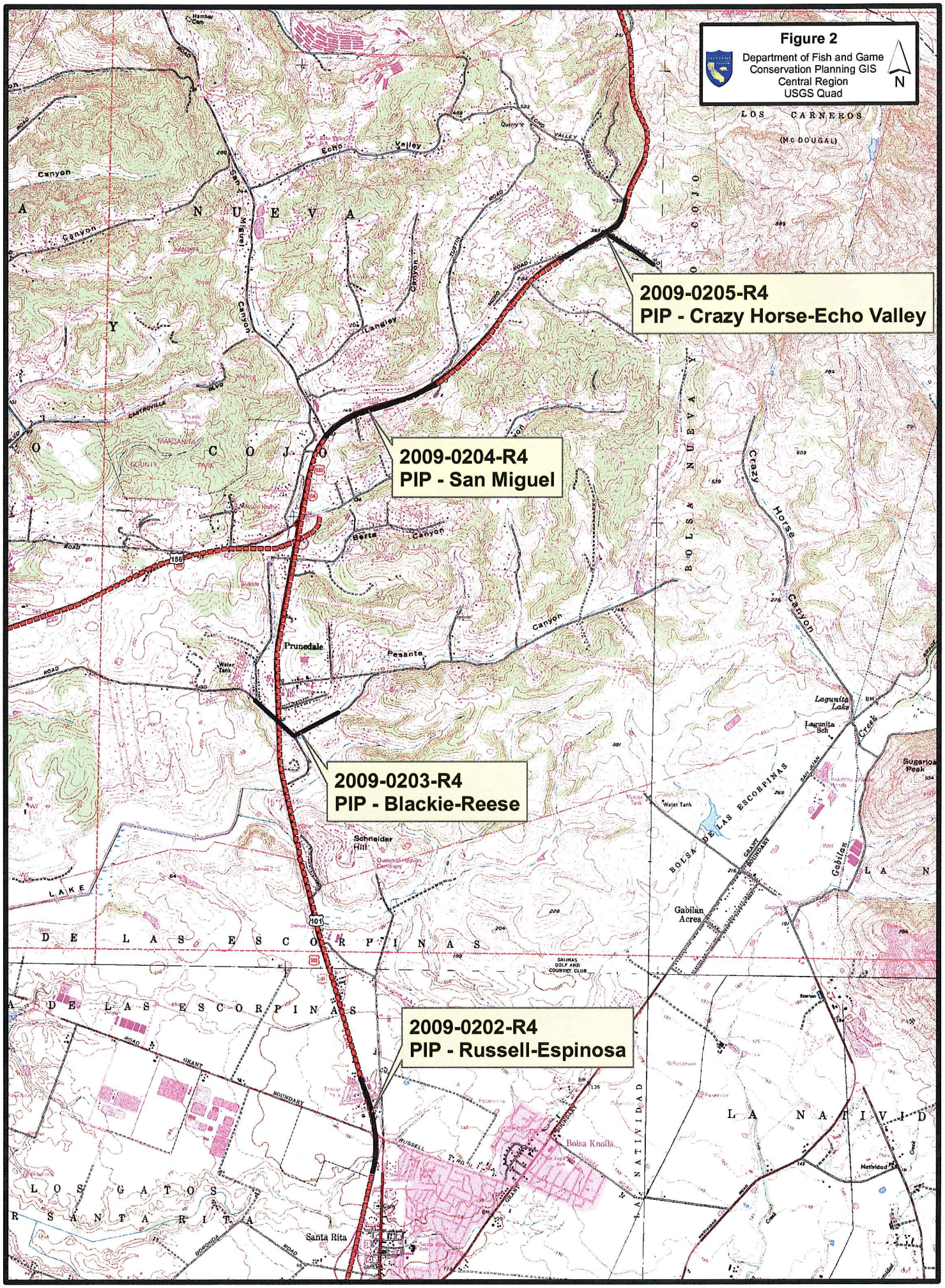


Figure 2
Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad
N
2009-0205-R4
PIP - Crazy Horse-Echo Valley
2009-0204-R4
PIP - San Miguel
2009-0203-R4
PIP - Blackie-Reese
2009-0202-R4
PIP - Russell-Espinosa
LOS CARNEROS
(McDOUGAL)
Echo Valley
Canyon
Langley
Prunedale
Pesante
Berta Canyon
Crazy Horse Canyon
Lagunita Lake
Lagunita Sch
Sugarloaf Peak
Schneider Hill
Gabilan Acres
Gabilan Creek
Water Tank
BOLSA DE LAS ESCORPINAS
BOLSA NUEVA
LAKE DE LAS ESCORPINAS
LA NATIVIDAD
Bolsa Knolls
Natividad
Santa Rita
LOS GATOS
SANTA RITA
GRANT BOUNDARY
RUSSELL RD
BONDONA ROAD
SALINAS GOLF AND COUNTRY CLUB
Quasimodo Memorial Cemetery
101
156

- Location 5 – At the outlet of this new culvert, Caltrans proposes to restore 540 feet of Prunedale Creek and its associated riparian/wetlands. In 2005, the landowner illegally disturbed this stretch of Prunedale Creek. At that time, the creek meandered through the property. The landowner filled the creek and forced it into a straight narrow alignment directly adjacent to Blackie Road. The adjacent riparian wetland vegetation was removed and soil was imported to fill the wetlands. This Project would restore the creek alignment to a meandering path approximately 40 to 50 feet away from Blackie Road. Gentle slopes (4:1) and bioengineering will be used to re-establish the creek banks. To restore the riparian wetlands, 340 willows (*Salix lucida*), 101 spike rush (*Eleocharis macrostachya*), 151 common rush (*Juncus effuses*), 151 western rush (*Juncus occidentalis*), 302 low bulrush (*Scirpus cemuss*), 302 small fruited bulrush (*Scirpus microcarpus*), 10 sycamore (*Platunus racemosa*), and 15 cottonwoods (*Populus trichocarpus*) will be planted.

- Location 6 – The Project would replace an existing culvert that conveys Prunedale Creek (OW 9) under Reese Circle, just prior to its intersection with Cross Road. The new culvert would be a double box culvert with RSP at the inlet and outlet to dissipate energy and prevent erosion. A three (3) inch sand bedding would be placed in the bottom of the cement culvert to create a partially natural bottom.

- Location 7 – Immediately downstream from Location 6, the creek flows through another culvert under Cross Road. The Project would replace this culvert with a triple box culvert. RSP would be placed at the inlet and outlet to dissipate energy and prevent erosion. This culvert would also get a six (6)-inch sand bedding. Thirty willows (*Salix lucida*) would be planted at the outlet to restore riparian vegetation.

- Location 8 – The Project would also fill SW 4 and OW 9 to accommodate the widening of Cross Road. These roadside drainages (tributaries to Prunedale Creek) would be replaced with similar natural bottom drainages adjacent to the new edge of pavement.

- Location 9 – The Project would replace an existing culvert that conveys Pesante Creek (OW 13) under Cross Road to accommodate the widening. RSP would be placed at the inlet and outlet to dissipate energy and prevent erosion. Fifteen willows (*Salix lucida*) would be planted at the outlet to create riparian vegetation.

- Location 10 – The Project would also create a new road, Polluck Lane, which will require a new culvert to convey Pesante Creek under the new road just prior to its intersection with Cross Road. The new culvert would be a double box culvert with RSP placed at the inlet and outlet to dissipate energy and prevent erosion. Nineteen willows (*Salix lucida*) and 3 cottonwoods (*Populus trichocarpus*) would be planted at the outlet; 33 willows (*Salix lucida*) and 5 cottonwoods (*Populus trichocarpus*) would be planted at the inlet to create and restore riparian vegetation.

- Project impacts at Blackie-Reese include permanent impacts to 0.24 acres and temporary impacts to 0.13 acres of channelized streambeds and roadside ditches. Portions of the temporary impacts include the restoration site. Trees to be removed include a total of 22 willows (*Salix* sp.) between four (4) and 24 inches diameter at breast height (DBH), 4 live oaks (*Quercus agrifolia*) four (4) to 34 inches DBH, and 3 cottonwoods (*Populus trichocarpus*) eight (8) to 16 inches DBH.

- Compensation measures for the entire PIP include planting and restoration on-site and the preservation of an off-site parcel within the watershed. The PIP Project requires 3.3 acres of wetland, 0.33 acres of other "Waters of the United States," 33.12 acres of oak woodland, and 24.95 acres of maritime chaparral from the off-site parcel. The remaining resources on the parcel would be available as potential credits for future projects

Plant and Animal Species of Concern: This Agreement is intended to avoid, minimize, and mitigate adverse impacts to the fish and wildlife resources that occupy the area of the unnamed drainages, Prunedale Creek, Pesante Creek, and the immediate adjacent riparian habitat. The protective measures described in this Agreement must be implemented in order to avoid impacts, within the area covered by this Agreement, to the following species: the Federal and State candidate California tiger salamander (*Ambystoma californiense*); Federal threatened, State Species of Special Concern California red-legged frog (*Rana aurora draytonii*); Species of Special Concern Western pond turtle (*Actinemys* marmorata); Species of Special Concern Monterey dusky-footed woodrat (*Neotoma fuscipes luciana*), as well as the other birds, mammals, fish, reptiles, amphibians, invertebrates, and plants that comprise the local riparian ecosystem. Department files contain lists of species that could be subject to potential generated impacts from this Project.

PROVISIONS:

General

1. The Notification, together with all supporting documents, is hereby incorporated into this Agreement to describe the location and features of the proposed Project. Caltrans agrees that all work shall be done as described in the Notification and supporting documents, incorporating all wildlife resource protection features, mitigation measures, and Provisions as described in this Agreement. Caltrans further agrees to notify the Department of any modifications that need to be made to the Project plans submitted to the Department. At the discretion of the Department, modifications may be deemed minor, requiring an amendment to this Agreement, or substantial requiring the submission of a new notification application. If the latter is the case, this Agreement becomes null and void. Failure to notify the Department of changes to the original plans or subsequent amendments to this Agreement may result in the Department suspending or canceling this Agreement.

2. Before the start of construction/work activities covered under this Agreement, all persons employed or otherwise working on the Project site shall have received training from Caltrans' staff, or approved alternate trainer, on the content of this Agreement, the resources at stake, and the legal consequences of non-compliance. The Education program shall include a discussion of the biology, general behavior, and habitat needs of all sensitive species with the potential to be in the Project area. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. All employees shall sign an attendance sheet stating they have received the training and understand all the protection measures.

3. When known, prior to beginning work, Caltrans shall provide a construction/work schedule to the Department (fax to Laura Peterson-Diaz, Environmental Scientist, at (559) 243-4020). Please reference the Agreement number. Caltrans shall also notify the Department upon the completion of the activities covered by this Agreement.

4. Agreed activities within the bed, bank, or channel may commence any time after the Department has signed this Agreement. This Agreement shall remain in effect for five (5) years beginning on the date signed by the Department. If the Project is not completed prior to the expiration date defined above, Caltrans shall contact the Department to negotiate a new expiration date and any new requirements.

Flagging/Fencing

5. Within the riparian corridor, Caltrans shall identify the upstream and downstream limits of the minimum work area required, access routes, the Project footprint, plus all Environmentally Sensitive Areas (ESA). These boundaries shall be defined by the Caltrans' Project engineer and biologist, and flagged/fenced prior to the beginning of construction. These limits shall not extend beyond Caltrans' right-of-way and/or the construction easement, and shall be confined to the minimal area needed to accomplish the proposed work. Flagging/fencing shall be maintained in good repair for the duration of construction in the area under 1602 jurisdiction.

Wildlife

6. An approved biologist shall perform general wildlife surveys of the Project area (including access routes and storage areas) prior to Project construction start with special attention being paid to the sensitive species noted above and shall report any possible adverse affect to fish and wildlife resources not originally reported. If the survey shows presence of any wildlife species which could be impacted, Caltrans shall contact the Department and mitigation, specific to each incident, shall be developed. 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 may need to be conducted, before work can begin.

7. If work is done between March 1 and September 1, then in order to protect nesting birds, an approved biologist shall survey for nesting activity in and adjacent to the defined "work area", before construction begins. If any nesting activity is observed, which could be disturbed by the proposed scope of work, Caltrans shall contact the Department and mitigation, specific to each incident, shall be developed.

8. If any wildlife is encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed.

California Tiger Salamander (CTS)

9. Because the Project site is within the geographic range of CTS Caltrans has already conducted a habitat evaluation to determine the likelihood (low, moderate, or high) of CTS occurring within the proposed work area footprint. Caltrans has determined that the likelihood is very low and that avoidance measures will prevent any take of CTS from occurring. The United States Fish and Wildlife Service has concurred with this determination.

10. No impact to CTS shall occur at any time as a result of Project activities.

11. At least 30 days before initiating ground- or vegetation-disturbing activities, Caltrans shall submit to the Department 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. The Designated Biologist shall be responsible for monitoring all ground- or vegetation-disturbing activities in areas of potential CTS habitat to avoid all impact to CTS and to minimize disturbance of potential CTS habitat.

12. 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 the Department shall be liable for any costs incurred in complying with the Conditions of Approval, including cease-work orders issued by the Department.

13. All Project activity 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.

14. The Designated Biologist shall be on-site daily while construction and/or surface-disturbing activities are taking place to avoid 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.

15. If any CTS are found in the Project footprint during construction, all work shall stop immediately and Caltrans shall immediately contact the Department. As stated in Provision 6, a new Agreement and/or a 2081(b) State Incidental Take Permit may be necessary and a new CEQA analysis may need to be conducted, before work can resume.

Vegetation

16. Compensation measures for the entire PIP include planting and restoration on-site and the preservation of an off-site parcel within the watershed. In addition to specific planting described above, 0.26 acres of native seed would be installed within or directly adjacent to the Department's jurisdiction. The off-site parcel contains approximately 5.3 acres of wetland, 2.2 acres of riparian, 38 acres of oak woodland, 83 acres of maritime chaparral, and 2.4 acres of sage scrub. The Mitigation and Monitoring Proposal submitted for the off-site parcel with Caltrans' Notification shall be followed.

17. For this Project, 22 willows (*Salix* sp.) between four (4) and 24-inches DBH, 4 live oaks (*Quercus agrifolia*) four (4) and 34-inches DBH, and 3 cottonwoods (*Populus trichocarpus*) eight (8) and 16-inches DBH will be removed. Trees shall be removed prior to nesting season February 15. On-site tree plantings shall be monitored for three (3) years from the last date of planting and a minimum 70 percent survivorship is necessary. See also Revegetation Plan described under Restoration below.

18. Precautions shall be taken to avoid any unnecessary damage to plants and vegetation by people or equipment for the duration of the Project.

Vehicles

19. Construction vehicles and heavy equipment access to the stream banks and bed shall be limited to predetermined ingress and egress corridors and shall be restricted to the dry portions of the channel. All other areas adjacent to the work site shall be considered an ESA and shall remain off-limits to construction equipment.

Pollution

20. Caltrans and all contractors and subcontractors shall be subject to the pollution protective and other features of Department of Transportation Standard Specifications Section 7-1.01G and Fish and Game Code Sections 5650 and 12015. In addition, all Project-generated debris, building materials, and rubbish shall be removed from the river and from areas where such materials could be washed into it.

21. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than 75 feet from the stream channel and banks. 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 life. Stationary equipment such as cranes, drill rig, pile driver, and similar equipment, located within or adjacent to the stream, shall be positioned over drip-pans.

22. If a spill should occur, cleanup shall begin immediately. The Department shall be notified as soon as possible by Caltrans and shall be consulted regarding further cleanup procedures.

23. 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. Excavated materials shall not be stockpiled in a location where they could discharge into the channel without implementing management measures to prevent accidental discharge into the stream.

Erosion

24. All disturbed soils shall be stabilized to reduce erosion potential, both during and following construction. Erosion control Best Management Practices (BMPs) shall be applied to all disturbed areas.

Fill/Spoil

25. 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.

26. Fill shall be limited to the minimal amount necessary to accomplish the agreed activities. Excess fill material shall be moved off-site at Project completion.

27. All cleared debris shall be removed from the normal high water areas of a stream or channel and shall not be redeposited within the flood plain. Spoil sites shall not be located within a stream or wetland, where spoil could be washed back into a stream, or where it covers aquatic or riparian vegetation.

Restoration

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

29. Caltrans shall make the final contour of the site match the adjacent slope of the land and provide the appropriate surface water drainage. All areas subject to temporary ground disturbance, including storage and staging areas, temporary roads, pipeline corridors, etc., shall be recontoured, if necessary, and revegetated to promote restoration of the area.

30. All areas subject to ground disturbance on the bank shall be stabilized. Planting, seeding with native species, and mulching is conditionally acceptable. Where suitable vegetation cannot reasonably be expected to become established, non-erodible material shall be used for such stabilization. Any installation of non-erodible material, not included in the original Project description, shall be coordinated with the Department. Coordination may include the negotiation of additional Agreement Provisions for this activity.

31. Caltrans shall develop a Revegetation Plan as indicated in Provision 17 above, and submit it to the Department for approval within 90 days of the commencement of work on the Project. The plans shall include proposed monitoring, maintenance activities including irrigation and weeding as needed, and replanting if necessary to ensure a minimum of 70 percent survivorship for three (3) years, after the last planting, (i.e., if several trees do not survive and repeated plantings are necessary, then monitoring, maintenance, and annual reporting shall continue for the subsequent three (3) years). Planting on-site shall be done the first appropriate season after the Project is complete. Annual reports on survivorship, due January 31 each year, shall include photographs taken from the same perspective before and after planting and each following year.

MONITORING AND REPORTING PROGRAM (MRP):

PURPOSE

The purpose of the MRP is to ensure that the protective measures required by the Department are properly implemented, and to monitor the effectiveness of those measures.

OBLIGATIONS OF THE OPERATOR

Caltrans shall have primary responsibility for monitoring compliance with all protective measures included as "Provisions" in this Agreement. Protective measures must be implemented within the time periods indicated in the Agreement and the program described below.

Caltrans shall submit the following Reports to the Department:

- Verification of employee training (Provision 2).
- Construction/work schedule (Provision 3).
- Wildlife survey results (Provisions 6 and 7).
- Revegetation Plan for on-site plantings (Provisions 17 and 31).
- A Final Project Report submitted 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. "Before and After" photo documentation of the Project site shall be required.

In addition to the above monitoring and reporting requirements, the Department requires as part of this MRP that Caltrans:

- Immediately notify the Department in writing if monitoring reveals that any of the protective measures were not implemented during the period indicated in this program, or if it anticipates that measures will not be implemented within the time period specified.
- Immediately notify the Department 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.

VERIFICATION OF COMPLIANCE:

The Department shall verify compliance with protective measures to ensure the accuracy of Caltrans' monitoring and reporting efforts. The Department may, at its sole discretion, review relevant Project documents maintained by Caltrans, interview Caltrans' employees and agents, inspect the Project area, and take other actions to assess compliance with or effectiveness of protective measures for the Project.

CONCURRENCE:

APPROVED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on 6/7, 2010.

Jeffrey R. Single, Ph.D.
Regional Manager
Central Region

ACKNOWLEDGMENT

The undersigned acknowledges receipt of this Agreement and, by signing, accepts and agrees to comply with all terms and conditions contained herein. The undersigned also acknowledges that adequate funding shall be made available to implement the measures required by this Agreement.

By: _____ Date: 6/14/2010

Karen Bewley
California Department of Transportation

AGREEMENT

California Fish and Game Code Section 1602
Stream Alteration Agreement No. 2009-0204-R4
California Department of Transportation
Tributaries to Prunedale Creek – Monterey County
Prunedale Improvement Project San Miguel
05-SLO-101 PM R91.2-100.4 EA 05-0161E0

Parties:

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

California Department of Transportation
Karen Bewley
50 Higuera Street
San Luis Obispo, California 93401

WHEREAS:

1. Ms. Karen Bewley, representing the California Department of Transportation (referred to as "Caltrans") on November 16, 2009, notified ("Notification" No.2009-0204-R4) the Department of Fish and Game ("Department") of their intent to divert or obstruct the natural flow of, or change the bed or banks of, or use materials from the tributaries to Prunedale Creek in Monterey County, waters over which the Department asserts jurisdiction pursuant to Division 2, Chapter 6 of the California Fish and Game Code.

2. Caltrans may not commence any activity that is subject to Fish and Game Code Sections 1600 et seq., until the Department has found that such Project shall not substantially adversely affect an existing fish or wildlife resource or until the Department's proposals, or the decisions of a panel of arbitrators, have been incorporated into such projects.

3. Fish and Game Code Sections 1600 et seq., make provisions for the negotiation of agreements regarding the delineation and definition of appropriate activities, Project modifications and/or specific measures necessary to protect fish and wildlife resources.

4. The Department has determined that without the protective features identified in this Agreement, the activities proposed in the Notification could substantially adversely affect fish and wildlife.

NOW THEREFORE, IT IS AGREED THAT:

1. The receipt of this document ("Agreement"), by Caltrans, satisfies the Department's requirement to notify Caltrans of the existence of an existing fish and wildlife resource that may be substantially adversely affected by the Project that is described in the Notification.

2. The contents of this Agreement constitute the Department's proposals as to measures necessary to protect fish and wildlife resources, and satisfy the Department's requirement to submit these proposals to Caltrans.

3. The signature of Caltrans' representative on this Agreement constitutes Caltrans' commitment to incorporate the Department's proposals into the Project that is described in the Notification.

4. This Agreement does not exempt Caltrans from complying with all other applicable local, State, and Federal law or other legal obligations.

5. This Agreement, alone, does not constitute or imply the approval or endorsement of a Project, or of specific Project features, by the Department, beyond the Department's limited scope of responsibility, established by Code Sections 1600 et seq. This Agreement does not therefore assure concurrence, by the Department, with the issuance of permits from this or any other agency. Independent review and recommendations shall be provided by the Department as appropriate on those projects where local, State, or Federal permits or environmental reports are required.

6. This Agreement does not authorize the "take" (defined in Fish and Game Code Section 86 as hunt, pursue, catch, capture, kill; or attempt to hunt, pursue, catch, capture, or kill) of State-listed threatened or endangered species. If the Operator, in the performance of the agreed work, discovers the presence of a listed species in the Project work area, work shall stop immediately. Caltrans shall not resume activities authorized by this Agreement until such time as valid "take" permits are obtained from the Department, pursuant to Fish and Game Code Sections 2081(a) and 2081(b), as appropriate.

7. To the extent that the Provisions of this Agreement provide for the diversion of water, they are agreed to with the understanding that Caltrans possesses the legal right to so divert such water.

8. To the extent that the Provisions of this Agreement provide for activities that require Caltrans to trespass on another owner's property, they are agreed to with the understanding that Caltrans possesses the legal right to so trespass.

9. To the extent that the Provisions of this Agreement provide for activities that are subject to the authority of other public agencies, said activities are agreed to with the understanding that all appropriate permits and authorizations shall be obtained prior to commencing agreed activities.

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11. Caltrans shall provide a copy of the Agreement to the Project supervisors and all contractors and subcontractors. Copies of the Agreement shall be available at work sites during all periods of active work and shall be presented to Department personnel upon demand.

12. Caltrans agrees to provide the Department access to the Project site at any time to ensure compliance with the terms, conditions, and Provisions of this Agreement.

13. Caltrans and any contractor or subcontractor, working on activities covered by this Agreement, are jointly and separately liable for compliance with the Provisions of this Agreement. Any violation of the Provisions of this Agreement is cause to stop all work immediately until the problem is reconciled. Failure to comply with the Provisions and requirements of this Agreement may result in prosecution.

14. Caltrans assumes responsibility for the restoration of any fish and wildlife habitat which may be impaired or damaged either directly or, incidental to the Project, as a result of failure to properly implement or complete the mitigation features of this Agreement, or from activities which were not included in the Caltrans' Notification.

15. It is understood that the Department enters into this Agreement for purposes of establishing protective features for fish and wildlife, in the event that a Project is implemented. The decision to proceed with the Project is the sole responsibility of Caltrans, and is not required by this Agreement. It is agreed that all liability and/or incurred costs, related to or arising out of Caltrans' Project and the fish and wildlife protective conditions of this Agreement, remain the sole responsibility of Caltrans. Caltrans agrees to hold harmless and defend the Department against any related claim made by any party or parties for personal injury or other damage.

16. The terms, conditions, and Provisions contained herein constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that Caltrans is precluded from doing other activities at the site. However, activities not specifically agreed to and resolved by this Agreement are subject to separate notification pursuant to Fish and Game Code Sections 1600 et seq.

California Environmental Quality Act (CEQA) Compliance: In approving this Agreement, the Department is independently required to assess the applicability of CEQA. The features of this Agreement shall be considered as part of the overall Project description. Caltrans' concurrence signature on this Agreement serves as confirmation to the Department that the activities that shall be conducted under the terms of this Agreement are consistent with the Project described in Notification No. 2009-0204-R4. Caltrans submitted an Environmental Impact Report dated March 2006, State Clearinghouse Number 2004091124, for the parent Project, the Prunedale Improvement Project (PIP). Due to the large total number of 1600 jurisdictional locations (26), this Project has been divided into four areas for the purpose of the Stream Alteration Agreements. This Agreement will address the area known as "San Miguel" which includes locations 11 to 17.

The Department, as a CEQA Responsible Agency, shall make findings and submit a Notice of Determination to the State Clearinghouse upon signing this Agreement.

This Agreement contains a Monitoring and Reporting Program (MRP), to incorporate monitoring and reporting requirements for the activities authorized in this Agreement.

Project Location: The work authorized by this Agreement will occur adjacent to the existing State Route (SR) 101 at eight locations along the tributaries to Prunedale Creek between Post Mile (PM) 96.1 and 96.9 in Bolsa Nueva Moro Cojo Landgrant in Monterey County (**Figure 1**). The spatial relationship between San Miguel and the other three areas of the PIP is shown in **Figure 2**.

Project Description: Caltrans' Notification includes Fish and Game Notification Form FG2023 and supporting documents. The Notification comprises Caltrans' Project description, and it is used as the basis for establishing the protective Provisions that are included in this Agreement. Any changes or additions to the Project as described in the Notification shall require additional consultation and protective Provisions. The Department's concurrence with Caltrans' CEQA Determination is based upon Caltrans' commitment to full implementation of the Provisions of this Agreement. Caltrans has proposed the following scope of work. The bulleted items comprise the activities authorized by this Agreement.

- Location 11 –Directly adjacent to the San Miguel southbound off-ramp, in the existing seasonal wetland (SW 49), nine sycamore (*Platunus racemosa*) and nine cottonwoods (*Populus trichocarpus*) will be planted.

- Location 12 – Further north, the Project would place RSP at the outlet of an existing culvert that conveys a tributary to Prunedale Creek (OW 22) under Messick Road.

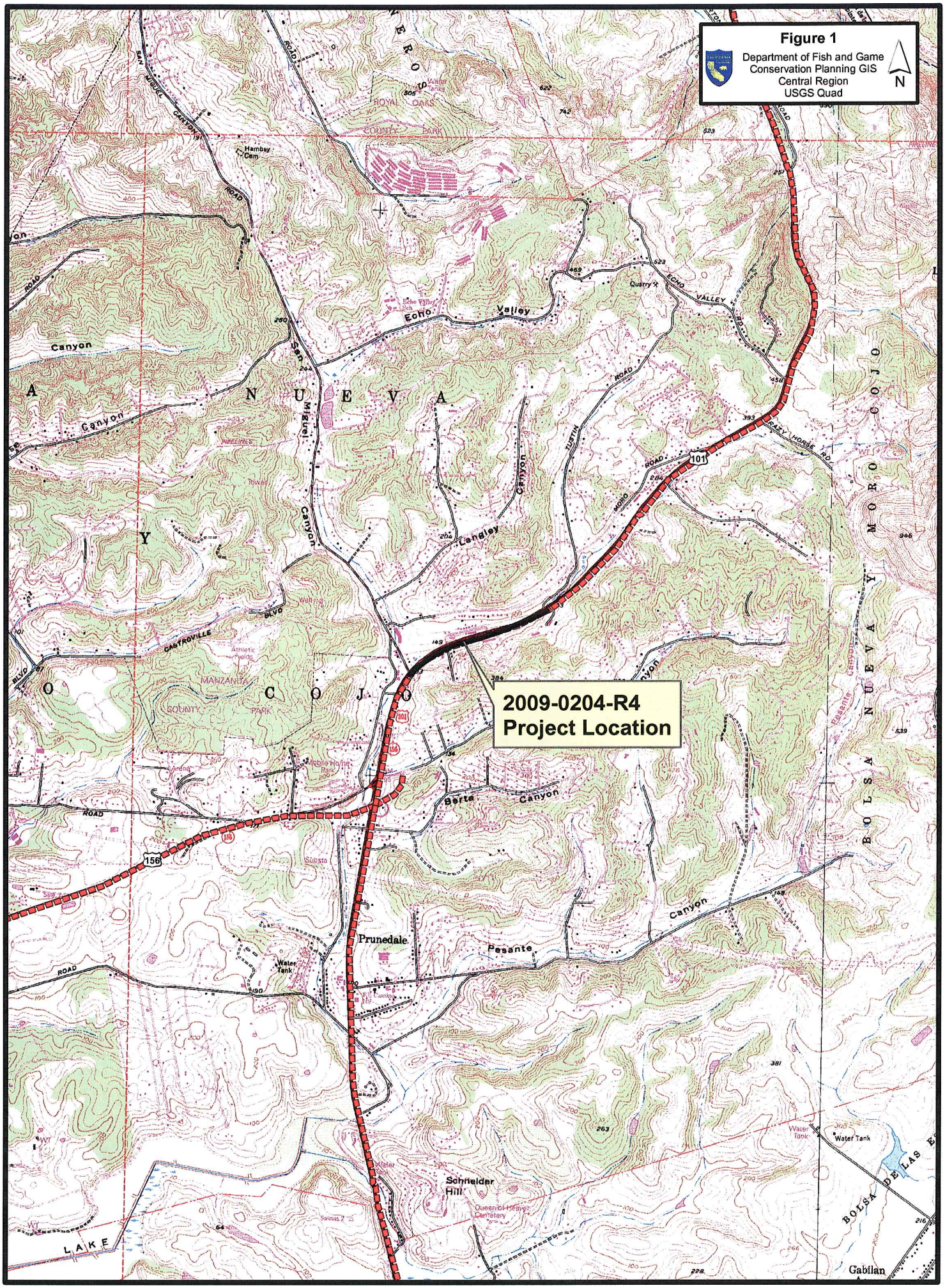
Figure 1
Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad
N
2009-0204-R4
Project Location
Prunedale
Pesante
Schneider Hill
Echo Valley
Langley Canyon
Berta Canyon
Canyon
Quarry
Water Tank
Hambey Cem
ROYAL OAKS
COUNTY PARK
MANZANITA
COUNTY PARK
CASTROVILLE
BLVD
ROAD
RAZY HORSE RD
JUSTIN
MORO
ECHO VALLEY
SAN MIGUEL CANYON
Substa
Athletic Fields
Mobile Home Park
Tower
Pipelines
Queen of Heaven Cemetery
Gabilan
LAKE
BOLSA DE LAS E
BOLSA NUEVA Y MORO COJO
A N U E V A
Y
O C O J O
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156
156
101

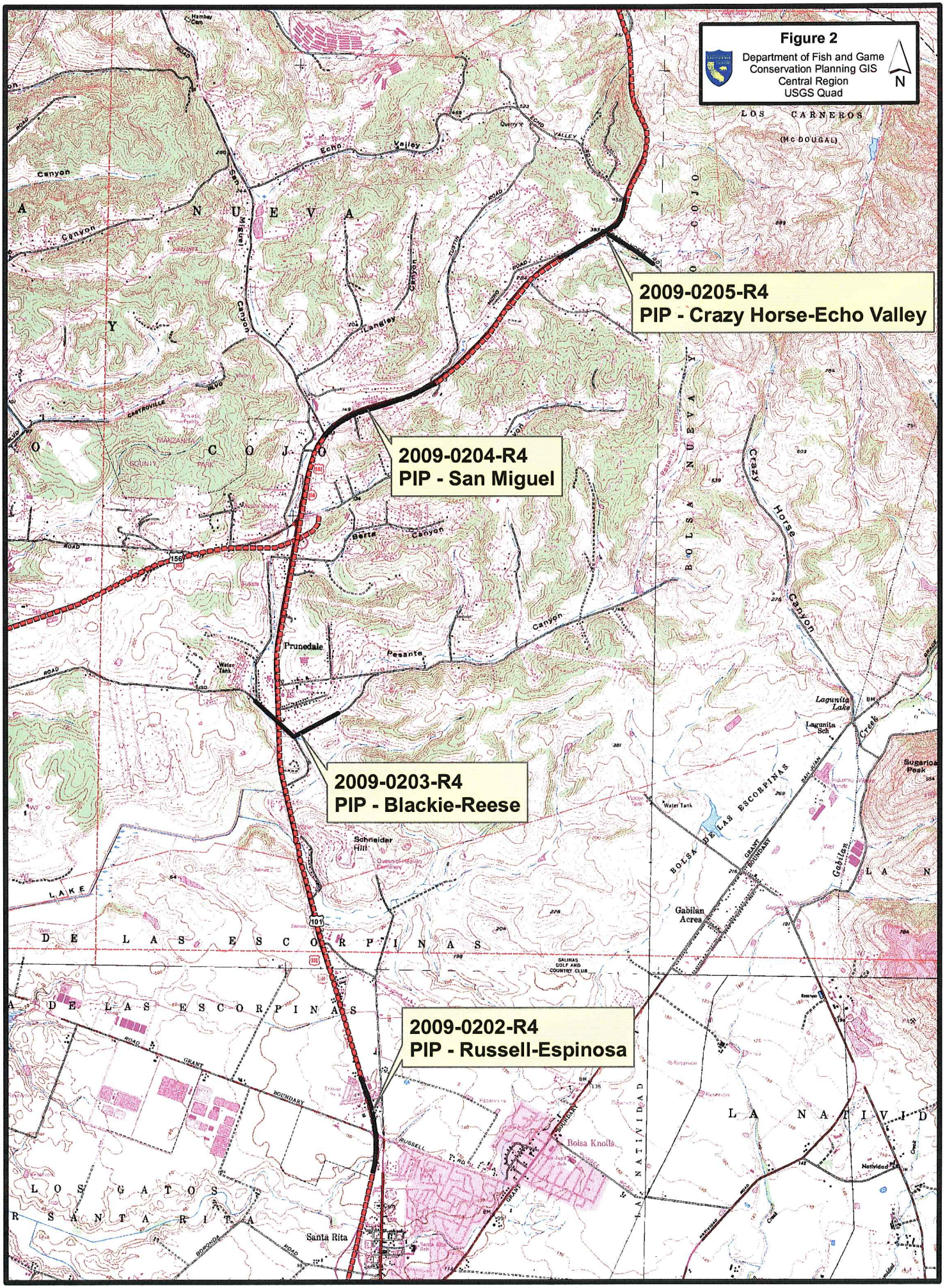
Figure 2
Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad
N
2009-0205-R4
PIP - Crazy Horse-Echo Valley
2009-0204-R4
PIP - San Miguel
2009-0203-R4
PIP - Blackie-Reese
2009-0202-R4
PIP - Russell-Espinosa
LOS CARNEROS
(Mc DOUGAL)
Echo Valley
Canyon
Langley
Berta Canyon
Prunedale
Pesante
Crazy Horse Canyon
Lagunita Lake
Lagunita Sch
Sugarloaf Peak
Schneider Hill
Gabilan Acres
Gabilan Creek
Bolsa Knolls
Santa Rita
Natividad
LAKE
DE LAS ESCORPINAS
LA NATIVIDAD
LOS GATOS
SANTA RITA
BOLSA NUEVA Y COJO
GALINAS GOLF AND COUNTRY CLUB
GRANT BOUNDARY
RUSSELL ROAD
BOROUGH ROAD
CASTROVILLE BLVD
MARZANITA PARK
Water Tank
Hambay Can

- Location 13 – Continuing upstream, the Project would construct a small down drain that would convey roadside run-off into an existing tributary to Prunedale Creek (OW 23). The placement of RSP at the outlet of this culvert would encroach on the bank of the existing drainage. Ten willows (*Salix lucida*) would be planted around the RSP.

- Location 14 – Approximately 120 feet upstream, the Project would extend an existing down drain that conveys roadside run-off into an existing tributary to Prunedale Creek (OW 23). The placement of RSP at the outlet of this culvert would encroach on the bank of the existing drainage. Ten willows (*Salix lucida*) would be planted around the RSP.

- Location 15 – Approximately 656 feet upstream, the Project would construct a small down drain that conveys roadside run-off into an existing tributary to Prunedale Creek (OW 23). The placement of RSP at the outlet of this culvert would encroach on the bank of the existing drainage.

- Location 16 – Just 50 feet upstream from Location 15, the Project would construct a small down drain that conveys roadside run-off into an existing tributary to Prunedale Creek (OW 23). The placement of RSP at the outlet of this culvert would encroach on the bank of the existing drainage.

- Location 17 – Approximately 280 feet upstream, another existing down drain that conveys roadside run-off into an existing tributary to Prunedale Creek (OW 23) would be extended. RSP at the outlet of this culvert would encroach on the bank of the existing drainage.

- Project impacts at San Miguel include permanent impacts to 0.04 acres and temporary impacts to 0.03 acres. Trees to be removed include two willows (*Salix* sp.) between four (4) and eight (8) inches DBH.

- Compensation measures for the entire PIP include planting and restoration on-site and the preservation of an off-site parcel within the watershed. In addition to specific planting described above, 0.26 acres of native seed would be installed within or directly adjacent to the Department's jurisdiction. The PIP Project requires 3.3 acres of wetland, 0.33 acres of other "Waters of the United States," 33.12 acres of oak woodland, and 24.95 acres of maritime chaparral from the off-site parcel. The remaining resources on the parcel would be available as potential credits for future projects.

Plant and Animal Species of Concern: This Agreement is intended to avoid, minimize, and mitigate adverse impacts to the fish and wildlife resources that occupy the area of the tributaries to Prunedale Creek and the immediate adjacent riparian habitat. The protective measures described in this Agreement must be implemented in order to avoid impacts, within the area covered by this Agreement, to the following species: Species of Special Concern Western pond turtle (*Actinemys* marmorata) and

CNPS 1B.1 Pajaro manzanita (*Arctostaphylos pajaroensis*) as well as the other birds, mammals, fish, reptiles, amphibians, invertebrates, and plants that comprise the local riparian ecosystem. Departmental files contain lists of species that could be subject to potential generated impacts from this Project.

PROVISIONS:

General

1. The Notification, together with all supporting documents, is hereby incorporated into this Agreement to describe the location and features of the proposed Project. Caltrans agrees that all work shall be done as described in the Notification and supporting documents, incorporating all wildlife resource protection features, mitigation measures, and Provisions as described in this Agreement. Caltrans further agrees to notify the Department of any modifications that need to be made to the Project plans submitted to the Department. At the discretion of the Department, modifications may be deemed minor, requiring an amendment to this Agreement, or substantial requiring the submission of a new notification application. If the latter is the case, this Agreement becomes null and void. Failure to notify the Department of changes to the original plans or subsequent amendments to this Agreement may result in the Department suspending or canceling this Agreement.

2. Before the start of construction/work activities covered under this Agreement, all workers shall have received training from Caltrans' staff, or approved alternate trainer, on the content of this Agreement, the resources at stake, and the legal consequences of non-compliance.

3. When known, prior to beginning work, Caltrans shall provide a construction/work schedule to the Department (fax to Laura Peterson-Diaz, Environmental Scientist, at (559) 243-4020). Please reference the Agreement number. Caltrans shall also notify the Department upon the completion of the activities covered by this Agreement.

4. Agreed activities within the bed, bank, or channel may commence any time after the Department has signed this Agreement. This Agreement shall remain in effect for five (5) years beginning on the date signed by the Department. If the Project is not completed prior to the expiration date defined above, Caltrans shall contact the Department to negotiate a new expiration date and any new requirements.

Flagging/Fencing

5. Within the riparian corridor, Caltrans shall identify the upstream and downstream limits of the minimum work area required, access routes, the Project footprint, plus all Environmentally Sensitive Areas (ESA). These boundaries shall be defined by the Caltrans' Project engineer and biologist, and flagged/fenced prior to the beginning of construction. These limits shall not extend beyond Caltrans' right-of-way and/or the

construction easement, and shall be confined to the minimal area needed to accomplish the proposed work. Flagging/fencing shall be maintained in good repair for the duration of construction in the area under 1602 jurisdiction.

Wildlife

6. An approved biologist shall perform general wildlife surveys of the Project area (including access routes and storage areas) prior to Project construction start with special attention being paid to the sensitive species noted above and shall report any possible adverse affect to fish and wildlife resources not originally reported. If the survey shows presence of any wildlife species which could be impacted, Caltrans shall contact the Department and mitigation, specific to each incident, shall be developed. 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 may need to be conducted, before work can begin.

7. If work is done between March 1 and September 1, then in order to protect nesting birds, an approved biologist shall survey for nesting activity in and adjacent to the defined "work area", before construction begins. If any nesting activity is observed, which could be disturbed by the proposed scope of work, Caltrans shall contact the Department and mitigation, specific to each incident, shall be developed.

8. If any wildlife is encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed.

Vegetation

9. Compensation measures for the entire PIP include planting and restoration on-site and the preservation of an off-site parcel within the watershed. In addition to specific planting described above, 0.26 acres of native seed would be installed within or directly adjacent to the Department's jurisdiction. The off-site parcel contains approximately 5.3 acres of wetland, 2.2 acres of riparian, 38 acres of oak woodland, 83 acres of maritime chaparral, and 2.4 acres of sage scrub. The Mitigation and Monitoring Proposal submitted for the off-site parcel with Caltrans' Notification shall be followed.

10. For this Project two willows (*Salix* sp.) between four (4) to 8-inches DBH will be removed. Trees shall be removed prior to nesting season February 15. On-site tree plantings shall be monitored for three (3) years from the last date of planting and a minimum 70 percent survivorship is necessary. See also Revegetation Plan described under Restoration below.

11. Precautions shall be taken to avoid any unnecessary damage to plants and vegetation by people or equipment for the duration of the Project.

Vehicles

12. Construction vehicles and heavy equipment access to the stream banks and bed shall be limited to predetermined ingress and egress corridors and shall be restricted to the dry portions of the channel. All other areas adjacent to the work site shall be considered an ESA and shall remain off-limits to construction equipment.

Pollution

13. Caltrans and all contractors and subcontractors shall be subject to the pollution protective and other features of Department of Transportation Standard Specifications Section 7-1.01G and Fish and Game Code Sections 5650 and 12015. In addition, all Project-generated debris, building materials, and rubbish shall be removed from the river and from areas where such materials could be washed into it.

14. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than 75 feet from the stream channel and banks. 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 life. Stationary equipment such as cranes, drill rig, pile driver and similar equipment, located within or adjacent to the stream, shall be positioned over drip-pans.

15. If a spill should occur, cleanup shall begin immediately. The Department shall be notified as soon as possible by Caltrans and shall be consulted regarding further cleanup procedures.

16. 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. Excavated materials shall not be stockpiled in a location where they could discharge into the channel without implementing management measures to prevent accidental discharge into the stream.

Erosion

17. All disturbed soils shall be stabilized to reduce erosion potential, both during and following construction. Erosion control Best Management Practices (BMPs) shall be applied to all disturbed areas.

Fill/Spoil

18. 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.

19. Fill shall be limited to the minimal amount necessary to accomplish the agreed activities. Excess fill material shall be moved off-site at Project completion.

20. All cleared debris shall be removed from the normal high water areas of a stream or channel and shall not be redeposited within the flood plain. Spoil sites shall not be located within a stream or wetland, where spoil could be washed back into a stream, or where it covers aquatic or riparian vegetation.

Restoration

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

22. Caltrans shall make the final contour of the site match the adjacent slope of the land and provide the appropriate surface water drainage. All areas subject to temporary ground disturbance, including storage and staging areas, temporary roads, pipeline corridors, etc., shall be recontoured, if necessary, and revegetated to promote restoration of the area.

23. All areas subject to ground disturbance on the bank shall be stabilized. Planting, seeding with native species, and mulching is conditionally acceptable. Where suitable vegetation cannot reasonably be expected to become established, non-erodible material shall be used for such stabilization. Any installation of non-erodible material, not included in the original Project description, shall be coordinated with the Department. Coordination may include the negotiation of additional Agreement Provisions for this activity.

24. Caltrans shall develop a Revegetation Plan as indicated in Provision 13 above, and submit it to the Department for approval within 90 days of the commencement of work on the Project. The plans shall include proposed monitoring, maintenance activities including irrigation and weeding as needed, and replanting if necessary to ensure a minimum of 70 percent survivorship for three (3) years, after the last planting, (i.e., if several trees do not survive and repeated plantings are necessary, then monitoring, maintenance, and annual reporting shall continue for the subsequent three (3) years). Planting on-site shall be done the first appropriate season after the Project is complete. Annual reports on survivorship, due January 31 each year, shall include photographs taken from the same perspective before and after planting and each following year.

MONITORING AND REPORTING PROGRAM (MRP):

PURPOSE

The purpose of the MRP is to ensure that the protective measures required by the Department are properly implemented, and to monitor the effectiveness of those measures.

OBLIGATIONS OF THE OPERATOR

Caltrans shall have primary responsibility for monitoring compliance with all protective measures included as "Provisions" in this Agreement. Protective measures must be implemented within the time periods indicated in the Agreement and the program described below.

Caltrans shall submit the following Reports to the Department:

- Verification of employee training (Provision 2).
- Construction/work schedule (Provision 3).
- Wildlife survey results (Provisions 6 and 7).
- Revegetation Plan for on-site plantings (Provisions 10 and 24).
- A Final Project Report submitted 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. "Before and After" photo documentation of the Project site shall be required.

In addition to the above monitoring and reporting requirements, the Department requires as part of this MRP that Caltrans:

- Immediately notify the Department in writing if monitoring reveals that any of the protective measures were not implemented during the period indicated in this program, or if it anticipates that measures will not be implemented within the time period specified.
- Immediately notify the Department 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.

VERIFICATION OF COMPLIANCE:

The Department shall verify compliance with protective measures to ensure the accuracy of Caltrans' monitoring and reporting efforts. The Department may, at its sole discretion, review relevant Project documents maintained by Caltrans, interview Caltrans' employees and agents, inspect the Project area, and take other actions to assess compliance with or effectiveness of protective measures for the Project.

CONCURRENCE:

APPROVED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on 6/17, 2010.

Jeffrey R. Single, Ph.D.
Regional Manager
Central Region

ACKNOWLEDGMENT

The undersigned acknowledges receipt of this Agreement and, by signing, accepts and agrees to comply with all terms and conditions contained herein. The undersigned also acknowledges that adequate funding shall be made available to implement the measures required by this Agreement.

By: _____ Date: 6/14/2010
Karen Bewley
California Department of Transportation

AGREEMENT

California Fish and Game Code Section 1602
Stream Alteration Agreement No. 2009-0205-R4
California Department of Transportation
Tributaries to Prunedale Creek – Monterey County
Prunedale Improvement Project Crazy Horse-Echo Valley
05-SLO-101 PM R91.2-100.4 EA 05-0161E0

Parties:

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

California Department of Transportation
Karen Bewley
50 Higuera Street
San Luis Obispo, California 93401

WHEREAS:

1. Ms. Karen Bewley, representing the California Department of Transportation (referred to as "Caltrans") on November 16, 2009, notified ("Notification" No. 2009-0205-R4) the Department of Fish and Game ("Department") of their intent to divert or obstruct the natural flow of, or change the bed or banks of, or use materials from the tributaries to Prunedale Creek in Monterey County, waters over which the Department asserts jurisdiction pursuant to Division 2, Chapter 6 of the California Fish and Game Code.

2. Caltrans may not commence any activity that is subject to Fish and Game Code Sections 1600 et seq., until the Department has found that such Project shall not substantially adversely affect an existing fish or wildlife resource or until the Department's proposals, or the decisions of a panel of arbitrators, have been incorporated into such projects.

3. Fish and Game Code Sections 1600 et seq., make provisions for the negotiation of agreements regarding the delineation and definition of appropriate activities, Project modifications and/or specific measures necessary to protect fish and wildlife resources.

4. The Department has determined that without the protective features identified in this Agreement, the activities proposed in the Notification could substantially adversely affect fish and wildlife.

NOW THEREFORE, IT IS AGREED THAT:

1. The receipt of this document ("Agreement"), by Caltrans, satisfies the Department's requirement to notify Caltrans of the existence of an existing fish and wildlife resource that may be substantially adversely affected by the Project that is described in the Notification.

2. The contents of this Agreement constitute the Department's proposals as to measures necessary to protect fish and wildlife resources, and satisfy the Department's requirement to submit these proposals to Caltrans.

3. The signature of Caltrans' representative on this Agreement constitutes Caltrans' commitment to incorporate the Department's proposals into the Project that is described in the Notification.

4. This Agreement does not exempt Caltrans from complying with all other applicable local, State, and Federal law or other legal obligations.

5. This Agreement, alone, does not constitute or imply the approval or endorsement of a Project, or of specific Project features, by the Department, beyond the Department's limited scope of responsibility, established by Code Sections 1600 et seq. This Agreement does not therefore assure concurrence, by the Department, with the issuance of permits from this or any other agency. Independent review and recommendations shall be provided by the Department as appropriate on those projects where local, State, or Federal permits or environmental reports are required.

6. This Agreement does not authorize the "take" (defined in Fish and Game Code Section 86 as hunt, pursue, catch, capture, kill; or attempt to hunt, pursue, catch, capture, or kill) of State-listed threatened or endangered species. If the Operator, in the performance of the agreed work, discovers the presence of a listed species in the Project work area, work shall stop immediately. Caltrans shall not resume activities authorized by this Agreement until such time as valid "take" permits are obtained from the Department, pursuant to Fish and Game Code Sections 2081(a) and 2081(b), as appropriate.

7. To the extent that the Provisions of this Agreement provide for the diversion of water, they are agreed to with the understanding that Caltrans possesses the legal right to so divert such water.

8. To the extent that the Provisions of this Agreement provide for activities that require Caltrans to trespass on another owner's property, they are agreed to with the understanding that Caltrans possesses the legal right to so trespass.

9. To the extent that the Provisions of this Agreement provide for activities that are subject to the authority of other public agencies, said activities are agreed to with the understanding that all appropriate permits and authorizations shall be obtained prior to commencing agreed activities.

10. All Provisions of this Agreement remain in force throughout the term of the Agreement. Any Provision of the Agreement may be amended at any time, provided such amendment is agreed to in writing by both parties. Mutually approved amendments become part of the original Agreement and are subject to all previously negotiated Provisions. The Agreement may be terminated by either party, subject to 30 days written notification.

11. Caltrans shall provide a copy of the Agreement to the Project supervisors and all contractors and subcontractors. Copies of the Agreement shall be available at work sites during all periods of active work and shall be presented to Department personnel upon demand.

12. Caltrans agrees to provide the Department access to the Project site at any time to ensure compliance with the terms, conditions, and Provisions of this Agreement.

13. Caltrans and any contractor or subcontractor, working on activities covered by this Agreement, are jointly and separately liable for compliance with the Provisions of this Agreement. Any violation of the Provisions of this Agreement is cause to stop all work immediately until the problem is reconciled. Failure to comply with the Provisions and requirements of this Agreement may result in prosecution.

14. Caltrans assumes responsibility for the restoration of any fish and wildlife habitat which may be impaired or damaged either directly or, incidental to the Project, as a result of failure to properly implement or complete the mitigation features of this Agreement, or from activities which were not included in the Caltrans' Notification.

15. It is understood that the Department enters into this Agreement for purposes of establishing protective features for fish and wildlife, in the event that a Project is implemented. The decision to proceed with the Project is the sole responsibility of Caltrans, and is not required by this Agreement. It is agreed that all liability and/or incurred costs, related to or arising out of Caltrans' Project and the fish and wildlife protective conditions of this Agreement, remain the sole responsibility of Caltrans. Caltrans agrees to hold harmless and defend the Department against any related claim made by any party or parties for personal injury or other damage.

16. The terms, conditions, and Provisions contained herein constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that Caltrans is precluded from doing other activities at the site. However, activities not specifically agreed to and resolved by this Agreement are subject to separate notification pursuant to Fish and Game Code Sections 1600 et seq.

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The Department, as a CEQA Responsible Agency, shall make findings and submit a Notice of Determination to the State Clearinghouse upon signing this Agreement.

This Agreement contains a Monitoring and Reporting Program (MRP), to incorporate monitoring and reporting requirements for the activities authorized in this Agreement.

Project Location: The work authorized by this Agreement will occur adjacent to the existing State Route (SR) 101 at nine locations along the tributaries to Prunedale Creek between Post Mile (PM) 97.9 and 98.6 in Bolsa Nueva Moro Cojo Landgrant in Monterey County (**Figure 1**). The spatial relationship between San Miguel and the other three areas of the PIP is shown in **Figure 2**.

Project Description: Caltrans' Notification includes Fish and Game Notification Form FG2023 and supporting documents. The Notification comprises Caltrans' Project description, and it is used as the basis for establishing the protective Provisions that are included in this Agreement. Any changes or additions to the Project as described in the Notification shall require additional consultation and protective Provisions. The Department's concurrence with Caltrans' CEQA Determination is based upon Caltrans' commitment to full implementation of the Provisions of this Agreement. Caltrans has proposed the following scope of work. The bulleted items comprise the activities authorized by this Agreement.

- Location 18 – The Project would install a new culvert to convey roadside run-off into an existing tributary to Prunedale Creek (OW 27). The placement of Rock Slope Protection (RSP) at the outlet of this culvert would encroach on the bank of the existing drainage. In addition, the creek must be re-graded immediately upstream of the RSP to ensure proper drainage. To restore riparian vegetation, eight willows (*Salix lucida*) would be planted.

- Location 19 – Approximately 325 feet upstream, the Project would install a new culvert to convey roadside run-off into an existing tributary to Prunedale Creek (OW 27). The placement of RSP at the outlet of this culvert would encroach on the bank of the existing drainage. To restore riparian vegetation, 20 willows (*Salix lucida*) would be planted.

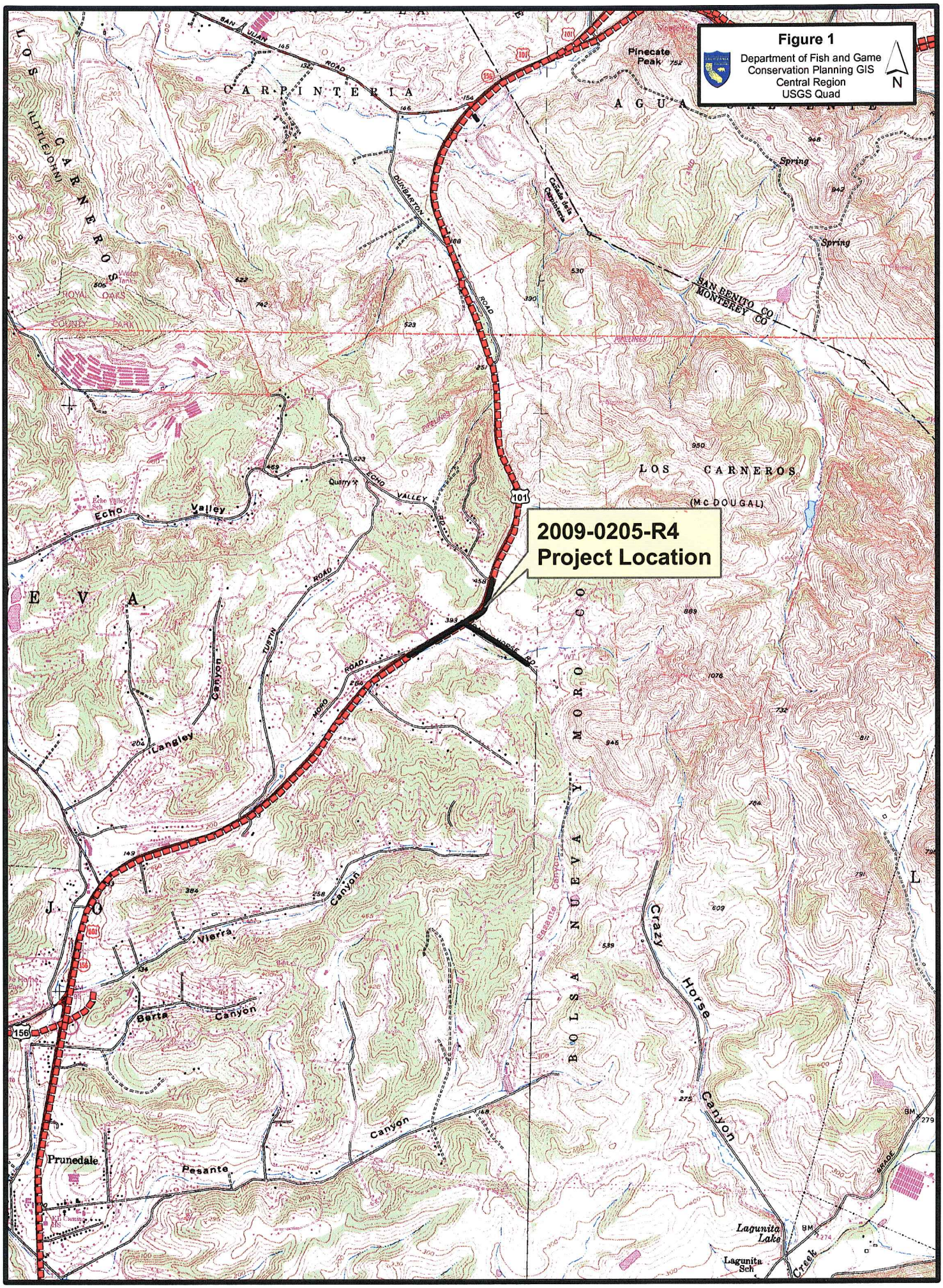
Figure 1
Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad
N
2009-0205-R4
Project Location
CARPINTERIA
AGUA
LOS CARNEROS
(McDOUGAL)
Pinecate Peak
Spring
Spring
SAN BENITO CO
MONTEREY CO
DUNBARTON ROAD
ECHO VALLEY ROAD
Echo Valley
Quarry
TUSTIN ROAD
HORSE RD
Langley Canyon
Vierra Canyon
Berta Canyon
Canyon
Crazy Horse Canyon
Pesante
Prunedale
Lagunita Lake
Lagunita Sch
Creek
BOLSA NUEVA Y MORO CO
EVA
JOLON
101
156

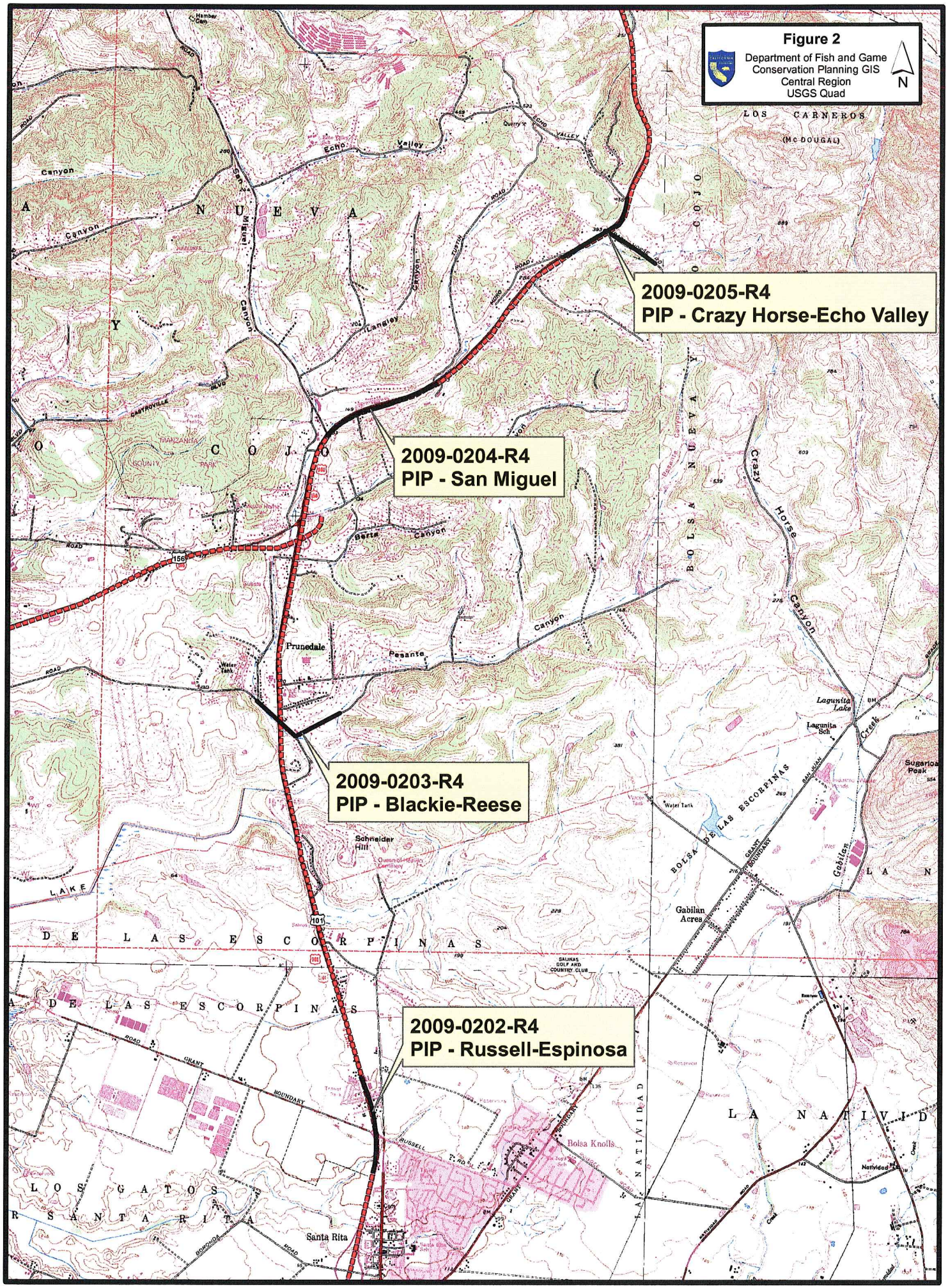
Figure 2
Department of Fish and Game
Conservation Planning GIS
Central Region
USGS Quad
N
2009-0205-R4
PIP - Crazy Horse-Echo Valley
2009-0204-R4
PIP - San Miguel
2009-0203-R4
PIP - Blackie-Reese
2009-0202-R4
PIP - Russell-Espinosa
LOS CARNEROS
(McDOUGAL)
Echo Valley
Canyon
San Miguel
Langley
Crazy Horse Canyon
Berta Canyon
Prunedale
Pesante
Lagunita Lake
Lagunita Sch
Sugarloaf Peak
Gabilan Acres
Schneider Hill
BOLSA DE LAS ESCORPINAS
BOLSA NUEVA Y COJO
LA NATIVIDAD
Bolsa Knolls
Santa Rita
LOS GATOS
SANTA RITA
DE LAS ESCORPINAS
LAKE
SALINAS GOLF AND COUNTRY CLUB
GRANT BOUNDARY
RUSSELL RD
BORONDA ROAD
CASTROVILLE BLVD
MANZANITA PARK
COUNTY
Water Tank
Reservoir
Natividad

- Location 20 – Continuing north upstream, the Project would restore 66 feet of the tributary to Prunedale Creek (OW 27) by removing an existing driveway and associated culvert and restoring the natural substrate. Bioengineering techniques would be used to stabilize the banks. Three large eucalyptus trees would be removed and replaced with native vegetation including 63 willows (*Salix lucida*).

- Location 21 – A new northbound off-ramp would be constructed with RSP at the toe of the new slope, which would encroach into the wetland riparian area (SW 16) associated with the tributary to Prunedale Creek (OW 27). The RSP will be limited to the minimum necessary and will be planted with 110 willow pole cuttings within the rock crevices. These are in addition to the 130 willows (*Salix lucida*) to be planted at this location. To minimize the impacts to wetlands (by approximately 0.56 acres), a portion of the off-ramp will be constructed as a viaduct, instead of a traditional fill slope.

- Location 22 – To minimize impacts to traffic flow during construction, a temporary detour road (parallel to the existing Crazy Horse Canyon Road) must be built to accommodate traffic during construction. Temporary culverts would be placed to convey drainages (OW 27 and 63) under the temporary road. Twenty willow plantings will be installed at this outlet to enhance the drainage and create riparian vegetation.

- Location 23 – The new interchange would realign a portion of the existing Crazy Horse Canyon Road filling a small drainage (OW 28) and seasonal wetlands (SW 19 and 20). The drainage (OW 28) is a small swale created by a culvert that concentrates what would otherwise remain sheet flow. Eucalyptus trees surround the drainage and all drainage features dissipate immediately downstream without connecting to any other hydraulic feature.

- Location 24 – A portion of the new road would utilize a viaduct instead of traditional fill slope, minimizing impacts to wetlands by 0.45 acres. Temporary fill for the detour would impact seasonal wetland (SW 17).

- Location 25 – A driveway and a portion of the existing Crazy Horse Canyon Road removed to restore hydrologic connectivity between wetlands (SW 18, 19, 20 and SW 16).

- Location 26 – Lastly, the Project would fill an unnamed drainage (OW 29) that currently flows parallel to the northbound lane, north of the intersection of Crazy Horse Canyon Road and State Route 101.

- Project impacts at Crazy Horse-Echo Valley include permanent impacts to 0.62 acres and temporary impacts to 0.99 acres of wetland riparian areas

associated with tributaries to Prunedale Creek. This Project would permanently impact 0.09 acres and temporarily impact 0.11 acres of tributaries to Prunedale Creek. The Project would permanently place 315.19 cubic yards and temporarily place 261.01 cubic yards of fill material in wetlands and drainages. Trees to be removed include 291 willows (*Salix* sp.) between four (4) and 12-inches DBH, 18 cottonwoods (*Populus trichocarpus*) between seven (7) and 22-inches DBH and 27 oaks (*Quercus* sp.) between four (4) and 30-inches DBH.

- Compensation measures for the entire PIP include planting and restoration on-site and the preservation of an off-site parcel within the watershed. In addition to specific planting described above, 4.46 acres of native seed, 581 willows (*Salix lucida*) and 56 cottonwoods (*Populus trichocarpus*) would also be planted in the Crazy Horse-Echo Valley area. The PIP Project requires 3.3 acres of wetland, 0.33 acres of other "Waters of the United States," 33.12 acres of oak woodland, and 24.95 acres of maritime chaparral from the off-site parcel. The remaining resources on the parcel would be available as potential credits for future projects.

Plant and Animal Species of Concern: This Agreement is intended to avoid, minimize, and mitigate adverse impacts to the fish and wildlife resources that occupy the area of the tributaries to Prunedale Creek and the immediate adjacent riparian habitat. The protective measures described in this Agreement must be implemented in order to avoid impacts, within the area covered by this Agreement, to the following species: the Federal threatened, State candidate California tiger salamander (*Ambystoma californiense*), Federal threatened, State Species of Special Concern California red-legged frog (*Rana aurora draytonii*), Federal threatened, CNPS 1B.2 Monterey spineflower (*Chorizanthe pungens var. pungens*), and CNPS 1B.1 Pajaro manzanita (*Arctostaphylos pajaroensis*), as well as the other birds, mammals, fish, reptiles, amphibians, invertebrates, and plants that comprise the local riparian ecosystem. Departmental files contain lists of species that could be subject to potential generated impacts from this Project.

PROVISIONS:

General

1. The Notification, together with all supporting documents, is hereby incorporated into this Agreement to describe the location and features of the proposed Project. Caltrans agrees that all work shall be done as described in the Notification and supporting documents, incorporating all wildlife resource protection features, mitigation measures, and Provisions as described in this Agreement. Caltrans further agrees to notify the Department of any modifications that need to be made to the Project plans submitted to the Department. At the discretion of the Department, modifications may be deemed minor, requiring an amendment to this Agreement, or substantial requiring the submission of a new notification application. If the latter is the case, this Agreement

becomes null and void. Failure to notify the Department of changes to the original plans or subsequent amendments to this Agreement may result in the Department suspending or canceling this Agreement.

2. Before the start of construction/work activities covered under this Agreement, all workers shall have received training from Caltrans' staff, or approved alternate trainer, on the content of this Agreement, the resources at stake, and the legal consequences of non-compliance.

3. When known, prior to beginning work, Caltrans shall provide a construction/work schedule to the Department (fax to Laura Peterson-Diaz, Environmental Scientist, at (559) 243-4020). Please reference the Agreement number. Caltrans shall also notify the Department upon the completion of the activities covered by this Agreement.

4. Agreed activities within the bed, bank, or channel may commence any time after the Department has signed this Agreement. This Agreement shall remain in effect for five (5) years beginning on the date signed by the Department. If the Project is not completed prior to the expiration date defined above, Caltrans shall contact the Department to negotiate a new expiration date and any new requirements.

Flagging/Fencing

5. Within the riparian corridor, Caltrans shall identify the upstream and downstream limits of the minimum work area required, access routes, the Project footprint, plus all Environmentally Sensitive Areas (ESA). These boundaries shall be defined by the Caltrans' Project engineer and biologist, and flagged/fenced prior to the beginning of construction. These limits shall not extend beyond Caltrans' right-of-way and/or the construction easement, and shall be confined to the minimal area needed to accomplish the proposed work. Flagging/fencing shall be maintained in good repair for the duration of construction in the area under 1602 jurisdiction.

Wildlife

6. An approved biologist shall perform general wildlife surveys of the Project area (including access routes and storage areas) prior to Project construction start with special attention being paid to the sensitive species noted above and shall report any possible adverse affect to fish and wildlife resources not originally reported. If the survey shows presence of any wildlife species which could be impacted, Caltrans shall contact the Department and mitigation, specific to each incident, shall be developed. 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 may need to be conducted, before work can begin.

7. If work is done between March 1 and September 1, then in order to protect nesting birds, an approved biologist shall survey for nesting activity in and adjacent to the defined "work area", before construction begins. If any nesting activity is observed, which could be disturbed by the proposed scope of work, Caltrans shall contact the Department and mitigation, specific to each incident, shall be developed.

8. If any wildlife is encountered during the course of construction, said wildlife shall be allowed to leave the construction area unharmed.

California Tiger Salamander (CTS)

9. Because the Project site is within the geographic range of CTS, Caltrans has already conducted a habitat evaluation to determine the likelihood (low, moderate, or high) of CTS occurring within the proposed work area footprint. Caltrans has determined that the likelihood is very low and that avoidance measures will prevent any take of CTS from occurring. The United States Fish and Wildlife Service has concurred with this determination.

10. No impact to CTS shall occur at any time as a result of Project activities.

11. At least 30 days before initiating ground- or vegetation-disturbing activities, Caltrans shall submit to the Department 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 the CTS. The Designated Biologist shall be responsible for monitoring all ground- or vegetation-disturbing activities in areas of potential CTS habitat to avoid all impact to the CTS and to minimize disturbance of potential CTS habitat.

12. 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 the Department shall be liable for any costs incurred in complying with the Conditions of Approval, including cease-work orders issued by the Department.

13. All Project activity 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.

14. The Designated Biologist shall be on-site daily while construction and/or surface-disturbing activities are taking place to avoid impacts to the 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.

15. If any CTS are found in the Project footprint during construction, all work shall stop immediately and Caltrans shall immediately contact the Department. As stated in Provision 6, a new Agreement and/or a 2081(b) State Incidental Take Permit may be necessary and a new CEQA analysis may need to be conducted, before work can resume.

Vegetation

16. Compensation measures for the entire PIP include planting and restoration on-site and the preservation of an off-site parcel within the watershed. In addition to specific planting described above, 0.26 acres of native seed would be installed within or directly adjacent to the Department's jurisdiction. The off-site parcel contains approximately 5.3 acres of wetland, 2.2 acres of riparian, 38 acres of oak woodland, 83 acres of maritime chaparral, and 2.4 acres of sage scrub. The Mitigation and Monitoring Proposal submitted for the off-site parcel with Caltrans' Notification shall be followed.

17. For this Project, 291 willows (*Salix* sp.) between four (4) and 12-inches DBH, 18 cottonwoods (*Populus trichocarpus*) between seven (7) and 22-inches DBH and 27 oaks (*Quercus* sp.) between four (4) and 30-inches DBH will be removed. Trees shall be removed prior to nesting season February 15. On-site tree plantings shall be monitored for three (3) years from the last date of planting and a minimum 70 percent survivorship is necessary. See also Revegetation Plan described under Restoration below.

18. Precautions shall be taken to avoid any unnecessary damage to plants and vegetation by people or equipment for the duration of the Project.

Vehicles

19. Construction vehicles and heavy equipment access to the stream banks and bed shall be limited to predetermined ingress and egress corridors and shall be restricted to the dry portions of the channel. All other areas adjacent to the work site shall be considered an ESA and shall remain off-limits to construction equipment.

Pollution

20. Caltrans and all contractors and subcontractors shall be subject to the pollution protective and other features of Department of Transportation Standard Specifications

Section 7-1.01G and Fish and Game Code Sections 5650 and 12015. In addition, all Project-generated debris, building materials, and rubbish shall be removed from the river and from areas where such materials could be washed into it.

21. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than 75 feet from the stream channel and banks. 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 life. Stationary equipment such as cranes, drill rig, pile driver and similar equipment, located within or adjacent to the stream, shall be positioned over drip-pans.

22. If a spill should occur, cleanup shall begin immediately. The Department shall be notified as soon as possible by Caltrans and shall be consulted regarding further cleanup procedures.

23. 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. Excavated materials shall not be stockpiled in a location where they could discharge into the channel without implementing management measures to prevent accidental discharge into the stream.

Erosion

24. All disturbed soils shall be stabilized to reduce erosion potential, both during and following construction. Erosion control Best Management Practices (BMPs) shall be applied to all disturbed areas.

Fill/Spoil

25. 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.

26. Fill shall be limited to the minimal amount necessary to accomplish the agreed activities. Excess fill material shall be moved off-site at Project completion.

27. All cleared debris shall be removed from the normal high water areas of a stream or channel and shall not be redeposited within the flood plain. Spoil sites shall not be located within a stream or wetland, where spoil could be washed back into a stream, or where it covers aquatic or riparian vegetation.

Restoration

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

29. Caltrans shall make the final contour of the site match the adjacent slope of the land and provide the appropriate surface water drainage. All areas subject to temporary ground disturbance, including storage and staging areas, temporary roads, pipeline corridors, etc., shall be recontoured, if necessary, and revegetated to promote restoration of the area.

30. All areas subject to ground disturbance on the bank shall be stabilized. Planting, seeding with native species, and mulching is conditionally acceptable. Where suitable vegetation cannot reasonably be expected to become established, non-erodible material shall be used for such stabilization. Any installation of non-erodible material, not included in the original Project description, shall be coordinated with the Department. Coordination may include the negotiation of additional Agreement Provisions for this activity.

31. Caltrans shall develop a Revegetation Plan as indicated in Provision 17 above, and submit it to the Department for approval within 90 days of the commencement of work on the Project. The plans shall include proposed monitoring, maintenance activities including irrigation and weeding as needed, and replanting if necessary to ensure a minimum of 70 percent survivorship for three (3) years, after the last planting, (i.e., if several trees do not survive and repeated plantings are necessary, then monitoring, maintenance, and annual reporting shall continue for the subsequent three (3) years). Planting on-site shall be done the first appropriate season after the Project is complete. Annual reports on survivorship, due January 31 each year, shall include photographs taken from the same perspective before and after planting and each following year.

MONITORING AND REPORTING PROGRAM (MRP):

PURPOSE

The purpose of the MRP is to ensure that the protective measures required by the Department are properly implemented, and to monitor the effectiveness of those measures.

OBLIGATIONS OF THE OPERATOR

Caltrans shall have primary responsibility for monitoring compliance with all protective measures included as "Provisions" in this Agreement. Protective measures must be implemented within the time periods indicated in the Agreement and the program described below.

Caltrans shall submit the following Reports to the Department:

- Verification of employee training (Provision 2).

- Construction/work schedule (Provision 3).

- Wildlife survey results (Provisions 6 and 7).

- Revegetation Plan for on-site plantings (Provisions 17 and 31).

- A Final Project Report submitted 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. "Before and After" photo documentation of the Project site shall be required.

In addition to the above monitoring and reporting requirements, the Department requires as part of this MRP that Caltrans:

- Immediately notify the Department in writing if monitoring reveals that any of the protective measures were not implemented during the period indicated in this program, or if it anticipates that measures will not be implemented within the time period specified.

- Immediately notify the Department 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.

VERIFICATION OF COMPLIANCE:

The Department shall verify compliance with protective measures to ensure the accuracy of Caltrans' monitoring and reporting efforts. The Department may, at its sole discretion, review relevant Project documents maintained by Caltrans, interview Caltrans' employees and agents, inspect the Project area, and take other actions to assess compliance with or effectiveness of protective measures for the Project.

CONCURRENCE:

APPROVED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on 6/17, 2010.

Jeffrey R. Single, Ph.D.
Regional Manager
Central Region

ACKNOWLEDGMENT

The undersigned acknowledges receipt of this Agreement and, by signing, accepts and agrees to comply with all terms and conditions contained herein. The undersigned also acknowledges that adequate funding shall be made available to implement the measures required by this Agreement.

By: _____ Date: 6/14/2010
Karen Bewley
California Department of Transportation

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:
PAS 1926.3041.3567

October 17, 2005

Gene Fong, Division Administrator
California Division
Federal Highway Administration
980 Ninth Street, Suite 400
Sacramento, California 95814-2724

Subject: Biological Opinion for the State Route 101, Prunedale Improvement Project, Monterey County, California (Document # P52247) (1-8-05-F-27)

Dear Mr. Fong:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the effects of the California Department of Transportation's (Caltrans) proposed State Route 101 Prunedale Improvement Project on the federally threatened California red-legged frog (*Rana aurora draytonii*) and Monterey spineflower (*Chorizanthe pungens* var. *pungens*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U. S. C. 1531 *et seq.*). The subject project would be funded by the Federal Highways Administration (FHWA) and would consist of constructing two new interchanges, improvements to an existing interchange, local road improvements, and the construction of additional median barriers in Prunedale, Monterey County, California. Your April 19, 2005, request for consultation was received on April 22, 2005.

The California tiger salamander (*Ambystoma californiense*) was listed as threatened on August 4, 2004 (69 Federal Register (FR) 47212). Your biological assessment (Caltrans 2005) included a determination that the proposed project is not likely to affect the California salamander. We concur with this determination. Significant barriers to migration from known occurrences are present and no California tiger salamanders have been found in wetlands within the project area. Critical habitat was designated for the California tiger salamander on August 23, 2005 (70 FR 49380). The action area for the proposed project, as described in this biological opinion, is outside the boundary of designated critical habitat for the California tiger salamander.

We proposed critical habitat for the California red-legged frog on April 13, 2004 (69 FR 19620). A final determination on this proposal is due in November 2005. The project site is within proposed critical habitat for the California red-legged frog and you determined that the project may affect but is not likely to adversely modify the proposed critical habitat. We concur with your determination that the proposed project will not adversely modify proposed critical habitat for the California red-legged frog. The project area does not contain the primary constituent

elements which are essential to the conservation of the species. These are defined as: a) essential aquatic habitat; b) associated uplands; and c) dispersal habitat connecting essential aquatic habitat. The project would occur along State Route 101, a two-lane highway with a concrete divider. Although Prunedale Creek and other wetlands are present in areas to be permanently disturbed, these areas do not contain the primary constituent elements because the aquatic habitats are too shallow or do not flow or hold water throughout the development phase of California red-legged frog larvae and are surrounded by urban development and a four-lane highway.

On May 29, 2002, we designated critical habitat for the Monterey spineflower (67 FR 37498). Your analysis determined that there would be no effect to Monterey spineflower critical habitat from project activities. Based on our knowledge at the time of designation, we considered the primary constituent elements to be: a) sandy soils associated with active coastal dunes, coastal bluffs with of deposition of windblown sand, inland sites with sandy soils, and interior floodplain dunes; b) plant communities that support associated species, including coastal dune, coastal scrub, grassland, maritime chaparral, oak woodland, and interior floodplain dune communities, and have a structure with openings between the dominant elements (e.g., scrub, shrub, oak trees, clumps of herbaceous vegetation); c) no or little cover by non-native species which compete for resources available for growth and reproduction of Monterey spineflower; and d) physical processes, such as occasional soil disturbance, that support natural dune dynamics along coastal areas. The only area within the Prunedale critical habitat unit that may be impacted occurs at the Crazy Horse Canyon Road/Echo Valley Road project area. Monterey spineflower critical habitat occurs on the eastern side of State Route 101 in this area. However, although surveys identified Monterey spineflower on the west side of the State Route 101, no Monterey spineflower plants were identified on the east side within the critical habitat boundary and you reported that the area did not contain sandy soils within the project boundaries. Therefore, the portion of critical habitat to be impacted does not contain the primary constituent elements. We concur with your determination that there would be no effect to critical habitat.

This biological opinion is based on information that accompanied the request for consultation which included a biological assessment (Caltrans 2005), informal discussions between our staffs, a site visit on August 19, 2005, and information in our files. A complete administrative record of this consultation is on file at the Ventura Fish and Wildlife Office.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The purpose of the project is to improve safety along State Route 101 and intersecting local roadways, improve traffic flow along existing State Route 101, and improve accessibility to area homes, businesses, and services. A combination of heavy traffic, numerous uncontrolled access points, a poor local road network, and nonstandard roadway features, have contributed to the deterioration of operating conditions and an increase in collisions along this section of State Route 101 in Prunedale. The project would include construction of two new interchanges, one

overcrossing, one undercrossing, improvements to local roads, and construction of additional median barriers at various locations throughout the project limits (Postmile 91.2 - 100.4). Construction is scheduled to begin May 1, 2009, and end May 1, 2012. The biological assessment includes an extensive list of the typical construction equipment used. The list includes large earth moving machinery as well as pavers, pile drivers, and drill rigs. The project consists of five construction zones, listed from south to north:

1. Russell Road/Espinosa Road Area,
2. Blackie Road/Reese Road Area,
3. San Miguel Canyon Road/Tustin Area,
4. Crazy Horse Canyon Road/Echo Valley Road Area, and
5. Dunbarton Road Area.

Russell Road/Espinosa Road Area

A 1.4-mile segment of divided four lane, controlled-access freeway would be constructed approximately 0.2 mile north of Boronda Road. This road segment would include a 69-foot wide median and a concrete median barrier that would begin at Russell Road. An undercrossing would be constructed at the intersection of State Route 101 and Russell Road/Espinosa Road where State Route 101 would be elevated. Approximately 0.62 mile north of the Russell Road/Espinosa Road undercrossing, a new grade-separated interchange would be constructed to include interchange ramps in a tight diamond pattern. Local roads in this area would be widened, upgraded, closed, or rerouted to accommodate the shifted traffic flow. Portions of the existing State Route 101 would be converted to frontage roads. Additional project elements in this area include construction of a sound wall, culvert modification, and construction of drainage basins. The project footprint in this area comprises approximately 58.8 acres consisting of 39 acres of paved and urban areas, 17.8 acres of agriculture (primarily cultivated row-crops), 1.7 acres of non-native annual grassland and other vegetation, and 0.3 acre of drainage areas or "other water channels."

Blackie Road/Reese Road Area

Traffic patterns in this area would be improved by the addition of an overcrossing connecting a new portion of Blackie Road to Reese Road. Other roads in this area would either be closed to State Route 101 access or restricted to right-in and right-out (no left turn) movements with the addition of a concrete median. Local roads would be extended and upgraded to support increased traffic on the east side of State Route 101. The project footprint in this area comprises approximately 14.3 acres consisting of 3 acres of rural and urban development, 1 acre of agriculture, 3 acres of non-native grassland and other vegetation, 1.3 acres of unknown habitat, 0.04 acre of valley needlegrass grassland, 0.4 acre of central coast riparian scrub, 5.3 acres of coast live oak woodland, 0.1 acre of seasonal wetland, and 0.1 acre of other water channel.

San Miguel Canyon Road/Tustin Area

The San Miguel Canyon Road intersection with State Route 101 would be modified to permit left turns and additional traffic lanes would be added on San Miguel Canyon Road between the southbound State Route 101 off-ramp and Prunedale North Road. The existing structure over

State Route 101 would be widened and retaining walls are proposed adjacent to the shopping center. This project portion occurs within the Caltrans right-of-way and no additional habitats would be impacted by construction in this segment.

Crazy Horse Canyon Road/Echo Valley Road Area

Echo Valley Road would be realigned and joined to Crazy Horse Canyon Road with an overcrossing and a diamond shaped interchange at the location of the existing Crazy Horse Canyon Road and State Route 101. To maintain local access along the west side of State Route 101, Moro Road would be extended. A cul-de-sac and a new local road connecting Echo Valley Road to Shady Drive would also be constructed. Additional project elements in this area include construction of a drainage basin, construction of a fire lane between the new alignment of Echo Valley Road and Shady drive, and closure of all private points of access to State Route 101. The project footprint in this area comprises approximately 29.6 acres consisting of 6.7 acres of rural and urban development, 8.6 acres of non-native grassland and other vegetation, 0.9 acre of unknown habitat, 1.1 acres of central coast riparian scrub, 4.2 acres of coast live oak woodland, 7.3 acres of central maritime chaparral, 0.8 acre of seasonal wetland, and 0.1 acre of other water channel.

Dunbarton Road Area

The Dunbarton Road Area is included in the project description as it includes the placement of construction signs along the roadway within the existing Caltrans right of way.

Minimization Measures

Caltrans has proposed the following measures to minimize adverse effects to the California red-legged frog:

1. In areas that offer potential habitat value for the California red-legged frog, pre-construction surveys will be conducted.

2. To reduce disturbance in habitat areas to be temporarily disturbed, vegetation will be removed by hand, where feasible, instead of heavy equipment.

3. No water will be used from streams or ponds that support California red-legged frogs.

4. Construction boundaries and Environmentally Sensitive Areas will be established prior to construction.

5. A biological monitor will be on-site to maintain Environmentally Sensitive Area boundaries and to survey for California red-legged frogs whenever construction activities occur in suitable habitat.

6. Best management practices will be employed to reduce erosion and stormwater runoff.

Caltrans has proposed the following measures to minimize adverse effects to the Monterey spineflower:

1. Vegetation in areas to be temporarily disturbed will be removed at ground level to reduce disturbance to the soil.

2. Retaining walls will be used to reduce the size of the project footprint wherever feasible.

In addition to the protection measures proposed above, Caltrans proposes to acquire land of equal or superior habitat to that of the area that would be disturbed by the proposed project or contribute funds to a preservation foundation to pool together funds for a larger property purchase and long term management. The proposed acquisition site will contain, at a minimum, occupied Monterey spineflower habitat and wetlands. Caltrans is currently working with the Elkhorn Slough Foundation which may have the opportunity to purchase a property that contains suitable breeding ponds for California red-legged frogs and populations of the Monterey spineflower and federally endangered Yadon's piperia (*Piperia yadonii*).

STATUS OF THE SPECIES

California Red-Legged Frog

The California red-legged frog was federally listed as threatened on May 23, 1996 (61 FR 25813). The Service has issued a final recovery plan (Service 2002). Critical habitat for the California red-legged frog was designated on March 13, 2001 (66 FR 14625). On November 6, 2002, the United States District Court for the District of Columbia set aside the designation and ordered the Service to publish a new critical habitat proposal for the California red-legged frog by March 2004 (*Home Builders Association of Northern California et al. versus Gale A. Norton, Secretary of the Department of Interior et al.* Civil Action No. 01-1291 (RJL) U.S. District Court, District of Columbia). We proposed critical habitat once again for the California red-legged frog on April 13, 2004 (69 FR 19620). A final determination on this proposal is due November 2005.

The California red-legged frog is the largest native frog in the western United States ranging from 1.75 to 5.25 inches from the tip of the snout to the vent (Stebbins 2003). From above, the frog can appear brown, gray, olive, red, or orange, often with a pattern of dark flecks or spots. The back of the frog is bordered on either side by an often prominent ridge (dorsolateral fold) running from the eye to the hip. The hind legs are well-developed with large, webbed feet. A cream, white, or orange stripe usually extends along the upper lip from beneath the eye to the rear of the jaw. The undersides of adult frogs are white, usually with patches of bright red or orange on the abdomen and hind legs. The groin area sometimes exhibits bold black mottling with a white or yellow background.

The historical 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, Schafer *et al.* 2004, Storer 1925). The California red-legged frog has sustained a 70 percent reduction in its geographic range as a result of several factors acting singly or in combination (Jennings *et al.* 1992). Only a few drainages are currently known to support California red-legged frogs in the Sierra Nevada foothills, compared to more than 60 historical records. In southern California, the California red-legged frog has essentially disappeared from the Los Angeles area south to the Mexican border; the only known, viable population in Los Angeles County is in San Francisquito Canyon on the Angeles National Forest.

Habitat loss and alteration, over-exploitation, and introduction of exotic predators were significant factors in the species' decline in the early- to mid-1900s. Reservoir construction, expansion of introduced predators, grazing, and prolonged drought fragmented and eliminated many of the Sierra Nevada foothill populations. Several researchers in central California have noted the decline and eventual disappearance of California red-legged frog once bullfrogs (*Rana catesbeiana*) become established at the same site (L. Hunt, in litt., 1993). Bullfrogs prey on California red-legged frogs (Twedt 1993) and interfere with their reproduction (Jennings and Hayes 1990, Twedt 1993).

California red-legged frogs have been found at elevations that range from sea level to about 5,000 feet. The frog uses a variety of habitat types, which include various aquatic systems, riparian, and upland habitats. There is much variation in how California red-legged frogs use the environment and in many cases they may complete their entire life cycle in a particular area without using other components (i.e., a pond is suitable for each life stage and use of upland habitat or a riparian corridor is not necessary). Populations appear to persist where a mosaic of habitat elements exists, embedded within a matrix of dispersal habitat. Here, local extinctions may be counterbalanced by recolonizations of new or unoccupied areas of suitable habitat. Adults are often associated with dense, shrubby riparian or emergent vegetation and areas with deep (> 28 inches) still or slow-moving water; the largest summer densities of California red-legged frogs are associated with deep-water pools with dense stands of overhanging willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha latifolia*) (Jennings 1988). California red-legged frogs spend considerable time resting and feeding within dense riparian vegetation; it is believed the moisture and camouflage provided by the riparian plant community provide good foraging habitat and riparian vegetation provides cover during dispersal (Rathbun et al. 1993).

Breeding sites of the California red-legged frog are in aquatic habitats; larvae, juveniles and adult frogs have been collected from streams, creeks, ponds, marshes, deep pools and backwaters within streams and creeks, dune ponds, lagoons, and estuaries. California red-legged frogs frequently breed in artificial impoundments, such as stock ponds, given the proper management of hydro-period, pond structure, vegetative cover, and control of exotic predators. While frogs successfully breed in streams and riparian systems, high spring flows and cold temperatures in streams often make these sites risky egg and tadpole environments. California red-legged frogs also successfully breed in artificial ponds with little or no emergent vegetation and have been observed in stream reaches that are not cloaked in riparian vegetation. In a coastal marsh in San Mateo County, Reis (1999) found California red-legged frog egg masses that successfully

produced tadpoles in water as shallow as 4 inches; adult frogs selected shallow and warm water locations over either cold or deep-water locations for laying eggs. An important factor influencing the suitability of aquatic breeding sites is the general lack of introduced aquatic predators.

California red-legged frogs are sensitive to high salinity. When eggs are exposed to salinity levels greater than 4.5 parts per thousand, 100 percent mortality occurs, and larvae die when exposed to salinities greater than 7.0 parts per thousand (Jennings and Hayes 1990). Nussbaum *et al.* (1983) state that early red-legged frog (*Rana a. aurora*) embryos are tolerant of temperatures only between 48 and 70 degrees Fahrenheit and both the lower and upper lethal temperatures are the most extreme known for any North American ranid frog. Data specific to the California red-legged frog are not available.

During periods of wet weather, starting with the first rains of fall, some individuals may make long-distance overland excursions through upland habitats to reach breeding sites. In Santa Cruz County, Bulger (2003) found marked California red-legged frogs moving up to 1.7 miles through upland habitats, via point to point, straight-line migrations without apparent regard to topography, rather than following riparian corridors. Most of these overland movements occurred at night and took up to two months. Similarly, in San Luis Obispo County Rathbun and Schneider (2001) documented the movement of a male California red-legged frog between two ponds that were 1.78 miles apart; this was accomplished in less than 32 days. However, most California red-legged frogs in the Bulger (2003) study were non-migrating frogs and always remained within 426 feet of their aquatic site of residence (half of the frogs always stayed within 82 feet of water). Rathbun et al. (1993) radio tracked several frogs near the coast in San Luis Obispo County at various times between July and January; these frogs also stayed rather close to water and never strayed more than 85 feet into upland vegetation. Nine California red-legged frogs radio-tracked from January to June, 2001, in East Las Virgenes Creek in Ventura County remained relatively sedentary as well; the longest within-channel movement was 280 feet and the furthest movement away from the stream was 30 feet (Scott 2002).

After breeding, California red-legged frogs often disperse from their breeding habitat to forage and seek suitable dry-season habitat. Cover within dry-season aquatic habitat could include boulders; downed trees; logs; agricultural features, such as drains, watering troughs, spring boxes, abandoned sheds, or hay-ricks; and industrial debris. California red-legged frogs use small mammal burrows and moist leaf litter (Jennings and Hayes 1994, Rathbun et al. 1993); incised stream channels with portions narrower and deeper than 18 inches may also provide habitat (61 FR 25813). This type of dispersal and habitat use, however, is not observed in all red-legged frogs and is most likely dependent on the year to year variations in climate and habitat suitability and varying requisites per life stage. For the California red-legged frog, suitable habitat is potentially all aquatic and riparian areas within the range of the species and includes any landscape features that provide cover and moisture (61 FR 25813).

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). They typically call in small, mobile groups of three to seven individuals to attract females (Jennings and Hayes 1985). 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 moderate-size (0.08 to 0.11 inch in diameter), dark reddish brown eggs (Storer 1925, Jennings and Hayes 1985). Eggs hatch in 6 to 14 days (Storer 1925). Larvae undergo metamorphosis 2.5 to 7 months after hatching (Storer 1925, Jennings and Hayes 1990, Service 2002). Egg predation is infrequent; most mortality probably occurs during the tadpole stage (Licht 1974), although eggs are susceptible to being washed away during high stream flows. Schmieder and Nauman (1994) report that the California red-legged frog eggs have a defense against predation which is possibly related to the nature of the egg mass jelly. Schmieder and Nauman (1994) report that California red-legged frog larvae are highly vulnerable to fish predation; larvae appear to be most vulnerable to fish predation immediately after hatching when the nonfeeding larvae are relatively immobile. 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 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 for 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 juvenile frogs to be active diurnally and nocturnally, whereas adult frogs were largely nocturnal.

Monterey spineflower

The Monterey spineflower, a small, prostrate annual in the buckwheat family, was listed as threatened on February 4, 1994 (59 FR 5499). On May 29, 2002, we designated critical habitat for the Monterey spineflower (67 FR 37498). Critical habitat occurs along the east side of State Route 101 but the areas to be impacted, which are in the Crazy Horse Canyon Road/Echo Valley Road area, do not contain the primary constituent elements and surveys did not find any Monterey spineflower plants within the project area.

Information contained in this account was obtained primarily from the final rule for listing, the Recovery Plan for Seven Coastal Plants and the Myrtle's Silverspot Butterfly (Service 1998), the final rule for designation of critical habitat (67 FR 37498), and Reveal and Hardham (1989).

Monterey spineflower occurs in sandy soils within coastal habitats from the Monterey Peninsula (Monterey County) northward along the coast to southern Santa Cruz County, and inland to the coastal plain of the Salinas Valley. As of the 1998 recovery plan, 29 occurrences are presumed extant on property managed by the U.S. Department of Defense, the County of Monterey, the City of Sand City, State Parks, the Pebble Beach Company, and other private entities, with the largest populations thought to occur on the undeveloped areas of former Fort Ord.

At coastal sites ranging from the Monterey Peninsula north to Manresa State Beach, Monterey spineflower is found in active coastal dune systems and on coastal bluffs upon which windblown sand has been deposited. The distribution of suitable habitat is subject to dynamic shifts caused by patterns of dune mobilization, stabilization, and successional trends in coastal dune vegetation that increase in cover over time. Accordingly, individual colonies of Monterey spineflower, found in gaps between stands of scrub, shift in distribution and size over time. Other native plants associated with Monterey spineflower in these areas include beach bur (*Ambrosia chamissonis*), beach sagewort (*Artemisia pycnocephala*), mock heather (*Ericameria ericoides*), Monterey Indian paintbrush (*Castilleja latifolia*), and beach pea (*Lathyrus littoralis*). At some locations, Monterey spineflower occurs in close proximity to the federally endangered sand gilia (*Gilia tenuiflora* ssp. *arenaria*), Menzies' wallflower (*Erysimum menziesii* ssp. *menziesii*), and Smith's blue butterfly (*Euphilotes enoptes smithi*), and the threatened western snowy plover (*Charadrius alexandrinus nivosus*).

At more inland sites, Monterey spineflower occurs on sandy, well-drained soils in a variety of plant communities, most frequently maritime chaparral, valley oak woodland, and grassland. Within grassland communities, Monterey spineflower occurs along roadsides, in firebreaks, and in other disturbed sites, while in oak woodland, chaparral, and scrub communities, it occurs in sandy openings between shrubs. In older stands with a high cover of shrubs, Monterey spineflower is restricted to roadsides, firebreaks, and trails that bisect these communities. Prior to the onset of human use of this area, Monterey spineflower may have been restricted to openings within these communities created by animal movement corridors, herbivory, and wildfires. The southwestern edge of Monterey spineflower habitat on former Fort Ord was once likely continuous with habitat found in the community of Del Rey Oaks and at the Monterey Airport. Other inland sites that support Monterey spineflower are located in the area between Aptos and La Selva Beach in Santa Cruz County and near Prunedale in northern Monterey County. At some of these locations, Monterey spineflower occurs in close proximity with the federally endangered Yadon's piperia and robust spineflower (*Chorizanthe robusta* var. *robusta*).

Farther up the Salinas River, Monterey spineflower is found on a dune located within the river floodplain near Soledad, Monterey County (California Natural Diversity Data Base (CNDDB) 2005). Two historic sites for Monterey spineflower occur near that locality, but the plant has likely been extirpated from these sites due to conversion to agriculture and channelization activities along the Salinas River. The dune near Soledad is the only one of its size and extent between there and the river mouth.

Monterey spineflower is a short-lived annual species that germinates during the winter months and flowers from April through June. Although its pollination ecology has not been studied, Monterey spineflower is likely visited by a wide array of pollinators. Observations of pollinators on other species of *Chorizanthe* that occur in Santa Cruz County have included leaf cutter bees (megachilids), at least six species of butterflies, flies, and sphecid wasps. Each flower produces one seed; depending on plant vigor, dozens or hundreds of seeds could be produced per individual. The importance of pollinator activity in seed set has been demonstrated by the production of seed with low viability where pollinator access was limited (Harding Lawson

Associates 2000). The plants turn a rusty hue as they dry through the summer months, eventually shattering during the fall. Seed dispersal is facilitated by the involucral spines, which attach the seed to passing animals. While animal vectors most likely facilitate dispersal between colonies and populations, the prevailing coastal winds undoubtedly play a part in scattering seed within colonies and populations.

Several coastal dune restoration efforts within the last decade have included measures to eliminate non-native species and to propagate and reintroduce Monterey spineflower, notably at Moss Landing North Harbor, Pajaro Dunes, and the University of California's Moss Landing Marine Laboratory. Such efforts have contributed to our understanding that Monterey spineflower readily grows where suitable sandy substrates occur and competition with other plant species is minimal. Where Monterey spineflower occurs within native plant communities, along the coast as well as at more interior sites, it occupies microhabitat sites found between scrub and shrub stands with little cover from other herbaceous species. Where Monterey spineflower occurs within grassland communities, the density of Monterey spineflower may decrease with an increase of the density of other herbaceous species.

Residential development, agricultural land conversion, recreational use, sand mining, dune stabilization, and competition with non-native plants, such as European beachgrass (*Ammophila arenaria*) and iceplant (*Carpobrotus* sp.), have all reduced the populations and habitat of the Monterey spineflower. Habitat loss and conversion from agricultural and residential development, activities at military institutions, and invasion by non-native plants were identified as the primary threats to Monterey spineflower at the time of listing (59 FR 5505). Hikers and equestrians may trample these plants at various locations throughout its range. Most of the historical locations of the Monterey spineflower in the Salinas Valley have probably been extirpated by conversion of grassland and valley oak woodland habitats to agricultural fields.

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 Regulation 402.02). For the purposes of this biological opinion, we consider the action area to include all areas where people and equipment would be working or staging. Based upon the information provided in the biological assessment (Caltrans 2005) we identify the action area as follows: All construction and staging activities from post mile 91.2 through 100.4. This includes the construction footprint plus and additional 100 meters around all wetland habitat and water features in the Blackie Road/Reese Road project area and the Crazy Horse Canyon Road/Echo Valley Road project area and an additional 5 meters from the project footprint in the remaining upland habitats.

The biological assessment describes considering the entire action area to consist of a 5 meter buffer outside of the project footprint in all habitats. However upland habitat for California red-legged frogs would be directly and indirectly affected by construction activities further than 5 meters from the project footprint. We believe that upland habitat adjacent to wetlands and water

features is important for the survival of the California red-legged frog and therefore determine that the action area for this project should extend 100 meters from construction activities. Several studies (Bulger 2003, Rathbun et al. 1993, Scott 2002) have demonstrated that California red-legged frogs generally remain close to their aquatic site of residence although, California red-legged frogs are known to disperse long distances (1.7 miles Bulger 2003, Rathbun and Schneider 2001) during the breeding season. Bulger (2003) recommends that "conservation and resource management planning for activities that alter the local environment should strive to retain a well-distributed array of natural habitat elements that provide protective cover for California red-legged frogs to a distance of at least 100 meters (328 feet) from occupied aquatic sites."

The proposed project is located in Prunedale, a rural area of northern Monterey County. The topography ranges from gently sloping to steep hills cut by narrow canyons with permanent and intermittent streams. The project elevation ranges from approximately 10 feet above sea level at the Blackie Road/Reese Road project area to 580 feet above sea level northwest of the Crazy Horse Canyon Road/State Route 101 intersection. State Route 101 generally runs north to south in this area and is a four-lane highway with concrete medians. There are currently openings in the concrete medians to allow left hand turns; however, this project will close many of those openings and replace them with interchanges and overpasses.

The project area contains both natural plant communities and areas extensively modified by human activity. The Prunedale area is a mosaic of oak woodlands, central maritime chaparral, and open grasslands mixed with agricultural lands, residential areas, and commercial developments. Invasive plant species are present throughout the project area, especially in areas of urban development. Common species include jubata grass (*Cortederia jubata*), French broom (*Cytisus monspessulanus*), and iceplant. Exotic aquatic animal species also present within the project area at the Blackie Road/Reese Road project area include bullfrogs, crayfish (*Astacus astacus*), and mosquito fish (*Gambusia affinis*). Terrestrial exotic species in the project areas include red fox (*Vulpes vulpes*), and European starling (*Sturnus vulgaris*).

California red-legged frog

California red legged frogs are known from the Prunedale area and several records occur in the California Natural Diversity Database (CNDDB). Caltrans surveys confirmed the locations of CNDDB records at Prunedale Creek (which is within the Blackie Road/Reese Road project footprint) where two adult frogs were observed; no breeding pools were located in this area. In the Dunbarton Area, California red-legged frogs were observed at two locations in an intermittent stream located approximately 0.62 mile north of Crazy Horse Road and east of State Route 101. Up to seven California red-legged frogs were observed at one site, which may be an indication that the location might be a successful breeding site.

Significant habitat modification was observed in the Blackie Road/ Reese Road project area during a site visit in August 2005 (Niceswanger personal observation). A segment of Prunedale Creek on the west side of State Route 101 has been bladed and recontoured and upland habitat

within approximately 100 meters surrounding Prunedale Creek is denuded and has been disced. Geoffrey Gray of Caltrans mentioned that he had also observed this habitat modification but was not aware of who had completed the work or when it was done. Water was flowing in the modified creek channel and could provide summer refugia in areas that are not denuded. However, the barren upland areas are currently unsuitable.

Unoccupied aquatic habitat or areas where surveyors did not observe California red-legged frogs occurs near the Blackie Road/Reese Road project. A small intermittent stream is located west of State Route 101 and south of Prunedale Creek and originates from springs located adjacent to strawberry fields before it disappears into annual grasslands near the corner of Blackie Road and State Route 101. The drainage is dry most of the year but may provide aquatic habitat during the wet season.

Additional unoccupied habitat is located near the Crazy Horse Canyon Road/Echo Valley Road project area. A broad seasonal wetland and intermittent stream occur on the east side of State Route 101. Although there are no pools located within the project footprint, pools were located upstream that could provide breeding habitat as well as summer refugia. The wetland area to be affected is also suitable habitat. Approximately 4 acres of California red-legged frog habitat will be temporarily impacted and 1.3 acres will be permanently impacted.

Monterey spineflower

Small, scattered Monterey spineflower populations were identified in the Crazy Horse Canyon Road/Echo Valley Road Area on the west side of State Route 101. These locations occur in disturbed sandy soil that appears to have been cleared or scraped in the past. Monterey spineflower was found along the linear pathways that were cleared through shrub habitat. Central maritime chaparral habitat occurs in this vicinity and may harbor a seed bank of Monterey spineflower that would be expressed if conditions changed to open the shrub canopy. Approximately 0.4 acre of Monterey spineflower habitat will be temporarily impacted and 0.2 acre will be permanently impacted.

EFFECTS OF THE ACTION

California red-legged frog

California red-legged frogs that are not detected during the initial field surveys may be killed or injured during construction activities and habitat disturbance in riparian and upland areas. Injury or mortality may result from being crushed by earth moving equipment and worker foot traffic. Leaking or spilling of fuel or other toxic fluids during routine equipment maintenance and operations could result in acute or chronic effects to individuals of this species. These effects would be minimized by clearly demarcating and limiting work areas to the smallest size possible, establishing environmentally sensitive areas, and designating a qualified biologist to monitor construction activities and move California red-legged frogs out of harm's way. Relocating individual California red-legged frogs may minimize injury or mortality. However, relocated

California red-legged frogs could be injured or killed if they attempt to return to the project area during construction activities. Standard practices will be implemented to reduce noise and protect soil, water, and other resources during equipment operation.

The capture and handling of California red-legged frogs to move them from a work area could adversely affect individuals. Injury or mortality may occur as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat. These effects would be reduced or prevented by using only biologists approved by the Service to conduct these activities.

Chytrid fungus (*Batrachochytrium dendrobatidis*) could be spread if infected amphibians are relocated and introduced into areas with healthy amphibians or vice-versa. 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. The fungus 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. It is possible that during the relocation of California red-legged frogs proposed by the applicant that infected individuals or equipment could introduce chytrid fungus into areas where it did not previously occur. If this occurs, many California red-legged frogs could be affected.

An indirect effect of the construction of the projects is their eventual use and maintenance. Use of the roads could injure or kill California red-legged frogs as a result of vehicle strikes. Opportunities for California red-legged frogs to forage, shelter, and breed would also be reduced temporarily by construction activities and permanently by the elimination of upland and wetland habitats due to the project footprints. Some wetland values will be permanently lost as culverts and concrete drainage areas are built. However, temporarily disturbed riparian areas would be revegetated after construction activities. Erosion and sedimentation have been addressed in the design of the project to limit runoff from roads.

Monterey spineflower

Construction activities would cause loss of individual plants and would disrupt the seed bank as sand is displaced. Equipment and personnel may trample and uproot plants and destroy seeds by crushing. Although Monterey spineflower was not found on the east side of the Crazy Horse Canyon Road/Echo Valley Road area in recent surveys, construction activities may adversely affect them by destroying part of the soil seedbank and by temporarily disturbing habitat. Equipment operating in this area has the potential for the greatest impact by trampling and destroying seeds. However, by following the protection measures discussed above, namely limiting the project footprint and erecting retaining walls to preserve habitat, impacts to this area will be kept to a minimum. Disturbance will be temporary in 0.4 acre and restoration activities will begin after the completion of the construction project to prevent erosion.

Caltrans proposes to acquire land of equal or superior habitat to that of the area that would be disturbed by the proposed project or contribute funds to a preservation foundation to pool together funds for a larger property purchase and long term management. The proposed acquisition site will contain at a minimum occupied Monterey spineflower habitat and wetlands to compensate for the permanently lost habitat due to project construction. As mentioned previously, Caltrans is currently working with the Elkhorn Slough Foundation which may have the opportunity to purchase a property that contains suitable breeding ponds for California red-legged frogs and populations of the Monterey spineflower and Yadon's piperia.

In summary, the construction activities would temporarily affect approximately 5.3 acres of California red-legged frog habitat however; only 1.3 acres will be impacted permanently. Approximately 0.6 acre of Monterey spineflower habitat would be affected; however, only 0.2 acre would be impacted permanently. With the implementation of Caltrans' minimization measures, the impacts of the construction activities to the California red-legged frog in the form of injury or mortality are expected to be minimal. We anticipate that few, if any, individuals of the species are likely to be killed or injured during this work.

CUMULATIVE EFFECTS

Cumulative effects are those impacts of future State and private actions that are reasonably certain to occur in the project area. Future Federal actions would be subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed project. We are unaware of any other 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 Monterey spineflower, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the Prunedale Improvement Project for post mile 91.2 to post mile 100.4, is not likely to jeopardize the continued existence of the California red-legged frog or the Monterey spineflower. We base this conclusion on the following reasons:

1. In comparison with the amount of habitat available to the California red-legged frog elsewhere in this portion of Monterey County, a small amount of habitat would be permanently lost or temporarily disturbed. The 1.3 acres of habitat for the California red-legged frog that would be permanently lost, is of marginal quality and represents a small portion of the species' range.

2. The 0.2 acre of habitat for the Monterey spineflower that would be permanently lost represents a small portion of the species' range.

3. No California red-legged frog breeding habitat would be adversely affected by the proposed project.

4. FHWA and Caltrans will implement numerous measures to reduce the adverse effects of the proposed project on the California red-legged frog and Monterey spineflower.

5. Caltrans has proposed compensating for California red-legged frog and Monterey spineflower habitat that will be permanently lost by acquiring land of equal or superior habitat to that of the area that would be disturbed by the proposed project or contributing funds to a preservation foundation to pool together funds for a larger property purchase and long term management.

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. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service 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. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to 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. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

Section 9 of the Act does not address the incidental take of listed plant species. Consequently, this biological opinion does not contain an incidental take statement for the Monterey spineflower. Protection of listed plants is provided in that the Act requires a Federal permit for the removal or reduction to possession of endangered or threatened plants from Federal lands. Furthermore, it is unlawful for any person to remove, cut, dig up, or damage or destroy a listed plant species in knowing violation of any law or regulation of any state or in the course of any violation of a state criminal trespass law (section 9(a)(2)(B) of the Act).

The measures described below are non-discretionary and FHWA must make them binding conditions of any grant or permit issued to Caltrans, as appropriate, for the exemption in section 7(o)(2) to apply. FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If FHWA fails to require Caltrans to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, FHWA must report the progress of the action and its impact on the California red-legged frog and the Monterey spineflower to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

All California red-legged frogs found within the project area may be subject to take in the form of capture during relocation efforts. A subset of captured California red-legged frogs may experience a significant disruption of normal behavioral patterns to the point that reaches the level of harassment. California red-legged frogs that remain in the project area may be subject to increased predation, be crushed by workers conducting project activities, or be otherwise injured or killed.

California red-legged frogs may be taken only within the defined boundaries of the action area of the construction project as provided in the Description of the Proposed Action and the Environmental Baseline sections of this biological opinion. However, we cannot determine the precise number of California red-legged frogs that may killed, injured, harassed, or harmed as a result of the construction activities. Numbers and locations of California red-legged frogs within a population vary from year to year. Incidental take of the California red-legged frog would be difficult to detect because of their small body size and finding dead or injured specimens is unlikely. Take by predation would likely be impossible to detect.

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 the California red-legged frog:

1. FHWA and Caltrans must ensure that the level of incidental take anticipated in this biological opinion 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 in the action area.

3. California red-legged frogs within the action area that are at risk of injury or mortality as a result of project activities must be moved.

4. Biologists who handle California red-legged frogs must ensure that their activities do not transmit diseases or pathogens.

5. Caltrans must implement worker education programs and well-defined measures to reduce take of California red-legged frogs during project activities.

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 that were

developed by FHWA and Caltrans and repeated in the Description of the Proposed Action portion of this biological opinion. Any subsequent changes in these measures proposed by FHWA and 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 FHWA and Caltrans as part of the proposed action.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, FHWA must ensure that Caltrans complies 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 terms and conditions implement reasonable and prudent measure 1:

   a. To ensure that the measures proposed by FHWA and Caltrans are effective and are being properly implemented, Caltrans must contact the Service immediately if it becomes aware that a California red-legged frog has been killed or injured by project activities. At that time, the Service and the FHWA must review the circumstances surrounding the incident to determine whether additional protective measures are required. Project activities may continue pending the outcome of the review, provided that Caltrans proposed protective measures and the terms and conditions of this biological opinion have been and continue to be fully implemented.

   b. If more than 2 California red-legged frog adults, 1 tadpole, or 1 egg mass are found dead or injured during construction activities in any single calendar year, Caltrans or FHWA must contact the Service to determine whether formal consultation should be re-initiated. This threshold is intended to determine whether project activities may be affecting California red-legged frogs more substantially than we anticipated.

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

   FHWA or Caltrans must submit the credentials of persons who would survey for, capture and relocate California red-legged frogs to us for review and approval at least 30 days prior to conducting these activities.

3. The following term and condition implements reasonable and prudent measure 3:

   Prior to the onset of any construction or habitat enhancement activities, Service-approved biologists must identify appropriate areas to receive translocated California red-legged frogs in the project area. These areas must be in proximity to the capture site but outside any area likely to be adversely impacted by construction activities, support suitable

vegetation, and be free of exotic predatory species (e.g., bullfrogs, crayfish) to the best of the Service-approved biologists' knowledge.

4. The following term and condition implements reasonable and prudent measure 4:

To ensure that diseases are not conveyed between work sites by the 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.

5. The following terms and conditions implement reasonable and prudent measure 5:

a. Caltrans must use pre-existing access routes and staging areas whenever possible and clearly designate boundaries of any new areas prior to use.

b. A Service-approved biologist must conduct a brief training session for all project personnel before any project-related activities begin within the project area. At a minimum, the training must include a description of the California red-legged frog and Monterey spineflower, their habitats, the general provisions and protections afforded by the Act, the measures to be implemented during work activities to protect the species, and a review of project boundaries.

c. The project area must be kept clean. All food-related trash items that may attract predators must be enclosed in sealed containers and removed daily from the project area.

d. Hazardous materials must be stored at least 100 feet from aquatic habitats in a designated location with plastic lining for containment of accidental spills. Refueling of vehicles must occur at least 100 feet from aquatic habitats. All project-related spills of hazardous materials within or adjacent to the construction zone must be cleaned up immediately. All mechanized equipment operated within 100 feet of aquatic habitats must be maintained daily to avoid leaks.

REPORTING REQUIREMENTS

FHWA or Caltrans must provide a written annual report to the Service by January 31 of each year this biological opinion is in effect. The report must discuss activities for the previous calendar year and include a table summarizing California red-legged frog sightings and take for all years of this project. The report must document the number of California red-legged frogs s captured and translocated pursuant to project activities; the date and time of capture; specific location of capture; approximate age of individuals captured and translocated; a description of

translocation sites including existing habitat types and their proximity to non-native predators; and the number and life stage of bullfrogs and other non-native species removed.

The report must also include the number of California red-legged frogs killed or injured, if any, and the date(s) such incidental take occurred. The report must contain a discussion of the activities conducted, any problems encountered in implementing terms and conditions or minimization measures, and any recommendations for improving the protective measures. The report must also include a map identifying locations of all California red-legged frogs the translocation areas for California red-legged frogs, and the locations of all bullfrogs found. This document will assist the Service and the FHWA in evaluating future measures for the conservation of the California red-legged frog.

DISPOSITION OF DEAD OR INJURED SPECIMENS

Within 3 days of locating any dead or injured California red-legged frogs you must notify the Service's Division of Law Enforcement in writing (370 Amapola Avenue, Suite 114, Torrance, California 90501) and the Ventura Fish and Wildlife Office in writing and by telephone (2493 Portola Road, Suite B, Ventura, California 93003; (805) 644-1766). The report must include the date, time, location of the carcass, a photograph, cause of death (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 survive, FHWA or Caltrans must contact the Service regarding their final disposition. The remains of California red-legged frogs 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 California Academy of Sciences by Caltrans, or their biological consultants prior to conducting any project-related activities.

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, Monterey spineflower and other sensitive species.

1. FHWA and Caltrans should involve the Service in long-range planning so its projects are designed and implemented in a manner that meets the conservation needs of the California red-legged frog and Monterey spineflower.

2. FHWA and Caltrans should ensure that material hauled to project sites for fill is free of weedy exotic species. A qualified biologist should inspect the source of any fill material prior to its transport to project sites.

3. FHWA and Caltrans should implement an invasive species eradication program to remove bullfrogs (within guidelines of California Department of Fish and Game) and exotic plant species from the project area and all restoration areas.

4. FHWA and Caltrans should collect and stockpile the topsoil from Monterey spineflower population areas to be permanently affected and use in revegetation efforts.

REINITIATION NOTICE

This concludes formal consultation on the proposed construction of the Prunedale Improvement Project for post mile 91.2 to post mile 100.4. As provided at 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 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 Julie Niceswanger of my staff at (805) 644-1766, extension 290.

Sincerely,

David M. Pereksta
Assistant Field Supervisor
Santa Cruz/San Benito/Monterey

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

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

Attn: Hernan Perez

Date: June 6, 2008

File: MON-101-PM 96.1
Retaining Wall No. 16
Prunedale Improvement
Br. No. 44-E0012
05-0161E1

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 request dated March 15, 2007. Proposed improvements are part of the Prunedale Improvement Project (PIP). The project proposes widening San Miguel Canyon Road adjacent to the proposed widening of the San Miguel Canyon O.C., which will require construction of a retaining wall in order to support the new fill. Refer to the attached layout for the location of the new retaining wall relative to existing facilities.

Project Description

State Route 101 within the project extents is a four-lane facility divided by a concrete median barrier. Lane widths are approximately 3.6 meters with a 2.4-meter southbound outside shoulder. The San Miguel Canyon Road interchange was constructed around 2000 to replace at grade intersections for numerous driveways in the area.

Widening the southbound offramp will provide a left turn lane for access onto San Miguel Canyon Road and improve the level of service of the existing intersection. A Type 1 retaining wall supported on 400 kN piles is recommended to support the fill adjacent to San Miguel Canyon Road O.C. Refer to layouts provided by design for project extents and the location of the wall relative to existing facilities. Three mud rotary borings were drilled in August of 2007 to provide information for the foundation recommendation. Boring logs from 1999 for the San Miguel Canyon Road Interchange project were also referenced.

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. *Geotechnical Design Report San Miguel Canyon Road Interchange*, EA 05-016171, Caltrans, Michael Finegan, Dec 15, 1998
3. *Geologic Map of California Santa Cruz Sheet,* Olaf P. Jenkins, State Department of Natural Resources, Division of Mines, 1958.

Site Geology and Subsurface Conditions

Topography and Geology

The project is located in the Gabilan Range of the Coast Range geomorphic province of California. The terrain consists flood plains and steep drainages covered with grasses, trees, and brush. Route 101 in the project area passes through the Prunedale Hills, which are gently rounded with deeply incised drainages. The main drainage in the project area is Prunedale Creek, which flows southwest through the project area parallel to Route 101. All surface drainage in the project area eventually flows into Prunedale Creek. Wetland habitat occurs along Prunedale Creek in the project area. The proposed structure is adjacent to a wetlands area, which will be preserved during and after construction.

The primary geologic formation in the project area is Pleistocene aged eolian and fluvial sedimentary deposits known as Aromas Sand. The Aromas Formation is composed of weakly cemented sands, silts, clays, and gravels that erode rapidly on slopes that are not vegetated. The formation is ordinarily massive, with indistinct bedding. Dark colored iron oxide cement is derived from iron-bearing ground water from the surrounding hills and rocks, which contain iron-bearing minerals. Most natural slopes in the Aromas Sand are gentle to moderately steep and appear stable. Deeply incised or "badland topography" develops on both natural and cut slopes where not protected from erosion. Refer to the attached geologic map and legend.

Soil Conditions and Geologic Hazards

Laboratory classification results and field observations found that interbedded layers of sand, clay and silt underlie the project site. Standard Penetration Test blow counts indicate an embankment fill of medium dense silty sand approximately 4 to 6 meters in depth, underlain by a 6 to 10 meter alluvial deposit of loose to very loose clayey sand, silty sand and soft clay overlying medium dense to dense silty sand of the Aromas Formation. Embankment fill consists of native silty sands from the Aromas Formation taken from cuts during construction of the interchange. The observed stratigraphy is consistent with geologic maps for the area, which show alluvial soils deposited by Prunedale Creek overlying silty sands of the Aromas Formation.

The Final Seismic Design Recommendations for the Overcrossing Widening indicate that liquefaction potential exists for a 5-meter thick loose silty sand layer from approximately elevation 40 meters to elevation 35 meters. Boring 99-1 was used to perform the analysis of liquefaction potential. The potentially liquefiable layer was encountered only in boring R-07-004 near wall station 16+23 at the end of the wall. Interpretation of the boring logs indicates that the soil stratigraphy consists of interbedded sands, silts and clays with discontinuous layers and variation in depth. Due to the heterogeneous nature of the soil profile and the presence of cohesive soils, potential hazards due to liquefaction are localized and will not affect overall performance of the structure.

Ground Water

Wet soils were encountered below the embankment fill in the clayey sand at an elevation of approximately 39 meters. Previous geotechnical investigations for the San Miguel Interchange project encountered groundwater near the ground surface, coinciding with the elevation of the clayey sand layer, which is now beneath the embankment fill. Groundwater is not expected to be encountered during construction of the retaining wall foundation.

Corrosion

Soil samples were taken during drilling and sent to the District 5 Laboratory for corrosion analysis. Test results show that the soils have a pH greater than 5.5 and resistivity greater

than 1000 ohm-cm. Based upon the test results, the soils are considered to be non-corrosive. Refer to the attached results of the corrosion analysis.

Seismic Study

The project area is located within a seismically active region. 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 maximum credible Moment Magnitude, approximate distance to the site and the expected maximum bedrock accelerations.

Fault	Maximum Credible Moment Magnitude	Distance	Acceleration
King City - Reliz	7.0	15 km	0.28g (gravity)
San Andreas (North)	8.0	11 km	0.47g
Calaveras	7.5	23 km	0.28g
Zayante - Vergales	7.25	4 km	0.58g
Monterey Bay	6.5	22 km	0.17g
Tularcitos	7.0	25 km	0.19g
Sargent	6.75	17 km	0.24g

The fault that has the greatest potential to influence this site is the Zayante-Vergales. The maximum credible Moment Magnitude as determined from Caltrans is 7.25. The peak horizontal bedrock acceleration at the project site is 0.58g (gravity) according to Final Seismic Design Recommendations for the San Miguel Canyon OC (Widen) dated January 14, 2008.

Foundation Recommendations

Construction of a standard plan Type 1 retaining wall supported on 400 kN piles is recommended to support the new embankment fill. Piles should be "Alternative W", steel pipe piles (PP360x9.53). Pile capacities derived from side resistance and end bearing were determined using the computer program "DRIVEN", assuming that the pipe piles will plug during driving and significant values of axial resistance will be obtained from pile end bearing. The computed and recommended pile tip elevations are summarized in the following Pile Data Table. The maximum retained height of the wall will be approximately 4300 millimeters and a minimum footing width of 2450 millimeters is recommended. Vertical footing steps shall be a minimum of 200 millimeters, per section 210.7 of the Caltrans Highway Design Manual. Refer to Caltrans Standard Plans for details of construction.

PILE DATA TABLE

Wall Station (meters)	Pile Type	Design Loading	Nominal Resistance kN		Design Tip Elevations (meters)	Specified Tip Elevations (meters)
			Compression	Tension		
16+22.634 to 16+35.00	PP 360x 9.53	400 kN	800 kN	N/A	29.0	29.0
16+35.00 to 16+60.00	PP 360x 9.53	400 kN	800kN	N/A	27.0	27.0
16+60.00 to 16+72.784	PP 360x 9.53	400 kN	800kN	N/A	29.0	29.0

Note: Design tip elevation is controlled by compression demand

Specified pile tip elevations were designed to extend into the medium dense to dense silty sand of the Aromas Formation underlying less competent materials. Deeper pile tip elevations were required at locations where the old Prunedale Creek channel had cut into the Aromas Formation and deposited loose soils unsuitable for pile end bearing.

Project LOTB's have not been finalized. They will be sent electronically from the Graphics Section when they are complete. For information regarding the status and delivery of the LOTB's, contact Irma Garmarra-Remmen at (916) 227-7203.

Slope Stability

Existing fill slopes beneath San Miguel Canyon Road were to be reinforced with geosynthetic reinforcement as part of the San Miguel Canyon Interchange project. The reinforcement was eliminated and the slopes flattened to 1:2 per recommendations from District Hydraulics. The memorandum recommending the change and revised contour map are attached to this report for reference. Slope stability is not considered to be an issue for the pile supported retaining wall.

Construction Considerations

All temporary cut slopes shall conform to OSHA guidelines and shall not exceed 1:1 slope. Permanent cut and fill slopes shall not exceed 1:2 slope.

Maintain a minimum horizontal distance of 1.5 meters from the toe of the retaining wall footing to the face of the slope below the wall.

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 of this report via electronic mail.

Data and information attached with the project plans are:
A. Log of Test Borings for Retaining Wall No. 16.

Data and information included in the Information Handout provided to the Bidders and Contractors are:
A. Foundation Report for the Retaining Wall dated June 6, 2008.

If you have any questions or comments, please contact Ryan Turner at (805) 549-3750 or Michael Finegan at (805) 549-3194.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL S. FINEGAN
No. C050138
Exp. 6/30/09
CIVIL
STATE OF CALIFORNIA

RYAN TURNER
Transportation Engineer
Geotechnical Design – North
Branch D

MICHAEL S. FINEGAN, PE
Geotechnical Design – North
Branch D

c: GDN Records
Branch D Records
GS Records
John Stayton- Structure Office Engineer (4)

LIST OF ATTACHMENTS

Vicinity Map	Attachment 1
Geologic Map and Legend	Attachment 2
Layout	Attachment 3
Corrosion Analysis Results	Attachment 4
Mitigation Site Grading Memo	Attachment 5
Revised Contour Grading Map	Attachment 6

INDEX OF SHEETS

STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

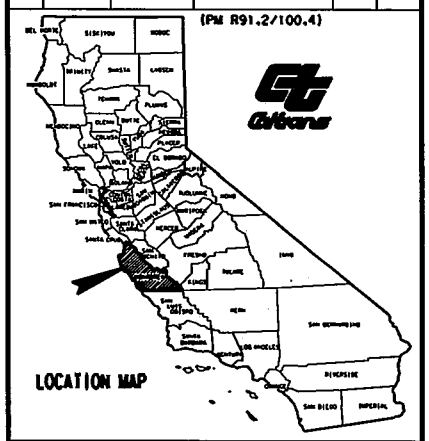
PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN MONTEREY COUNTY IN AND NEAR PRUNEDALE ON ROUTE 101 FROM 0.3 Km NORTH OF BORONDA ROAD TO 0.5 Km NORTH OF ECHO VALLEY ROAD

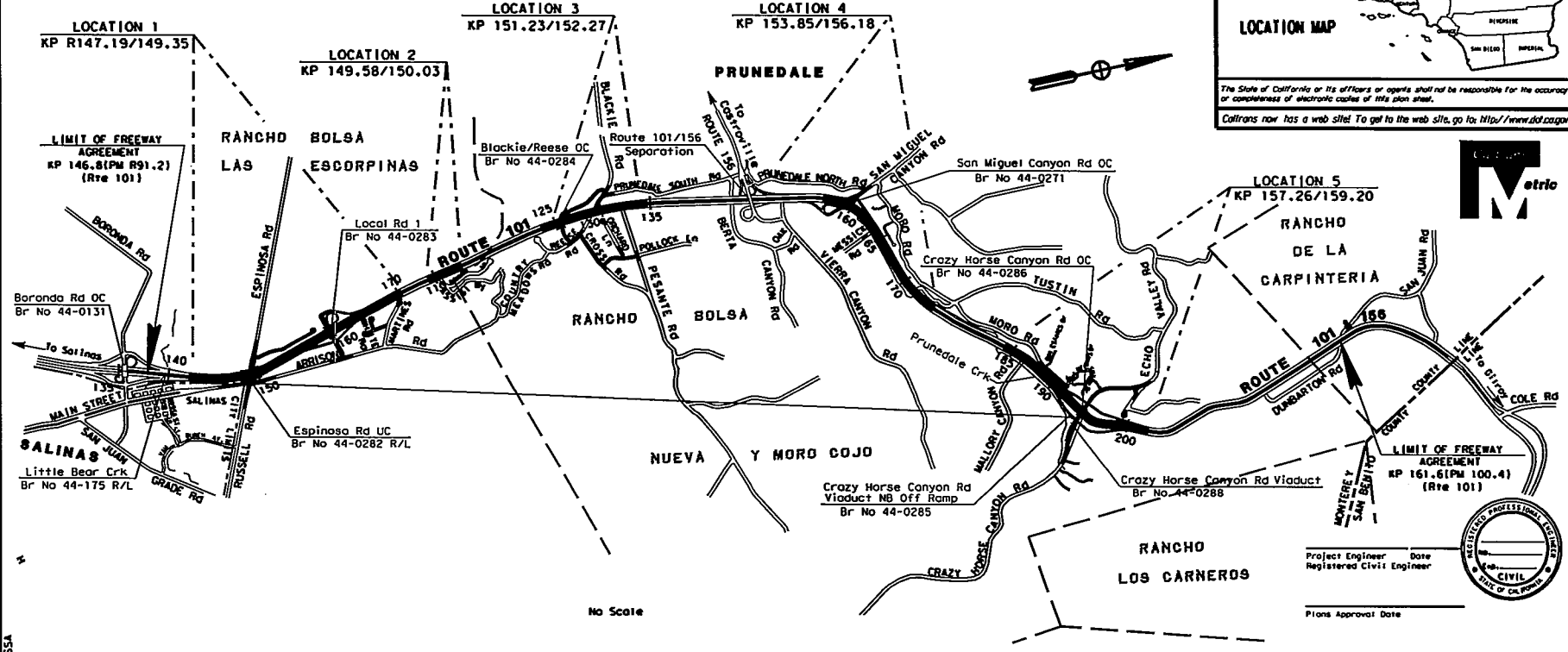
To be supplemented by Standard Plans dated July, 1999

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
05	Mon	101	R146.8/161.6 (PM R91.2/100.4)		



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.

Caltrans now has a web site! To get to the web site, go to: http://www.dot.ca.gov



The Contractor shall possess the Class (or classes) of license as specified in the "Notice to Contractors".

Project Engineer Date
Registered Civil Engineer

Plans Approval Date

REGISTERED PROFESSIONAL ENGINEER CIVIL STATE OF CALIFORNIA

PROJECT ENGINEER D. FRAWLEY DATE 03/07 PROJECT MANAGER D. SILBERBERGER DATE 03/07

D. MASSA

Contract No. 05-0161E4

FORM DC-OE-93-PF (REV. 3/88)

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

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03-15-07

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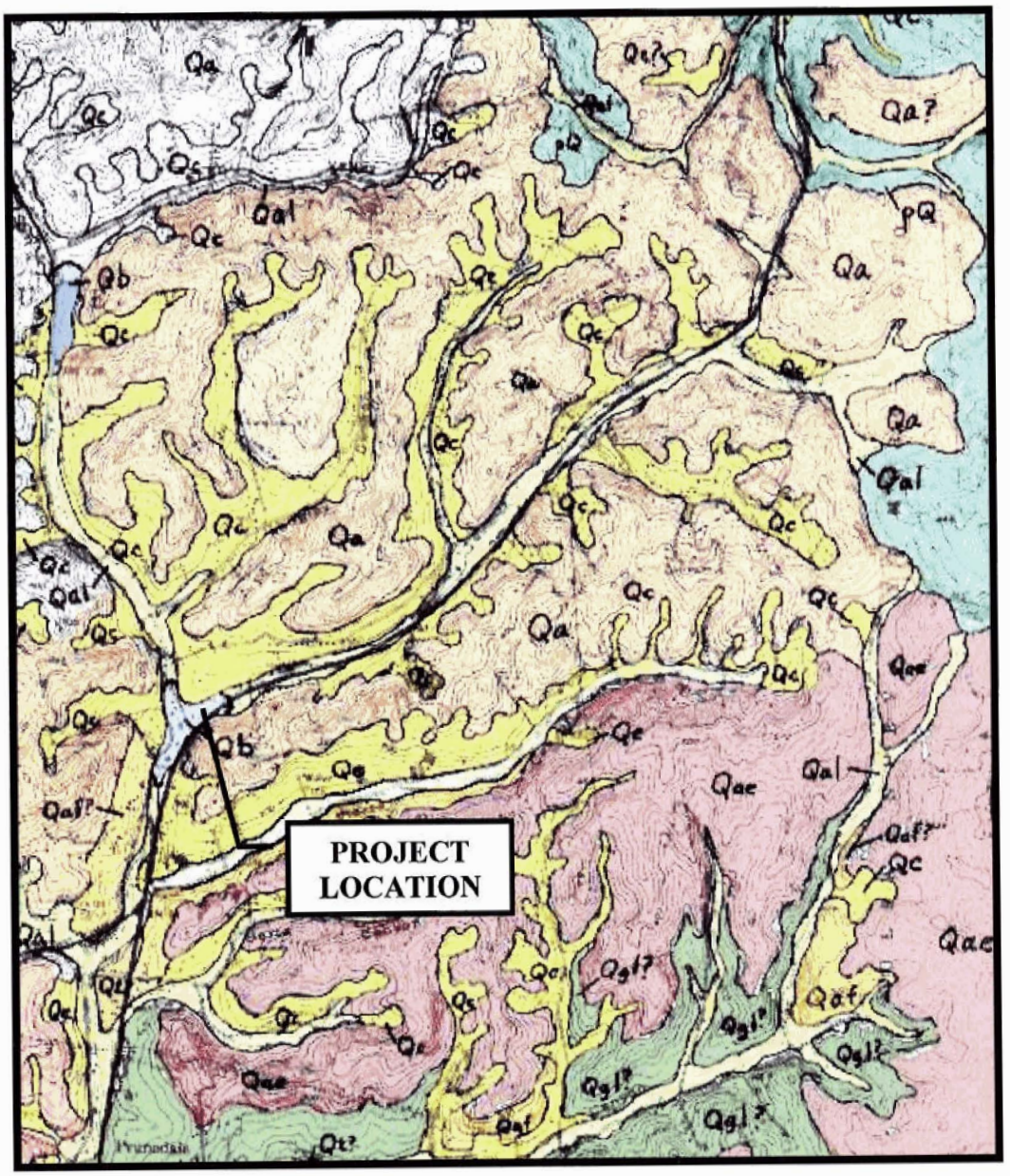
Attachment 1 1/1



SCALE 1:62 500

1 ½ 0 1 2 3 4 5 MILES

1 .5 0 1 2 3 4 5 KILOMETERS

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

Attachment 2 1/3

This map is part of:
Map Showing Geology and Liquefaction Potential of Northern Monterey and Southern Santa Cruz Counties, California
By: Dupre and Tinsley
1980

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

Attachment 2 3/3

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6	39	00

(PM R91.2/100.4)

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

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Caltrans now has a web site! To get to the web site, go to: http://www.dot.ca.gov

Caltrans Metric

PRELIMINARY PLAN
SUBJECT TO REVISION

MATCH SHEET L-38

N 29° 39' 24.8" W
453.275 m

San Miguel Canyon Rd

17+00

PI 59+46.821
PC 59+46.821
17+91.0375

F-LINE

60

E/C

R=890.49

BEGIN RW No. 8
Sta 59+69.079

END RW No. 7
Sta 16+72.686
12.594 m Rt

Concrete Barrier
On Top Of Retaining Wall

END RW No. 8
Sta 60+62.059

61

PI 61+87.147

EXISTING R/W

DENSE BRUSH

F-LINE

Overlay/Reconstruction of AC Pavements
Sta 160+77.0516 to Sta 164+43.9028

ROUTE 101 & ROUTE 156

CB Type 60

162

R=762

MATCH SHEET L-40

MATCH SHEET L-37

Match Striping
Sta 160+20.00 (SB)

161

160

R=762

Existing ℄

Match Existing Median Barrier
Sta 160+77.0516, Lt 5.59

Match Striping
Sta 160+60.00 (NB)

6.1 m UTILITY EASEMENT

DIKE

BRUSH

EXISTING R/W

ASPH

GNV

PIPE

ALL DIMENSIONS ARE IN METERS
UNLESS OTHERWISE SHOWN

PRUNEDALE IMPROVEMENT PROJECT

LAYOUT

SCALE: 1:500

L-39

Attachment 3 1/2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER	CALCULATED/ DESIGNED BY	SGA	DATE 6/05	REVISED BY
Caltrans PROJECT DEVELOPMENT	DAVID S. FRANKE	CHECKED BY			DATE REVISED

LAST REVISION 06-15-05 | DATE PLOTTED => $DATE | TIME PLOTTED => $TIME

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

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DGN FILE => $REQUEST

CU 06226

EA 0161E0

layout39.dgn 1/31/2008 2:41:31 PM

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6 (PM R91.2/100.4)		

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

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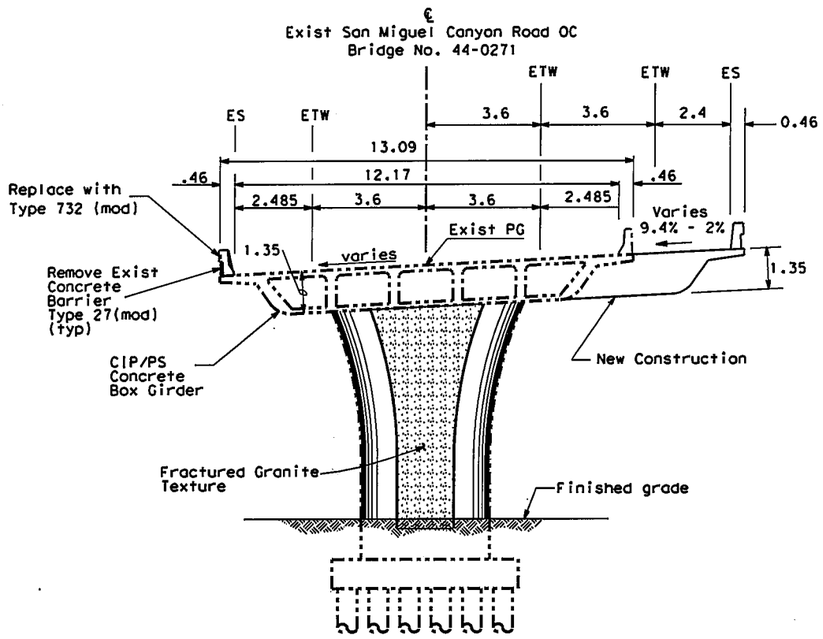
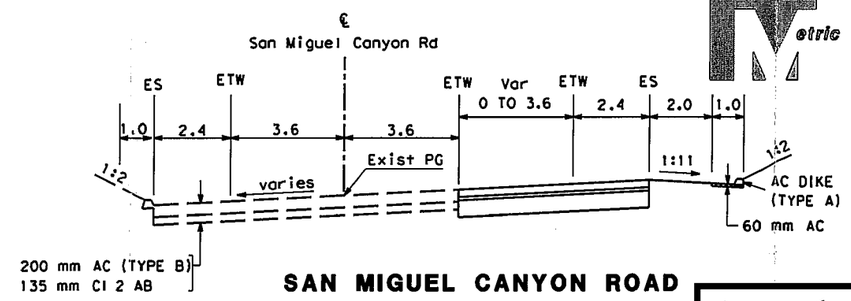
Cal-Trans now has a web site! To get to the web site, go to: http://trescdd.ca.gov

Caltrans Metric

NOTES:
1. SEE PROJECT CONTRACT No. 05-016174 PLANS
2. SEE SAN MIGUEL CANYON ROAD OC BRIDGE No. 44-0271 PLANS

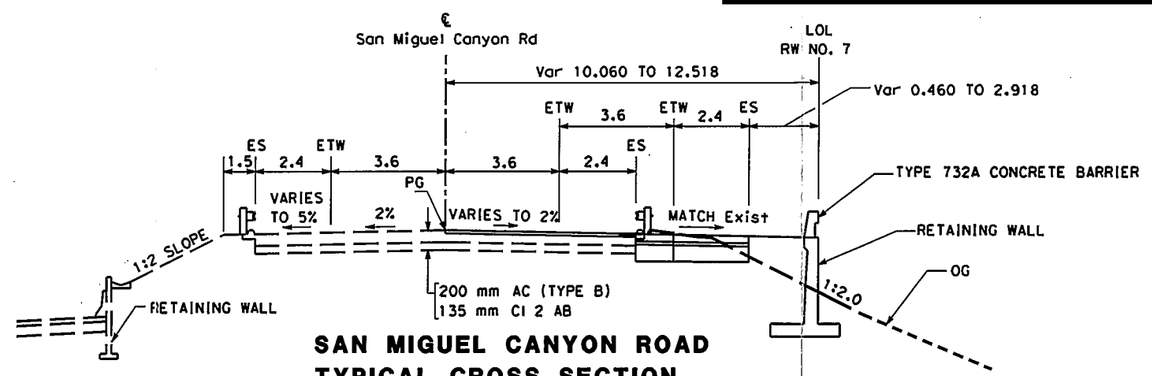


TYPICAL SECTION
STA 15+60.224 TO 16+18.805
SEE NOTES 1 AND 2
No Scale

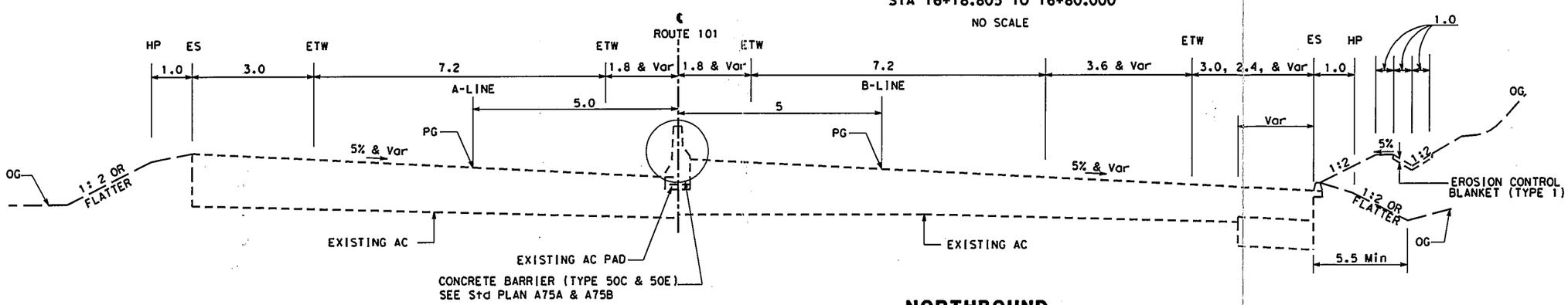


SAN MIGUEL CANYON ROAD
TYPICAL CROSS SECTION
STA 15+40.000 TO 15+60.224
NO SCALE

Attachment 3 2/2



SAN MIGUEL CANYON ROAD
TYPICAL CROSS SECTION
STA 16+18.805 TO 16+80.000
NO SCALE



SOUTHBOUND
STA 159+20 TO 160+00

NORTHBOUND
STA 150+70 TO 154+93
STA 157+60 TO 160+89

ROUTE 101

ALL DIMENSIONS ARE IN
METERS UNLESS OTHERWISE SHOWN

PRUNEDALE IMPROVEMENT PROJECT
SAN MIGUEL CANYON ROAD OC
NO SCALE **SHEET 3 OF 3**

DATE	REVISED BY	DATE REVISED
7/05	CJG	

CALCULATED/DESIGNED BY — CHECKED BY — PROJECT ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PROJECT DEVELOPMENT

LAST REVISION 07-19-05 — DATE PLOTTED => $DATE — TIME PLOTTED => $TIME

FOR REDUCED PLANS ORIGINAL SCALE IS IN MILLIMETERS 0 20 40 60 80

USERNAME => $USER
DGN FILE => $REQUEST

CU 06226 | EA 0161E0

SanMigOCplansheets082605.dgn 1/31/2008 3:20:25 PM

Attachment 4 1/2

FRONT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON STABILOMETER

MR-0361 (REV. 12/91)

TEST NO. 0507 338

DATE RECEIVED AUG 14 2007

CALC. BY

APPROVED BY

DATE REPORTED faxed 08-21-2007

☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB

☐ RESIDENT ENGINEER

☒ GEO-TECH

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

REMARKS:

PH — 6.7

RESISTIVITY — 2400 Ω CM

REPORT OF TESTS ON

SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION
0631705		01 61 E1

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ.-#/CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK, BY STAB. FEET					
EXPANSION DIAL READING					
THICK, BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS			SPEC.
LL.	P.L.	P.I.	
CV			

S.E.	AS REC'D.		
	CRUSHED		
	COMBINED		
LART	GRADE	100 REV.	
		500 REV.	
DUR.	D_i		
	D_e		
% CRUSHED PARTICLES			

SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT	
	FINE	COARSE
AS REC'D		
CRUSHED		
REL. COMPACTION DATA		
	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

SURFACE	
BASE	
SUBBASE	
GRAVEL EQUIVALENT FACTOR	
TRAFFIC INDEX	
R VALUE: EXUDATION PRESSURE	
R VALUE: EXPANSION PRESSURE	
R VALUE: AT EQUILIBRIUM	SPEC.
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)	

FM 91 1433 M

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER C 707180

0507 338

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS

INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB

☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDQTRS. LAB
☐ BRANCH LAB
☐ DIST. LAB

FIELD NO.

DIST. LAB NO.

LOT NO.

SHIPMENT NO.

P.O. OR REQ. NO.

AUTHORIZATION NO. 05-01161

AUG 14 2007

SAMPLE OF Soil

FOR USE IN Structure Fund

SAMPLE FROM R-07-003

DEPTH 25' - 32'

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN 1 (NO. CONTAINERS)

AND IS ON E OF A GROUP OF 1

SAMPLES REPRESENTING (TONS, GALS, BBLS, STA, ETC.) lbs

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE

TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY

DATE NEEDED

REMARKS

PH & Resistivity

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED 7/31/07

BY L. Hoon

TITLE MRGB

DIST, CO, RTE, PM 05-MON-101-92.4/100.4

LIMITS

CONT. NO.

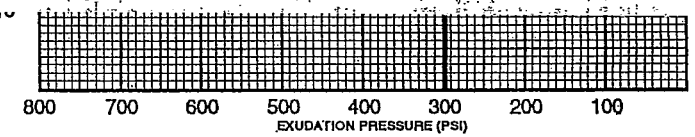
FED. NO.

RES. ENGR. OR SUPT.

ADDRESS

CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE



Attachment 4 2/2

FRONT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON STABILOMETER

MR-0361 (REV. 12/91)

TEST NO. 0507 337

DATE RECEIVED AUG 14 2002

APPROVED BY

CALC. BY

DATE REPORTED faxed 08-21-07

☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
☐ RESIDENT ENGINEER
☒ GEO-TECH

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

REMARKS:

PH — 6.5

RESISTIVITY — 3300 ΩCM

REPORT OF TESTS ON: SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION
06317 05		01 61 E1

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ.-#/CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK, BY STAB. FEET					
EXPANSION DIAL READING					
THICK, BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS			SPEC.
LL.	P.L.	P.I.	
CV			
S.E.	AS REC'D.		
	CRUSHED		
	COMBINED		
LART	GRADE 100 REV.		
	500 REV.		
DUR.	D_1		
	D_c		
% CRUSHED PARTICLES			

SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT	
	FINE	COARSE
AS REC'D		
CRUSHED		
REL. COMPACTION DATA		
	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

SURFACE	
BASE	
SUBBASE	
GRAVEL EQUIVALENT FACTOR	
TRAFFIC INDEX	
R VALUE: EXUDATION PRESSURE	
R VALUE: EXPANSION PRESSURE	
R VALUE: AT EQUILIBRIUM	SPEC.
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)	

FM 91 1433 M

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER C 707181

0507 337

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS

INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB

☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDQTRS. LAB
☐ BRANCH LAB
☒ DIST. LAB

FIELD NO.
DIST. LAB NO.
LOT NO.
SHIPMENT NO.
P.O. OR REQ. NO.
AUTHORIZATION NO. 05-016181

SAMPLE OF Soil

FOR USE IN Structure Found.

AUG 14 2002

SAMPLE FROM R-07-002

DEPTH 5'-15'

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) 1

AND IS ON E OF A GROUP OF 1

SAMPLES REPRESENTING (TONS, GALS, BBLS, STA. ETC.) lbs

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE

TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY

DATE NEEDED

REMARKS

PH & RESISTIVITY

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED 7/3/07

BY W. Hoen

TITLE MAEA

DIST, CO, RTE, PM 05-MON-101-R1.2/100.4

LIMITS

CONT. NO.

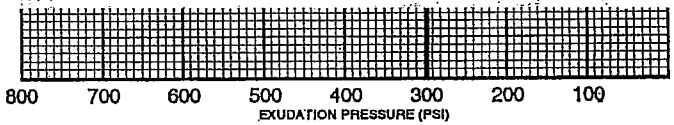
FED. NO.

RES. ENGR. OR SUPT.

ADDRESS

CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE



State of California Business, Transportation and Housing Agency

Caltrans

Memorandum

To : Rochelle Watts
Hydraulics, District 6

Date: May 6, 1999

File No. : 05-Mon-101
KP 153.8/155.9
(PM 95.3/96.9)
06-249-016171
San Miguel Canyon
Interchange

From : DEPARTMENT OF TRANSPORTATION
Central Region Landscape Architecture
District 5 Branch
Corby Kilmer

Subject : **Mitigation Site Grading**

Attached please find my sketch of proposed grading for the wetlands mitigation area. It reflects the changes we discussed at our last meeting -

- 1:2 slopes or gentler, instead of 1:1 1/2 so that we can eliminate structural fabric and allow planting on the slopes (conform to 1:1 1/2 at new headwall and up station of trees to remain).
- Deepen the area to at least Elevation 37m with a small pool to 36.6m +/- if possible.
- Contour the area in a natural form - rounded slopes.

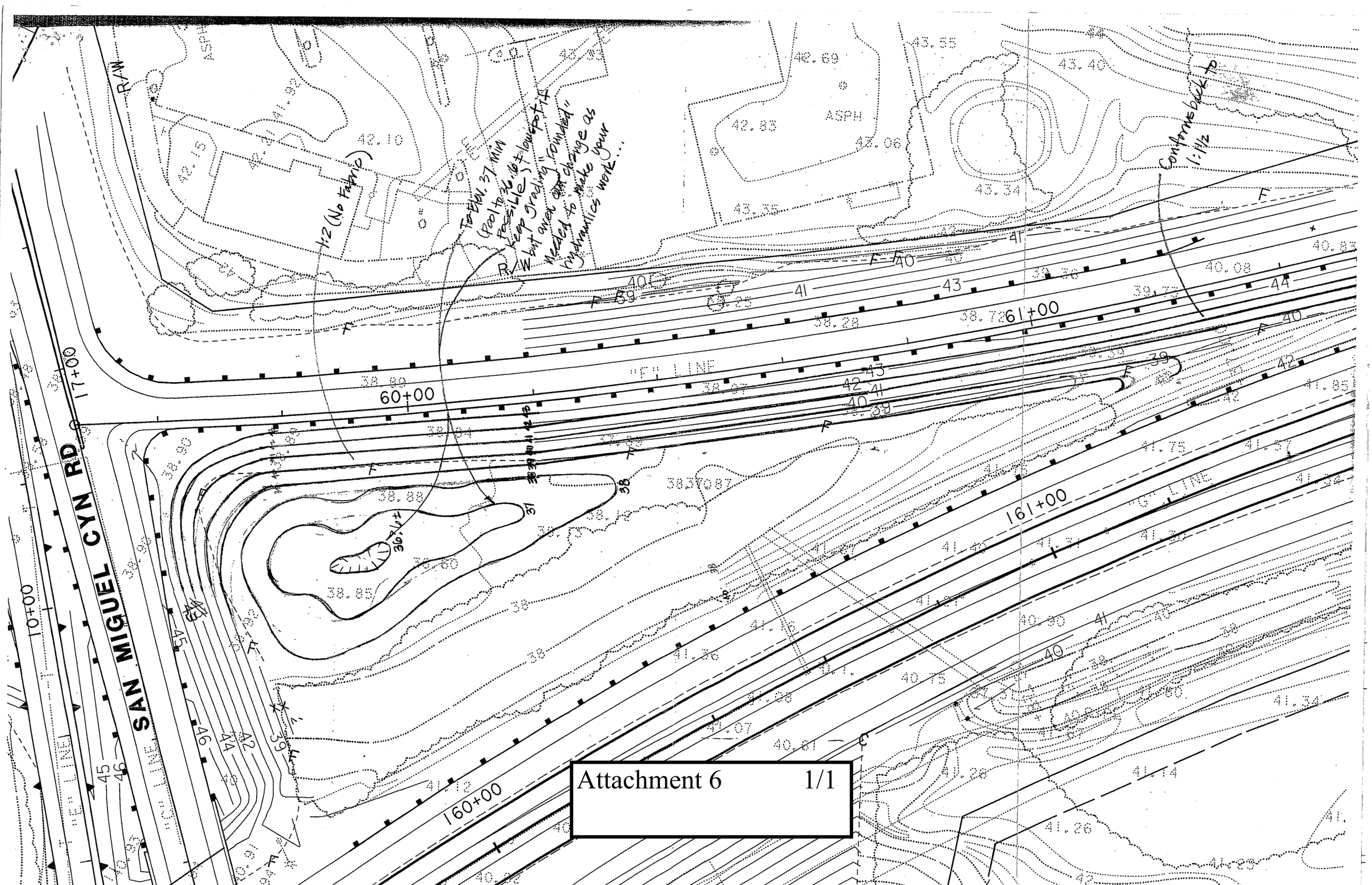
Fine tune these grades as needed, if you find this doesn't meet your drainage requirements, give me a call and we'll come up with another alternative.

Also at a previous meeting we had talked about rounding and naturalizing the edge of the large cut slope. Anything you can do to soften the hard artificial line of the typical half moon shape of the cut will help blend this visually into the surrounding hills.

If you have any questions I can be reached at:
Ph 805-542-4679 (Atss: 8-629) Fax: 8-629-4746 or by email.

cc: J. Xu, Design 6
M. Finnegan, Geotech
J. Luchetta, Environmental
J. Ponce, Proj Mgmt
File

Attachment 5 1/1



Attachment 6 1/1

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

Attn: Hernan Perez

Date: June 6, 2008

File: MON-101-PM 96.1
Retaining Wall No. 60
Br. No 44-E0013
Prunedale Improvement
05-0161E1

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 request dated March 15, 2007. Proposed improvements are part of the Prunedale Improvement Project (PIP). The project proposes widening San Miguel Canyon Road adjacent to the proposed widening of the San Miguel Canyon O.C., which will require construction of a retaining wall in order to support the new offramp fill. Refer to the attached layout for the location of the new retaining wall relative to existing facilities.

Project Description

State Route 101 within the project extents is a four-lane facility divided by a concrete median barrier. Lane widths are approximately 3.6 meters with a 2.4-meter southbound outside shoulder. The San Miguel Canyon Road interchange was constructed around 2000 to replace at grade intersections for numerous driveways in the area.

Widening the southbound offramp will provide a left turn lane for access onto San Miguel Canyon Road and improve the level of service of the existing intersection. A Type 1 retaining wall supported on 400 kN piles is recommended to support the fill adjacent to the San Miguel Canyon Road southbound off ramp. Refer to layouts provided by design for project extents and the location of the wall relative to existing facilities. Three mud rotary borings were drilled in July and August of 2007 to provide information for the foundation recommendation. Boring logs from 1998 for the San Miguel Canyon Road Interchange project were also referenced.

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. *Geotechnical Design Report San Miguel Canyon Road Interchange*, EA 05-016171, Caltrans, Michael Finegan, Dec 15, 1998
3. *Geologic Map of California Santa Cruz Sheet,* Olaf P. Jenkins, State Department of Natural Resources, Division of Mines, 1958.

Site Geology and Subsurface Conditions

Topography and Geology

The project is located in the Gabilan Range of the Coast Range geomorphic province of California. The terrain consists flood plains and steep drainages covered with grasses, trees, and brush. Route 101 in the project area passes through the Prunedale Hills, which are gently rounded with deeply incised drainages. The main drainage in the project area is Prunedale Creek, which flows southwest through the project area parallel to Route 101. All surface drainage in the project area eventually flows into Prunedale Creek. Wetland habitat occurs along Prunedale Creek in the project area. The proposed structure is adjacent to a wetlands area, which will be preserved during and after construction.

The primary geologic formation in the project area is Pleistocene aged eolian and fluvial sedimentary deposits known as Aromas Sand. The Aromas Formation is composed of weakly cemented sands, silts, clays, and gravels that erode rapidly on slopes that are not vegetated. The formation is ordinarily massive, with indistinct bedding. Dark colored iron oxide cement is derived from iron-bearing ground water from the surrounding hills and rocks, which contain iron-bearing minerals. Most natural slopes in the Aromas Sand are gentle to moderately steep and appear stable. Deeply incised or "badland topography" develops on both natural and cut slopes where not protected from erosion. Refer to the attached geologic map and legend.

Soil Conditions and Geologic Hazards

Laboratory classification results and field observations found that interbedded layers of sand, clay and silt underlie the project site. Standard Penetration Test blow counts indicate an embankment fill of medium dense silty sand approximately 4 to 6 meters in depth, underlain by a 6 to 10 meter alluvial deposit of loose to very loose clayey sand, silty sand and soft clay overlying medium dense to dense silty sand of the Aromas Formation. Embankment fill for the existing southbound off ramp consists of native silty sands from the Aromas Formation taken from cuts during construction of the interchange. The observed stratigraphy is consistent with geologic maps for the area, which show alluvial soils deposited by Prunedale Creek overlying silty sands of the Aromas Formation.

The Final Seismic Design Recommendations indicate that liquefaction potential exists for a 5-meter thick loose silty sand layer. Boring 99-1 was used to analyze the liquefaction potential. The potentially liquefiable layer was encountered only in boring R-07-003 near "F" Line station 59+71 at the end of the wall from approximately elevation 39 meters to elevation 36 meters. Interpretation of the boring logs indicates that the soil stratigraphy consists of interbedded sands, silts and clays with discontinuous layers and variation in depth. Due to the heterogeneous nature of the soil profile and the presence of cohesive soils, potential hazards due to liquefaction are localized and will not affect overall performance of the structure.

Ground Water

Wet soils were encountered below the offramp embankment fill in the clayey sand at an elevation of approximately 39 meters. Previous geotechnical investigations for the San Miguel Interchange project encountered groundwater near the ground surface, coinciding with the elevation of the clayey sand layer, which is now beneath the embankment fill. Groundwater is not expected to be encountered during construction of the retaining wall foundation.

Corrosion

Soil samples were taken during drilling and sent to the District 5 Laboratory for corrosion analysis. Test results show that the soils have a pH greater than 5.5 and resistivity greater

than 1000 ohm-cm. Based upon the test results, the soils are considered to be non-corrosive. Refer to the attached results of the corrosion analysis.

Seismic Study

The project area is located within a seismically active region. 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 maximum credible Moment Magnitude, approximate distance to the site and the expected maximum bedrock accelerations.

Fault	Maximum Credible Moment Magnitude	Distance	Acceleration
King City - Reliz	7.0	15 km	0.28g (gravity)
San Andreas (North)	8.0	11 km	0.47g
Calaveras	7.5	23 km	0.28g
Zayante - Vergales	7.25	4 km	0.58g
Monterey Bay	6.5	22 km	0.17g
Tularcitos	7.0	25 km	0.19g
Sargent	6.75	17 km	0.24g

The fault that has the greatest potential to influence this site is the Zayante-Vergales. The maximum credible Moment Magnitude as determined from Caltrans is 7.25. The peak horizontal bedrock acceleration at the project site is 0.58g (gravity) according to Final Seismic Design Recommendations for the San Miguel Canyon Road OC dated January 14, 2008.

Foundation Recommendations

Construction of a standard plan Type 1 retaining wall supported on 400 kN piles is recommended to support the new embankment fill. Piles should be "Alternative W", steel pipe piles (PP360x9.53). Pile capacities derived from side resistance and end bearing were determined using the computer program "DRIVEN", assuming that the pipe piles will plug during driving and significant values of axial resistance will be obtained from pile end bearing. The computed and recommended pile tip elevations are summarized in the following Pile Data Table. The maximum retained height of the wall will be approximately 3000 millimeters and a minimum footing width of 1900 millimeters is recommended. Vertical footing steps shall be a minimum of 200 millimeters, per section 210.7 of the Caltrans Highway Design Manual. Refer to Caltrans Standard Plans for details of construction.

PILE DATA TABLE

Wall Station (meters)	Pile Type	Design Loading	Nominal Resistance kN		Design Tip Elevations (meters)	Specified Tip Elevations (meters)
			Compression	Tension		
59+68.75 to 59+71.61	PP 360x 9.53	400 kN	800 kN	N/A	32.0	32.0
59+71.61 to 60+35.91	PP 360x9.53	400 kN	800kN	N/A	31.0	31.0
60+35.91 to 60+45.67	PP 360x9.53	400 kN	800kN	N/A	31.0	31.0
60+45.67 to 60+59.46	PP 360x 9.53	400 kN	800kN	N/A	31.5	31.5

Note: Design tip elevation is controlled by compression demand

Specified pile tip elevations were designed to extend into the medium dense to dense silty sand of the Aromas Formation underlying less competent materials.

Project LOTB's have not been finalized. They will be sent electronically from the Graphics Section when they are complete. For information regarding the status and delivery of the LOTB's, contact Irma Garmarra-Remmen at (916) 227-7203.

Slope Stability

Existing fill slopes beneath the southbound offramp are reinforced with geosynthetic reinforcement along the left side of the ramp. Geosynthetic reinforcement is not present at the retaining wall location. Slope stability is not considered to be an issue for the pile supported retaining wall.

Construction Considerations

All temporary cut slopes shall conform to OSHA guidelines and shall not exceed 1:1 slope. Permanent cut and fill slopes shall not exceed 1:2 slope.

Maintain a minimum horizontal distance of 1.5 meters from the toe of the retaining wall footing to the face of the slope below the wall.

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 of this report via electronic mail.

Data and information attached with the project plans are:
A. Log of Test Borings for Retaining Wall No. 60.

Data and information included in the Information Handout provided to the Bidders and Contractors are:
A. Foundation Report for the Retaining Wall dated June 6, 2008.

If you have any questions or comments, please contact Ryan Turner at (805) 549-3750 or Michael Finegan at (805) 549-3194.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL S. FINEGAN
No. C050138
Exp. 6/30/09
CIVIL
STATE OF CALIFORNIA

RYAN TURNER
Transportation Engineer
Geotechnical Design – North
Branch D

MICHAEL S. FINEGAN, PE
Geotechnical Design – North
Branch D

c: GDN Records
Branch D Records
GS Records
John Stayton- Structure Office Engineer (4)

LIST OF ATTACHMENTS

Vicinity Map	Attachment 1
Geologic Map and Legend	Attachment 2
Layout	Attachment 3
Corrosion Analysis Results	Attachment 4

INDEX OF SHEETS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN MONTEREY COUNTY IN
AND NEAR PRUNEDALE ON ROUTE 101
FROM 0.3 Km NORTH OF BORONDA ROAD
TO 0.5 Km NORTH OF ECHO VALLEY ROAD

To be supplemented by Standard Plans dated July, 1999

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6 (PM R91.2/100.4)		

LOCATION MAP

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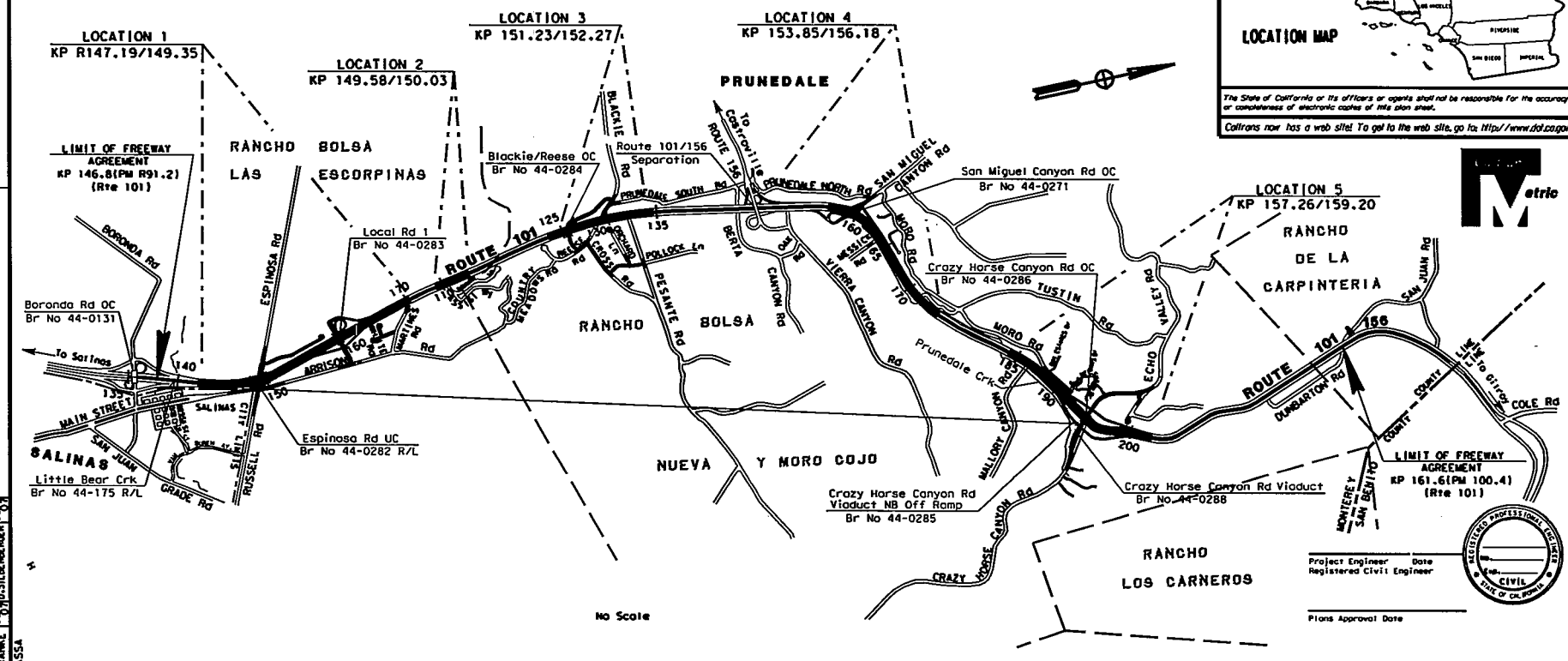
Caltrans now has a web site! To get to the web site, go to: http://www.dot.ca.gov



The Contractor shall possess the Class (or classes) of license as specified in the "Notice to Contractors".

Project Engineer Date
Registered Civil Engineer

Plans Approval Date

REGISTERED PROFESSIONAL ENGINEER CIVIL STATE OF CALIFORNIA

Contract No. 05-0161E4

PROJECT ENGINEER D. FRAME 03-15-07
PROJECT MANAGER D. SILBERBERGER 03-15-07
D. MASSA

FORM DC-OE-93-PF (REV. 3/88)

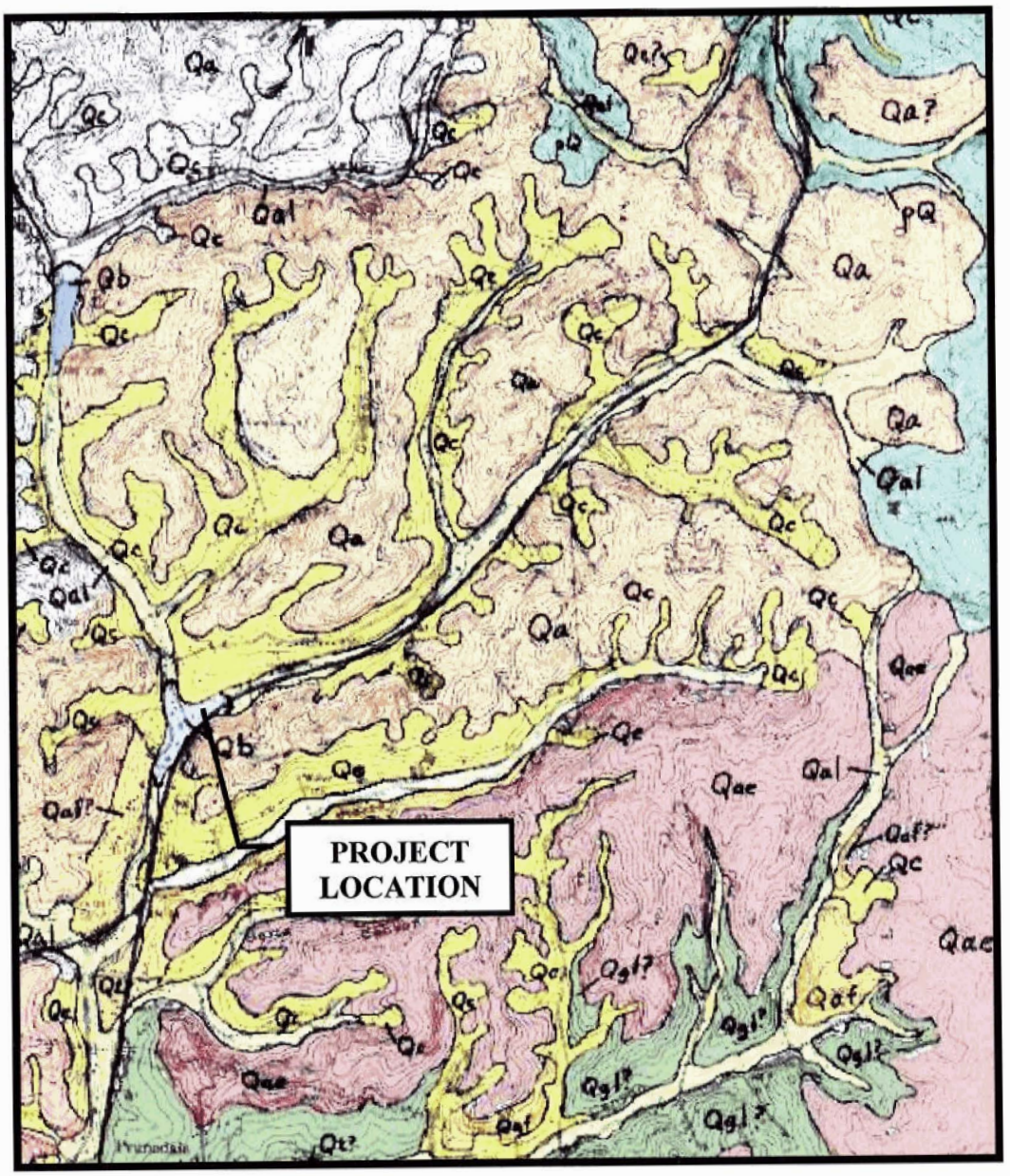
RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

CU 06226 EA 0161E0

03-15-07 DATE PLOTTED

title.dgn 2/29/2008 9:15:34 AM

Attachment 1 1/1



SCALE 1:62 500

1 ½ 0 1 2 3 4 5 MILES

1 .5 0 1 2 3 4 5 KILOMETERS

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 2 1/3

This map is part of:
Map Showing Geology and Liquefaction Potential of Northern Monterey and Southern Santa Cruz Counties, California
By: Dupre and Tinsley
1980

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

Attachment 2 3/3

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

(PM R91.2/100.4)

Caltrans Metric

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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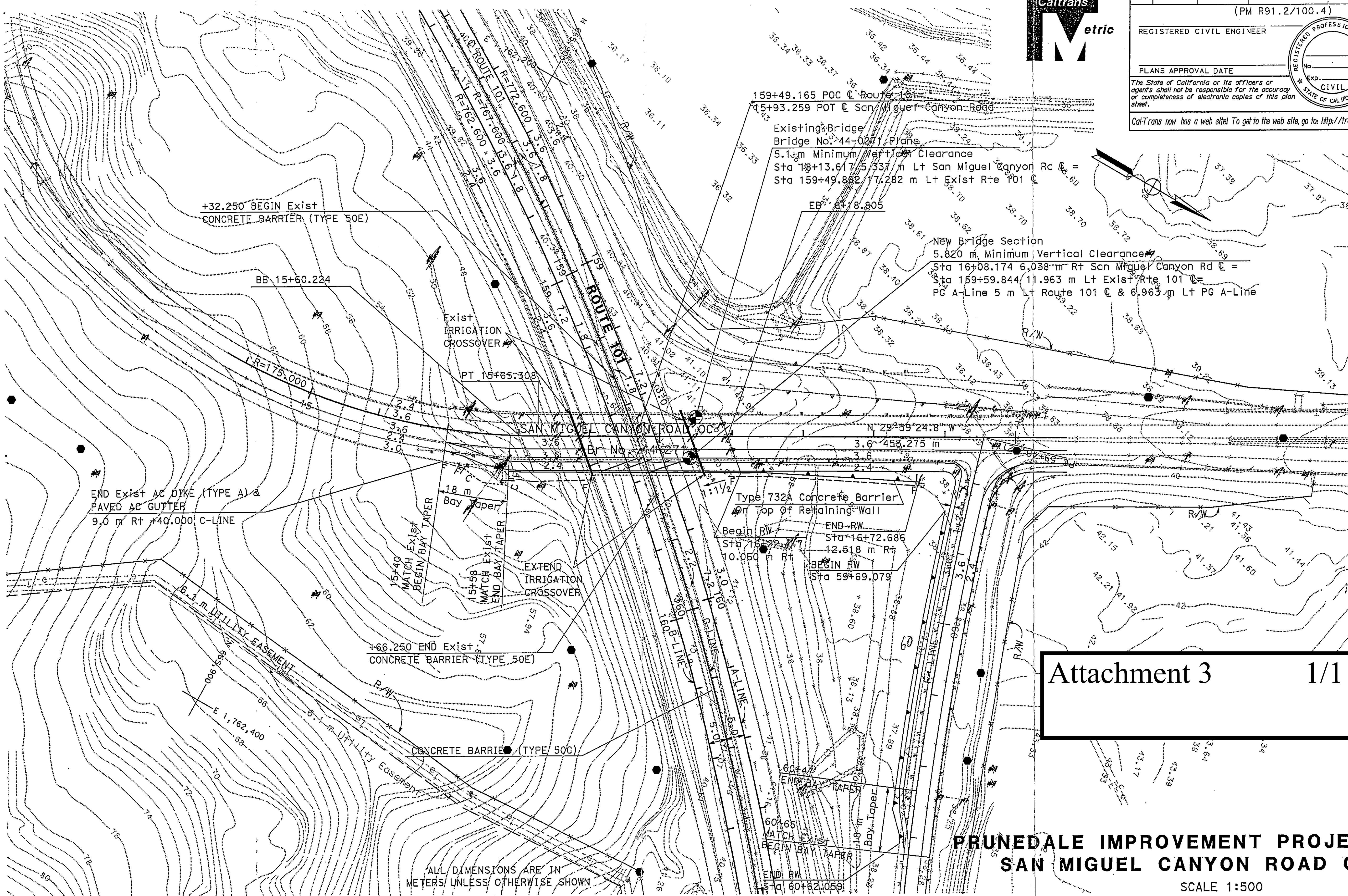


Attachment 3 1/1

PRUNEDALE IMPROVEMENT PROJECT
SAN MIGUEL CANYON ROAD OC

SCALE 1:500

SHEET 1 OF 3

LAST REVISION

DATE 7/05	REVISED BY	DATE REVISED
CALCULATED/DESIGNED BY	CJG	CHECKED BY
PROJECT ENGINEER		

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT

Attachment 4 1/2

FRONT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

REPORT OF TESTS ON STABILOMETER

MR-0361 (REV. 12/91)

TEST NO. 0507 337

DATE RECEIVED AUG 14 2002

CALC. BY

APPROVED BY

DATE REPORTED faxed 08-21-07

☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB
☐ RESIDENT ENGINEER
☒ GEO-TECH

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

REMARKS:

pH ——— 6.5

RESISTIVITY — 3300 ΩCM

REPORT OF TESTS ON

SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION
06317 05		01 61 E1

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ.-#/CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK, BY STAB. FEET					
EXPANSION DIAL READING					
THICK, BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS			SPEC.
LL.	P.L.	P.I.	
CV			
S.E.	AS REC'D.		
	CRUSHED		
	COMBINED		
LART	GRADE 100 REV.		
	GRADE 500 REV.		
DUR.	D_1		
	D_c		
% CRUSHED PARTICLES			

SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT	
	FINE	COARSE
AS REC'D		
CRUSHED		
REL. COMPACTION DATA		
	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

SURFACE	
BASE	
SUBBASE	
GRAVEL EQUIVALENT FACTOR	
TRAFFIC INDEX	
R VALUE: EXUDATION PRESSURE	
R VALUE: EXPANSION PRESSURE	
R VALUE: AT EQUILIBRIUM	SPEC.
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)	

FM 91 1433 M

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER C 707181

0507 337

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS

INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB

☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDQTRS. LAB
☐ BRANCH LAB
☒ DIST. LAB

FIELD NO.
DIST. LAB NO.
LOT NO.
SHIPMENT NO.
P.O. OR REQ. NO.
AUTHORIZATION NO. 05-016181

SAMPLE OF Soil

FOR USE IN Structure Found.

AUG 14 2002

SAMPLE FROM R-07-002

DEPTH 5'-15'

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) 1

AND IS ON E OF A GROUP OF 1

SAMPLES REPRESENTING (TONS, GALS, BBLS, STA, ETC.) lbs

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE

TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY

DATE NEEDED

REMARKS

pH & RESISTIVITY

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED 7/3/07

BY W. Hoon TITLE MAEA

DIST, CO, RTE, PM 05-Mon-101-91.2/100.4

LIMITS

CONT. NO.

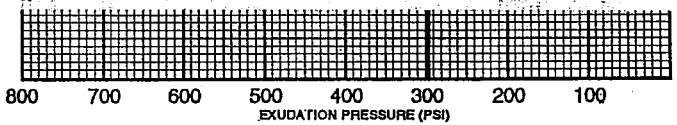
FED. NO.

RES. ENGR. OR SUPT.

ADDRESS

CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE



Attachment 4 2/2

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATI

REPORT OF TESTS ON STABILOMETER

MR-0361 (REV. 12/91)

TEST NO. 0507 338

DATE RECEIVED AUG 14 2007

CALC. BY

APPROVED BY

DATE REPORTED faxed 08-21-2007

☐ DIS. MAT'LS. ENGR. ☐ TRANS. LAB

☐ RESIDENT ENGINEER

☒ GEO-TECH

GRADING ANALYSIS					
SIEVE	AS RECEIVED	RET. CR.	ADJ. OR COMB. GRADE	AS USED	☐ SPECIF. LIMITS ☐ SOUGHT
3					
2½					
2					
1½					
1					
¾					
½					
⅜					
4					
8					
16					
30					
50					
100					
200					
5μ					
1μ					

REMARKS:

pH — 6.7

RESISTIVITY — 2400 Ω CM

REPORT OF TESTS ON

SOIL

IF CONTRACT, USE CONTRACT ITEM

SOURCE	CHARGE	EXPENDITURE AUTHORIZATION
06317	05	01 61 E1

SPECIAL DESIGNATION (USE WHEN APPLICABLE)	ACTIVITY OR OBJECT	AMOUNT

TEST SPECIMEN	A	B	C	D	E
DATE TESTED					
COMPACTOR FOOT PRESSURE P.S.I.					
INITIAL MOISTURE %					
SOAK WATER ML					
WATER ADDED-ML (TOTAL)					
WATER ADDED %					
MOISTURE AT COMPACTION %					
WET WT. OF BRIQUETTE-GMS					
HEIGHT OF BRIQUETTE-INCHES					
DRY DENSITY OF BRIQ.-#/CU. FT.					
STABILOMETER P_H AT 2000 LBS.					
DISPLACEMENT					
R-VALUE BY STABILOMETER					
EXUDATION PRES. P.S.I.					
THICK, BY STAB. FEET					
EXPANSION DIAL READING					
THICK, BY EXP. PRESS. FEET					
R-VALUE BY EXPANSION					

TEST RESULTS			SPEC.
LL.	P.L.	P.I.	
CV			

SURFACE	S.E.	AS REC'D.	
BASE		CRUSHED	
SUBBASE		COMBINED	
	LART	GRADE 100 REV.	
GRAVEL EQUIVALENT FACTOR		500 REV.	
TRAFFIC INDEX	DUR.	D_i	
R VALUE: EXUDATION PRESSURE		D_e	
EXPANSION PRESSURE	% CRUSHED PARTICLES		
AT EQUILIBRIUM SPEC.			
INDICATED MINIMUM THICKNESS OF COVER FOR ABOVE CONDITIONS (FEET)			

SP. GR.	☐ BULK (OVEN DRY) ☐ BULK (SSD) ☐ APPARENT	
	FINE	COARSE
AS REC'D		
CRUSHED		
REL. COMPACTION DATA		
	IN PLACE	OPTIMUM
DENSITY		
MOISTURE		
% REL. COMP.		
SPEC.		

FM 91 1433 M

FRONT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

SAMPLE IDENTIFICATION CARD

TL-0101 (REV. 10/97)

CARD NUMBER C 707180

0507 338

☐ PRELIMINARY TESTS
☐ PROCESS TESTS
☐ ACCEPTANCE TESTS

INDEPENDENT ASSURANCE TESTS
☐ DIST. LAB
☐ TRANS. LAB

☐ SPECIAL TESTS

SAMPLE SENT TO:
☐ HDQRS. LAB
☐ BRANCH LAB
☐ DIST. LAB

FIELD NO.

DIST. LAB NO.

LOT NO.

SHIPMENT NO.

P.O. OR REQ. NO.

AUTHORIZATION NO. 05-0161E1

AUG 14 2007

SAMPLE OF Soil

FOR USE IN Structure Found.

SAMPLE FROM R-07-003

DEPTH 25' - 32'

LOCATION OF SOURCE

THIS SAMPLE IS SHIPPED IN (NO. CONTAINERS) 1

AND IS ON E OF A GROUP OF 1

SAMPLES REPRESENTING (TONS, GALS, BBLS, STA, ETC.) lbs

OWNER OR MANUFACTURER

TOTAL QUANTITY AVAILABLE

TEST RESULTS DESIRED ☒ NORMAL ☐ PRIORITY

DATE NEEDED

REMARKS

pH & Resistivity

COVER ADDITIONAL INFORMATION WITH LETTER

DATE SAMPLEED 7/31/07

BY L. Hoon

TITLE MREA

DIST, CO, RTE, PM 05-MON-101-42.1/100.4

LIMITS

CONT. NO.

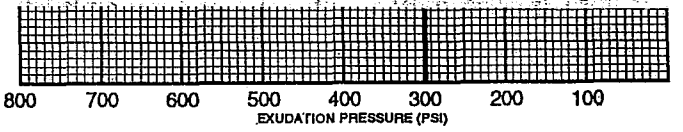
FED. NO.

RES. ENGR. OR SUPT.

ADDRESS

CONTRACTOR

MAIL TO SAME DESTINATION AS SAMPLE



State of California

Business, Transportation and Housing Agency

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

Attn: Hernan Perez
Design Engineer

Date: October 1, 2007

File: 05-MON-101-94.1(KP151.4)
Retaining Wall No. 23
(Soil Nail Wall)
05-0161E1
Br. No. 44-E0014

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

Subject: Foundation Report

As per your request dated March 15, 2007, a Foundation Report (FR) is provided for a soil nail wall in the Blackie/Reese area of the Prunedale Improvement Project (PIP). 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, and our observations and engineering judgment.

Pertinent Reports and Investigations

The following reports have 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 Prunedale area.

Geologic Hazards Report for 05-MON-101-R146.8/161.3 (R91.2/100.2 PM), 05-0161X0, by Geotechnical Services, dated July 23, 2002.

Preliminary Geotechnical Report for 05-Mon-101-94.1 (KP 151.4), 05-0161E0, by Geotechnical Services, dated March 3, 2004.

Geotechnical Impact of Proposed Project, Route 101 Improvement Alternatives – Prunedale Study, Monterey County California, Caltrans District 5, 05-MON-101-91.5/98.7 for DeLeuw Cather and Company by PSC Associates, Inc., dated August 2, 1991.

A subsurface investigation in the area of the proposed soil nail wall was conducted in February of 2007 for the writing of this report.

Existing Facilities and Proposed Improvements

The existing Blackie/Reese Road and Route 101 intersection is currently at-grade. The intersection was constructed at the existing ground surface with minor grading for surface drainage. Retaining walls just north of the Blackie/Reese Road and Route 101 intersection were recently constructed to accommodate turning movements. Retaining walls support Route 101 in the northwest quadrant of Blackie Road and Route 101 and retain a cut slope above Route 101 in the northeast quadrant of Reese Road and Route 101. In the Blackie/Reese area it is proposed to extend a new local road south from the intersection of Blackie Road and Prunedale South Road. The proposed road would cross over Route 101 via an overcrossing bridge, approximately 290 meters south of where the existing Blackie Road intersects Route 101. The proposed local road would extend east from the overcrossing and intersect with Reese Circle 85 meters southeast of Cross Road. As part of the improvements in the area, Pollock Lane would be extended south from Pesante to Cross Road and be joined with Orchard Lane, which would be cul-de-saced at the west end.

A soil nail wall with a maximum height of approximately 9 meters is proposed on the left side of Blackie / Reese Road from station 22+85.49 "NBLKE1" to station 25+58 "NBLKE1". 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.

Physical Setting

The project is located in the Coast Ranges Geomorphic Province of California in the gently rounded deeply dissected Prunedale Hills. The Prunedale Hills are bordered by the

rugged Gabilan Range to the north and the relatively flat terrain of the Salinas Valley to the south. The topography consists of low rolling hills underlain by Aromas Sands.

The climate is mild and semi-arid with a strong coastal influence. Daytime temperatures in the summer months are generally in the middle 80's to the middle 90's (Fahrenheit) with occasional extreme temperatures into the 100's. Nighttime summer temperatures are normally in the 50's. Winter temperatures generally have average lows in the middle to low 30's with highs in the high 50's to low 60's. The area typically receives most of its rainfall between November and April with the heaviest rains occurring during the winter months. The average annual rainfall varies considerably but generally the average annual rainfall is 406 millimeters (16 inches).

Geology and Soil Conditions

The project area is underlain by two Quaternary aged Deposits: the lower portion of the Aromas Sand Deposit (Q_{af}) and the Older Eolian Deposit (Q_{oe}). The Aromas Sand Deposit appears to be on both the east and west side of Route 101 whereas the Older Eolian Deposit is shown only on the west side of Route 101. The location of the geologic contact between the units is unknown.

The lower portion of the Aromas Sand Deposit (Q_{af}) is a fluvial unit, which is a basal alluvial or stream deposited unit, that consists of interbedded silty clay, silt, sand and gravel. This Aromas Sand Deposit separates an upper and lower aquifer. Due to the presence of discontinuous layers and lenses of clay in the lower portion of the Aromas Sand, the lower aquifer is considered partially confined and the upper aquifer is semi-perched. Gravel beds in the Aromas Sand Deposit act as local aquifers and can transmit significant amounts of groundwater to cut slope faces or sidehill embankments. These gravel beds are reported to range in thickness from 3 to 30 meters. Perched water or artesian conditions may exist at this site.

Older Eolian Deposits were placed in a series of inland-migrating dune fields and can be as thick as 13 meters. The Deposits locally overly and conform to undifferentiated coastal terrace deposits and terrace deposits of the Antioch Soil Series. The Deposits consist of semiconsolidated, moderately well sorted sand capped by moderately well drained, maximally developed soils with some duripans.

The material (Aromas Formation) at the location of boring B1-07 consists of approximately 4 meters of very dense silty and clayey sand with lenses of sandy clay overlying medium dense to dense silty and clayey sand with lenses of sandy clay. The material (Aromas Formation) at the location of boring B2-07 consists of approximately 3 meters of very dense silty sand overlying medium dense to dense silty sand. The material (Aromas Formation) at the location of boring B3-07 consists of medium dense to dense silty sand. The material (Aromas Formation) at the location of boring B4-07 consists of medium dense to dense silty sand. The material (Aromas Formation) at the location of boring B5-07 consists of medium dense to dense silty and clayey sand. A very loose silty sand layer was encountered at a depth of 3 meters that is a possible void. The material (Aromas Formation) at the location of boring B6-07 consists of very dense silty sand to 8 meters in depth. From 1 meter to 2 meters the material was logged as moderately hard sandstone. This material is underlain by medium dense to dense silty and clayey sand and hard sandy clay.

The very dense silty sand encountered in the borings was generally weakly to moderately cemented.

Ground Water

Two open standpipe piezometers were constructed during the subsurface investigation to monitor groundwater elevations in the vicinity of the proposed structure. In Boring B1-07, 3.4 meters left of station 23+06.5 "NBLKE1", ground water was measured at elevation 14.9 on March 27, 2007. In Boring B5-07, 48.4 meters left of station 24+58.2 "NBLKE1", ground water was measured at elevation 28.6 on June 20, 2007. Due to the drilling method used (wet rotary), ground water was not measured in borings B2-07, B3-07, B4-07, and B6-07.

As is stated above, it is recognized that the lower portion of the Aromas Sand Deposit divides an upper and lower aquifer. The lower aquifer is considered partially confined and the upper aquifer is semi-perched. No springs have been noted exiting the cut slope faces west or east of Route 101. Heavy vegetation west of Route 101 suggests the potential for springs. It should be noted that perched water or artesian conditions may exist due to the geology of the site.

Seismicity

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

There are two faults that influence the project site. The controlling fault for the design of the proposed Blackie Reese Road and overcrossing is the North Branch of the San Andreas Fault (Strike Slip) located approximately 14 kilometers northeast of the site. The maximum credible earthquake on this fault has a potential Moment Magnitude of 8.0. The maximum credible bedrock acceleration at the project site due to an earthquake along the fault is 0.5g (gravity) according to the Caltrans-adopted Mualchin peak acceleration curves. The second fault is the Zayante-Vergales Fault (Strike Slip) located approximately 7.9 kilometers northeast of the site. The maximum credible earthquake on this fault has a potential Moment Magnitude of 7.25. The maximum credible bedrock acceleration at the project site due to an earthquake along this fault is 0.5g.

Liquefaction is a loss of soil strength and stiffness due to an increase in 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 of the fluvial unit of the Aromas Sand and the Older Eolian Deposit is considered low. Low ground water levels as well as the medium dense to dense soil of the subsurface material encountered during the geotechnical foundation investigation confirm this finding.

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:

Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

Soil samples were obtained for corrosion analysis at the following location:

- Boring B1-07, 3.4 meters left of station 23+06.5 "BLKE1" from elevation 19.5 to elevation 16.3 had a minimum resistivity of 850 ohm-cm, a chloride content of 239 ppm, a sulfate content of 51 ppm, and a pH of 6.7.
- Boring B1-07, 3.4 meters left of station 23+06.5 "BLKE1" from elevation 12.8 to elevation 9.2 had a minimum resistivity of 600 ohm-cm, a chloride content of 122 ppm, a sulfate content of 16 ppm, and a pH of 6.5.
- Boring B4-07, 42.8 meters left of station 25+21.4 "BLKE1" from elevation 35.4 to elevation 32.2 had a minimum resistivity of 515 ohm-cm, a chloride content of 719 ppm, a sulfate content of 8 ppm, and a pH of 5.0.
- Boring B5-07, 48.4 meters left of station 24+58.2 "BLKE1" from elevation 40.8 to elevation 39.3 had a minimum resistivity of 800 ohm-cm, a chloride content of 424 ppm, a sulfate content of 15 ppm, and a pH of 4.6.
- Boring B5-07, 48.4 meters left of station 24+58.2 "BLKE1" from elevation 32.1 to elevation 31.8 had a minimum resistivity of 550 ohm-cm, a chloride content of 10 ppm, a sulfate content of 12 ppm, and a pH of 6.7.

Based on the results of the corrosion analysis, the site is considered corrosive. Controlling corrosion test parameter results are as follows:

4.6 pH,
719 ppm Cloride

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, limiting-equilibrium, slope-stability model based on satisfying overall limiting 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 *Manual for Design and Construction Monitoring of Soil Nail Walls*, Publication No. FHWA-SA-96-069. The 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 X S_h) $\leq$ 3.0 m^2 where,
  S_v is the vertical spacing of the nails
  $S_{v,Max}$ = 1.5 m
  S_h is the horizontal spacing of the nails
  $S_{h,Max}$ = 2.0 m

- Diameter of the grout hole (D) = 150 mm

- The declination angle (θ) of the nails from the horizontal = 15°

- The design strength and nail pullout characteristics of the soil in the nailing zone are assumed as follows:

Unit Weight =	18.8 kN/m^3
Cohesion =	0 kPa
Friction Angle =	34°
Design Nail Pullout Resistance =	14 kN/m
Ultimate Nail Pullout Resistance =	28 kN/m
Ultimate Bond Stress =	60 kPa

- The top nail profile line was assumed to be parallel to the OG line at the top of the wall, 0.75 m below the top of cut. The bottom nail profile line shall be parallel to the bottom of the wall, 0.75 m above the bottom of wall. The bottom of the wall is

assumed to be 0.75 m below finished grade. Linear interpolation for intermediate nails.

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, #29, Grade 520 MPa (75 ksi) bars conforming to ASTM Designation A 615/A 615M are required. The calculated tendon strength for this bar size is 335 kN. The maximum required nail tendon strength for the wall design was 270 kN. For bar sizes that are unavailable in the designated steel grade, other steel grades with adjusted bar sizes may be used.

A minimum nail head strength of 219 kN (49 kips) was used for the wall design. The actual nail head strength for a permanent cast in place (CIP) concrete facing was calculated with the following assumptions:

- Thickness of permanent facing is 200 mm.
- Facing reinforcement consists of two No. 19 deformed bars spaced at 204 mm, placed both vertically and horizontally.
- Facing steel is placed in the center of CIP facing.
- Grade 420 bars and head studs.
- 28 day concrete compressive strength equals or exceeds 28.0 Mpa.
- Horizontal soil nail spacing equals 2.0 m.
- Vertical soil nail spacing equals 1.5 m.
- Bearing Plate dimensions are 25mm x 254mm x 254mm.
- Headed Stud dimensions are 19 mm diameter body, 32 mm diameter head, 10 mm head thickness, 125 mm length, 174 mm spacing.

The nominal head strength was calculated for facing flexure, facing punching shear, and headed stud tension strength criteria. The critical failure mode was determined to be facing punching shear with a calculated nominal head strength of 282 kN. The temporary shotcrete facing was neglected in the calculations due to corrosion, durability, and quality of construction concerns.

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 designed lengths (embedment depth) of the soil nails are shown in the following table. Wall heights used for the design of the soil nail wall were obtained from the Profile Grade sheet for Blackie / Reese Road and Retaining Wall No. 23 and cross sections that were provided by design. Because of the variation in wall height and backslope height above the wall, the Soil Nailed Retaining Wall is divided into several segments, each of which is assigned soil nail lengths (embedment depths).

Station Limits "NBLKE1" Line	Upper Rows Nail Lengths	Bottom Row Nail Lengths
22+85.5 to 23+05	8.5 meters	6.5 meters
23+05 to 23+40	10 meters	7 meters
23+40 to 23+90	12 meters	11 meters
23+90 to 24+20	8 meters	5.5 meters
24+20 to 25+20	5 meters	5 meters
25+20 to 25+58	6.5 meters	5.5 meters

The bottom row of nails are generally shorter than the upper rows of nails as it has been shown that the top down method of construction of soil nail walls generally results in the nails in the upper part of the wall being more significant than the nails in the lower part of the wall in developing resisting loads and controlling displacements. The lengths of the bottom row of nails may be increased to the lengths given for the upper rows of nails if desired for uniformity and ease of construction.

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 Soil Nailed Retaining Wall.

- Place 600-mm wide prefabricated geocomposite drain strips vertically on 2.0-meter centers, prior to applying shotcrete. Geocomposite drains shall start 0.6 meters below the top of the cut and end at 150 mm 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 6-meter 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 (m)	Lower Elevation (m)
1	22+85	24+20	34.3	30.0
2	22+85	24+20	30.0	26.0
3	24+20	25+58	27.3	24.0

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 for the Soil Nailed Retaining Wall have been prepared, please forward them to this office for review.

Construction Considerations

The holes made from the borings for the geotechnical exploration were 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 1V:2H.

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 can 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 to you 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 23 (Soil Nail)

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

A. Foundation Report for Retaining Wall 23 (Soil Nail) dated September 25, 2007

Data and information available for inspection at the District Office:

A. Borehole Core Samples.

The District Office is located at 50 Higuera Street, San Luis Obispo, California, 93401.

If you have any questions or comments, please contact Mike Finegan at (805) 549-3194.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL S. FINEGAN
No. C050138
Exp. 6/30/09
CIVIL
STATE OF CALIFORNIA

MICHAEL S. FINEGAN, PE
Associate Materials & Research Engineer
Geotechnical Design – North
Branch D

c: Roy Bibbens / GDN Records
GS Records
John Stayton – Structure Office Engineer (4)
Job File / Branch D Records

LIST OF ATTACHMENTS

Title Sheet	Attachment 1
Layout	Attachment 2
Profile Grade	Attachment 3
Boring Locations	Attachment 4
Geologic Map	Attachment 5
Corrosion Test Summary Report	Attachment 6
Station 23+80 GOLDNAIL Output	Attachment 7

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

INDEX OF SHEETS

STATE OF CALIFORNIA

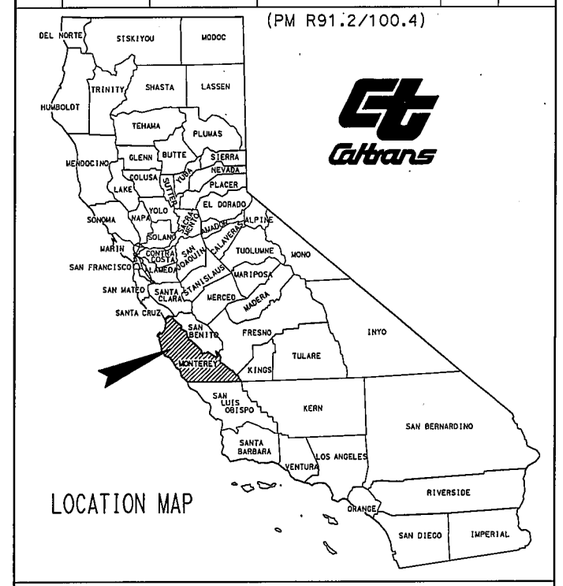
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN MONTEREY COUNTY IN AND NEAR PRUNEDALE ON ROUTE 101 FROM 0.3 Km NORTH OF BORONDA ROAD TO 0.5 Km NORTH OF ECHO VALLEY ROAD

To be supplemented by Standard Plans dated July, 1999



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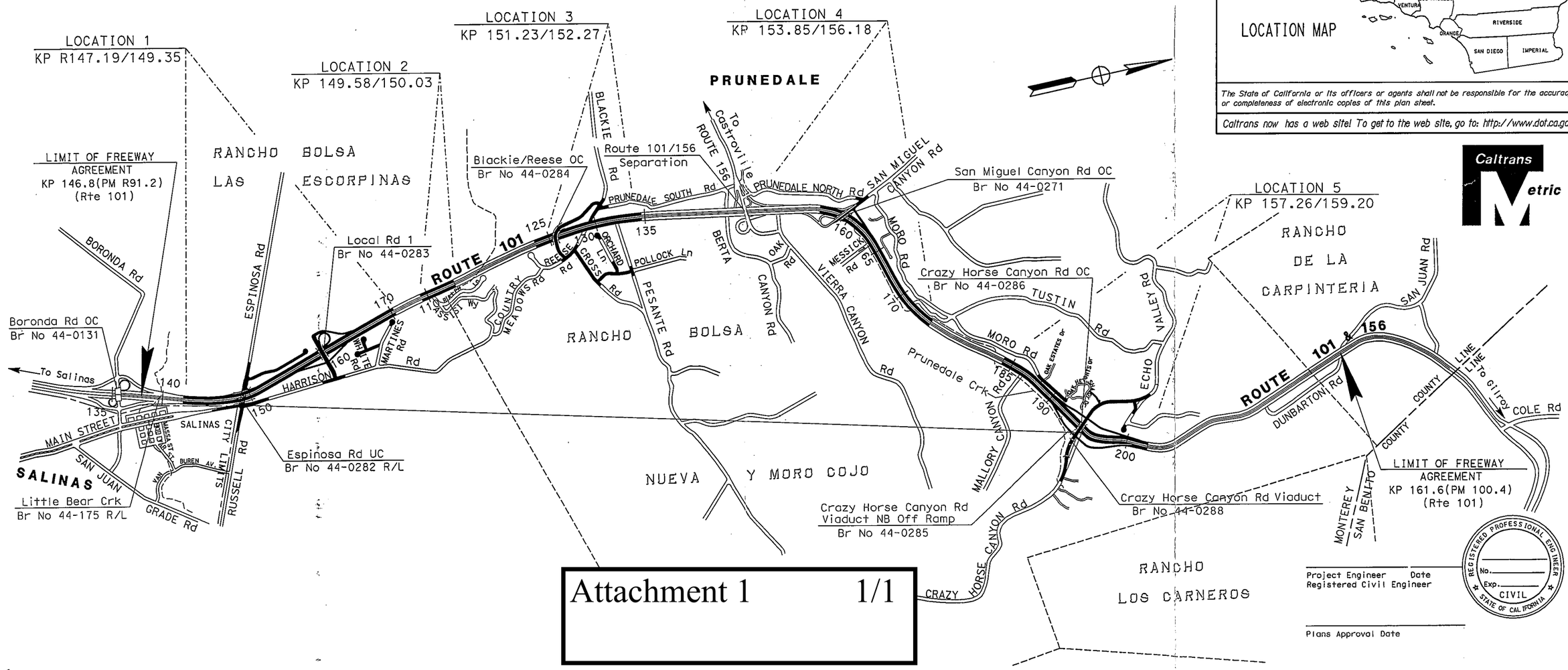
Caltrans Metric



Attachment 1 1/1

Project Engineer Date
Registered Civil Engineer

Plans Approval Date

REGISTERED PROFESSIONAL ENGINEER
No.
Exp.
CIVIL
STATE OF CALIFORNIA

The Contractor shall possess the Class (or classes) of license as specified in the ''Notice to Contractors''.

Contract No. 05-0161E4

PROJECT ENGINEER	DATE	PROJECT MANAGER	DATE
D. FRANKE	03/07	D.SILBERBERGER	03/07

D. MASSA

LAST REVISION

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

(PM R91.2/100.4)

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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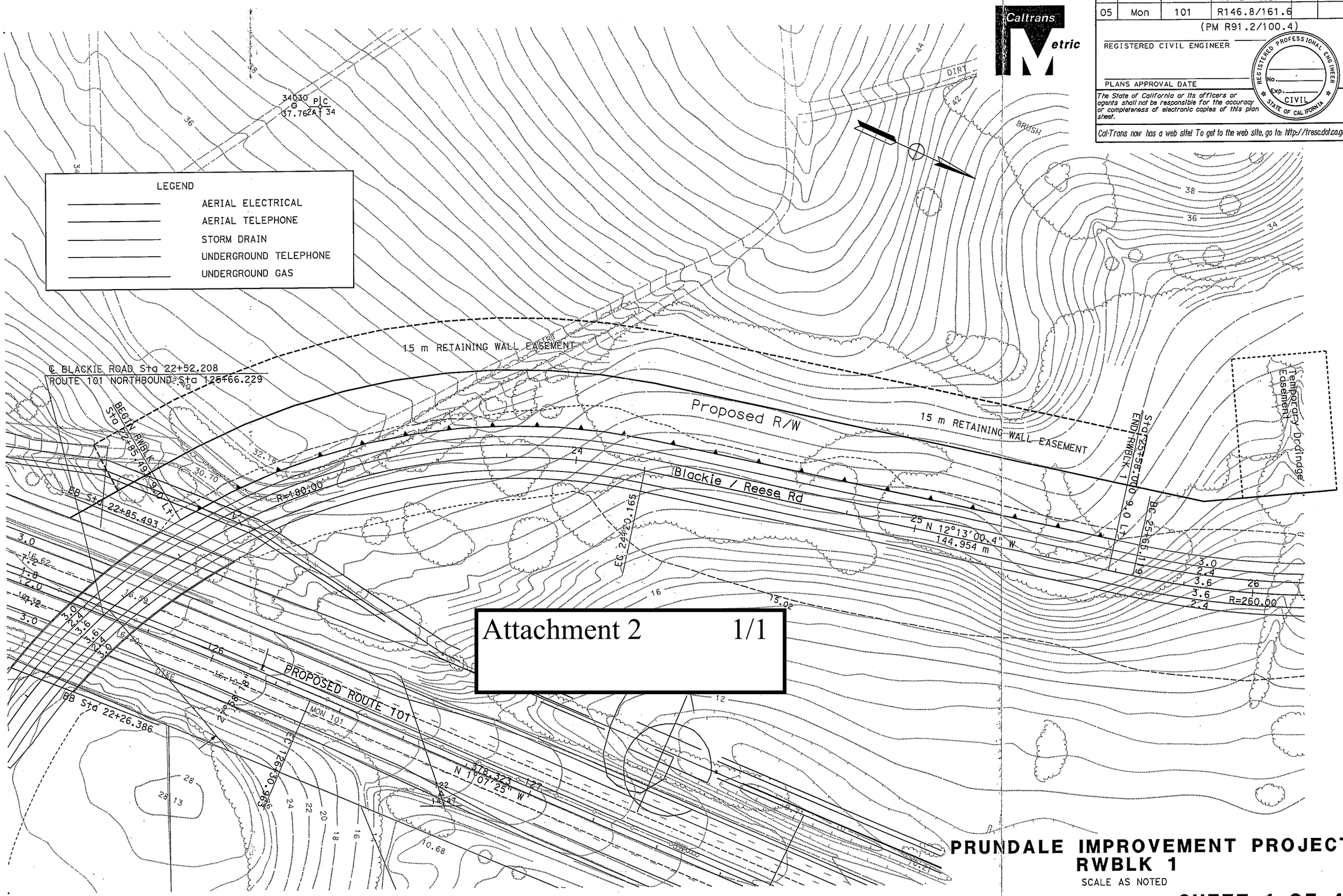
Caltrans Metric



Attachment 2 1/1

PRUNDALE IMPROVEMENT PROJECT
RWBLK 1

SCALE AS NOTED

SHEET 1 OF 4

DATE 5/06	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY: ACB

CHECKED BY

PROJECT ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans **PROJECT DEVELOPMENT**

LAST REVISION

Attachment 3 1/1

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

(PM R91.2/100.4)

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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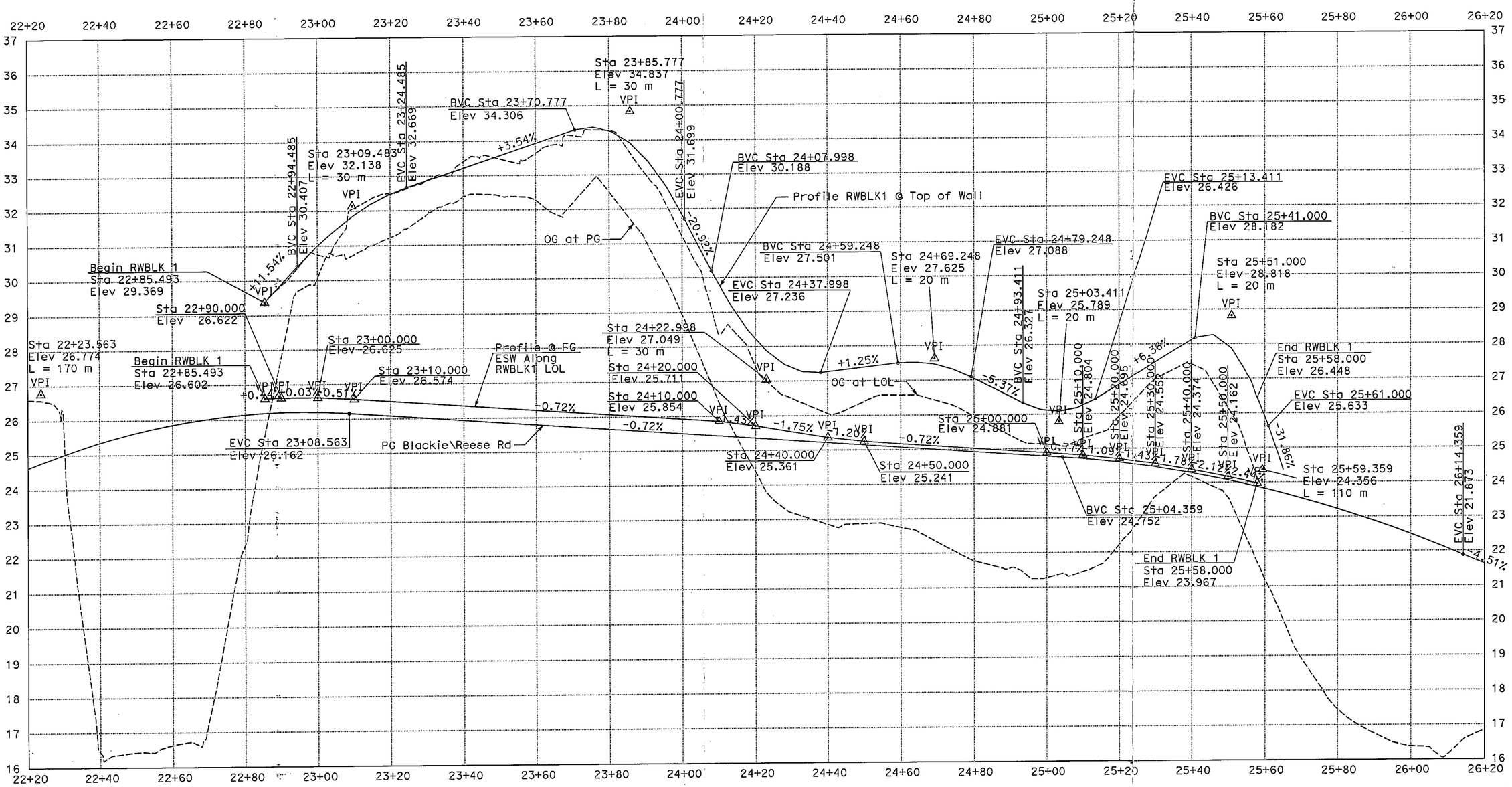
Caltrans Metric



PROFILE GRADE
BLACKIE\REESE ROAD & RWBLK 1
NO SCALE

PRUNDALE IMPROVEMENT PROJECT
RWBLK 1
SCALE AS NOTED

SHEET 3 OF 4

DATE 5/06	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY ACB CHECKED BY

PROJECT ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PROJECT DEVELOPMENT

LAST REVISION

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS

Caltrans Metric

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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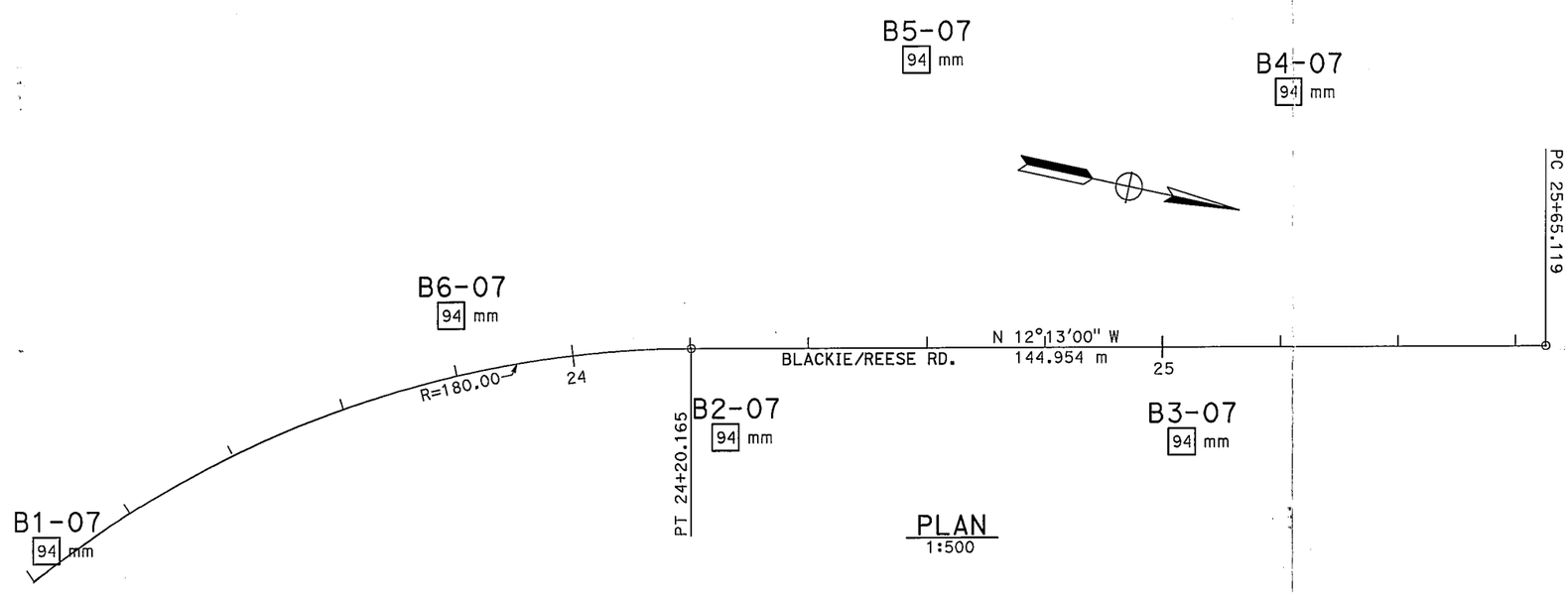
Attachment 4 1/1

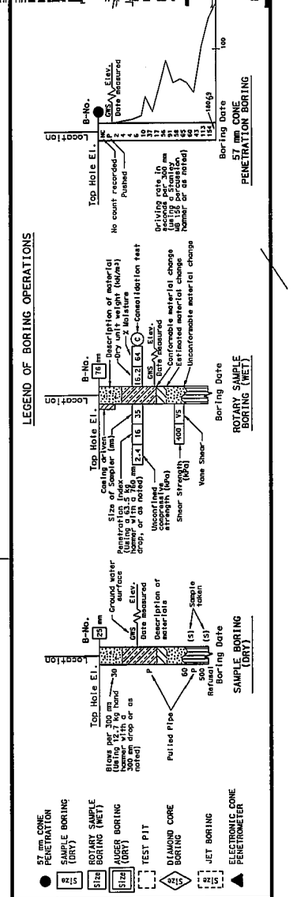
Notes:

1. 35 mm samples were taken using a standard split barrel sampler with an inside diameter (I.D.) of 35 mm and an outside diameter (O.D.) of 51 mm.
2. A safety driver hammer with an assumed efficiency of 60% was used for borings B2-07 and B3-07 to advance the sampler using a 63.5 kg hammer with a 762 mm drop. A CME automatic hammer with an average efficiency of approximately 85% was used to advance the sampler for borings B4-07 through B6-07.
3. Borings were drilled using a "HX" wireline with "HQ" drill rod, outside diameter (O.D.) of 89 mm and inside diameter (I.D.) of 78 mm.



PLAN
1:500

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN



CONSISTENCY CLASSIFICATION FOR SOILS

According to the Standard Penetration Test

SPT N-Value (Blows/ 0.3m)	Granular	SPT N-Value (Blows/ 0.3m)	Cohesive
0-4	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-30	Medium Dense	5-8	Firm
31-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very stiff
		>30	Hard

LEGEND OF EARTH MATERIALS

GRAVEL, SAND, SILT, CLAY, CLAYEY SILT, PEAT and/or ORGANIC MATTER, COBBLES and/or BOULDERS, IGNEOUS ROCK, SEDIMENTARY ROCK, METAMORPHIC, SANDY CLAY or CLAYEY SAND, SANDY SILT or SILTY SAND, SILTY CLAY

NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.

ENGINEERING SERVICES	GEOTECHNICAL SERVICES
DRAWN BY	
CHECKED BY	

FIELD INVESTIGATION BY:

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN

DESIGN BRANCH

BRIDGE NO.

KILOMETER POST

BORING LOCATIONS

CU
EA

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

OGS CIVIL LOG OF TEST BORINGS SHEET (METRIC) (REV. 10/27/05)

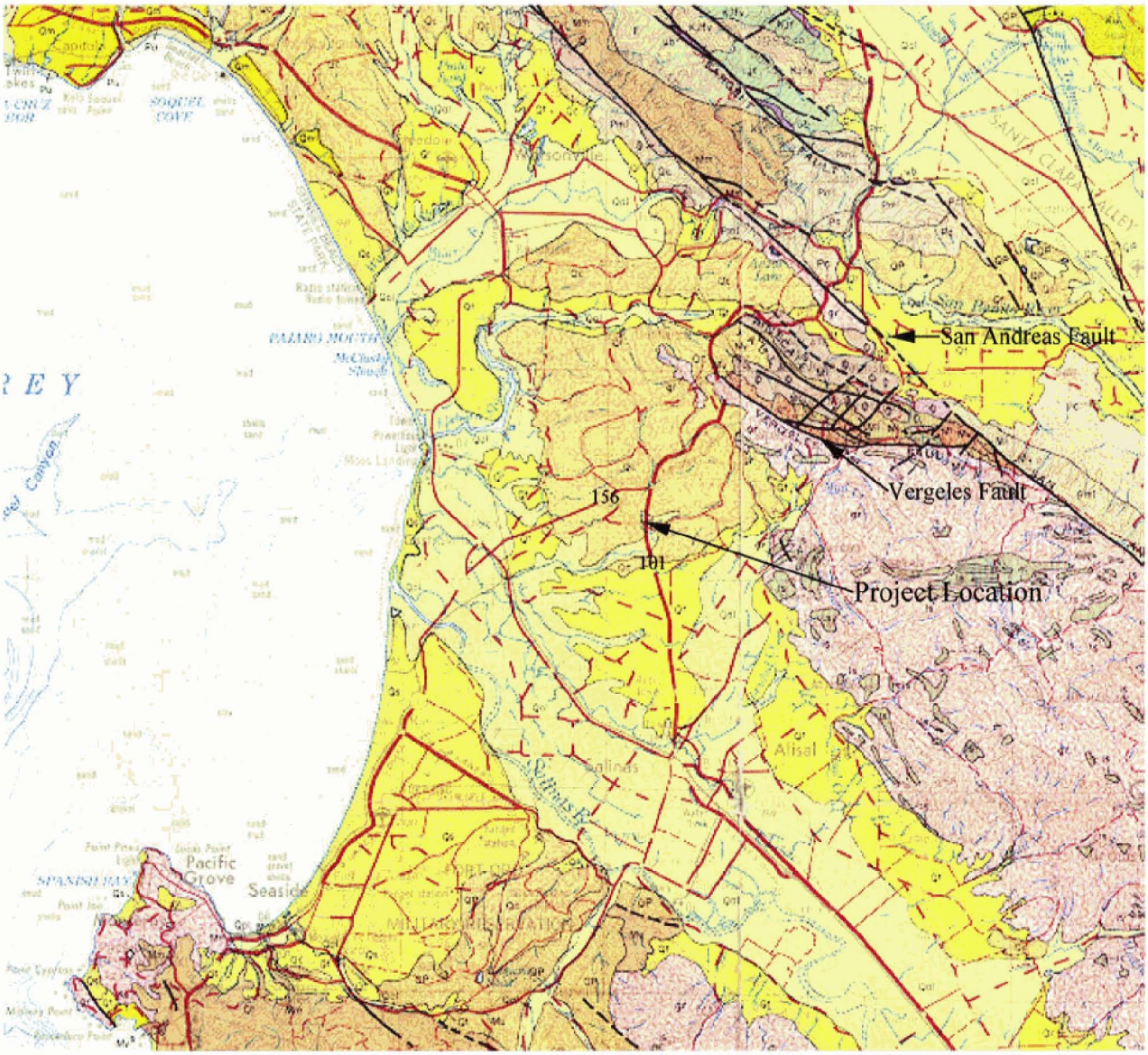
FILE => BW23.dgn

USERNAME => mfinnegan DATE PLOTTED => 01-OCT-2007 TIME PLOTTED => 07:32

GEOLOGIC MAP

05-MON-101-R146.8/161.6

05-0161E1



Scale 1:250,000

5 0 5 10 15 20 Statute Miles

5 0 5 10 15 20 25 30 Kilometers

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS

Attachment 5 1/2

GEOLOGIC LEGEND

05-MON-101-R146.8/161.6

05-0161E1

- Qs — Sand dunes
- Qal — Alluvium
- Qsc — Stream channel deposits
- Qf — Fan deposits
- Qb — Basin deposits
  - GREAT VALLEY
- Qsl — Salt deposits
- Ql — Quaternary lake deposits
- Qg — Glacial deposits
- Qt — River terrace deposits
- Qm — Pleistocene marine and marine terrace deposits
- Qc — Pleistocene nonmarine Aromas Sand
- QP — Plio-Pleistocene nonmarine
- Pc — Undivided Pliocene nonmarine
- Pcu — Upper Pliocene nonmarine
- Pu — Upper Pliocene marine
- Pml — Middle and/or lower Pliocene nonmarine
- Pml — Middle and/or lower Pliocene marine
- Mc — Undivided Miocene nonmarine
- Mu — Upper Miocene nonmarine
- Mu — Upper Miocene marine
- Mmc — Middle Miocene nonmarine
- Mm — Middle Miocene marine
- Ml — Lower Miocene marine
- Oc — Oligocene nonmarine
- O — Oligocene marine
- Ec — Eocene nonmarine
- E — Eocene marine
- Epc — Paleocene nonmarine
- Ep — Paleocene marine

- KJF — Franciscan group
- KJfv — Franciscan volcanic and metavolcanic rocks
- Km — Mesozoic granitic rocks
- Ji — Mesozoic basic intrusive rocks
- Jub — Mesozoic ultrabasic intrusive rocks
- JTRv — Jura-Trias metavolcanic rocks
- Kv — Pre-Cretaceous metavolcanic rocks
- gr — Pre-Cenozoic granitic and metamorphic rocks
- Pv — Paleozoic metavolcanic rocks
- Pzv — Permian metavolcanic rocks
- Cv — Carboniferous metavolcanic rocks
- Dv — Devonian metavolcanic rocks
- pDv — Undivided pre-Devonian metavolcanic rocks

Attachment 5 2/2

Attachment 6 1/1

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion Technology Branch
Report Date: 7/3/2007
Reported By: Lopez, Rudy

CORROSION TEST SUMMARY REPORT - Soil/Water

Bridge Name:
Bridge Number:
EA No.: **05-0161E1**
Dist/Co/Rte/PM or KP: **05 / MON / 101 / 92.1/100.4**

SIC Number (TL101)	Sample Location	Sample Type	Sample Depth	Minimum Resistivity[1] (ohm-cm)	pH[2]	Chloride Content[3] (ppm)	Sulfate Content[4] (ppm)
C	BLAKIE ROAD	SOIL	5.5-10.5 FT/B5-07	800	4.6	424	15
C	BLAKIE ROAD OC	SOIL	37.2-47.5 FT/B1-07	850	6.7	239	51
C44011		SOIL	34-35 FT/BORING B-5-06	550	6.7	10	12
C	BLAKIE ROAD OC	SOIL	59.0-70.7 FT/B1-07	600	6.5	122	16
C	BLAKIE ROAD	SOIL	5.8-16.5 FT/B4-07	515	5.0	719	8

☐ This site is not corrosive to foundation elements (see note below for MSE wall backfill)

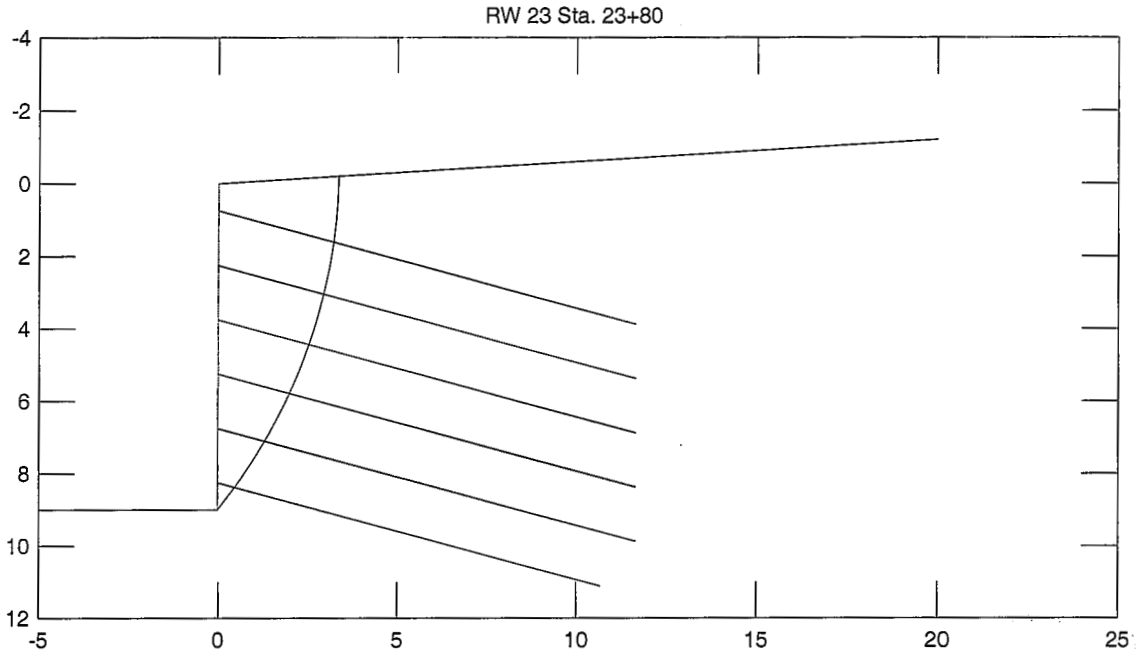
☒ This site is corrosive (if checked). Controlling corrosion parameters are as follows:

4.6 pH

719 ppm Chloride

51 ppm Sulfate

[1,2]CTM 643, [3]CTM 422, [4]CTM 417



L = 12 m (top rows)
L = 11 m (bottom row)

Attachment 7 1/18

RW 23 Sta. 23+80

General Data	
File Indentifier	R232380T.GNI
Unit weight of water	9.81
Base depth for analysis	9.0
Seismic Coefficient	0.0
Minimum Base Exit Angle	-10.0
X Search limit (left)	0.1
X Search limit (right)	20.0
Number of slip circles	250
No. of slip circle exits	20

LRFD and Safety Factor Data	
Analysis Mode: (L)RFD or (S)LD (specify L or S)	S
SLD Safety and Strength Factors (mode S only)	
FS for Soil Cohesion	1.35
FS for Soil Friction	1.35
Strength Factor for Head Strength	0.67
Strength Factor for Nail Tendon Strength	0.55
Strength Factor for Nail Pullout Resistance	0.5
LRFD Load Factors (mode L only)	
LF for Unit Weight of Water	1
LF for Unit Weight of Soil	1.35
LF for Surcharge Loads	1.75
LF for Seismic Loads	1
LRFD Resistance Factors (mode L only)	
RF for Soil Cohesion	1
RF for Soil Friction Angle	0.75
RF for Head Strength	0.9
RF for Nail Pullout Resistance	0.7
RF for Nail Tendon Strength	0.9

PIEZOMETRIC DATA	X-Value	Piez. Level
Point 1		
Point 2		
Point 3		
Point 4		
Point 5		
Point 6		
Point 7		
Point 8		
Point 9		
Point 10		

Attachment 7 2/18

Nodal Data

Node No	X-Value	Y-Value	Node No	X-Value	Y-Value	Node No	X-Value	Y-Value
1	-0.01	9	16			31		
2	0	0	17			32		
3	20	-1.2	18			33		
4			19			34		
5			20			35		
6			21			36		
7			22			37		
8			23			38		
9			24			39		
10			25			40		
11			26			41		
12			27			42		
13			28			43		
14			29			44		
15			30			45		

Wall Segment Data

Seg. No.	Node 1	Node 2	Soil ID	Pullout Res. ID	Seg. No.	Node 1	Node 2	Soil ID	Pullout Res. ID
1	1	2	1	1	11				
2					12				
3					13				
4					14				
5					15				
6					16				
7					17				
8					18				
9					19				
10					20				

Surface Segment Data

Seg. No.	Node 1	Node 2	Soil ID	Seg. No.	Node 1	Node 2	Soil ID
1	2	3	1	11			
2				12			
3				13			
4				14			
5				15			
6				16			
7				17			
8				18			
9				19			
10				20			

Attachment 7 3/18

Internal Segment Data

Seg. No.	Node 1	Node 2	Soil ID	Pullout Res. ID	Seg. No.	Node 1	Node 2	Soil ID	Pullout Res. ID
1					11				
2					12				
3					13				
4					14				
5					15				
6					16				
7					17				
8					18				
9					19				
10					20				

Soil Strength & Pullout Resist. Data

Material ID No.	c	ø	Unit Weight	Pullout Res.
1	0	34	18.8	28
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

Surcharge Pressure Data

Load No	X-value	Vert.	Horiz.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Attachment 7 4/18

Nail Data	Nail Depth	Nail Length	Tendon Strength	Head Strength	Fixed Nail?
Nail Row 1	0.75	12	425	282	
Nail Row 2	2.25	12	425	282	
Nail Row 3	3.75	12	425	282	
Nail Row 4	5.25	12	425	282	
Nail Row 5	6.75	12	425	282	
Nail Row 6	8.25	11	425	282	
Nail Row 7					
Nail Row 8					
Nail Row 9					
Nail Row 10					
Nail Row 11					
Nail Row 12					
Nail Row 13					
Nail Row 14					
Nail Row 15					

Horiz. Spacing	2
Nail Declination	15

Attachment 7 5/18

Design Data

Nail Head Factor = 1.00 for circle no 197
Nail Length Factor = 1.01 for circle no 47

Nail No.	Circle No	Required Nail Tendon Strength
1	37	229.13
2	37	234.75
3	37	243.56
4	37	255.56
5	37	270.78
6	47	266.47

Nail No.	Circle No	Required Nail Length
1		12.07
2		12.07
3		12.07
4		12.07
5		12.07
6		11.06

Attachment 7 6/18

Output Data

Wall Height = 9.00
Wall Slope = 89.94

Circle Number	Circle X-Intercept	Circle Base Angle	Circle X-Center	Circle Y-Center	Moment Ratio	Force Req'd/ Unit Wall Length
1	0.11	89.19	-4503.22	-55.01	1.000	39.50
2	0.42	87.20	-4512.45	-211.44	1.000	127.00
3	0.42	85.09	-118.95	-1.21	1.000	159.91
4	0.76	85.06	-4522.50	-381.77	1.000	195.34
5	0.76	82.95	-119.05	-5.72	1.000	223.14
6	0.76	80.84	-60.05	-0.68	1.000	249.81
7	1.12	82.81	-4533.17	-562.64	1.000	247.74
8	1.12	80.70	-119.16	-10.51	1.000	270.53
9	1.12	78.59	-60.02	-3.11	1.000	293.67
10	1.12	76.48	-39.91	-0.60	1.000	314.27
11	1.51	80.45	-4544.54	-755.44	1.000	288.16
12	1.51	78.34	-119.27	-15.61	1.000	306.83
13	1.51	76.23	-59.98	-5.70	1.000	325.72
14	1.51	74.12	-39.82	-2.33	1.000	343.44
15	1.51	72.01	-29.65	-0.63	0.999	358.92
16	1.92	77.97	-4556.72	-961.86	1.000	319.29
17	1.92	75.86	-119.39	-21.07	1.000	334.09
18	1.92	73.75	-59.94	-8.47	1.000	349.15
19	1.92	71.64	-39.73	-4.18	1.000	364.29
20	1.92	69.53	-29.53	-2.02	1.000	376.82
21	1.92	67.41	-23.36	-0.71	1.000	387.89
22	2.37	75.37	-4569.82	-1183.98	1.000	342.90
23	2.37	73.26	-119.52	-26.95	1.000	354.83
24	2.37	71.15	-59.89	-11.45	1.000	366.27
25	2.37	69.03	-39.62	-6.18	1.000	377.67
26	2.37	66.92	-29.39	-3.52	1.000	388.67
27	2.37	64.81	-23.21	-1.91	1.000	397.12
28	2.37	62.70	-19.06	-0.83	1.000	404.18
29	2.85	72.64	-4584.01	-1424.40	1.000	360.20
30	2.85	70.52	-119.66	-33.31	1.000	369.61
31	2.85	68.41	-59.85	-14.68	1.000	378.32

Output Data

Wall Height = 9.00
Wall Slope = 89.94

Circle Number	Circle X-Intercept	Circle Base Angle	Circle X-Center	Circle Y-Center	Moment Ratio	Force Req'd/ Unit Wall Length
32	2.85	66.30	-39.51	-8.34	1.000	386.61
33	2.85	64.19	-29.25	-5.14	1.000	394.88
34	2.85	62.08	-23.05	-3.21	1.000	401.59
35	2.85	59.97	-18.88	-1.91	1.000	406.36
36	2.85	57.85	-15.89	-0.98	1.000	409.84
37	2.85	55.74	-13.63	-0.27	1.000	411.99
38	3.37	69.77	-4599.47	-1686.40	1.000	372.01
39	3.37	67.65	-119.81	-40.25	1.000	379.15
40	3.37	65.54	-59.79	-18.19	1.000	385.48
41	3.37	63.43	-39.39	-10.69	1.000	391.21
42	3.37	61.32	-29.09	-6.91	1.000	396.54
43	3.37	59.21	-22.87	-4.62	1.000	401.65
44	3.37	57.10	-18.69	-3.09	1.000	404.23
45	3.37	54.98	-15.69	-1.98	1.000	405.94
46	3.37	52.87	-13.42	-1.15	1.000	406.21
47	3.37	50.76	-11.64	-0.49	1.001	405.28
48	3.95	66.75	-4616.44	-1974.18	1.000	378.84
49	3.95	64.64	-119.98	-47.86	1.000	383.86
50	3.95	62.53	-59.74	-22.05	1.000	388.06
51	3.95	60.42	-39.26	-13.28	1.000	391.56
52	3.95	58.31	-28.92	-8.85	1.000	394.46
53	3.95	56.19	-22.67	-6.18	1.000	396.94
54	3.95	54.08	-18.48	-4.38	1.000	398.55
55	3.95	51.97	-15.46	-3.09	1.000	398.06
56	3.95	49.86	-13.19	-2.11	1.000	396.69
57	3.95	47.75	-11.40	-1.34	1.001	394.01
58	3.95	45.64	-9.96	-0.73	1.001	390.19
59	4.59	63.59	-4635.26	-2293.18	1.000	380.92
60	4.59	61.48	-120.17	-56.30	1.000	383.93
61	4.59	59.36	-59.67	-26.33	1.000	386.15
62	4.59	57.25	-39.11	-16.15	1.000	387.61
63	4.59	55.14	-28.73	-11.00	1.000	388.40
64	4.59	53.03	-22.46	-7.90	1.000	388.59
65	4.59	50.92	-18.25	-5.81	1.000	388.29
66	4.59	48.81	-15.22	-4.31	1.000	386.54
67	4.59	46.70	-12.93	-3.18	1.000	383.16
68	4.59	44.58	-11.13	-2.29	1.001	378.71
69	4.59	42.47	-9.69	-1.57	1.001	373.35
70	4.59	40.36	-8.49	-0.98	1.001	366.73
71	4.59	38.25	-7.48	-0.48	1.002	358.97
72	5.30	60.27	-4656.35	-2650.66	1.000	378.23
73	5.30	58.15	-120.38	-65.76	1.000	378.62
74	5.30	56.04	-59.60	-31.13	1.000	379.60
75	5.30	53.93	-38.94	-19.36	1.000	379.15
76	5.30	51.82	-28.52	-13.42	1.000	377.99
77	5.30	49.71	-22.21	-9.83	1.000	376.13
78	5.30	47.60	-17.98	-7.41	1.000	373.65
79	5.30	45.48	-14.94	-5.68	1.000	370.59
80	5.30	43.37	-12.64	-4.37	1.000	365.54
81	5.30	41.26	-10.84	-3.34	1.000	359.34
82	5.30	39.15	-9.38	-2.51	1.000	352.06
83	5.30	37.04	-8.18	-1.83	1.001	343.69
84	5.30	34.93	-7.17	-1.25	1.001	334.29
85	5.30	32.82	-6.30	-0.76	1.001	323.63
86	5.30	30.70	-5.55	-0.33	1.002	311.78
87	6.11	56.78	-4680.29	-3056.39	1.000	370.56
88	6.11	54.67	-120.61	-76.50	1.000	369.44
89	6.11	52.55	-59.52	-36.58	1.000	367.45

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Output Data

Wall Height = 9.00
Wall Slope = 89.94

Circle Number	Circle X-Intercept	Circle Base Angle	Circle X-Center	Circle Y-Center	Moment Ratio	Force Req'd/ Unit Wall Length
90	6.11	50.44	-38.76	-23.00	1.000	364.61
91	6.11	48.33	-28.27	-16.15	1.000	362.67
92	6.11	46.22	-21.94	-12.01	1.000	358.89
93	6.11	44.11	-17.69	-9.24	1.000	354.38
94	6.11	42.00	-14.63	-7.24	1.000	349.17
95	6.11	39.88	-12.32	-5.73	1.000	342.88
96	6.11	37.77	-10.50	-4.54	1.000	334.87
97	6.11	35.66	-9.04	-3.59	0.999	325.76
98	6.11	33.55	-7.83	-2.80	0.999	315.53
99	6.11	31.44	-6.81	-2.13	0.999	304.14
100	6.11	29.33	-5.94	-1.56	0.999	291.55
101	6.11	27.22	-5.19	-1.07	0.999	277.72
102	6.11	25.10	-4.52	-0.63	0.999	262.55
103	7.05	53.11	-4707.88	-3523.99	1.000	357.28
104	7.05	51.00	-120.89	-88.88	1.000	354.63
105	7.05	48.89	-59.43	-42.85	1.000	351.06
106	7.05	46.78	-38.54	-27.21	1.000	346.62
107	7.05	44.67	-27.99	-19.31	1.000	341.33
108	7.05	42.56	-21.62	-14.54	1.000	335.21
109	7.05	40.44	-17.34	-11.33	0.999	329.40
110	7.05	38.33	-14.27	-9.03	0.999	322.11
111	7.05	36.22	-11.94	-7.29	0.999	314.02
112	7.05	34.11	-10.12	-5.92	0.999	304.17
113	7.05	32.00	-8.65	-4.82	0.998	293.10
114	7.05	29.89	-7.43	-3.91	0.998	280.84
115	7.05	27.78	-6.41	-3.14	0.998	267.35
116	7.05	25.66	-5.53	-2.49	0.997	252.58
117	7.05	23.55	-4.77	-1.92	0.997	236.46
118	7.05	21.44	-4.10	-1.42	0.995	218.43
119	7.05	19.33	-3.51	-0.97	0.994	199.21
120	7.05	17.22	-2.98	-0.58	0.993	178.18
121	8.14	49.27	-4740.26	-4072.91	1.000	337.35
122	8.14	47.16	-121.21	-103.40	1.000	333.02
123	8.14	45.04	-59.32	-50.22	1.000	327.77
124	8.14	42.93	-38.28	-32.14	1.000	321.62
125	8.14	40.82	-27.66	-23.01	1.000	314.57
126	8.14	38.71	-21.25	-17.50	0.999	306.62
127	8.14	36.60	-16.94	-13.80	0.999	297.78
128	8.14	34.49	-13.84	-11.13	0.999	288.04
129	8.14	32.38	-11.50	-9.12	0.998	277.46
130	8.14	30.26	-9.66	-7.54	0.998	265.64
131	8.14	28.15	-8.18	-6.27	0.997	252.39
132	8.14	26.04	-6.96	-5.22	0.997	237.86
133	8.14	23.93	-5.93	-4.33	0.996	222.01
134	8.14	21.82	-5.04	-3.57	0.995	204.76
135	8.14	19.71	-4.28	-2.92	0.993	185.67
136	8.14	17.59	-3.61	-2.34	0.991	165.23
137	8.14	15.48	-3.01	-1.83	1.005	155.36
138	8.14	13.37	-2.47	-1.37	1.003	132.08
139	8.14	11.26	-1.99	-0.95	1.001	106.66
140	8.14	9.15	-1.55	-0.57	0.998	79.27
141	9.46	45.23	-4779.15	-4732.05	1.000	309.06
142	9.46	43.12	-121.59	-120.84	1.000	302.79
143	9.46	41.01	-59.19	-59.06	1.000	295.64
144	9.46	38.89	-37.98	-38.06	1.000	287.57
145	9.46	36.78	-27.27	-27.46	1.000	278.55
146	9.46	34.67	-20.80	-21.06	0.999	268.58
147	9.46	32.56	-16.46	-16.75	0.999	257.62

Output Data

Wall Height = 9.00
Wall Slope = 89.94

Circle Number	Circle X-Intercept	Circle Base Angle	Circle X-Center	Circle Y-Center	Moment Ratio	Force Req'd/ Unit Wall Length
148	9.46	30.45	-13.33	-13.66	0.998	245.65
149	9.46	28.34	-10.97	-11.32	0.998	232.64
150	9.46	26.23	-9.12	-9.49	0.997	218.14
151	9.46	24.11	-7.62	-8.01	0.996	202.24
152	9.46	22.00	-6.39	-6.79	0.995	184.30
153	9.46	19.89	-5.35	-5.76	0.994	165.57
154	9.46	17.78	-4.46	-4.88	0.992	145.20
155	9.46	15.67	-3.69	-4.11	1.004	134.51
156	9.46	13.56	-3.01	-3.44	1.003	111.94
157	9.46	11.44	-2.41	-2.85	1.001	87.28
158	9.46	9.33	-1.87	-2.31	0.998	60.49
159	9.46	7.22	-1.38	-1.83	0.995	31.45
160	11.09	40.99	-4827.18	-5546.20	1.000	269.63
161	11.09	38.88	-122.07	-142.39	1.000	260.79
162	11.09	36.77	-59.03	-69.99	1.000	251.06
163	11.09	34.65	-37.60	-45.38	1.000	240.42
164	11.09	32.54	-26.78	-32.96	0.999	229.86
165	11.09	30.43	-20.25	-25.45	0.999	217.50
166	11.09	28.32	-15.86	-20.41	0.999	204.05
167	11.09	26.21	-12.70	-16.78	0.998	189.48
168	11.09	24.10	-10.32	-14.04	0.997	173.64
169	11.09	21.98	-8.45	-11.90	0.997	156.28
170	11.09	19.87	-6.94	-10.16	0.995	137.54
171	11.09	17.76	-5.69	-8.73	0.994	117.34
172	11.09	15.65	-4.64	-7.52	0.992	95.49
173	11.09	13.54	-3.74	-6.49	1.004	83.11
174	11.09	11.43	-2.96	-5.60	1.003	57.87
175	11.09	9.32	-2.28	-4.81	1.001	31.57
176	13.18	36.54	-4888.70	-6588.89	1.000	214.30
177	13.18	34.42	-122.68	-169.98	1.000	202.91
178	13.18	32.31	-58.82	-83.98	1.000	190.51
179	13.18	30.20	-37.11	-54.75	1.000	177.08
180	13.18	28.09	-26.16	-39.99	1.000	162.60
181	13.18	25.98	-19.54	-31.07	0.999	147.04
182	13.18	23.87	-15.09	-25.09	0.999	130.36
183	13.18	21.76	-11.90	-20.78	0.998	113.02
184	13.18	19.64	-9.48	-17.53	0.997	93.70
185	13.18	17.53	-7.58	-14.98	0.996	72.96
186	13.18	15.42	-6.06	-12.92	0.995	50.74
187	13.18	13.31	-4.79	-11.22	0.994	26.95
188	13.18	11.20	-3.73	-9.78	0.992	1.51
189	15.98	31.86	-4971.34	-7989.77	1.000	134.54
190	15.98	29.75	-123.50	-207.06	1.000	119.22
191	15.98	27.64	-58.54	-102.78	1.000	103.13
192	15.98	25.53	-36.46	-67.34	1.000	85.83
193	15.98	23.42	-25.32	-49.44	1.000	67.40
194	15.98	21.30	-18.58	-38.63	0.999	47.76
195	15.98	19.19	-14.06	-31.37	0.999	26.87
196	15.98	17.08	-10.81	-26.15	0.998	4.73
197	20.00	26.95	-5090.00	-10001.10	1.000	13.57

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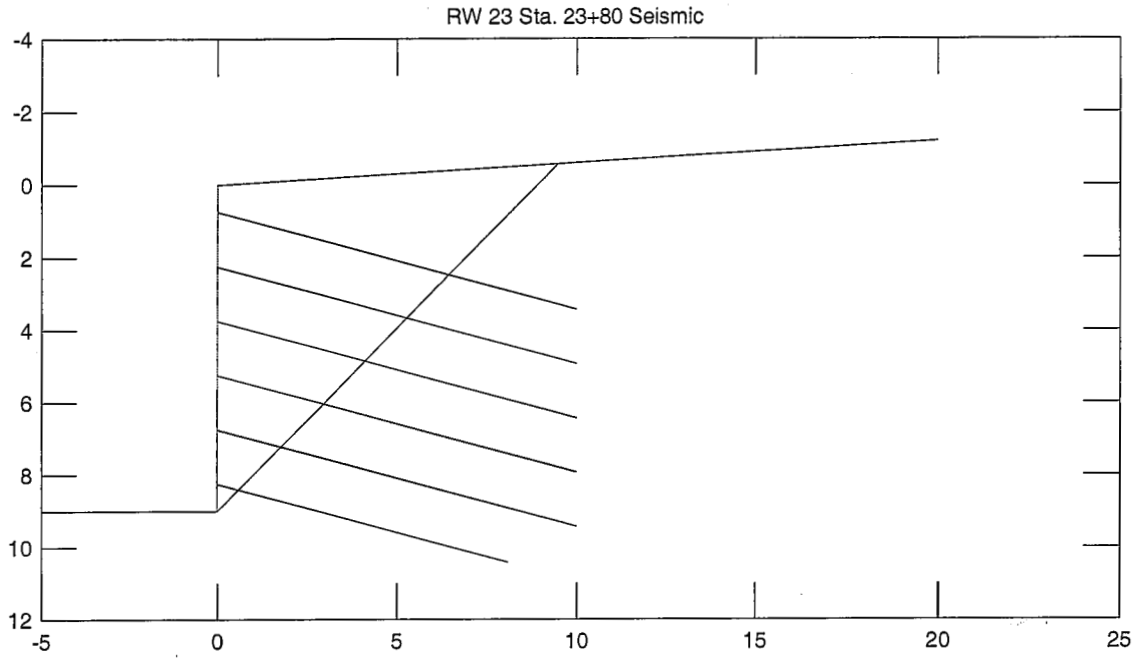

L = 10.5 m (top rows)
L = 8.5 m (bottom row)

Attachment 7 10/18

RW 23 Sta. 23+80 Seismic

General Data	
File Indentifier	R232380.GNI
Unit weight of water	9.81
Base depth for analysis	9.0
Seismic Coefficient	0.2
Minimum Base Exit Angle	-10.0
X Search limit (left)	0.1
X Search limit (right)	20.0
Number of slip circles	250
No. of slip circle exits	20

LRFD and Safety Factor Data	
Analysis Mode: (L)RFD or (S)LD (specify L or S)	S
SLD Safety and Strength Factors (mode S only)	
FS for Soil Cohesion	1.01
FS for Soil Friction	1.01
Strength Factor for Head Strength	0.89
Strength Factor for Nail Tendon Strength	0.73
Strength Factor for Nail Pullout Resistance	0.67
LRFD Load Factors (mode L only)	
LF for Unit Weight of Water	1
LF for Unit Weight of Soil	1.35
LF for Surcharge Loads	1.75
LF for Seismic Loads	1
LRFD Resistance Factors (mode L only)	
RF for Soil Cohesion	1
RF for Soil Friction Angle	0.75
RF for Head Strength	0.9
RF for Nail Pullout Resistance	0.7
RF for Nail Tendon Strength	0.9

PIEZOMETRIC DATA	X-Value	Piez. Level
Point 1		
Point 2		
Point 3		
Point 4		
Point 5		
Point 6		
Point 7		
Point 8		
Point 9		
Point 10		

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Nodal Data

Node No	X-Value	Y-Value	Node No	X-Value	Y-Value	Node No	X-Value	Y-Value
1	-0.01	9	16			31		
2	0	0	17			32		
3	20	-1.2	18			33		
4			19			34		
5			20			35		
6			21			36		
7			22			37		
8			23			38		
9			24			39		
10			25			40		
11			26			41		
12			27			42		
13			28			43		
14			29			44		
15			30			45		

Wall Segment Data

Seg. No.	Node 1	Node 2	Soil ID	Pullout Res. ID	Seg. No.	Node 1	Node 2	Soil ID	Pullout Res. ID
1	1	2	1	1	11				
2					12				
3					13				
4					14				
5					15				
6					16				
7					17				
8					18				
9					19				
10					20				

Surface Segment Data

Seg. No.	Node 1	Node 2	Soil ID	Seg. No.	Node 1	Node 2	Soil ID
1	2	3	1	11			
2				12			
3				13			
4				14			
5				15			
6				16			
7				17			
8				18			
9				19			
10				20			

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Internal Segment Data

Seg. No.	Node 1	Node 2	Soil ID	Pullout Res. ID	Seg. No.	Node 1	Node 2	Soil ID	Pullout Res. ID
1					11				
2					12				
3					13				
4					14				
5					15				
6					16				
7					17				
8					18				
9					19				
10					20				

Soil Strength & Pullout Resist. Data

Material ID No.	c	ø	Unit Weight	Pullout Res.
1	0	34	18.8	28
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

Surcharge Pressure Data

Load No	X-value	Vert.	Horiz.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Attachment 7 13/18

Nail Data	Nail Depth	Nail Length	Tendon Strength	Head Strength	Fixed Nail?
Nail Row 1	0.75	10.5	425	282	
Nail Row 2	2.25	10.5	425	282	
Nail Row 3	3.75	10.5	425	282	
Nail Row 4	5.25	10.5	425	282	
Nail Row 5	6.75	10.5	425	282	
Nail Row 6	8.25	8.5	425	282	
Nail Row 7					
Nail Row 8					
Nail Row 9					
Nail Row 10					
Nail Row 11					
Nail Row 12					
Nail Row 13					
Nail Row 14					
Nail Row 15					

Horiz. Spacing	2
Nail Declination	15

Attachment 7 14/18

Design Data

Nail Head Factor = 1.00 for circle no 204
Nail Length Factor = 0.99 for circle no 141

Nail No.	Circle No	Required Nail Tendon Strength
1	37	153.10
2	37	157.71
3	74	171.54
4	103	191.67
5	121	217.24
6	142	197.35

Nail No.	Circle No	Required Nail Length
1		10.35
2		10.35
3		10.35
4		10.35
5		10.35
6		8.38

Attachment 7 15/18

Output Data

Wall Height = 9.00
Wall Slope = 89.94

Circle Number	Circle X-Intercept	Circle Base Angle	Circle X-Center	Circle Y-Center	Moment Ratio	Force Req'd/ Unit Wall Length
1	0.11	89.19	-4503.22	-55.01	1.000	26.62
2	0.42	87.20	-4512.45	-211.44	1.000	90.61
3	0.42	85.09	-118.95	-1.21	1.005	114.64
4	0.76	85.06	-4522.50	-381.77	1.000	146.47
5	0.76	82.95	-119.05	-5.72	1.005	168.18
6	0.76	80.84	-60.05	-0.68	1.008	188.76
7	1.12	82.81	-4533.17	-562.64	1.000	193.89
8	1.12	80.70	-119.16	-10.51	1.005	212.94
9	1.12	78.59	-60.02	-3.11	1.007	231.59
10	1.12	76.48	-39.91	-0.60	1.007	247.73
11	1.51	80.45	-4544.54	-755.44	1.000	234.19
12	1.51	78.34	-119.27	-15.61	1.005	250.80
13	1.51	76.23	-59.98	-5.70	1.010	267.78
14	1.51	74.12	-39.82	-2.33	1.007	281.08
15	1.51	72.01	-29.65	-0.63	0.999	289.95
16	1.92	77.97	-4556.72	-961.86	1.000	268.40
17	1.92	75.86	-119.39	-21.07	1.005	282.53
18	1.92	73.75	-59.94	-8.47	1.010	296.98
19	1.92	71.64	-39.73	-4.18	1.008	308.41
20	1.92	69.53	-29.53	-2.02	1.000	315.04
21	1.92	67.41	-23.36	-0.71	1.000	324.12
22	2.37	75.37	-4569.82	-1183.98	1.000	297.27
23	2.37	73.26	-119.52	-26.95	1.005	309.38
24	2.37	71.15	-59.89	-11.45	1.010	321.27
25	2.37	69.03	-39.62	-6.18	1.008	329.90
26	2.37	66.92	-29.39	-3.52	1.001	335.32
27	2.37	64.81	-23.21	-1.91	1.002	342.38
28	2.37	62.70	-19.06	-0.83	1.003	348.28
29	2.85	72.64	-4584.01	-1424.40	1.000	321.36
30	2.85	70.52	-119.66	-33.31	1.005	331.58
31	2.85	68.41	-59.85	-14.68	1.010	341.36

Attachment 7 16/18

Output Data

Wall Height = 9.00
Wall Slope = 89.94

Circle Number	Circle X-Intercept	Circle Base Angle	Circle X-Center	Circle Y-Center	Moment Ratio	Force Req'd/ Unit Wall Length
32	2.85	66.30	-39.51	-8.34	1.009	347.60
33	2.85	64.19	-29.25	-5.14	1.003	350.85
34	2.85	62.08	-23.05	-3.21	1.003	356.49
35	2.85	59.97	-18.88	-1.91	1.005	360.49
36	2.85	57.85	-15.89	-0.98	1.006	363.35
37	2.85	55.74	-13.63	-0.27	1.007	365.06
38	3.37	69.77	-4599.47	-1686.40	1.000	341.07
39	3.37	67.65	-119.81	-40.25	1.005	349.46
40	3.37	65.54	-59.79	-18.19	1.009	357.31
41	3.37	63.43	-39.39	-10.69	1.009	361.44
42	3.37	61.32	-29.09	-6.91	1.004	362.43
43	3.37	59.21	-22.87	-4.62	1.005	366.58
44	3.37	57.10	-18.69	-3.09	1.006	368.70
45	3.37	54.98	-15.69	-1.98	1.008	369.99
46	3.37	52.87	-13.42	-1.15	1.010	369.98
47	3.37	50.76	-11.64	-0.49	1.001	361.92
48	3.95	66.75	-4616.44	-1974.18	1.000	356.64
49	3.95	64.64	-119.98	-47.86	1.005	363.25
50	3.95	62.53	-59.74	-22.05	1.009	369.26
51	3.95	60.42	-39.26	-13.28	1.009	371.46
52	3.95	58.31	-28.92	-8.85	1.005	370.46
53	3.95	56.19	-22.67	-6.18	1.006	372.41
54	3.95	54.08	-18.48	-4.38	1.008	373.50
55	3.95	51.97	-15.46	-3.09	1.009	372.82
56	3.95	49.86	-13.19	-2.11	1.001	364.04
57	3.95	47.75	-11.40	-1.34	1.001	359.54
58	3.95	45.64	-9.96	-0.73	1.001	353.66
59	4.59	63.59	-4635.26	-2293.18	1.000	368.16
60	4.59	61.48	-120.17	-56.30	1.005	373.01
61	4.59	59.36	-59.67	-26.33	1.009	377.23
62	4.59	57.25	-39.11	-16.15	1.009	377.57
63	4.59	55.14	-28.73	-11.00	1.006	374.72
64	4.59	53.03	-22.46	-7.90	1.007	374.62
65	4.59	50.92	-18.25	-5.81	1.009	373.96
66	4.59	48.81	-15.22	-4.31	0.993	358.99
67	4.59	46.70	-12.93	-3.18	0.992	353.39
68	4.59	44.58	-11.13	-2.29	0.992	346.68
69	4.59	42.47	-9.69	-1.57	0.992	338.65
70	4.59	40.36	-8.49	-0.98	0.992	329.62
71	4.59	38.25	-7.48	-0.48	0.993	319.48
72	5.30	60.27	-4656.35	-2650.66	1.000	375.56
73	5.30	58.15	-120.38	-65.76	1.004	378.07
74	5.30	56.04	-59.60	-31.13	1.009	381.05
75	5.30	53.93	-38.94	-19.36	1.009	379.55
76	5.30	51.82	-28.52	-13.42	1.006	374.86
77	5.30	49.71	-22.21	-9.83	1.008	372.84
78	5.30	47.60	-17.98	-7.41	1.010	370.12
79	5.30	45.48	-14.94	-5.68	0.995	354.21
80	5.30	43.37	-12.64	-4.37	0.995	346.98
81	5.30	41.26	-10.84	-3.34	0.995	338.60
82	5.30	39.15	-9.38	-2.51	0.996	329.11
83	5.30	37.04	-8.18	-1.83	0.997	318.54
84	5.30	34.93	-7.17	-1.25	0.997	306.22
85	5.30	32.82	-6.30	-0.76	0.998	293.17
86	5.30	30.70	-5.55	-0.33	1.000	278.44
87	6.11	56.78	-4680.29	-3056.39	1.000	378.62
88	6.11	54.67	-120.61	-76.50	1.004	379.65
89	6.11	52.55	-59.52	-36.58	1.009	379.87

Attachment 7 17/18

Output Data

Wall Height = 9.00
Wall Slope = 89.94

Circle Number	Circle X-Intercept	Circle Base Angle	Circle X-Center	Circle Y-Center	Moment Ratio	Force Req'd/ Unit Wall Length
90	6.11	50.44	-38.76	-23.00	1.009	376.02
91	6.11	48.33	-28.27	-16.15	1.006	370.37
92	6.11	46.22	-21.94	-12.01	1.008	366.41
93	6.11	44.11	-17.69	-9.24	1.010	361.68
94	6.11	42.00	-14.63	-7.24	0.997	344.04
95	6.11	39.88	-12.32	-5.73	0.997	335.35
96	6.11	37.77	-10.50	-4.54	0.997	325.12
97	6.11	35.66	-9.04	-3.59	0.998	313.74
98	6.11	33.55	-7.83	-2.80	0.999	301.21
99	6.11	31.44	-6.81	-2.13	1.000	287.48
100	6.11	29.33	-5.94	-1.56	1.002	272.61
101	6.11	27.22	-5.19	-1.07	1.002	254.98
102	6.11	25.10	-4.52	-0.63	1.005	237.16
103	7.05	53.11	-4707.88	-3523.99	1.000	376.79
104	7.05	51.00	-120.89	-88.88	1.004	376.28
105	7.05	48.89	-59.43	-42.85	1.009	374.90
106	7.05	46.78	-38.54	-27.21	1.009	369.31
107	7.05	44.67	-27.99	-19.31	1.007	360.49
108	7.05	42.56	-21.62	-14.54	1.008	354.17
109	7.05	40.44	-17.34	-11.33	1.010	347.64
110	7.05	38.33	-14.27	-9.03	0.998	327.94
111	7.05	36.22	-11.94	-7.29	0.998	317.29
112	7.05	34.11	-10.12	-5.92	0.998	305.03
113	7.05	32.00	-8.65	-4.82	0.999	291.49
114	7.05	29.89	-7.43	-3.91	1.000	276.70
115	7.05	27.78	-6.41	-3.14	1.001	260.63
116	7.05	25.66	-5.53	-2.49	1.002	242.93
117	7.05	23.55	-4.77	-1.92	1.004	224.05
118	7.05	21.44	-4.10	-1.42	1.006	203.78
119	7.05	19.33	-3.51	-0.97	1.008	182.16
120	7.05	17.22	-2.98	-0.58	1.000	148.14
121	8.14	49.27	-4740.26	-4072.91	1.000	369.21
122	8.14	47.16	-121.21	-103.40	1.004	367.00
123	8.14	45.04	-59.32	-50.22	1.008	363.88
124	8.14	42.93	-38.28	-32.14	1.009	356.35
125	8.14	40.82	-27.66	-23.01	1.006	345.46
126	8.14	38.71	-21.25	-17.50	1.008	337.09
127	8.14	36.60	-16.94	-13.80	1.010	327.74
128	8.14	34.49	-13.84	-11.13	0.999	305.70
129	8.14	32.38	-11.50	-9.12	0.997	291.15
130	8.14	30.26	-9.66	-7.54	0.998	276.54
131	8.14	28.15	-8.18	-6.27	0.998	260.45
132	8.14	26.04	-6.96	-5.22	0.999	242.98
133	8.14	23.93	-5.93	-4.33	1.000	224.10
134	8.14	21.82	-5.04	-3.57	1.000	203.46
135	8.14	19.71	-4.28	-2.92	1.002	181.44
136	8.14	17.59	-3.61	-2.34	1.003	157.76
137	8.14	15.48	-3.01	-1.83	1.005	132.34
138	8.14	13.37	-2.47	-1.37	1.006	105.04
139	8.14	11.26	-1.99	-0.95	1.009	75.93
140	8.14	9.15	-1.55	-0.57	1.010	42.14
141	9.46	45.23	-4779.15	-4732.05	1.000	354.41
142	9.46	43.12	-121.59	-120.84	1.004	350.24
143	9.46	41.01	-59.19	-59.06	1.008	345.16
144	9.46	38.89	-37.98	-38.06	1.008	335.34
145	9.46	36.78	-27.27	-27.46	1.006	321.97
146	9.46	34.67	-20.80	-21.06	1.007	311.23
147	9.46	32.56	-16.46	-16.75	1.009	299.39

Attachment 7 18/18

Output Data

Wall Height = 9.00
Wall Slope = 89.94

Circle Number	Circle X-Intercept	Circle Base Angle	Circle X-Center	Circle Y-Center	Moment Ratio	Force Req'd/ Unit Wall Length
148	9.46	30.45	-13.33	-13.66	0.998	274.11
149	9.46	28.34	-10.97	-11.32	0.998	257.97
150	9.46	26.23	-9.12	-9.49	0.998	240.23
151	9.46	24.11	-7.62	-8.01	0.998	220.97
152	9.46	22.00	-6.39	-6.79	0.996	197.31
153	9.46	19.89	-5.35	-5.76	0.996	174.66
154	9.46	17.78	-4.46	-4.88	0.996	150.53
155	9.46	15.67	-3.69	-4.11	0.996	124.66
156	9.46	13.56	-3.01	-3.44	0.997	96.90
157	9.46	11.44	-2.41	-2.85	0.997	67.12
158	9.46	9.33	-1.87	-2.31	0.998	35.04
159	9.46	7.22	-1.38	-1.83	0.998	0.66
160	11.09	40.99	-4827.18	-5546.20	1.000	330.04
161	11.09	38.88	-122.07	-142.39	1.004	323.27
162	11.09	36.77	-59.03	-69.99	1.008	315.50
163	11.09	34.65	-37.60	-45.38	1.010	304.64
164	11.09	32.54	-26.78	-32.96	1.005	286.88
165	11.09	30.43	-20.25	-25.45	1.006	273.28
166	11.09	28.32	-15.86	-20.41	1.007	258.43
167	11.09	26.21	-12.70	-16.78	1.009	242.30
168	11.09	24.10	-10.32	-14.04	0.995	208.92
169	11.09	21.98	-8.45	-11.90	0.994	187.38
170	11.09	19.87	-6.94	-10.16	0.994	164.24
171	11.09	17.76	-5.69	-8.73	0.993	139.42
172	11.09	15.65	-4.64	-7.52	0.992	112.76
173	11.09	13.54	-3.74	-6.49	0.992	84.29
174	11.09	11.43	-2.96	-5.60	1.001	62.46
175	11.09	9.32	-2.28	-4.81	1.001	30.55
176	13.18	36.54	-4888.70	-6588.89	1.000	292.06
177	13.18	34.42	-122.68	-169.98	1.004	282.82
178	13.18	32.31	-58.82	-83.98	1.007	272.41
179	13.18	30.20	-37.11	-54.75	1.009	258.34
180	13.18	28.09	-26.16	-39.99	1.009	241.41
181	13.18	25.98	-19.54	-31.07	1.004	217.59
182	13.18	23.87	-15.09	-25.09	1.005	198.83
183	13.18	21.76	-11.90	-20.78	1.006	178.83
184	13.18	19.64	-9.48	-17.53	1.007	156.79
185	13.18	17.53	-7.58	-14.98	1.008	133.06
186	13.18	15.42	-6.06	-12.92	1.009	107.61
187	13.18	13.31	-4.79	-11.22	1.001	70.73
188	13.18	11.20	-3.73	-9.78	1.001	40.79
189	15.98	31.86	-4971.34	-7989.77	1.000	233.13
190	15.98	29.75	-123.50	-207.06	1.004	220.13
191	15.98	27.64	-58.54	-102.78	1.007	206.29
192	15.98	25.53	-36.46	-67.34	1.008	187.96
193	15.98	23.42	-25.32	-49.44	1.008	166.17
194	15.98	21.30	-18.58	-38.63	1.002	135.94
195	15.98	19.19	-14.06	-31.37	1.002	112.05
196	15.98	17.08	-10.81	-26.15	1.003	86.57
197	15.98	14.97	-8.35	-22.21	1.003	59.45
198	15.98	12.86	-6.43	-19.11	1.004	30.64
199	20.00	26.95	-5090.00	-10001.10	1.000	138.85
200	20.00	24.84	-124.67	-260.28	1.003	120.36
201	20.00	22.73	-58.14	-129.77	1.007	100.62
202	20.00	20.62	-35.53	-85.41	1.007	75.80
203	20.00	18.51	-24.12	-63.02	1.006	46.93
204	20.00	16.39	-17.22	-49.48	1.008	20.38

Memorandum

Flex your power!

Be energy efficient!

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

Attn: Hernan Perez

Date: December 4, 2007

File: 05-MON-101-91.9 (KP147.9)
05-0161E1
Retaining Wall No. 144
Br. No. 44-E0015

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

Subject: Foundation Report

A Foundation Report (FR) is provided for Retaining Wall No. 144 in the Russell/Espinosa area of the Prunedale Improvement Project (PIP) per your request dated March 15, 2007. A Mechanically Stabilized Embankment (MSE) retaining wall with a soundwall is proposed from 22.2 meters right of "M-Line" station 144+10 to 24.3 meters right of "M-Line" station 147+40.

Pertinent Reports and Investigations

The following reports have 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 PIP alternative directly. These reports discuss many points, which are relevant to any project constructed in the Prunedale area and some of the areas are overlapping with the current project.

1) *Alternative 2 Preliminary Geotechnical Design Report* for 05-Mon-101-KP 147.2/161.2 (PM 91.2/100.3), 05-0161X0, by Geotechnical Services, dated January 18, 2002,
2) *Preliminary Geotechnical Report – Supplemental for Alternate 4 Alignment* for 05-Mon-101-KP 147.2/161.2, 05-0161X0, by Division of Structural Foundations, dated November 6, 1999.
3) *Geotechnical Impact of Proposed Project, Route 101 Improvement Alternatives – Prunedale Study, Monterey County California, Caltrans District 5, 05-MON-101-91.5/98.7* for DeLeuw Cather and Company by PSC Associates, Inc., dated August 2, 1991.
4) *Preliminary Geotechnical Report* for the Russell/Espinosa U.C., 05-Mon-101-R91.9 (KP147.9), by Geotechnical Services, dated February 4, 2004.

Existing Facilities and Proposed Improvements

The existing Russell/Espinosa Road and Route 101 intersection is currently at-grade. The intersection was constructed at the existing ground surface with minor grading for surface drainage. It is proposed to construct an undercrossing for Russell/Espinosa Road where 2 bridges will be constructed to carry the northbound and southbound Route 101 traffic. It is also proposed to construct a fill embankment to support Route 101 north and south of the proposed undercrossing. An MSE wall with a maximum height of approximately 8 meters is proposed on the right side of the structure approach embankment south of the proposed bridges. A soundwall will be constructed on top of the MSE wall using a barrier slab and 460 mm diameter CIDH piles.

Physical Setting

The project is located in the Central Coast Range of California at the northern edge of the Salinas Valley. The topography consists of relatively flat terrain with terraces along the northern edge of the Salinas Valley.

The climate is mild and semi-arid with a strong coastal influence. Daytime temperatures in the summer months are generally in the middle 80's to the middle 90's (Fahrenheit) with occasional extreme temperatures into the 100's. Nighttime summer temperatures are normally in the 50's. Winter temperatures generally have average lows in the middle to low 30's with highs in the high 50's to low 60's. The area typically receives most of its rainfall between November and April with the heaviest rains occurring during the winter months. The average annual rainfall varies considerably from year to year but generally the average annual rainfall is 380 millimeters (15 inches).

Geology and Soil Conditions

The project area lies within Quaternary Chular Alluvial Fan Deposits (Q_{ch}). The Chular deposits are found flanking the hills that border the Salinas Valley and much of the deposit is farmed. The Chular alluvial fan deposits are weakly consolidated, moderately to poorly sorted sand, silt and gravels.

Based on the subsurface investigation, the majority of the subsurface material in the vicinity of the proposed retaining wall consists of sandy alluvium. The upper strata of the sand include well graded sand, poorly graded sand with silt or clay, silty sand and clayey sand. The densities range from medium dense to dense. Very stiff to hard sandy lean clay layers were also encountered in some of the borings during the field investigation. The layers were generally 0.6 to 1 meter in thickness. Boring B1-06, 24 meters right of "M Line" station 145+11 encountered a very stiff

clay layer from approximately 9.2 meters below the ground surface to the bottom of hole at 13 meters below the ground surface. Boring B5-06, 24.9 meters right of "M Line" station 147+31 encountered a hard fat clay layer from approximately 9.3 to 11.7 meters below the ground surface. Rock or rock-like material was not encountered in the borings, which had a maximum depth of 19.1 meters below the ground surface of Route 101.

Groundwater

Ground water was not encountered during the geotechnical investigation and is not expected to influence the performance or construction of the retaining wall.

Seismicity

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

There are two faults that influence the project site. The controlling fault for the design of the proposed retaining wall is the North Branch of the San Andreas Fault (Strike Slip) located approximately 16.3 kilometers northeast of the site. The maximum credible earthquake on this fault has a potential Moment Magnitude of 8.0. The maximum credible bedrock acceleration at the project site due to an earthquake along the fault is 0.5g (gravity) according to the Caltrans-adopted Mualchin peak acceleration curves with an estimated peak ground acceleration of 0.5 g at zero period. The second fault is the Zayante-Vergales Fault (Strike Slip) located approximately 10.8 kilometers northeast of the site. The maximum credible earthquake on this fault has a potential Moment Magnitude of 7.25. The maximum credible bedrock acceleration at the project site due to an earthquake along this fault is 0.4g with an estimated peak ground acceleration of 0.44g at zero period. Based on the geotechnical investigation, the subsurface materials may be classified as Soil Profile D of the Caltrans Seismic Design Criteria.

The Caltrans Guidelines for Foundation Investigations and Reports dated March, 2002 recommends using one-third of the horizontal PGA with an upper limit of 0.2g for the seismic assessment of slopes and retaining systems with a minimum factor of safety of 1.1. A horizontal PGA of 0.2g was used in the pseudo-static analysis of the MSE wall.

Liquefaction is a loss of soil strength and stiffness due to an increase in pore water pressure during cyclic loading, such as occurs during an earthquake. Soils with liquefaction potential include loose cohesionless soils that may become saturated. Based on the field investigation, the geology of the site consists of alluvium in a medium dense to dense condition. Ground water was not encountered during the field investigation to a depth of 19 meters below the ground surface. Based on the field investigation the liquefaction susceptibility is very low.

Corrosion

For structural elements, the Department considers a site to be corrosive if one or more of the following conditions exist for the representative soil samples taken at the site:

Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

Corrosion tests indicate that the retaining wall area is considered non-corrosive. Resistivity testing was performed on 11 soil samples obtained from the borings along the retaining wall layout at various depths. All of the samples tested had resistivity values greater than 1500 ohm-cm. Soil is not tested for chlorides and sulfates if the minimum resistivity is greater than 1500 ohm-cm for MSE walls. A minimum resistivity greater than 1500 ohm-cm indicates that the chloride and sulfate contents are low.

Standard Special provision 19-600 requires that the structure backfill material for an MSE structure meet the following corrosion related requirements:

- Minimum resistivity must be greater than 1500 ohm-cm.
- Chloride concentration must be less than 500 ppm.
- Sulfate concentration must be less than 2000 ppm.
- pH must be between 5.5 and 10.0.

Retaining Wall Recommendations

The Mechanically Stabilized Earth Walls Software program MSEW distributed by the FHWA was used to assess internal and external stability of the MSE wall. Retaining wall cross sections were analyzed at 50 or 60 meter intervals over the entire length of the wall.

The foundation requirements for the proposed MSE wall are provided in the following table. A minimum factor of safety of 2.5 with respect to ultimate bearing capacity was used under static loading conditions to determine the gross allowable bearing capacity. The required minimum seismic loading bearing capacity factor of safety is 75% of that specified for static loading. The gross allowable bearing capacity given in the following table is based on an MSE wall using PHI=34° backfill and Loading Condition 1. A minimum depth of burial of 0.6 meters or 0.1H (height of wall) below the finished grade elevation was used in the calculations and is recommended for design.

FOOTING DATA TABLE RETAINING WALL 144					
Station	Approximate Foundation Elevation	Approximate Ultimate Design Height (meters)**	Minimum Base Width to Height Ratio *	Recommended Soil Bearing Pressures	
				ASD[1]	LFD[2]
				Gross Allowable Soil Bearing Pressure (q_{all})	Ultimate Soil Bearing Pressure (q_{ult})
144+10	33.6	1.5	0.7	365 kPa (7.6 ksf)	N/A
144+60	31.6	3.6	0.7	260 kPa (5.4 ksf)	N/A
145+10	31.4	4.3	0.7	265 kPa (5.5 ksf)	N/A
145+60	31.4	5.5	0.7	460 kPa (9.6 ksf)	N/A
146+20	32.2	6.1	0.7	460 kPa (9.6 ksf)	N/A
146+80	32.4	6.7	0.7	480 kPa (10.0 ksf)	N/A
147+30	31.6	8.5	0.7	480 kPa (10.0 ksf)	N/A

(1) Allowable Stress Design (2) Load Factor Design

* From global stability analysis, a minimum base width of 2.5 meters and a minimum base width to height ratio of 0.7 is recommended.
** Per Kathryn Griswell, the Structures Earth Retaining Systems Specialist, 0.3 meters was added to the design height of the MSE wall to account for the barrier slab / soundwall loading.

The anticipated bearing soils that are to be encountered at the MSE wall foundation elevation, soil parameters and the global stability factors of safety (FS) under seismic loading conditions for the wall height and base width to height ratios given in the previous table are presented.

DATA TABLE RETAINING WALL 144					
Station	Foundation Soil Type and Consistency / Relative Density	Soil Parameters			Seismic Loading Global Stability Factor of Safety
		Unit Weight (kN/m^3)	Friction Angle (Degrees)	Cohesion (kPa)	
144+10	Clayey SAND, Medium Dense	18.8	34	0	1.7
144+60	Clayey SAND, Medium Dense	18.8	33	0	1.4
145+10	Silty SAND, Medium Dense	18.8	33	0	1.2
145+60	Clayey SAND, Medium Dense	18.8	34	0	1.2
146+20	Clayey SAND, Medium Dense	18.8	33	0	1.2
146+80	Clayey SAND, Very Dense	18.8	37	0	1.4
147+30	Clayey SAND, Medium Dense	18.8	33	0	1.1

As shown on the table, the site soil parameters meet the requirements of the design soil parameters listed in the Standard Detail XS Sheet General Notes. The standard base width and toe cover is adequate for design.

Insignificant total and differential settlement of the foundation soil is anticipated along the length of the proposed retaining wall. Settlement in the medium dense to dense cohesionless and overconsolidated cohesive foundation soils will be immediate and will occur during construction of the wall.

The proposed MSE wall will retain new embankment constructed over original ground. Because of this a back-of-wall drainage system as shown on the Mechanically Stabilized Embankment Details No. 6 in the Bridge Standard Details Sheets is not required. There is negligible potential for ground water infiltration into the reinforced zone of the MSE wall due to subsurface water flow or spring activity.

If you have any questions or comments, please contact Mike Finegan at (805) 549-3194.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL S. FINEGAN
No. C050138
Exp. 6/30/09
CIVIL
STATE OF CALIFORNIA

MICHAEL S. FINEGAN, PE
Associate Materials & Research Engineer
Geotechnical Design – North
Branch D

c: Roy Bibbens / GDN Records
GS Records
John Stayton – Structures Office Engineer (4)
Job File / Branch D Records

LIST OF ATTACHMENTS

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Layout	Attachment 2
Profile Grade	Attachment 3
Typical Cross Section	Attachment 4

INDEX OF SHEETS

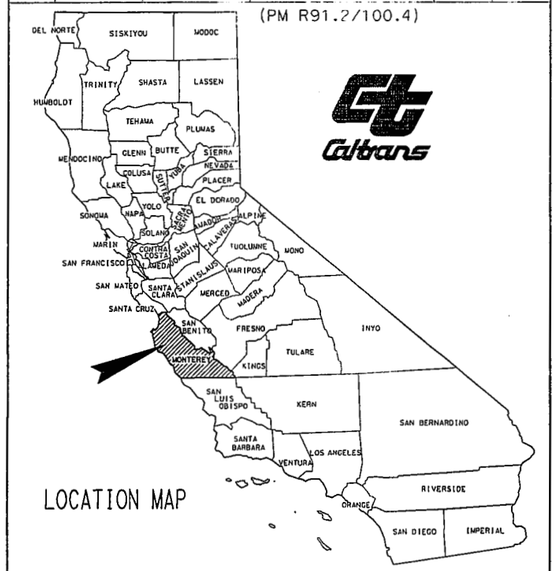
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN MONTEREY COUNTY IN
AND NEAR PRUNEDALE ON ROUTE 101
FROM 0.3 Km NORTH OF BORONDA ROAD
TO 0.5 Km NORTH OF ECHO VALLEY ROAD

To be supplemented by Standard Plans dated July, 1999

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

(PM R91.2/100.4)



LOCATION MAP

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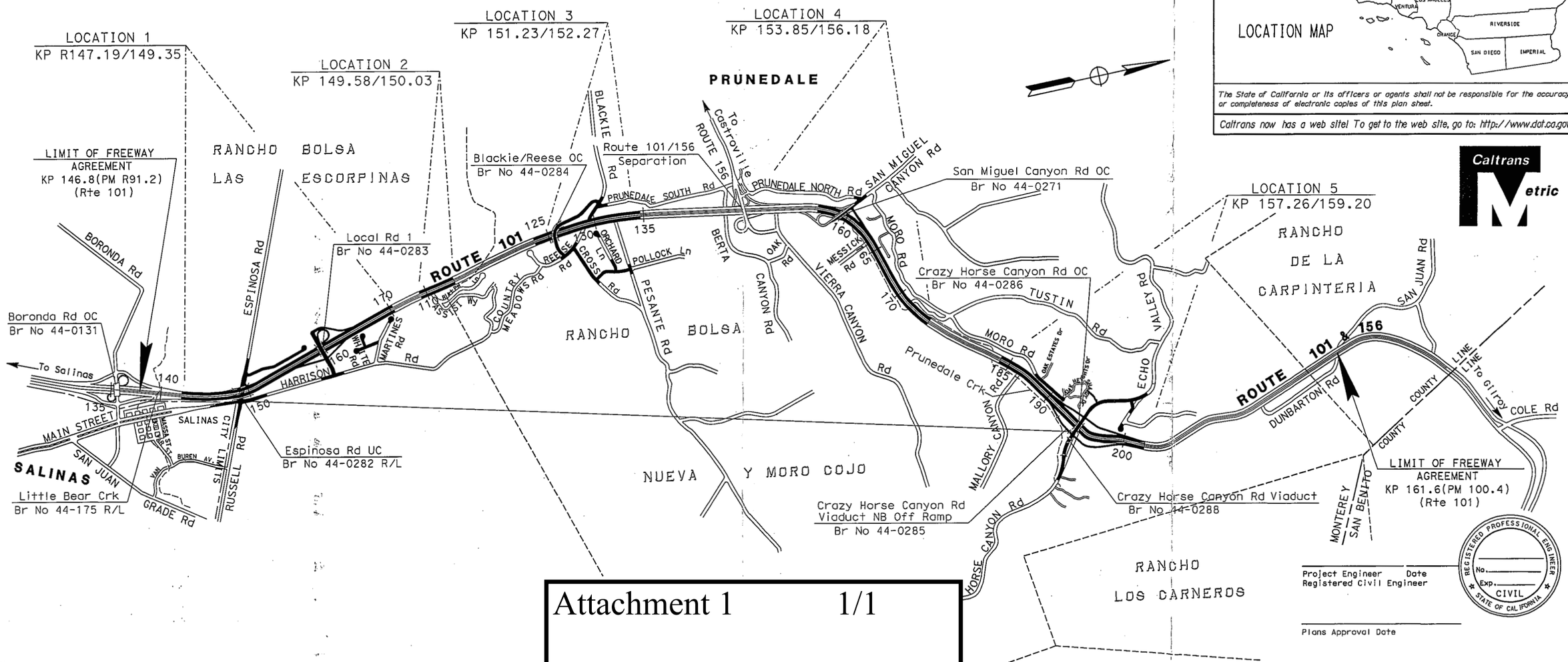

Attachment 1 1/1

Project Engineer Date
Registered Civil Engineer

Plans Approval Date

REGISTERED PROFESSIONAL ENGINEER
No.
Exp.
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER	DATE	PROJECT MANAGER	DATE
D. FRANKE	03/07	D.SILBERBERGER	03/07

D. MASSA

The Contractor shall possess the Class (or classes) of license as specified in the ''Notice to Contractors''.

Contract No. **05-0161E4**

LAST REVISION

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
05	Mon	101	R146.8/161.6		
			(PM R91.2/100.4)		

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER NO. EXP. CIVIL STATE OF CALIFORNIA

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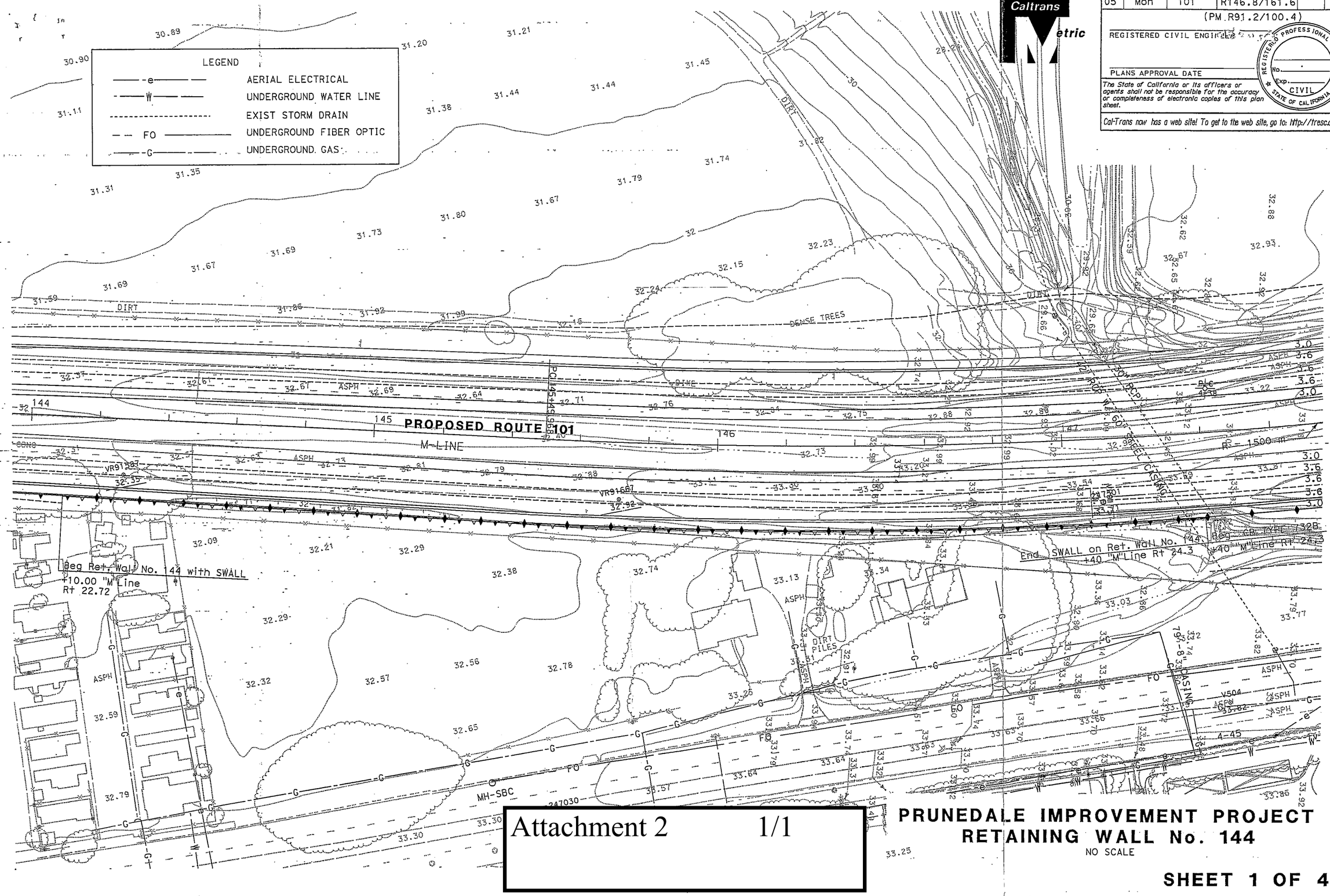

PRUNEDALE IMPROVEMENT PROJECT
RETAINING WALL No. 144
NO SCALE

SHEET 1 OF 4

DATE 7/06	REVISED BY	DATE REVISED
8/06	ACB	

CALCULATED/DESIGNED BY

CHECKED BY

PROJECT ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT

LAST REVISION

FOR REDUCED PLANS ORIGINAL 0 20 40 60 80

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

(PM R91.2/100.4)

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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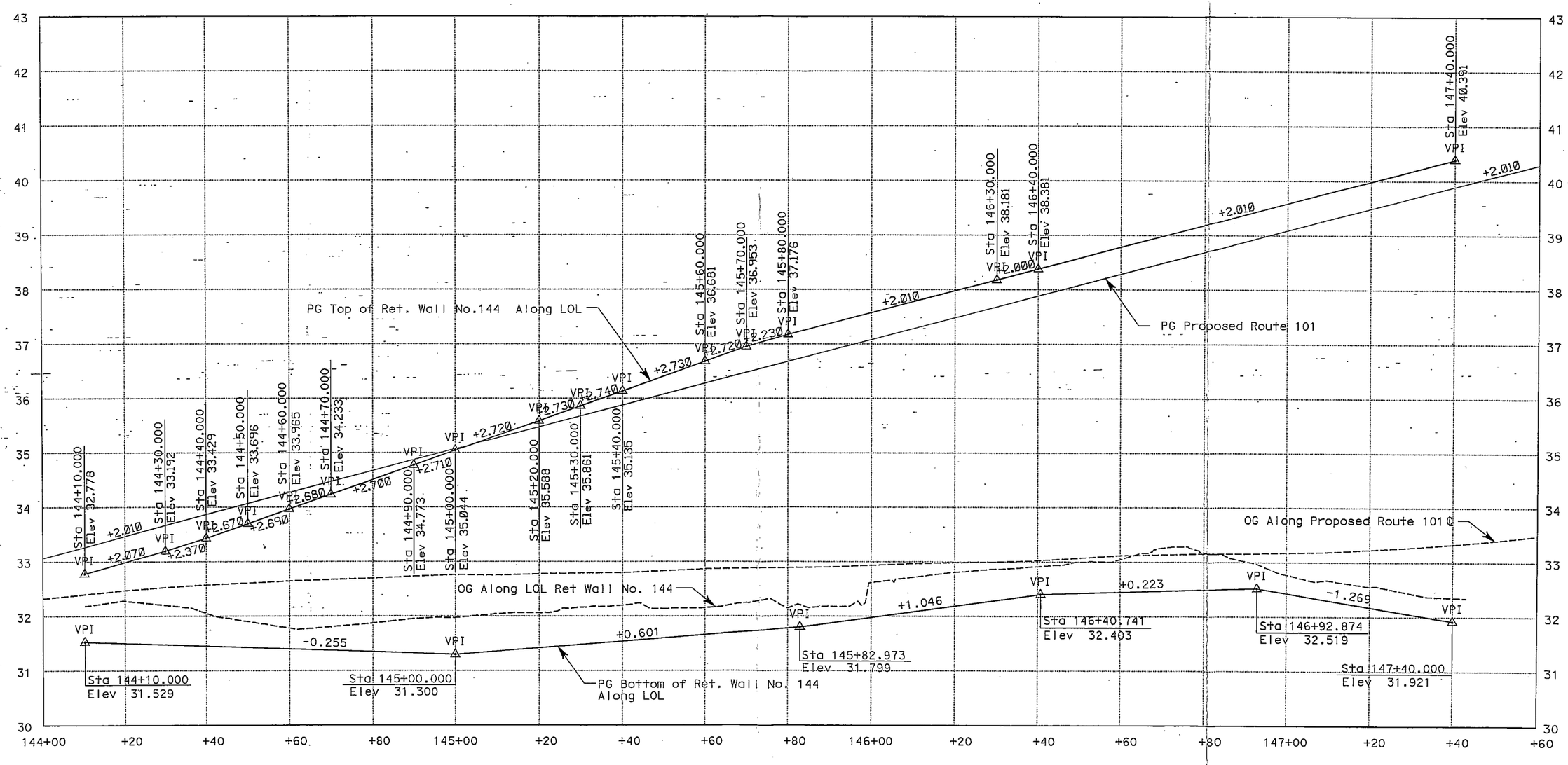
Caltrans Metric

DATE 7/05	REVISED BY	ACB	CALCULATED/ DESIGNED BY	PROJECT ENGINEER
8/05	DATE REVISED		CHECKED BY	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT



Attachment 3 1/1

PROFILE GRADE
PROPOSED ROUTE 101 & RWMLINE 1
NO SCALE

PRUNEDALE IMPROVEMENT PROJECT
RETAINING WALL No. 144
NO SCALE

SHEET 2 OF 4

LAST REVISION

FOR REDUCED PLANS ORIGINAL 0 20 40 60 80

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

(PM R91.2/100.4)

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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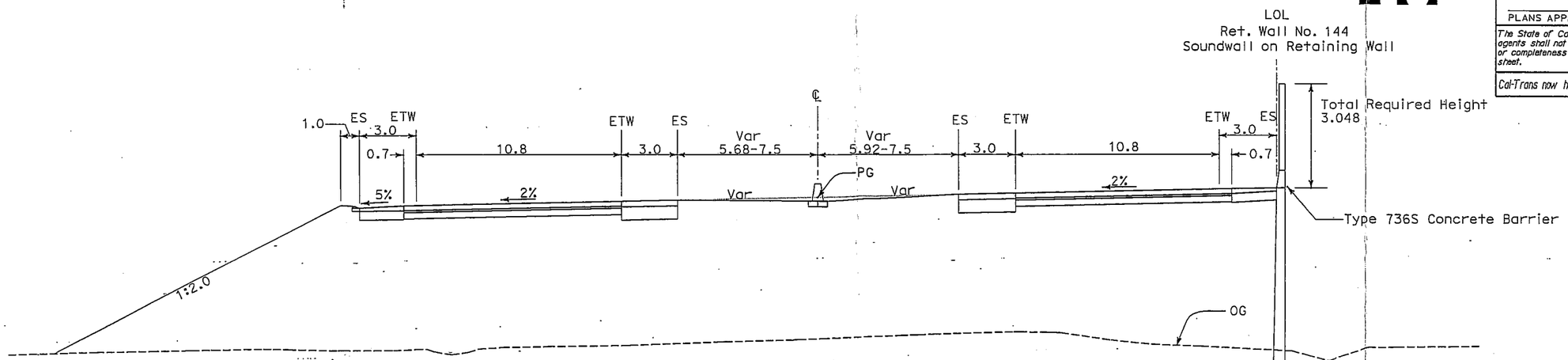
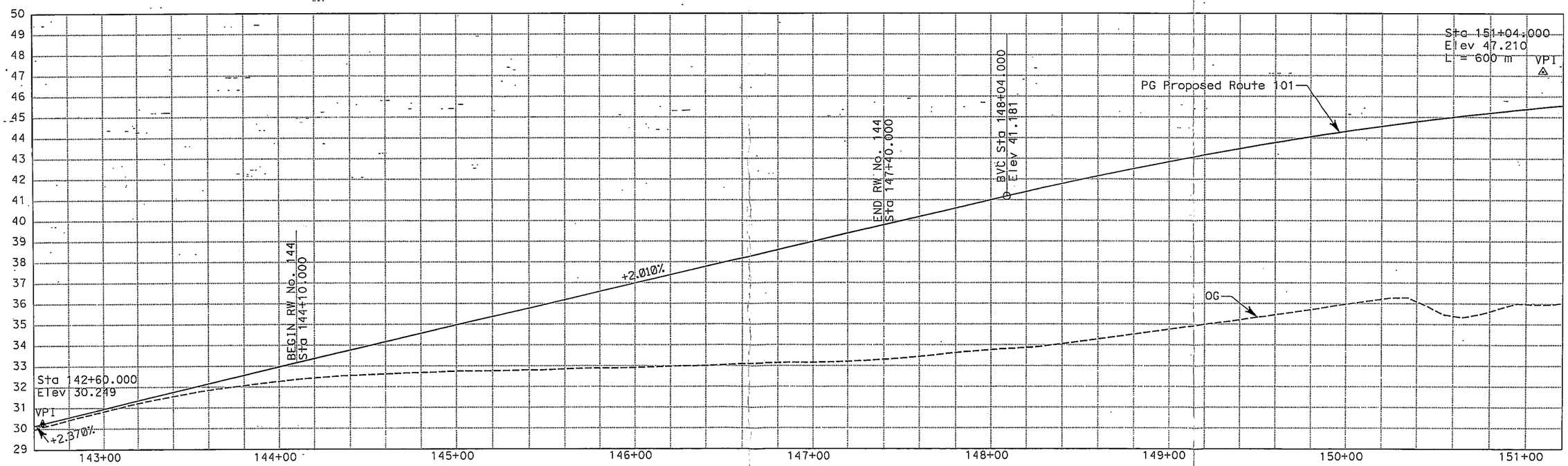
Caltrans Metric



TYPICAL CROSS SECTION
PROPOSED ROUTE 101
NO SCALE



PROFILE GRADE
PROPOSED ROUTE 101
NO SCALE

Attachment 4 1/1

PRUNEDALE IMPROVEMENT PROJECT
RETAINING WALL No. 144
NO SCALE

SHEET 3 OF 4

DATE	REVISED BY	DATE	REVISED BY
7/06	ACB	7/06	

CALCULATED/DESIGNED BY

CHECKED BY

PROJECT ENGINEER

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT

LAST REVISION

FOR REDUCED PLANS ORIGINAL 0 20 40 60 80

Memorandum

Flex your power!

Be energy efficient!

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

Attn: Hernan Perez

Date: January 30, 2008

File: 05-MON-101-98.4 (KP158.4)
05-0161E1
Retaining Wall No. 200
Br. No. 44-E0016

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

Subject: Revised Foundation Report

A Revised Foundation Report (FR) is provided for Retaining Wall No. 200 along the Highway 101 northbound on ramp at the proposed Crazy Horse Canyon Interchange. A Revised Foundation Report is required because of a change in retaining wall type. A discrepancy between the aerial survey and the ground survey at this location has caused the retaining wall layout line to be shifted into the adjacent cut slope. This shift has resulted in a higher average design height of the wall. The layout line shift has also resulted in constructability issues concerning the excavation for the Type 7 retaining wall that was previously recommended. Using a 1:1 excavation backslope for the Type 7 wall, the excavation catches more than 10 meters up the existing cut slope. Reconstructing the finished slope above the retaining wall to a 1:2 slope angle would require that the excavation slope be flatter than 1:1 so that it would catch at the same point as the 1:2 slope. This would result in the temporary construction slope catching higher on the cut slope.

To reduce the amount of excavation required for the construction of the retaining wall, a wall using top-down construction techniques is proposed. Wall types considered included a soil nail wall and a soldier pile wall. Because a horizontal drill rig requires a working area approximately 8 meters wide in front of the wall, it was felt that there would not be enough room near the end of the wall to maintain two lanes of traffic and construct the wall. Therefore, a soldier pile wall is proposed at this site.

This report is based on a field investigation conducted by Geotechnical Services in 2007 and the Layout, Profile, and Cross Sections provided by Design. Five auger borings were drilled along the proposed layout line of the retaining wall for the study. The following reports were also reviewed for this report:

1) *Geologic Hazards Report* for 05-MON-101-R146.8/161.3 (R91.2/100.2 PM), 05-0161X0 by Geotechnical Services, dated July 23, 2002.

2) *Preliminary Structure Foundation Report* for 05-Mon-101-98.4 (KP158.4), Retaining Walls 2 & 3, 05-0161E0, by Geotechnical Services, dated February 18, 2004.
3) *Preliminary Structure Foundation Report* for 05-Mon-101-98.4 (KP158.4), Echo Valley Road O.C., 05-0161E0, by Geotechnical Services, dated February 17, 2004.
4) *Geotechnical Impact of Proposed Project, Route 101 Improvement Alternatives – Prunedale Study, Monterey County California, Caltrans District 5, 05-MON-101-91.5/98.7* for DeLeuw Cather and Company by PSC Associates, Inc., dated August 2, 1991.

Existing Facilities and Proposed Improvements

The existing Crazy Horse Road and Route 101 intersection is at-grade. It is proposed to construct a diamond-shaped interchange with an overcrossing bridge for Crazy Horse Canyon Road to Echo Valley Road, a viaduct at Crazy Horse Canyon Road, and an off ramp with a structure from Northbound Route 101 to Crazy Horse Road.

A soldier pile retaining wall is proposed on the right side of the northbound on ramp to support the adjacent cut slope. The proposed retaining wall is approximately 177 meters long from station 200+00 "RWCH-1" to station 201+77 "RWCH-1". The maximum Design Height is approximately 3.3 meters between station 200+25 and station 200+55.

Physical Setting

The project is located in the Coast Ranges Geomorphic Province of California in the Gabilan Range. The topography is semi-mountainous with rock outcrops.

The climate is mild and semi-arid with a strong coastal influence. Daytime temperatures in the summer months are generally in the middle 80's to the middle 90's (Fahrenheit) with occasional extreme temperatures into the 100's. Nighttime summer temperatures are normally in the 50's. Winter temperatures generally have average lows in the middle to low 30's with highs in the high 50's to low 60's. The area typically receives most of its rainfall between November and April with the heaviest rains occurring during the winter months. The average annual rainfall varies considerably but generally the average annual rainfall is 457 millimeters (18 inches).

Geology and Soil Conditions

The retaining wall is underlain by Aromas Sand (Q_a), as shown on the geologic maps. The Aromas Sand near this location consists of interbedded alluvial and eolian deposits.

Five borings using 150 mm continuous flight augers were drilled along the proposed layout line of the retaining wall. In Boring B1-07, 10.5 meters right of station 200+00 "ALN1", dense to

very dense silty sand was encountered from the ground surface to the bottom of the boring at 9.4 meters. In Boring B2-07, 10.7 meters right of station 200+40 "ALN1", medium dense silty sand was encountered from the ground surface to approximately 3.9 meters below the ground surface. Dense silty sand was encountered below 3.9 meters to the bottom of the boring at 9.4 meters. In Boring B3-07, 11.4 meters right of station 200+80 "ALN1", medium dense silty sand was encountered from the ground surface to approximately 6.8 meters below the ground surface. Dense to very dense silty sand was encountered below 6.8 meters to the bottom of the boring at 9.4 meters. In Boring B4-07, 11.5 meters right of station 201+20 "ALN1", medium dense silty sand was encountered from the ground surface to approximately 6.8 meters below the ground surface. Dense silty sand was encountered below 6.8 meters to the bottom of the boring at 9.4 meters. In Boring B5-07, 11.8 meters right of station 201+70 "ALN1", medium dense silty sand was encountered from the ground surface to approximately 5.4 meters below the ground surface. Dense silty sand was encountered below 5.4 meters to the bottom of the boring at 9.4 meters. All of the borings remained open following the completion of drilling and auger withdrawal.

Ground Water

Ground water was not encountered in any of the borings. No springs or seeps were evident in the adjacent cut slope at the time of the investigation.

Seismicity

No known active or potentially active faults, as classified by Caltrans, intersect the proposed retaining wall. However, photographic interpretation techniques have been used to identify a previously unmapped fault on the northwest side of Route 101 approximately 500 meters southwest of the retaining wall. The surface trace of the fault is oriented roughly orthogonal to Route 101 (fault trends generally northwest southeast) with a length of approximately 370 meters, terminating at Route 101. There is speculation that the unnamed fault may be a branch of the Zayante-Vergales Fault, which is considered active or potentially active by Caltrans. Evaluation of aerial photographic evidence and a ground survey of this feature by Caltrans personnel has determined that there is no strong evidence of recent activity.

There are two known active or potentially active faults that influence the project site. The controlling fault is the Zayante-Vergales Fault (Strike Slip) located approximately 1.7 kilometers northeast of the site. The maximum credible earthquake on this fault has a potential Moment Magnitude of 7.25. The maximum credible bedrock acceleration at the project site due to an earthquake along this fault is 0.7g (gravity). The second fault is the North Segment of the San Andreas Fault (Strike Slip) located approximately 7.8 kilometers northeast of the site. The maximum credible earthquake on this fault has a potential Moment Magnitude of 8.0. The

maximum credible bedrock acceleration at the project site due to an earthquake along the San Andreas Fault is 0.6g according to the Caltrans-adopted Mualchin peak acceleration curves.

Liquefaction

The liquefaction susceptibility is low based on the field investigation.

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:

Chloride concentration is greater than or equal to 500 ppm, sulfate concentration is greater than or equal to 2000 ppm, or the pH is 5.5 or less.

Soil samples were obtained for corrosion analysis at the following location:

- Boring B2-07, 10.7 meters right of station 200+40 "ALN1" from elevation 141.4 to elevation 139.9 had a minimum resistivity of 3500 ohm-cm and a pH of 6.8.

Based on these results, the site is considered non-corrosive.

Geotechnical Analysis and Design

The proposed soldier pile wall will retain and be founded within medium dense to dense silty sand of the Aromas Formation. Soil strength parameters used in the analysis and design of the retaining wall are based upon Standard Penetration Test (SPT) blow count and material property correlations.

Soil strength parameters are assumed to be the same for both the retained soil and foundation soil. The strength parameters obtained from the boring data at the roadway elevation are conservatively applied to the slope above the roadway. The recommended soil strength parameters are as follows:

Friction Angle = 34°
Cohesion = 0 kPa
Unit Weight = 18.8 kN/m^3

The lateral earth pressure distribution recommended for the design of the soldier pile wall is shown in Figure 5.5.5.6-1 of the Bridge Design Specifications (BDS). From the top of the wall to the full design height of the wall, an active lateral earth pressure coefficient, Ka = 0.55 is recommended. The active lateral earth pressure coefficient, Ka, was calculated using Coulomb's Theory at station 200+80 where the cut slope to be retained has a 1:1.5 slope angle. It was assumed that the friction angle between the back of wall and the backfill material, δ, equals zero as specified in Section 5.7.2 of the BDS. Below the full design height of the wall, an active lateral earth pressure coefficient, Ka = 0.28 is recommended for calculating the active earth pressure against the piles. A passive lateral earth pressure coefficient, Kp = 3.5 is recommended for calculating the passive lateral earth pressure against the piles.

Construction Considerations

Drilling conditions can be expected to be fairly uniform in the medium dense to dense silty sand of the Aromas Formation. The test borings indicate that the boreholes for the retaining wall will be dry and that the foundation soil should stand un-supported during construction of the drilled shafts. Surface casing may be required to prevent caving of the looser surficial soils caused by the tooling going in and out of the hole. The shafts will be drilled into the existing cut slope up to 3 meters above the roadway elevation and 3 to 5 meters from the toe of the slope.

All permanent cut or fill slopes in the project area should be 1:2 or flatter. Temporary slopes should be 1:1 or flatter.

The installation of the CIDH piles should be performed in accordance with Section 49-4 of the Standard Specifications.

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 of this report via electronic mail.

Data and information attached with the project plans are:
A. Log of Test Borings for the Soldier Pile Wall.

Data and information included in the Information Handout provided to the Bidders and Contractors are:
Revised Foundation Report for the Soldier Pile Wall dated January 30, 2008.

If you have any questions or comments, please contact Mike Finegan at (805) 549-3194.

REGISTERED PROFESSIONAL ENGINEER
MICHAEL S. FINEGAN
No. C050138
Exp. 6/30/09
CIVIL
STATE OF CALIFORNIA

MICHAEL S. FINEGAN, PE
Associate Materials & Research Engineer
Geotechnical Design – North
Branch D

c: Roy Bibbens / GDN Records
GS Records
John Stayton – Structures Office Engineer (4)
Job File / Branch D Records

LIST OF ATTACHMENTS

Title Sheet	Attachment 1
Profile Grade	Attachment 2
Layout	Attachment 3

INDEX OF SHEETS

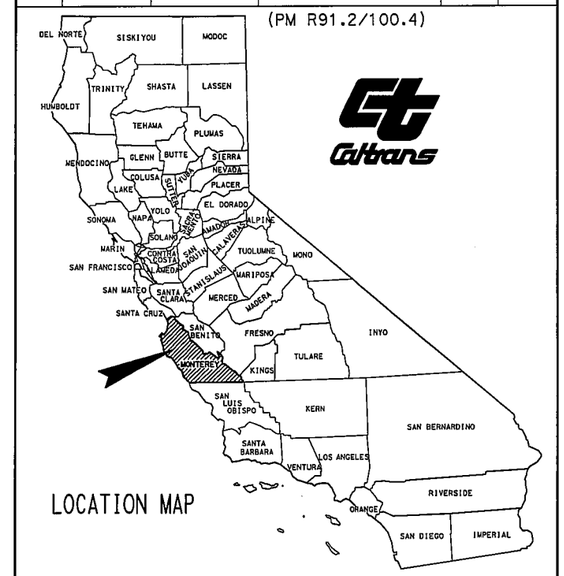
DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

(PM R91.2/100.4)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN MONTEREY COUNTY IN
AND NEAR PRUNEDALE ON ROUTE 101
FROM 0.3 Km NORTH OF BORONDA ROAD
TO 0.5 Km NORTH OF ECHO VALLEY ROAD

To be supplemented by Standard Plans dated July, 1999



LOCATION MAP

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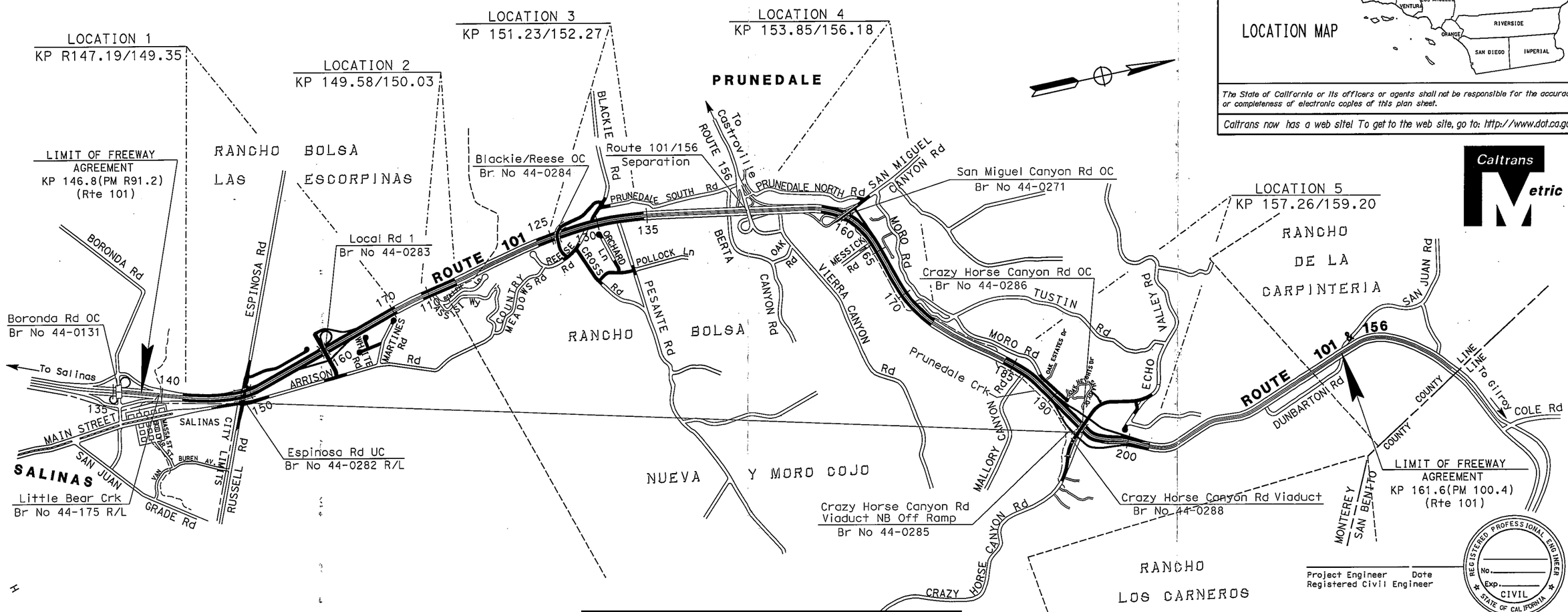


Attachment 1 1/1

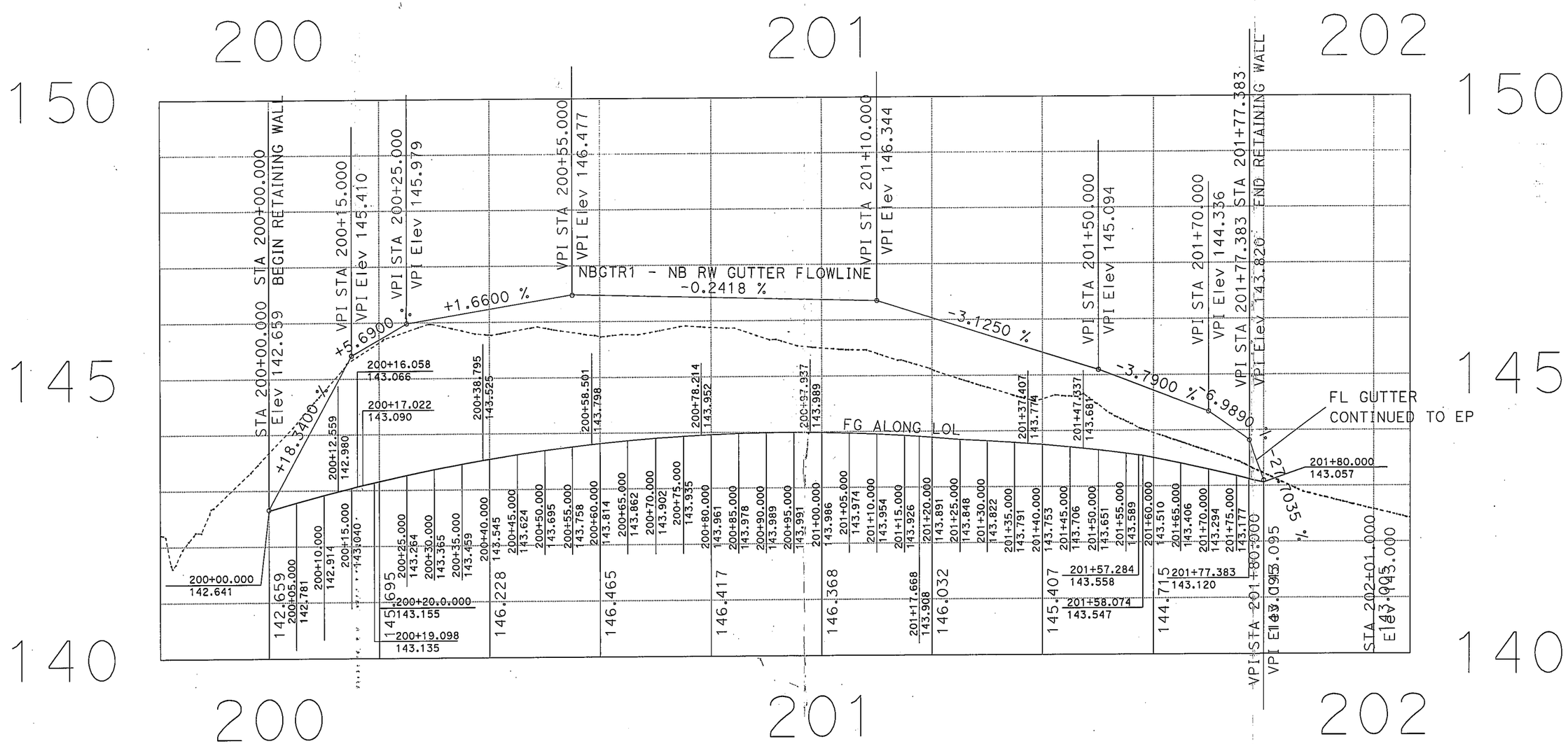
The Contractor shall possess the Class (or classes) of license as specified in the ''Notice to Contractors''.

PROJECT ENGINEER	DATE	PROJECT MANAGER	DATE
D. FRANKE	03/07	D.SILBERBERGER	03/07

D. MASSA

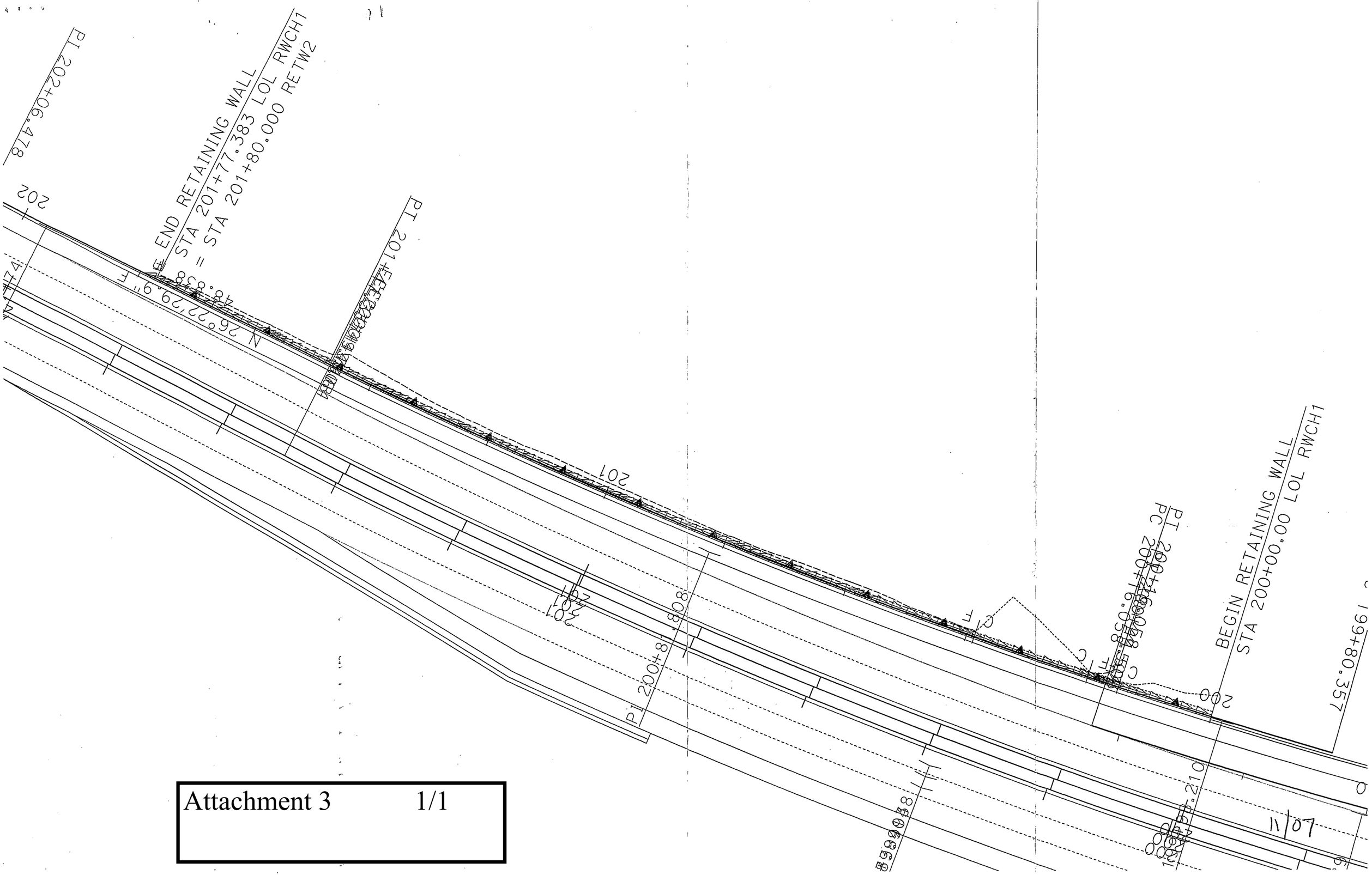
Contract No. 05-0161E4

LAST REVISION



Attachment 2 1/1

11/07



Attachment 3 1/1

State of California
Department of Transportation

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: Fritz Hoffman
Branch Chief
Division of Engineering Services, Structure Design

Date: February 9, 2009

Attn: Hernan Perez

File: 05-0161E1
05 MON-101-
91.2/100.4
Cross Road
Retaining Wall

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

Subject: Foundation Report

A Foundation Report (FR) is provided for the above referenced project per your request. The project proposes to widen a portion of Cross Road as part of the Prunedale Improvement Project (PIP). Foundation recommendations are presented herein for the construction of a soldier pile retaining wall to support the adjacent 2 meter high-slope between stations 29 +93.6 and 30 +15.9. The Soldier Pile Wall (SPW) will protect two prominent Oak trees at stations 29 +97 and 30 +12, approximately 2.4 meters left of the proposed wall alignment. A Type 7 retaining wall was initially planned for this area. The SPW has replaced this design in order to minimize disturbance to the Oak Trees, using top down construction. This installation method eliminates the OSHA required maximum 1:1 cut slope behind a Type 7 wall during construction, which would have intercepted the base of the trees.

This report is based on a field investigation conducted by Geotechnical Services in September, 2008 and the Layout, Profile, and Cross Sections provided by Design. Three mud rotary holes were drilled approximately 1 meter left of the "CR" line, at stations 29 +90.000, 30 +37.35, and 30 +84.7. The following reports were also reviewed for this report:

1) *Maps Showing Geology and Liquefaction Potential of Northern Monterey and Southern Santa Cruz Counties, CA, 1980,* Dupre, W. R. and Tinsley III, J. C.

2) *Geologic Hazards Report* for 05-MON-101-R146.8/161.3 (R91.2/100.2 PM), 05-0161X0 by Geotechnical Services, dated July 23, 2002.

3) *Preliminary Structure Foundation Report* for 05-Mon-101-98.4 (KP158.4), Retaining Walls 2 & 3, 05-0161E0, by Geotechnical Services, dated February 18, 2004.

4) Geotechnical Impact of Proposed Project, Route 101 Improvement Alternatives – Prunedale Study, Monterey County California, Caltrans District 5, 05-MON-101-91.5/98.7 for DeLeuw Cather and Company by PSC Associates, Inc., dated August 2, 1991.

5) *Alternative 2 Preliminary Geotechnical Design Report* for 05-Mon-101-KP 147.2/161.2 (PM 91.2/100.3), 05-0161X0, by Geotechnical Services, dated January 18, 2002,

Existing Facilities and Proposed Improvements

Cross Road is a narrow two lane road connecting Reese Circle and Pesante Roads which both serve as main access roads primarily from residential areas to the 101 Highway. The road cuts through low hills vegetated with grass, trees, and shrubs in the vicinity of the proposed retaining wall. The proposed widening of this road will require cutting back the existing slopes. The proposed retaining wall is approximately 21.9 meters (72 feet) long, spanning between stations 29 +93.6 and 30 +15.9. The maximum design height is 1.42 meters, with a 2:1 backslope.

Physical Setting

The project is located in the Coast Range Geomorphic Province of California at the northern edge of the Salinas Valley. The topography in the vacinty of the project consists of relatively flat to low lying hills. The climate is mild and semi-arid with a strong coastal influence. Daytime temperatures in the summer months are generally in the middle 80's to the middle 90's (Fahrenheit) with occasional extreme temperatures into the 100's. Nighttime summer temperatures are normally in the 50's. Winter temperatures generally have average lows in the middle to low 30's with highs in the high 50's to low 60's. The area typically receives most of its rainfall between November and April with the heaviest

rains occurring during the winter months. The average annual rainfall varies considerably from year to year but generally the average annual rainfall is 380 millimeters (15 inches).

Geology and Soil Conditions

The project area lies within Quaternary sedimentary deposits consisting mostly of Quaternary Undifferentiated Alluvial Deposits (Q_{al}) in the valleys and Alluvial Fan Deposits (Q_{gl}) and Pleistocene Aromas SAND. The undifferentiated alluvial deposits (Q_{al}) contain mostly silts and sands with discontinuous lenses of clay and localized large amounts of gravel. The Aromas Sand is comprised of both eolian and fluvial SAND, SILT, CLAY and GRAVELs. These deposits are found flanking the hills in the vicinity of the project site.

Soils encountered below the surface of the asphalt show mostly silty SANDs to SANDs with varying degrees of fines and trace coarse granitic GRAVEL and COBBLE at about 8 meters depth below ground surface. Stiff to medium stiff Lean sandy CLAY and medium dense SILT interbedded with medium dense SAND were encountered between 10.5 meters and the bottom of the hole at about 12.8 meters (42 feet). Standard Penetration Test (SPT) values corrected for a hammer efficiency of 74% and overburden stress ranged from 19 to 46 (medium dense to dense).

Groundwater

One two inch diameter observation well was installed at boring R-08-001, completed with 9.14 meters of screened casing and 3.0 meters of blank casing. A filter pack of medium number 3 washed sand was installed to approximately 2.5 meters below the road surface. The remaining space was sealed with bentonite chips. A flush mounted vault was installed with cold-patch asphalt. Perched water tables may exist locally because of confining clays and silts at depth. Wet conditions were noted at about 6 meters (20 feet) below ground surface during advancement of the bore hole on September 16, 2008. Static groundwater was measured at 4.92 meters (16.14 feet) below the road surface on February 2, 2009. Groundwater presence and depth will be monitored quarterly.

Seismicity

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

There are two faults that influence the project site. The controlling fault for the design of the proposed Russell/Espinosa Road Undercrossing is the North Branch of the San Andreas Fault (Strike Slip) located approximately 16.3 kilometers northeast of the site. The maximum credible earthquake on this fault has a potential Moment Magnitude of 8.0. The maximum credible bedrock acceleration at the project site due to an earthquake along the fault is 0.5g (gravity) according to the Caltrans-adopted Mualchin peak acceleration curves. The second fault is the Zayante-Vergales Fault (Strike Slip) located approximately 10.8 kilometers northeast of the site. The maximum credible earthquake on this fault has a potential Moment Magnitude of 7.25. The maximum credible bedrock acceleration at the project site due to an earthquake along this fault is 0.4g.

Liquefaction is a loss of soil strength and stiffness due to an increase in pore water pressure during cyclic loading, such as occurs during an earthquake. Soils with liquefaction potential include loose cohesionless soils that may become saturated. Based on the 2008 field investigation, the geology of the site consists of mostly alluvial, medium dense to dense, silty sand. A dense to very dense poorly graded sand was encountered at a depth of 4.9 to 17.4 meters from the ground surface. No loose sands were encountered during the field investigation. Local groundwater is at a depth of 4.92 meters below the ground surface so there is minimal potential to have layers of loose or medium dense saturated sand. Groundwater levels will continued to be monitored. Based on the field investigation the liquefaction susceptibility is very low.

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:

- Minimum Resistivity of 100 ohm-cm or less

- PH of 5.5 or less

Corrosion results in the vicinity of the proposed retaining wall are summarized in the table below:

Cross Road Retaining Wall Corrosion Results			
Borehole I.D.	**Depth (meters)**	**Resistance (Ohms/cm)**	**pH**
R-08-001	0.0-1.77	1040	7.3
R-08-001	4.82-5.27	2530	7.4
R-08-002	4.75-5.21	4300	7.5

Based on the above results, the subsurface soils are considered non-corrosive.

Geotechnical Analysis and Design

The proposed soldier pile wall will retain and be founded within medium dense to dense silty sand. Soil strength parameters used in the analysis and design of the retaining wall are based upon Standard Penetration Test (SPT) blow count and material property correlations.

Soil strength parameters are assumed to be the same for both the retained soil and foundation soil. The strength parameters obtained from the boring data at the roadway elevation are conservatively applied to the slope above the roadway. The recommended soils strength parameters are as follows:

Internal Friction Angle = 34°
Cohesion = 0 kPa
Unit Weight = 18.9 kN/m^3

The lateral earth pressure distribution recommended for the design of the soldier pile wall is shown in Figure 5.5.5.6-1 of the Bridge Design Specifications (BDS). From the top of the wall to bottom of lagging, an active lateral earth pressure coefficient, Ka = 0.56 is recommended. The active lateral earth pressure coefficient, Ka, was calculated using

Coulomb's Theory at borings R-08-001 and R-08-002. The existing slope at both these locations is approximately 2:1. The friction angle between back of wall and the backfill material, δ, equals zero as specified in Section 5.7.2 of the BDS. Below the bottom of lagging, an active lateral earth pressure coefficient, Ka = 0.28 is recommended for calculating the active earth pressure against the piles. A passive lateral earth pressure coefficient, Kp = 3.5 is recommended for calculating the passive lateral earth pressure against the pile.

Construction Considerations

Geotechnical borings show relatively uniform medium dense to dense silty sand. This material should stand un-supported during construction of the drilled shafts. Wet conditions, however, were noted in boring R-08-001 (west end of proposed wall) at approximately 6 meters (20 feet) below the surface which may be localized perched groundwater. Groundwater was measured at 4.92 meters (16.14 feet) below ground surface (5.73 meters elevation) at the above well. Based on field observations, flowing sand conditions are not anticipated since groundwater exceeds twice the depth of the design pile depth of 1.78 meters. Seasonal groundwater fluctuation should be considered in the event that drilling occurs during winter months. Due to sandy conditions, if water is intercepted, caving is possible and casing may be needed as well as modified grouting methods using a tremmy pipe.

The main portion of this wall will be constructed beneath the canopies of the two Oak trees, limiting access of drilling equipment with tall booms. Specialized drilling equipment will likely be required to access each pile location in addition to selective pruning of tree limbs.

All permanent cut or fill slopes in the project area should be 1:2 or flatter.

The installation of the CIDH piles should be performed in accordance with Section 49-4 of the Standard Specifications.

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 form 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 of this report via electronic mail.

Data and information attached with the project plans are:

- Log of Test Borings for Cross Road Retaining Wall.

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

- Foundation Report for Cross Road Retaining Wall dated February 2, 2009.

Project Log of Test Borings have been finalized by this office and are being drafted by the Engineering Graphics Unit. Your office will be notified once they have been completed. For information regarding the status and delivery of the LOTB's, contact Irma Garmarra-Remmen at (916) 227-5510.

If you have any questions or comments, please contact Mike Jurasius at (805) 549-3729 or Mike Finegan at (805) 549-3194.

Supervised by,

REGISTERED PROFESSIONAL ENGINEER
MICHAEL S. FINEGAN
No. C050138
Exp. 6/30/09
CIVIL
STATE OF CALIFORNIA

Michael J. Jurasius
Engineering Geologist
Geotechnical Design – North
Branch D

MICHAEL S. FINEGAN, PE, Chief
Geotechnical Design - North
Branch D

c: Roy Bibbens / GDN File
GS File Room
Job File / Branch D Records
John Stayton – Structures Office Engineer (E – copy)

LIST OF ATTACHMENTS

ATTACHMENT 1	**Vicinity Map**
ATTACHMENT 2	**Geologic Map**
ATTACHMENT 3	**General Plan**
ATTACHMENT 4	**Structure Plan**

INDEX OF SHEETS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

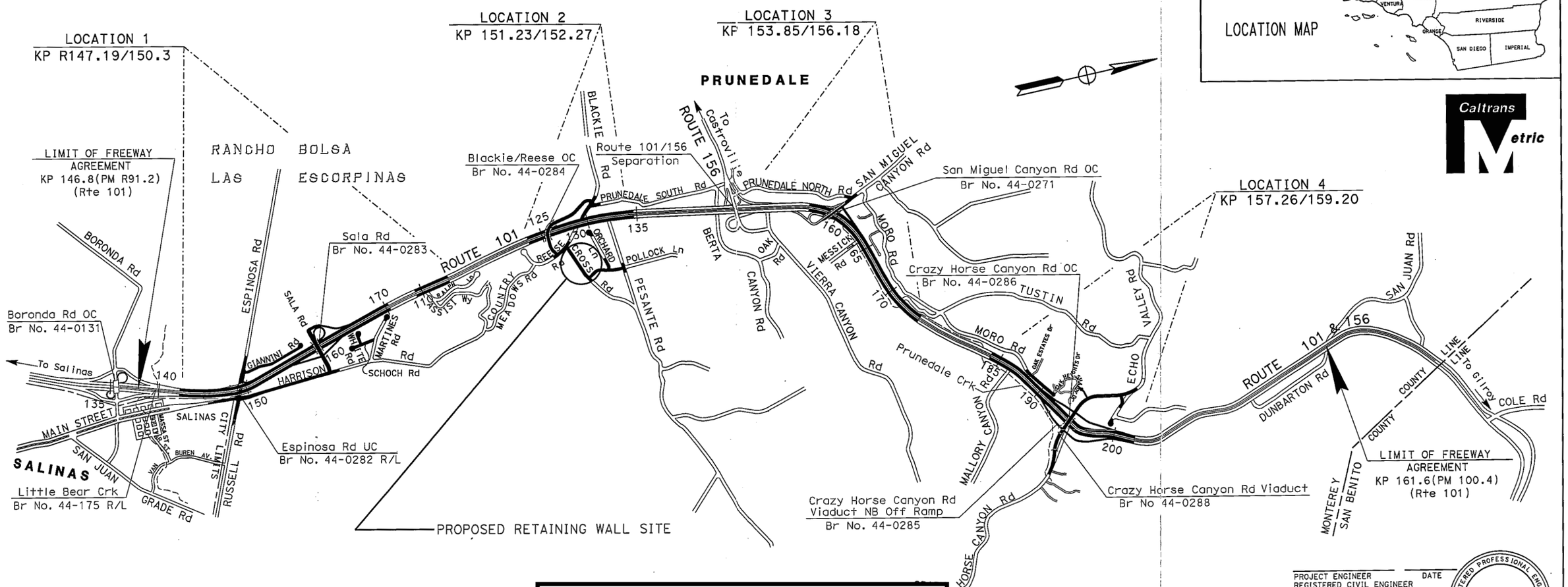
PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY
IN MONTEREY COUNTY IN
AND NEAR PRUNEDALE ON ROUTE 101
FROM 0.3 Km NORTH OF BORONDA ROAD
TO 0.5 Km NORTH OF ECHO VALLEY ROAD

TO BE SUPPLEMENTED BY STANDARD PLANS DATED JULY 2004

Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon	101	R146.8/161.6		

LOCATION MAP

Caltrans Metric



Attachment 1 1/1

PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

60% PS&E Review

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. 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.

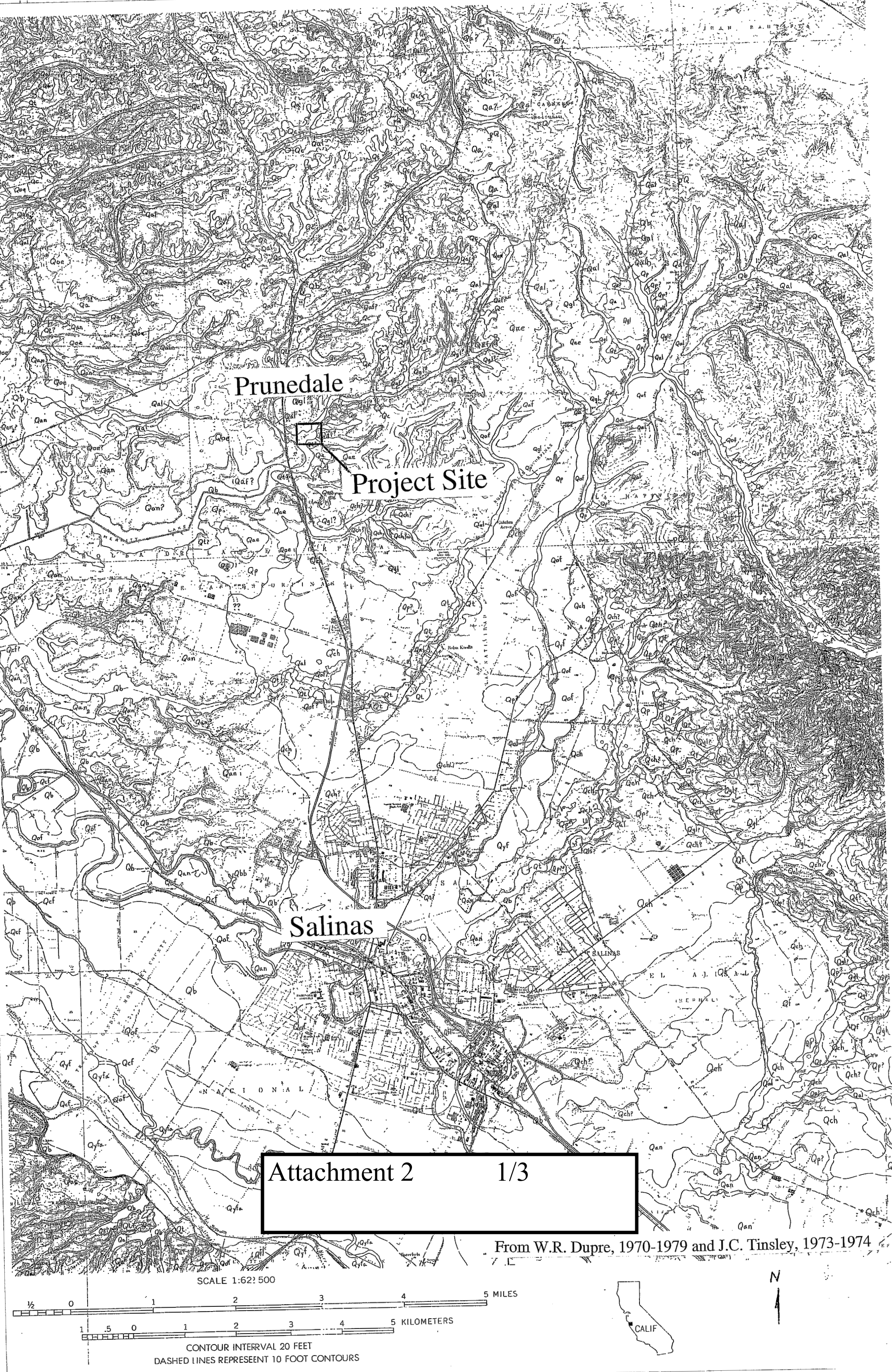
CONTRACT No. **05-0161E4**

PROJECT MANAGER D.SILBERBERGER

DESIGN ENGINEER D. MASSA

LAST REVISION

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


Prunedale
Project Site
Salinas
Attachment 2 1/3
From W.R. Dupre, 1970-1979 and J.C. Tinsley, 1973-1974
SCALE 1:62: 500
½ 0 1 2 3 4 5 MILES
1 .5 0 1 2 3 4 5 KILOMETERS
CONTOUR INTERRVAL 20 FEET
DASHED LINES REPRESEENT 10 FOOT CONTOURS
CALIF
N

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

Attachment 2 3/3

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
05	Mon	101	R146.8/161.6	00	000

(PM R91.2/100.4)

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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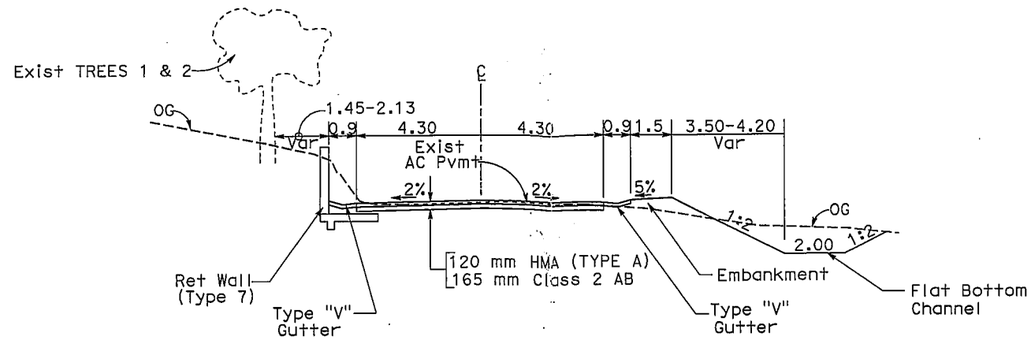
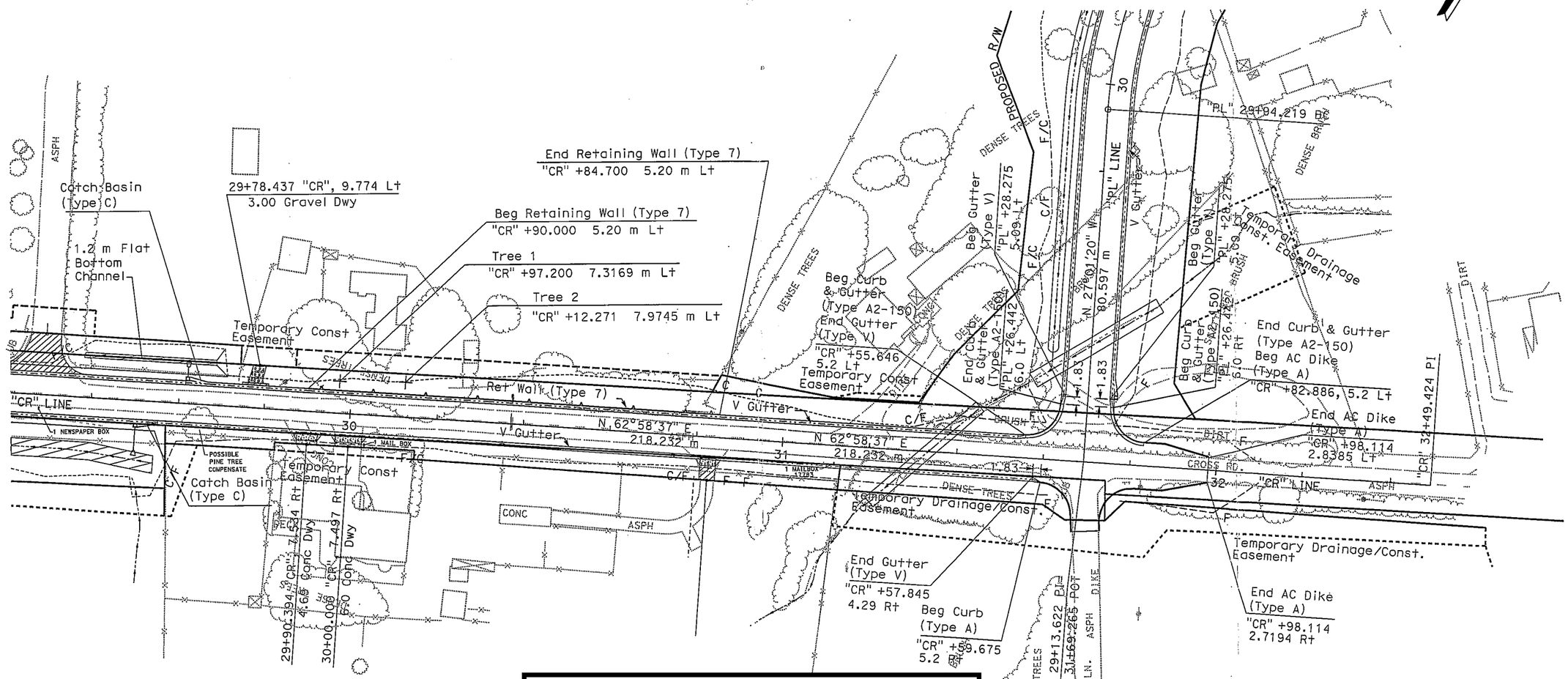
Caltrans Metric



CROSS ROAD RETAINING WALL

STA 29+90.000 TO STA 30+84.700



Attachment 3 1/1

ALL DIMENSIONS ARE IN METERS
UNLESS OTHERWISE SHOWN.

LAYOUT & CROSS SECTION L-X

SCALE 1:500

DATE	REVISED BY
04/07	DATE REVISED

CALCULATED/DESIGNED BY

CHECKED BY

PROJECT ENGINEER DAVID FRANKE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT

P:\MFINEGAN\Office\COUNTIES\MON_CO\P1P\Blackie-Reese\Cross Road RW\Cross_RetWall_09-20-08.dgn

LAST REVISION

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
05	Mon	101			

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER HERNAN PEREZ No. 60993 Exp. 12/31/08 CIVIL STATE OF CALIFORNIA

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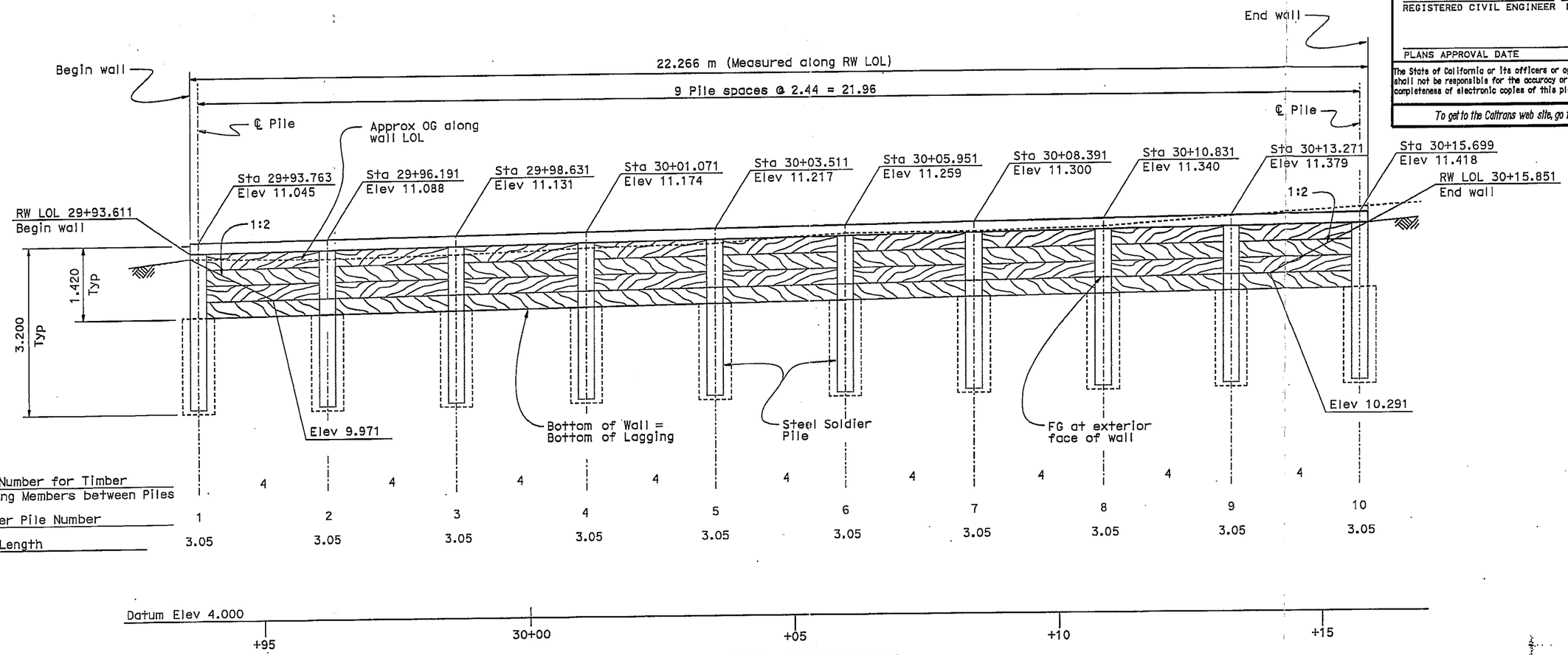

DEVELOPED ELEVATION

1:40

DRAFT FOR REVIEW

Attachment 4 1/1

DESIGN	BY H. Perez	CHECKED A. Salimi	
DETAILS	BY M. Lane	CHECKED H. Perez	
QUANTITIES	BY	CHECKED	

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH 6

BRIDGE NO.

KILOMETER POST R146.8/161

RETAINING WALL - CROSS RD

STRUCTURE PLAN

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

CU 05 EA 0161E1

FILE => cr-c-sp.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES

SHEET 2 OF 5

STRUCTURES DESIGN DETAIL SHEET (METRIC) (REV.03-17-04)

USERNAME => mlane DATE PLOTTED => 19-DEC-2008 TIME PLOTTED => 05:55

Memorandum

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

Date: May 30, 2008

File: 05-0161E1
05-Mon-101-96.1
(kP 154.7)
San Miguel Canyon Road
O.C. (Widen)
Bridge No. 44-0271

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

Subject: Foundation Report

A Foundation Report (FR) is provided for the above referenced project per your request. This report is based on pre-existing subsurface data collected for this design and construction of this bridge.

Proposed Improvements

The proposed improvements include construction of a widening on the right side of the existing overcrossing structure at the location shown on the General Plan dated April 3rd 2008. The proposed structure is a 58.91 meter long, two-span CIP/PS girder bridge. The widenings at Abutment 1 and Bent 2 of the proposed structure will be founded in existing ground. Abutment 3 will be founded within an embankment that has a maximum height of approximately 6.5 meters.

Physical Setting

The project is located within the Coast Ranges Geomorphic Province. It lies within the Gabilan Range. The topography is semi-mountainous. The predominant land uses in the project vicinity are commercial and low density residential. The surface elevations in the vicinity of the proposed bridge widening lie between approximately 40 and 51 meters.

Geology and Soil Conditions

The project area is underlain by Quaternary aged alluvium and Pleistocene Aged Aromas Formation. The June 28th 1999 Foundation Report and the 1998-1999 subsurface exploration program for the design and construction of the San Miguel Canyon Road Overcrossing describe the characteristics of the Aromas Formation.

Laboratory Data

There were no laboratory tests performed for this report.

Groundwater

Groundwater was observed in boreholes B-4 and 99-1. At borehole B-4 the groundwater surface was observed at elevation 35.25 meters on September 19th 1998. At borehole 99-1 the groundwater was observed at elevation 35.06 meters during December of 1998. In addition to these phreatic surfaces, saturated soils were observed in boreholes B-4, B-12 and 99-1, both above and below the groundwater surfaces observed at the boreholes. The saturated soils are shown as "wet" on the Log-of-Test Borings.

Seismic Data and Liquefaction Potential

The "Final Seismic Design Recommendations" were provided to you on January 14th 2008 by Reza Mahallati, Office of Geotechnical Design North. Analyses indicate that a potentially liquefiable layer of silty sand is present between elevations 33.5 and 35 meters in the vicinity of Abutment 3.

Corrosion Testing

Representative soil samples collected during the foundation investigation for the adjacent Retaining Wall No. 16 were tested for corrosion potential. The results of the corrosion tests are summarized in the Foundation Report for Retaining Wall No. 16. The site is considered to be non-corrosive to the foundation elements.

Foundation Recommendations

The abutments of the existing bridge are supported on Class 625 Alternative W open ended pipe piles. Bent 2 is supported on Class 900 Alternative W open ended pipe piles. The construction records indicate that the Bent 2 and Abutment 3 piles were driven to approximately specified tip elevation, 25.5 meters and 30.5 meters respectively. The piles on the west end of Abutment 1 were also driven to approximately specified tip elevation, 35.0 meters. The piles on the east end of Abutment 1 sustained bending damage prior to the pile tip reaching the specified tip elevation, and were cutoff with the pile tip elevation at approximately 38.0 meters. The Logs of Test Borings indicate that all of the piles are founded in Pleistocene Age Aromas Formation.

Caltrans Standard Plan driven open-ended pipe piles are the recommended foundation type. Class 625 Alternative W piles are proposed for abutments 1 and 3, and the abutment 1 wing wall. Class 900 Alternative W piles are proposed for the bent (Caltrans Standard Plans dated July 2004). Analyses of the lateral resistances of the driven piles were not

requested. Design tip elevations for lateral loads have not been provided in the following tables.

Abutments Foundation Design Recommendations

Support	Pile	Cut-off Elevation (m)	LRFD Service-I Limit State Load (kN) per Support		LRFD Service-I Limit State Total Load (kN) per Pile (Compression)	Nominal Resistance (kN)	Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
			Total	Permanent					
Abut. 1	Class 625 Alt. W	46.125	6,800	5,250	625	1250	38.0 (a) 42.0 (c)	38.0	1250
Abut. 1 wingwall	Class 625 Alt. W	50.170	N/A	N/A	400	800	38.0 (a) 42.0 (c)	38.0	800
Abut. 3	Class 625 Alt. W	43.125	6,800	5,250	625	1250	24.5 (a) 31.0 (c)	24.5	1250

Notes:

1) *Design tip elevations are controlled by: (a) Compression and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Bent Foundations Design Recommendations

Support Location	Pile Type	Cut-off Elevation (m)	Service-I Limit State Load per Support (kN)	Total Permissible Support Settlement (mm)	Required Factored Nominal Resistance (kN)				Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
					Strength Limit		Extreme Event				
					Comp. (φ=0.7)	Tension (φ=0.7)	Comp. (φ=1)	Tension (φ=1)			
Bent 2	Class 900 Alt. W	39.125	13,500	25	720	550	1150	450	26.1 (a-I) 28.5 (b-I) 25.5 (a-II) 31.8 (b-II) 35.9 (c)	25.5	1150

Notes:

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

Pile Data Table						
Location	Pile Type	Nominal Resistance (kN)		Design Tip Elevation (m)	Specified Tip Elevation (m)	Nominal Driving Resistance (kN)
		Compression	Tension			
Abut. 1	Class 625 Alt. W	1250	0	38.0 (a) 42.0 (c)	38.0	1250
Abut. 1 wingwall	Class 625 Alt. W	800	0	38.0 (a) 42.0 (c)	38.0	800
Bent 2	Class 900 Alt. W	1150	790	25.5 (a) 28.5 (b) 35.9 (c)	25.5	1150
Abut. 3	Class 625 Alt. W	1250	0	24.5 (a) 31.0 (c)	24.5	1250

Notes:

1) *Design tip elevations for Abutments are controlled by: (a) Compression, (c) Settlement*
2) *Design tip elevations for Bent is controlled by: (a) Compression, (b) Tension, (c) Settlement*
3) *The specified tip elevation shall not be raised above the design tip elevations for lateral load and tolerable settlement.*

Project Information

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 "pdf" format to the addressee of this report via electronic mail.

Data and information attached with the project plans are:

A. Log of Test Borings for the San Miguel Canyon Road Overcrossing (Widen).

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

A. Foundation Report for the San Miguel Canyon Road Overcrossing (Widen), May 30, 2008, Caltrans.
B. Final Foundation Recommendations for the San Miguel Canyon Road Overcrossing, June 28, 1999, Caltrans.
C. Footing Plans and Pile Layouts, Quantity and Driving Records (Driven Piles), and Log Pile Sheets, for the San Miguel Canyon Road Overcrossing, December 2001 and May 2002.

Data and information available for inspection at the District 5 Office:

A. None

Data and information available for inspection at the Transportation Laboratory:

A. None

Construction Considerations

A settlement period of 30 days is specified for the embankment at abutment 3. Piles may be driven at abutment 3 after the completion of the settlement period.

Piles shall be driven in oversized drilled holes in conformance with the provisions in Section 49-1.06, "Predrilled Holes," of the Standard Specifications at the locations and to the corresponding bottom of hole elevations listed in the following table:

Bridge Name or Number	Abutment Number	Bent Number	Elevation of Bottom of Hole
San Miguel Canyon Rd O.C. (widen) (Br. No. 44-0271)	3	-	40.5 meters

For piles that are driven to the specified tip elevation and do not indicate the nominal resistance per the method prescribed in Section 49-1.08 of the Standard Specifications, the pile shall be re-struck with the same impact hammer not less than 16 hours after completion of the initial installation. Prior to the monitored restrike, the pile hammer should be warmed-up by impacting another pile or object a minimum of 10 combustion cycles.

The Office of Geotechnical Design North is to be contacted if the constructed pile tip elevation is above the specified tip elevation.

Closure

A request for production of a Log-of-Test Boring sheet has been made to the Engineering Graphics Branch of the Office of Geotechnical Services. When complete, the As-Built Log-of-Test Borings will be provided to you for attachment to the contract plans.

If you have any questions or comments, please call me at (805) 549-3385 (CalNet 629-3385).

REGISTERED PROFESSIONAL ENGINEER
RONALD L. RICHMAN
No. CE039869
Exp. 12/31/09
CIVIL ENGINEERING
STATE OF CALIFORNIA

RON RICHMAN, P.E., C.E.G.
Office of Geotechnical Design – North

c: RE Pending
Structure OE (E-copy)
PCE (E-copy)
DME (E-copy)
Branch D File
GDN File
GS File Room

Memorandum

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

Date: December 29, 2008

File: 05-0161E1
05-Mon-101-91.9
(kP 147.9)
Espinosa Road U.C.
Bridge No. 44-0282 R/L

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

Subject: Foundation Report

A Foundation Report (FR) is provided for the above referenced project per your request. This report is based on the subsurface data collected for this bridge.

Proposed Improvements

The proposed improvements include construction of a pair of new parallel under crossing structures at the location shown on the General Plan dated December 11th 2006. The proposed structures are 65.6 meter long, two-span CIP/PS girder bridges. The abutments are founded within an embankment that has a maximum height of approximately 6.5 meters. The Bent 2 supports of the proposed structures will be founded on existing ground.

Physical Setting

The project is located within the Coast Ranges Geomorphic Province. It lies at the northern margin of the Salinas Valley, on an uplifted alluvium filled basin. In the immediate vicinity of the project, the terrain is relatively flat with stream terraces along the northern edge of the Salinas Valley. The predominant land use in the project vicinity is agricultural. The surface elevation in the vicinity of the proposed bridge lies between approximately 34.0 and 36.5 meters.

Geology and Soil Conditions

The surficial deposits within the project area are Quaternary Chular Alluvial Fan Deposits. The Chular deposits are described in the geologic literature as weakly consolidated, moderately to poorly sorted sand, silt and gravel.

Caltrans personnel performed six boreholes in 2003 and two boreholes in 2006. The 2003

field investigation consisted of six rotary wash boreholes: B4-03 at Abutment 1 Left, B1-03 and B2-03 at Abutment 3 Left, B3-03 and B7-03 in the vicinity of Abutment 2 Left and B5-03 at Abutment 3 Right. The deepest point reached by the 2003 boreholes was approximately elevation 4.39 meters (14.4 feet). The observed subsurface materials include sandy clay, clayey sand, well graded sand, poorly graded sand, silty sand and lean clay with sand.

The 2006 field investigation by Caltrans for the Overcrossing structure consisted of two rotary wash boreholes, B9-06 and B10-06, located in the proximity of Abutment 1 and Bent 2 of the right bridge. The deepest point reached by the 2006 boreholes was approximately elevation 0.94 meters (3.1 feet). The observed subsurface materials include lean clay, clean clay with sand, fat clay, clayey sand, silty sand and poorly graded sand. None of the soils were described as wet.

Laboratory Data

In addition to the corrosion testing discussed below, two soil samples were tested for Atterberg limits and particle analysis. The results of the tests are attached to this memorandum.

Groundwater

Groundwater was observed in borehole B1-03 at elevation 7.87 meters in January 2003. Saturated soils were observed above this elevation in Caltrans borehole B1-03. The saturated soils are described as "wet" on the Log-of-Test Borings.

Seismic Data and Liquefaction Potential

The "Final Seismic Design Recommendations" were provided to you on November 6th 2007 by Reza Mahallati, Office of Geotechnical Design North.

Corrosion Testing

Representative soil samples collected during the foundation investigation were tested for corrosion potential. The site is considered to be non-corrosive for the foundation elements. The results of the corrosion tests are summarized on the Corrosion Test Summary Report dated March 5th 2004, which is attached to this report.

Foundation Recommendations

Caltrans Standard Plan driven open-ended pipe piles are the recommended foundation type. Class 625 Alternative W piles are proposed for the abutments, and Class 900 Alternative W piles are proposed for the bents (Caltrans Standard Plans dated July 2004).

Analyses of the lateral resistances of the driven piles were not requested. Design tip elevations for lateral loads have not been provided in the following tables.

Left Structure: Abutment Foundation Design Recommendations

Support	Pile	Cut-off Elevation (m)	LRFD Service-I Limit State Load (kN) per Support		LRFD Service-I Limit State Total Load (kN) per Pile (Compression)	Nominal Resistance (kN)	Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
			Total	Permanent					
Abut. 1 Left	Class 625 Alt. W	37.74	9,520	7,070	600	1200	23.5 (a), 26.6 (c)	23.5	1200
Abut. 3 Left	Class 625 Alt. W	38.67	9,380	6,850	590	1180	23.8 (a), 26.6 (c)	23.8	1180

Notes:

1) *Design tip elevations are controlled by: (a) Compression and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Left Structure: Bent Foundation Design Recommendations

Support Location	Pile Type	Cut-off Elevation (m)	Service I Limit State Load per Support (kN)	Total Permissible Support Settlement (mm)	Required Factored Nominal Resistance (kN)				Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
					Strength Limit		Extreme Event				
					Comp. (φ=0.7)	Tension (φ=0.7)	Comp. (φ=1)	Tension (φ=1)			
Bent 2 Left	Class 900 Alt. W	32.68	7,450	25.4	1000	0	960	0	21.6 (a-I), 22.8 (a-II), 27.9 (c)	21.6	1430

Notes:

1) *Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Left Structure: Pile Data Table						
Location	Pile Type	Nominal Resistance (kN)		Design Tip Elevation (m)	Specified Tip Elevation (m)	Nominal Driving Resistance (kN)
		Compression	Tension			
Abut. 1 Left	Class 625 Alt. W	1200	0	23.5 (a), 26.6 (c)	23.5	1200
Bent 2 Left	Class 900 Alt. W	1430	0	21.6 (a), 27.9 (c)	21.6	1430
Abut. 3 Left	Class 625 Alt. W	1180	0	23.8 (a), 26.6 (c)	23.8	1180

Notes:

1) *Design tip elevations for Abutments are controlled by: (a) Compression, (c) Settlement, (d) Lateral Load*
2) *Design tip elevations for Bent is controlled by: (a) Compression, (c) Settlement (d) Lateral Load*
3) *The specified tip elevation shall not be raised above the design tip elevations for lateral load and tolerable settlement.*

Right Structure: Abutment Foundation Design Recommendations									
Support	Pile	Cut-off Elevation (m)	LRFD Service-I Limit State Load (kN) per Support		LRFD Service-I Limit State Total Load (kN) per Pile (Compression)	Nominal Resistance (kN)	Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
			Total	Permanent					
Abut. 1 Right	Class 625 Alt. W	37.74	9,520	7,070	600	1200	22.9 (a), 30.9 (c)	22.9	1200
Abut. 3 Right	Class 625 Alt. W	38.67	9,380	6,850	590	1180	23.8 (a), 28.2 (c)	23.8	1180

Notes:

1) *Design tip elevations are controlled by: (a) Compression and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Right Structure: Bent Foundation Design Recommendations											
Support Location	Pile Type	Cut-off Elevation (m)	Service I Limit State Load per Support (kN)	Total Permissible Support Settlement (mm)	Required Factored Nominal Resistance (kN)				Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
					Strength Limit		Extreme Event				
					Comp. (φ=0.7)	Tension (φ=0.7)	Comp. (φ=1)	Tension (φ=1)			
Bent 2 Right	Class 900 Alt. W	33.50	7,450	25.4	1000	0	960	0	22.2 (a-I), 22.8 (a-II), 29.0 (c)	22.2	1430

Notes:

1) *Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Right Structure: Pile Data Table						
Location	Pile Type	Nominal Resistance (kN)		Design Tip Elevation (m)	Specified Tip Elevation (m)	Nominal Driving Resistance (kN)
		Compression	Tension			
Abut. 1 Right	Class 625 Alt. W	1200	0	22.9 (a), 30.9 (c)	22.9	1200
Bent 2 Right	Class 900 Alt. W	1430	0	22.2 (a), 29.0 (c)	22.2	1430
Abut. 3 Right	Class 625 Alt. W	1180	0	23.8 (a), 28.2 (c)	23.8	1180

Notes:

1) *Design tip elevations for Abutments are controlled by: (a) Compression, (c) Settlement, (d) Lateral Load*
2) *Design tip elevations for Bents are controlled by: (a) Compression, (c) Settlement (d) Lateral Load*
3) *The specified tip elevation shall not be raised above the design tip elevations for lateral load and tolerable settlement.*

Concrete pavement was encountered between elevations 33.9 meters and 34.5 meters by borehole B3-03 in the vicinity of Abutment 1 Right. Prior to placement of the approach embankments for Abutments 1 and 3 Right, and prior to driving the foundation piles, the existing foundation soils at the projected footprints of the pile caps at the abutment locations of the right structure should be excavated to elevation 33.0 meters, but not less than the bottom of any pavement that is encountered. Excavated pavement or other buried man-made objects should be removed and disposed per Standard Specifications Section 19. It is not known the quantity of man-made objects that may need to be removed and

disposed. Refer to section 19-1.04 of the Standard Specifications for a discussion of payment options. The excavations should be backfilled with compacted suitable embankment soil per Section 19 of the Standard Specifications. This soil should also be predrilled prior to pile driving.

Project Information

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 "pdf" format to the addressee of this report via electronic mail.

Data and information attached with the project plans are:

A. Log of Test Borings for the Espinosa Road Undercrossing

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

A. Foundation Report and attachments for the Espinosa Road Undercrossing, December 29, 2008, Caltrans.

Data and information available for inspection at the District 5 Office:

A. None

Data and information available for inspection at the Transportation Laboratory:

A. None

Construction Considerations

Fifteen day fill delay periods are recommended for Abutments 1 and 3. Piles may be driven at these support locations after the completion of the settlement periods.

Piles shall be driven in oversized drilled holes in conformance with the provisions in Section 49-1.06, "Predrilled Holes," of the Standard Specifications at the locations and to the corresponding bottom of hole elevations listed in the following table:

Bridge Name or Number	Abutment Number	Bent Number	Elevation of Bottom of Hole
Espinosa Road Undercrossing (Br. No. 44-0282 R/L)	1	-	35 meters
Espinosa Road Undercrossing (Br. No. 44-0282 R/L)	3	-	36 meters

For piles that are driven to the specified tip elevation and do not indicate the nominal resistance per the method prescribed in Section 49-1.08 of the Standard Specifications, the pile shall be re-struck with the same impact hammer not less than 16 hours after completion of the initial installation. Prior to the monitored restrike, the pile hammer should be warmed-up by impacting another pile or object a minimum of 10 combustion cycles.

The Office of Geotechnical Design North is to be contacted if the constructed pile tip elevation is above the specified tip elevation.

Closure

A request for production of a Log-of-Test Boring sheet has been made to the Engineering Graphics Branch of the Office of Geotechnical Services. When complete, the As-Built Log-of-Test Borings will be provided to you for attachment to the contract plans.

If you have any questions or comments, please call me at (805) 549-3385 (CalNet 629-3385).

REGISTERED PROFESSIONAL ENGINEER
RONALD L. RICHMAN
No. CE039869
Exp. 12/31/09
CIVIL ENGINEERING
STATE OF CALIFORNIA

RON RICHMAN, P.E., C.E.G.
Office of Geotechnical Design – North

c: RE Pending
Structure OE (E-copy)
PCE (E-copy)
DME (E-copy)
Branch D File
GDN File
GS File Room

LIST OF ATTACHMENTS

Material Properties Summary	Attachment 1
Corrosion Testing Summary	Attachment 2

Mon-101-KP 147.9
05-0161E1
Espinosa Road U.C.

MATERIALS PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	B9-06	B10-06
	DATE SAMPLED	7/19/2006	7/20/2006
	STATION	149+09	149+51
	LINE	M-line	M-line
	DISTANCE FROM LINE (RT. OR LT.)	20.8 m Rt	13.1 m Rt
	DEPTH OR ELEVATION (meters)	7.6 to 9.1 m	6.4 to 9.4 m
	USCS CLASSIFICATION		
SIEVE ANALYSIS	38 mm (1 1/2")		
	19 mm (3/4")		
	9.5 mm (3/8")		
	4.75 mm (No. 4)	100	100
	2.36 mm (No. 8)	100	100
	1.18 mm (No. 16)	100	100
	600 μm (No. 30)	100	99
	300 μm (N0. 50)	94	97
	75 μm (N0. 200)	35	39
	5 μm	26	23
	1μm		
CLASSIFICATION TEST SUMMARY	IN-PLACE DENSITY (DRY WT. lb/cu.ft.)		
	IN-PLACE MOISTURE (PERCENT)		
	SPECIFIC GRAVITY		
	LIQUID LIMIT	22	24
	PLASTICITY INDEX	7	6
	SAND EQUIVALENT		
SOIL STRENGTH	CUe TRIAXIAL TEST		
	EFFECTIVE STRESS		
	FRICTION ANGLE (DEGREES)		
	COHESION (kPa)		
	TOTAL STRESS		
	FRICTION ANGLE (DEGREES)		
	COHESION (kPa)		
CORROSION	RESISTIVITY (ohm-cm)		
	pH		
	SULFATES (ppm)		
	CHLORIDES (ppm)		

Attachment 1 1/1

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion Technology Branch
Report Date: 3/5/2004
Reported By: Lopez, Rudy

CORROSION TEST SUMMARY REPORT

Bridge Name: **Espinosa Road UC**
Bridge Number:
EA No.: **05-0161E0**
Dist/Co/Rte/PM or KP: **5 / Mon / 101 / PM 91.9**

SIC Number	Sample Location/ Limit	Sample Type	Sample Depth	Minimum Resistivity[1] (ohm-cm)	pH[2]	Chloride Content[3] (ppm)	Sulfate Content[4] (ppm)
C421540	Boring B1-03/	Soil	5.5'-7'	2300	7		
C421541	Boring B1-03/	Soil	13.5-'15.5'	1400	7.5		
C421542	Boring B1-03/	Soil	20.5'-22'	4100	7.5		
C421543	Boring B1-03/	Soil	27'-29'	1600	8		
C421544	Boring B1-03/	Soil	32'-35'	2000	7.5		
C421545	Boring B1-03/	Soil	40.5'-42'	2000	7.5		
C421546	Boring B1-03/	Soil	57'-60'	2900	7.5		
C421547	Boring B1-03/	Soil	87'-89'	2800	7.5		
C421548	Boring B3-03/	Soil	46'-48'	2600	7.5		
C421549	Boring B3-03/	Soil	19.5'-20.5'	2800	8		
C421550	Boring B3-03/	Soil	7.5'10.5'	5600	8		

Attachment 2 1/2

CORROSION TEST SUMMARY REPORT Cont.

Bridge Name:	**Espinosa Road UC**
Bridge Number:	
EA No.:	**05-0161E0**
Dist/Co/Rte/PM or KP:	**5 / Mon / 101 / PM 91.9**

☒ This site is not corrosive to foundation elements (see note below for MSE wall backfill)

☐ This site is corrosive (if checked).

Note: For MSE wall structure backfill material, minimum resisitivity must be 1500 ohm-cm or greater, pH must be between 5.5 and 10.0, chloride content must not be greater than 500 ppm, and sulfate content must not be greater than 2000 ppm.

[1,2]CTM 643, [3]CTM 422, [4]CTM 417

Attachment 2 2/2

Memorandum

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

Date: December 29, 2008

File: 05-0161E1
05-Mon-101-92.5
(kP 148.9)
Sala Road O.C.
Bridge No. 44-0283

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

Subject: Foundation Report

A Foundation Report (FR) is provided for the above referenced project per your request. This report is based on the subsurface data collected for this bridge.

Proposed Improvements

The proposed improvements include construction of a new overcrossing structure at the location shown on the General Plan dated February 2nd 2007. The proposed structure is a 63.1 meter long, two-span CIP/PS girder bridge. The abutments are founded within an embankment that has a maximum height of approximately 6.5 meters. The Bent 2 supports of the proposed structure will be founded on existing ground.

Physical Setting

The project is located within the Coast Ranges Geomorphic Province. It lies at the northern margin of the Salinas Valley., on an uplifted alluvium filled basin. In the immediate vicinity of the project, the terrain is relatively flat with stream terraces along the northern edge of the Salinas Valley. The predominant land use in the project vicinity is agricultural. The surface elevation in the vicinity of the proposed bridge lies between approximately 35 and 36 meters.

Geology and Soil Conditions

The surficial deposits within the project area are Quaternary Chular Alluvial Fan Deposits. The Chular deposits are described in the geologic literature as weakly consolidated, moderately to poorly sorted sand, silt and gravel.

Caltrans personnel performed two boreholes in 2004 and one borehole in 2007. The 2004

field investigation consisted of two rotary wash boreholes: B1-04 at Abutment 1 and B2-04 at bent 2. The deepest point reached by the boreholes was approximately elevation 4.44 meters (14.6 feet). The observed subsurface materials include sandy clay, clayey sand, well graded sand, and poorly graded sand.

The 2007 field investigation by Caltrans for the Overcrossing structure consisted of one rotary wash borehole, B8-07, located in the proximity of Abutment 3. The deepest point reached by B8-07 was approximately elevation 4.89 meters (16.0 feet). The observed subsurface materials include sandy clay, fat clay, well graded sand, silt with sand and silty sand.

Laboratory Data

The results of the corrosion tests on selected soil specimens are attached to this report.

Groundwater

Groundwater was observed in borehole B1-04 at elevation 21.47 meters on April 15th 2004. Saturated soils were observed above this elevation in Caltrans boreholes B1-04 and B2-04. The saturated soils are described as "wet" on the Log-of-Test Borings.

Seismic Data and Liquefaction Potential

The "Final Seismic Design Recommendations" were provided to you on November 8th 2007 by Reza Mahallati, Office of Geotechnical Design North.

Corrosion Testing

Representative soil samples collected during the foundation investigation were tested for corrosion potential. The results of the corrosion tests are summarized on the Corrosion Test Summary Report dated August 23rd 2004. The site is considered to be non-corrosive to the foundation elements.

Foundation Recommendations

Caltrans Standard Plan driven open-ended pipe piles are the recommended foundation type. Class 625 Alternative W piles are proposed for the abutments, and Class 900 Alternative W piles are proposed for the bent (Caltrans Standard Plans dated July 2004). Driven piles having the recommended lengths and diameters will meet the requirements for permissible movement under the Service Limit State loads provided on the "Final Foundation Data Sheet". Analyses of the lateral resistances of the driven piles were not requested. Design tip elevations for lateral load have not been provided.

Abutments Foundation Design Recommendations									
Support	Pile	Cut-off Elevation (m)	LRFD Service-I Limit State Load (kN) per Support		LRFD Service-I Limit State Total Load (kN) per Pile (Compression)	Nominal Resistance (kN)	Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
			Total	Permanent					
Abut. 1	Class 625 Alt. W	41.3	13,900	9,940	604	1210	23.2 (a), 26.6 (c)	23.2	1210
Abut. 3	Class 625 Alt. W	40.8	11,600	7,990	580	1160	24.4 (a), 32.0 (c)	24.4	1160

Notes:

1) *Design tip elevations are controlled by: (a) Compression and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*
3) *The nominal driving resistance required is equal to the nominal resistance needed to support the factored load.*

Bent Foundation Design Recommendations											
Support Location	Pile Type	Cut-off Elevation (m)	Service I Limit State Load per Support (kN)	Total Permissible Support Settlement (mm)	Required Factored Nominal Resistance (kN)				Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
					Strength Limit		Extreme Event				
					Comp. (φ=0.7)	Tension (φ=0.7)	Comp. (φ=1)	Tension (φ=1)			
Bent 2	Class 900 Alt. W	35.5	9,900	12.7	1330	0	1250	0	23.8 (a-I), 27.2 (a-II), 26.0 (c)	23.8	1900

Notes:

1) *Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*
3) *The nominal driving resistance required is equal to the nominal resistance needed to support the factored load.*

Pile Data Table						
Location	Pile Type	Nominal Resistance (kN)		Design Tip Elevation (m)	Specified Tip Elevation (m)	Nominal Driving Resistance (kN)
		Compression	Tension			
Abut. 1	Class 625 Alt. W	1210	0	23.2 (a), 26.6 (c)	23.2	1210
Bent 2	Class 900 Alt. W	1900	0	23.8 (a), 26.0 (c)	23.8	1900
Abut. 3	Class 625 Alt. W	1160	0	24.4 (a), 32.0 (c)	24.4	1160

Notes:

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

Project Information

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 "pdf" format to the addressee of this report via electronic mail.

Data and information attached with the project plans are:

A. Log of Test Borings for the Sala Road Overcrossing

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

A. Foundation Report for the Sala Road Overcrossing, December 29, 2008, Caltrans.

Data and information available for inspection at the District 5 Office:

A. None

Data and information available for inspection at the Transportation Laboratory:

A. None

Construction Considerations

Fifteen day fill delay periods are recommended for Abutments 1 and 3. Piles may be driven at these support locations after the completion of the settlement periods.

Piles shall be driven in oversized drilled holes in conformance with the provisions in Section 49-1.06, "Predrilled Holes," of the Standard Specifications at the locations and to the corresponding bottom of hole elevations listed in the following table:

Bridge Name or Number	Abutment Number	Bent Number	Elevation of Bottom of Hole
Sala Road Overcrossing (Br. No. 44-0283)	1	-	36 meters
Sala Road Overcrossing (Br. No. 44-0283)	3	-	36 meters

For piles that are driven to the specified tip elevation and do not indicate the nominal resistance per the method prescribed in Section 49-1.08 of the Standard Specifications, the pile shall be re-struck with the same impact hammer not less than 16 hours after completion of the initial installation. Prior to the monitored restrike, the pile hammer should be warmed-up by impacting another pile or object a minimum of 10 combustion cycles.

The Office of Geotechnical Design North is to be contacted if the constructed pile tip elevation is above the specified tip elevation.

Closure

A request for production of a Log-of-Test Boring sheet has been made to the Engineering Graphics Branch of the Office of Geotechnical Services. When complete, the As-Built Log-of-Test Borings will be provided to you for attachment to the contract plans.

If you have any questions or comments, please call me at (805) 549-3385 (CalNet 629-3385).

REGISTERED PROFESSIONAL ENGINEER
RONALD L. RICHMAN
No. CE039869
Exp. 12/31/09
CIVIL ENGINEERING
STATE OF CALIFORNIA

RON RICHMAN, P.E., C.E.G.
Office of Geotechnical Design – North

c: RE Pending
Structure OE (E-copy)
PCE (E-copy)
DME (E-copy)
Branch D File
GDN File
GS File Room

LIST OF ATTACHMENTS

Corrosion Testing Summary Attachment 1

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion Technology Branch
Report Date: 8/23/2004
Reported By: Lopez, Rudy

CORROSION TEST SUMMARY REPORT - Soil/Water

Bridge Name:	
Bridge Number:	
EA No.:	**05-0161E0**
Dist/Co/Rte/PM	**05 / MON / 101**
or KP:	**/ PM R92.55**

SIC Number (TL101)	Sample Location	Sample Type	Sample Depth	Minimum Resistivity[1] (ohm-cm)	pH[2]	Chloride Content[3] (ppm)	Sulfate Content[4] (ppm)
C677823	LOCAL RD #1	WATER	41 FT/ B1-04 SAMPLE #510	730	7.93	81	205
C661485	MON-101-R92.55	SOIL	1-5 FT/BORING B1-04 SAMPLE 1	2700	7.43		
C661486	MON-101-R92.55	SOIL	9-11 FT /BORING B1-04, SAMPLE 3	1700	7.43		
C661490	MON-101-R92.55	SOIL	27.5-31.0 FT /BORING B1-04, SAMPLE 11	6200	8.27		
C661491	MON-101-R92.55	SOIL	32.5-36 FT /BORING B1-04, SAMPLE 13	4100	7.61		
C661493	MON-101-R92.55	SOIL	42.5-46 FT /BORING B1-04, SAMPLE 17	6000	7.51		
C661496	MON-101-R92.55	SOIL	57.5-59 FT /BORING B1-04, SAMPLE 23	870	6.55	22	921
C677808	MON-101-R92.55	SOIL	67.5-71FT/BORING B1-04, SAMPLE 27	4200	7.38		

☒ This site is not corrosive to foundation elements (see note below for MSE wall backfill)

☐ This site is corrosive (if checked).

Note: For MSE wall structure backfill material, minimum resisitivity must be 1500 ohm-cm or greater, pH must be between 5.5 and 10.0, chloride content must not be greater than 500 ppm, and sulfate content must not be greater than 2000 ppm.

[1,2]CTM 643, [3]CTM 422, [4]CTM 417

Attachment 1 1/1

Memorandum

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

Date: February 3, 2009

File: 05-0161E1
05-Mon-101-94.1
(kP 151.4)
Prunedale South Road
Overcrossing
Bridge No. 44-0284

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

Subject: Foundation Report

A Foundation Report (FR) is provided for the above referenced project per your request. This report is based on the subsurface data collected for this bridge.

Proposed Improvements

The proposed improvements include construction of a new overcrossing structure at the location shown on the General Plan dated September 27th 2007. The proposed structure is a 55.0 meter long, one-span CIP/PS girder bridge. The abutment 1 and abutment 2 foundations are founded within existing ground at the top of 1:1.5 cut slopes that have heights of approximately 9.0 to 10.3 meters.

Physical Setting

The project is located within the Coast Ranges Geomorphic Province. It lies within the Gabilan Range. The topography is semi-mountainous. The predominant land uses in the project vicinity are commercial and low density residential. The surface elevation in the vicinity of the proposed bridge lies between approximately 16 and 32 meters.

Geology and Soil Conditions

The project area is underlain by two Quaternary aged Deposits: the lower portion of the Aromas Sand Deposit (Q_{af}) and the Older Eolian Deposit (Q_{oe}). The Aromas Sand Deposit appears to be on both the east and west side of Route 101, whereas the Older Eolian Deposit is shown only on the west side of Route 101.

The lower portion of the Aromas Sand Deposit (Q_{af}) is a fluvial unit, which is a basal

alluvial or stream deposited unit, that consists of interbedded silty clay, silt, sand and gravel. This Aromas Sand Deposit separates an upper and lower aquifer. Due to the presence of discontinuous layers and lenses of clay in the lower portion of the Aromas Sand, the lower aquifer is considered partially confined and the upper aquifer is semi-perched. Gravel beds in the Aromas Sand Deposit act as local aquifers and can transmit significant amounts of groundwater to cut slope faces or sidehill embankments. These gravel beds are reported to range in thickness from 3 to 30 meters. Perched water conditions may exist at this site.

Caltrans personnel performed two boreholes in 2007. One rotary wash borehole, B7-07, was drilled in the proximity of Abutment 1. The deepest point reached by B7-07 was approximately elevation -4.8 meters. Borehole B1-07 was drilled in the proximity of Abutment 2. The deepest point reached by B1-07 was approximately -0.1 meters. The observed subsurface materials include clayey sand, silty sand, sandy fat clay, fat clay and well graded sand with silt.

Laboratory Data

The results of the corrosion tests are attached to this report.

Groundwater

Groundwater was observed in boreholes B7-07 and B1-07. At borehole B7-07 the groundwater surface was observed at elevation 1.6 meters on February 6th 2008. At borehole B1-07 the groundwater was observed at elevation 15.1 meters on March 27th 2007 and June 20th 2007. In addition to these phreatic surfaces, saturated soils were observed in the boreholes both above and below the groundwater surfaces observed at the boreholes. The saturated soils are shown as "wet" on the Log-of-Test Borings.

Seismic Data and Liquefaction Potential

The "Final Seismic Design Recommendations" were provided to you on November 6th 2007 by Reza Mahallati, Office of Geotechnical Design North.

Corrosion Testing

Representative soil samples collected for this structure, the adjacent retaining walls, and nearby cut slopes were tested for corrosion potential. The results of the corrosion tests are summarized on the Corrosion Test Summary Report dated July 3rd 2007. The site is considered to be corrosive to the foundation elements.

Foundation Recommendations

Caltrans Standard Plan driven open-ended pipe piles are the recommended foundation type. Class 625 Alternative W piles are proposed (Caltrans Standard Plans dated July 2004). Analyses of the lateral resistances of the driven piles were not requested. Design tip elevations for lateral loads have not been provided in the following tables.

Prior to placing and driving all piles at both abutments, a hole should be predrilled to elevation 14 meters per Section 49-1.06, "Predrilled Holes", of the Caltrans Standard Specifications.

Abutments Foundation Design Recommendations

Support	Pile	Cut-off Elevation (m)	LRFD Service-I Limit State Load (kN) per Support		LRFD Service-I Limit State Total Load (kN) per Pile (Compression)	Nominal Resistance (kN)	Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
			Total	Permanent					
Abut. 1	Class 625 Alt. W	19.425	14,600	9,300	610	1220	5.2 (a), 7.2 (c)	5.2	1220
Abut. 2	Class 625 Alt. W	20.525	15,500	10,150	600	1200	5.2 (a), 9.2 (c)	5.2	1200

Notes:

1) *Design tip elevations are controlled by: (a) Compression and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Pile Data Table

Location	Pile Type	Nominal Resistance (kN)		Design Tip Elevation (m)	Specified Tip Elevation (m)	Nominal Driving Resistance (kN)
		Compression	Tension			
Abut. 1	Class 625 Alt. W	1220	0	5.2 (a), 7.2 (c)	5.2	1220
Abut. 2	Class 625 Alt. W	1200	0	5.2 (a), 9.2 (c)	5.2	1200

Notes:

1) *Design tip elevations for Abutments are controlled by: (a) Compression, (c) Settlement, (d) Lateral Load*
2) *The specified tip elevation shall not be raised above the design tip elevations for lateral load and tolerable settlement.*

Slope Paving

The boreholes indicate the possible presence of saturated soils behind the proposed slope paving at abutments 1 and 2. Drainage features should be incorporated into the design of the slope paving. The slope paving should incorporate weep holes on 2 meter centers. Vertically arranged 0.3 meter wide strips of geocomposite drain material should be placed at the location of the weep holes on the graded slope, prior to placement of the slope pavement.

Project Information

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 "pdf" format to the addressee of this report via electronic mail.

Data and information attached with the project plans are:

A. Log of Test Borings for the Prunedale South Road Overcrossing.

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

A. Foundation Report for the Prunedale South Road Overcrossing, February 3, 2009, Caltrans.

Data and information available for inspection at the District 5 Office:

A. None

Data and information available for inspection at the Transportation Laboratory:

A. None

Construction Considerations

For piles that are driven to the specified tip elevation and do not indicate the nominal resistance per the method prescribed in Section 49-1.08 of the Standard Specifications, the pile shall be re-struck with the same impact hammer not less than 48 hours after completion of the initial installation. Prior to the monitored restrike, the pile hammer should be warmed-up by impacting another pile or object a minimum of 10 combustion cycles.

The Office of Geotechnical Design North is to be contacted if the constructed pile tip elevation is above the specified tip elevation.

Closure

A request for production of a Log-of-Test Boring sheet has been made to the Engineering Graphics Branch of the Office of Geotechnical Services. When complete, the As-Built Log-of-Test Borings will be provided to you for attachment to the contract plans.

If you have any questions or comments, please call me at (805) 549-3385 (CalNet 629-3385).

REGISTERED PROFESSIONAL ENGINEER
RONALD L. RICHMAN
No. CE039869
Exp. 12/31/09
CIVIL ENGINEERING
STATE OF CALIFORNIA

RON RICHMAN, P.E., C.E.G.
Office of Geotechnical Design – North

c: RE Pending
Structure OE (E-copy)
PCE (E-copy)
DME (E-copy)
Branch D File
GDN File
GS File Room

LIST OF ATTACHMENTS

Corrosion Testing Summary Attachment 1

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion Technology Branch
Report Date: 7/3/2007
Reported By: Lopez, Rudy

CORROSION TEST SUMMARY REPORT - Soil/Water

Bridge Name:

Bridge Number:

EA No.: **05-0161E1**

Dist/Co/Rte/PM or KP: **05 / MON / 101 / 92.1/100.4**

SIC Number (TL101)	Sample Location	Sample Type	Sample Depth	Minimum Resistivity[1] (ohm-cm)	pH[2]	Chloride Content[3] (ppm)	Sulfate Content[4] (ppm)
C	BLAKIE ROAD	SOIL	5.5-10.5 FT/B5-07	800	4.6	424	15
C	BLAKIE ROAD OC	SOIL	37.2-47.5 FT/B1-07	850	6.7	239	51
C44011		SOIL	34-35 FT/BORING B-5-06	550	6.7	10	12
C	BLAKIE ROAD OC	SOIL	59.0-70.7 FT/B1-07	600	6.5	122	16
C	BLAKIE ROAD	SOIL	5.8-16.5 FT/B4-07	515	5.0	719	8

☐ This site is not corrosive to foundation elements (see note below for MSE wall backfill)

☒ This site is corrosive (if checked). Controlling corrosion parameters are as follows:

- 4.6 pH
- 719 ppm Chloride
- 51 ppm Sulfate

Attachment 1 1/1

Memorandum

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

Date: May 4, 2010

File: 05-0161E1
05-Mon-101-94.1
(kP 151.4)
Four type 1 retaining walls at the Prunedale South Road O.C.

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

Subject: Foundation Report for Type 1 Retaining Walls

A Foundation Report (FR) is provided for the above referenced project per your request. This report is based on the subsurface data collected for the adjacent bridge. Information regarding the site conditions and exploratory program can be found in the Foundation Report for the Prunedale South Road Overcrossing, dated February 3rd 2009.

Foundation Recommendations

Caltrans Standard Plan Type 1 Retaining Walls founded on spread footings are appropriate for the subsurface conditions at all four corners of the overcrossing. The foundations for the four retaining walls will be configured in accordance with the Caltrans Standard Plans dated July 2004, as found on page B3-1. The wall design heights range between 1.8 and 3.6 meters. The spread footings will be founded on original ground between elevations 22.0 meters and 24.1 meters. The maximum applied toe pressures range from 90 kPa and 135 kPa. The undisturbed foundation soils will provide the required allowable bearing capacity with a minimum safety factor of three. If the foundation soils are not disturbed by construction activities, the foundation settlement magnitudes will be acceptable.

Construction Considerations

Thin layers of fat clay were identified in borehole B1-07 at the approximate elevation of the spread footings for the abutment 2 Type 1 Retaining Walls. If during construction, these soils are found to be present at the retaining wall locations, approximately 0.6 meter of sub-excavation and replacement with Class 2 AB will be required. The Class 2 AB should be placed at 95 percent relative compaction. The area of sub-excavation should project 0.6 meter beyond the outside edges of the spread footings.

Contact the Office of Geotechnical Design North for an inspection of the foundation soils prior to placement of the reinforcing steel.

If you have any questions or comments, please call me at (805) 549-3385 (CalNet 629-3385).

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RON RICHMAN, P.E., C.E.G.
Office of Geotechnical Design – North

c: Branch D File
GDN File

Memorandum

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

Date: June 26, 2009

File: 05-0161E1
05-Mon-101-98.3
(kP 158.2)
Northbound Offramp
Viaduct
Bridge No. 44-0285

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

Subject: Revised Foundation Report

A Revised Foundation Report is provided for the above referenced project per your request. This report is based on the subsurface data collected for this bridge.

Proposed Improvements

The proposed improvements include construction of a new viaduct structure at the location shown on the General Plan dated February 13th 2007. The proposed structure is a 154.0 meter long, four-span CIP/PS girder bridge. The abutment 1 and abutment 5 foundations are founded within embankments that have heights of approximately 13.2 meters and 19.3 meters, respectively. The Bent 2 and Bent 3 supports of the proposed structure will be founded in existing ground. The Bent 4 supports will be founded within an embankment that has a height of approximately 7.7 meters.

Physical Setting

The project is located within the Coast Ranges Geomorphic Province. It lies within the Gabilan Range. The topography is semi-mountainous with rock outcrops. The predominant land uses in the project vicinity are agricultural and low density residential. The surface elevation in the vicinity of the proposed bridge lies between approximately 101 and 111 meters.

Geology and Soil Conditions

As shown on the Geologic maps, the structure is underlain by Quaternary aged Alluvial Deposits (Q_{al}). There are two geologic formations bordering the Alluvial Deposits in the vicinity of the proposed structure: Colluvium (Q_c) and Aromas Sand (Q_a). Santa Lucia

Quartz Diorite (pQ), a granitic rock, was found close to the ground surface northeast of the proposed structure and at modest depth below the alignment of the structure.

Alluvial Deposits (Q_{al}) are found along drainage courses. A heterogeneous sequence of silt and sand with clay lenses is typical of alluvial soils. Highly variable groundwater levels should be anticipated in Alluvial Deposits. Colluvial soils are typically found at the base of slopes and bordering alluvial deposits. Colluvium (Q_c) is the product of landslide and slope wash processes. Heterogeneous mixtures of silt, sand, and gravel are typical. Colluvial soils may exhibit highly variable groundwater levels. The Aromas Sand (Q_a) near this location consists of interbedded alluvial and eolian deposits.

Caltrans personnel performed four boreholes in 2003 and three boreholes in 2006. The 2003 field investigation consisted of four rotary wash boreholes: B3-03 in the vicinity of Abutment 5, B6-03 west of Abutment 1, B7-03 east of Abutment 1, and B8-03 in the vicinity of Abutment 1. The deepest point reached by the 2003 boreholes was approximately elevation 68.98 meters. The observed subsurface materials include fat clay, lean clay, sandy lean clay, sandy fat clay, clayey sand, silty sand, silt, poorly graded sand, well graded sand, and decomposed to slightly weathered, very soft to very hard granitic rock.

The 2006 field investigation by Caltrans for the Viaduct structure consisted of three rotary wash boreholes, B9-06, located in the proximity of Bent 2, B10-06 near Bent 3, and B11-06 at Bent 4. The deepest point reached by the 2006 boreholes was approximately elevation 74.35 meters. The observed subsurface materials include sandy fat clay, clayey sand, silty sand and decomposed to moderately weathered, very soft to very hard granitic rock.

Laboratory Data

The results of the corrosion tests and soils laboratory tests on selected specimens are attached to this report.

Groundwater

Groundwater was observed in boreholes B7-03, B8-03, B11-06 and B3-03 between 2.24 and 5.17 meters below the ground surface. The elevation of the ground water surface varied between 99.45 and 103.79 meters. Additional information regarding groundwater observations may be found on the Log-of-Test Borings. In addition to these phreatic surfaces, saturated soils were observed in boreholes B7-03, B8-03, B10-06, and B3-03. The saturated soils are shown as "wet" on the Log-of-Test Borings.

Seismic Data and Liquefaction Potential

The "Final Seismic Design Recommendations" were provided to you on February 15th 2008 by Reza Mahallati, Office of Geotechnical Design North.

Corrosion Testing

Representative soil samples collected during the foundation investigation were tested for corrosion potential. The results of the corrosion tests are summarized on the Corrosion Test Summary Report dated March 5th 2004. The site is considered to be corrosive to the foundation elements.

Foundation Recommendations

Driven piles are the recommended foundation type. Class 625 Alternative W piles are proposed for Abutment 1, and HP 250 X 85 piles are proposed for Abutment 5. CISS PP 610 X 12.7 piles are proposed for Bent 2. Class 900 Alternative W piles are proposed for the Bents 3 and 4 (Caltrans Standard Plans dated July 2004). Analyses of the lateral resistances of the driven piles were not requested. Design tip elevations for lateral loads have not been provided in the following tables.

Abutment Foundation Design Recommendations

Support	Pile	Cut-off Elevation (m)	LRFD Service-I Limit State Load (kN) per Support		LRFD Service-I Limit State Total Load (kN) per Pile (Compression)	Nominal Resistance (kN)	Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
			Total	Permanent					
Abut. 1	Class 625 Alt. W	110.125	4,150	3,300	600	1200	87.0 (a) 88.0 (c)	87.0	1200
Abut. 5	HP 250 X 85 Piles	123.125	5,900	4,400	550	1100	101.5 (a)	101.5	1100

Notes:

1) *Design tip elevations are controlled by: (a) Compression and (c) Settlement, respectively.*
2) *There is no design tip elevation for Settlement at Abutment 5.*
3) *The specified tip elevation shall not be raised if controlled by settlement.*

Bent Foundation Design Recommendations

Support Location	Pile Type	Cut-off Elevation (m)	Service I Limit State Load per Support (kN)	Total Permissible Support Settlement (mm)	Required Factored Nominal Resistance (kN)				Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
					Strength Limit		Extreme Event				
					Comp. (φ=0.7)	Tension (φ=0.7)	Comp. (φ=1)	Tension (φ=1)			
Bent 2	CISS PP610 X 12.7	100.050	9950	25	1200	0	1850	700	92.4 (a-I) 83.2 (a-II) 88.7 (b-II) 90.4 (c)	83.2	2270
Bent 3	Class 900 Alt. W	102.125	10400	25	800	0	1700	850	91.7 (a-I) 86.0 (a-II) 89.3 (b-II) 98.7 (c)	86.0	2450
Bent 4	Class 900 Alt. W	109.125	6800	25	1350	0	900	0	90.9 (a-I) 92.1 (a-II) 90.9 (c)	90.9	1930

Notes:

1) *Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), (b-II) Tension (Extreme Event), (c) Settlement, and (d) Lateral Load, respectively.*
2) *The specified tip elevation shall not be raised above the design tip elevations for Tension, Settlement, and Lateral Load.*
3) *The nominal driving resistance required is equal to the nominal resistance needed to support the factored load plus driving resistance from the unsuitable penetrated soil layers (liquefiable) which do not contribute to the design resistance. Unsuitable soil layers at Bent 2 extend to elevation 95 meters. Unsuitable soil layers at Bents 3 and 4 extend to elevation 99.1 meters.*
4) *Design tip elevation for Lateral Load is typically provided by SD*

Pile Data Table						
Location	Pile Type	Nominal Resistance (kN)		Design Tip Elevation (m)	Specified Tip Elevation (m)	Nominal Driving Resistance (kN)
		Compression	Tension			
Abut. 1	Class 625 Alt. W	1200	0	87.0 (a) 88.0 (c)	87.0	1200
Bent 2	CISS PP 610X27 ~~Class 900 Alt. W~~	1850	700	83.2 (a) 88.7 (b) 90.4 (c)	83.2	2270
Bent 3	Class 900 Alt. W	1700	850	86.0 (a) 89.3 (b) 98.7 (c)	86.0	2450
Bent 4	Class 900 Alt. W	1930	0	90.9 (a) 90.9 (c)	90.9	1930
Abut. 5	HP 250 X 85 Piles	1100	0	101.5 (a)	101.5	1100

Notes:

1) *Design tip elevations for Abutments are controlled by: (a) Compression, (c) Settlement.*
2) *There is no design tip elevation for Settlement at Abutment 5.*
3) *Design tip elevations for Bents are controlled by: (a) Compression, (b) Tension and (c) Settlement*
4) *The specified tip elevation shall not be raised above the design tip elevations for tension, tolerable settlement and lateral load.*
5) *The nominal driving resistance required is equal to the nominal resistance needed to support the factored load plus driving resistance from the unsuitable penetrated soil layers (liquefiable) which do not contribute to the design resistance. Unsuitable soil layers at Bent 2 extend to elevation 95 meters. Unsuitable soil layers at Bents 3 and 4 extend to elevation 99.1 meters.*

Construction Considerations

A recommendation for a 60 day fill delay period was provided for Abutment 1 in the Geotechnical Design Report. A 30 day fill delay period is recommended for Bent 4 and Abutment 5. Piles may be driven at these support locations after the completion of the respective settlement periods.

Piles shall be driven in oversized drilled holes in conformance with the provisions in Section 49-1.06, "Predrilled Holes," of the Standard Specifications at the locations and to the corresponding bottom of hole elevations listed in the following table:

Bridge Name or Number	Abutment Number	Bent Number	Elevation of Bottom of Hole
NB Offramp Viaduct (Br. No. 44-0285)	1	-	102 meters
NB Offramp Viaduct (Br. No. 44-0285)	-	4	105.5 meters
NB Offramp Viaduct (Br. No. 44-0285)	5	-	109 meters

The variable degree of weathering, variable degree of fracturing, variable hardness, and variable elevation of the granitic rock will influence the resistance to pile installation at bent 4 and abutment 5. The contractor should use caution when driving the piles so as to not damage them.

The Office of Geotechnical Design North is to be contacted if the constructed pile tip elevation is above the specified tip elevation.

Project Information

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 "pdf" format to the addressee of this report via electronic mail.

Data and information attached with the project plans are:

A. Log of Test Borings for the Northbound Offramp Viaduct

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

A. Revised Foundation Report for the Northbound Offramp Viaduct, June 26, 2009, Caltrans.

B. Geotechnical Design Report for Crazy Horse Canyon Road/ Echo Valley Road IC PIP, June 16, 2008, Caltrans.

Data and information available for inspection at the District 5 Office:

A. Subsurface samples from boreholes B6-03, B7-03, B8-03, B9-06, B10-06, B11-06 and B3-03.

Data and information available for inspection at the Transportation Laboratory:

A. None

Closure

A request for production of a Log-of-Test Boring sheet has been made to the Engineering Graphics Branch of the Office of Geotechnical Services. When complete, the As-Built Log-of-Test Borings will be provided to you for attachment to the contract plans.

If you have any questions or comments, please call me at (805) 549-3385 (CalNet 629-3385).

REGISTERED PROFESSIONAL ENGINEER
RONALD L. RICHMAN
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Exp. 12/31/09
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RON RICHMAN, P.E., C.E.G.
Office of Geotechnical Design – North

c: RE Pending
Structure OE (E-copy)
PCE (E-copy)
DME (E-copy)
Branch D File
GDN File
GS File Room

Memorandum

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

Date: February 3, 2009

File: 05-0161E1
05-Mon-101-98.4
(kP 158.4)
Crazy Horse
Canyon/Echo Valley
Road O.C.
Bridge No. 44-0286

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

Subject: Foundation Report

A Foundation Report (FR) is provided for the above referenced project per your request. This report is based on the subsurface data collected for this bridge.

Proposed Improvements

The proposed improvements include construction of a new overcrossing structure at the location shown on the General Plan dated January 20th 2009. The proposed structure is a 57.4 meter long, two-span CIP/PS girder bridge. The abutment 1 and abutment 3 foundations are founded within embankments that have heights of approximately 8 meters. The Bent 2 supports of the proposed structure will be founded in existing ground.

Physical Setting

The project is located within the Coast Ranges Geomorphic Province. It lies within the Gabilan Range. The topography is semi-mountainous with rock outcrops. The predominant land uses in the project vicinity are agricultural and low density residential. The surface elevation in the vicinity of the proposed bridge lies between approximately 112 and 122 meters.

Geology and Soil Conditions

The surficial deposits within the project area are Quaternary and Pleistocene aged Alluvial Deposits (Q_{al}), Colluvium (Q_c) and Aromas Sand (Q_a). Santa Lucia Quartz Diorite (pQ), a granitic rock, lies close to the ground surface in the area of the proposed structure. This granitic rock is also exposed in the cut slope northwest of the proposed structure. Borehole

samples indicate that the granitic rock is highly variable in its hardness, degree of weathering and degree of fracturing.

Caltrans personnel performed one borehole in 2003, one borehole in 2006, and two boreholes in 2007. The 2003 field investigation consisted of one rotary wash borehole: B6-03 in the vicinity of Abutment 1. The deepest point reached by B6-03 was approximately elevation 111.83 meters. The observed subsurface materials include silty sand, clayey sand and decomposed granitic rock.

The 2006 field investigation by Caltrans for the Overcrossing structure consisted of one rotary wash borehole, B13-06, located in the proximity of Abutment 3. The deepest point reached by B13-06 was approximately elevation 97.55 meters. The observed subsurface materials include clayey sand and decomposed to fresh granitic rock.

The 2007 field investigation by Caltrans for the Overcrossing structure consisted of two rotary wash boreholes, B7-07, located in the proximity of Abutment 1 and B8-07 located in the proximity of Bent 2. The deepest point reached by B7-07 was approximately elevation 97.58 meters. The deepest point reached by B8-07 was approximately elevation 96.34 meters. The observed subsurface materials include well graded sand with clay, and decomposed to slightly weathered granitic rock.

Laboratory Data

The results of the corrosion tests on selected specimens are attached to this report.

Groundwater

Groundwater was observed in borehole B13-06 between 7.23 and 7.72 meters below the ground surface. The elevation of the highest observed ground water surface at the borehole is 112.9 meters. Additional information regarding groundwater observations may be found on the Log-of-Test Borings.

Seismic Data and Liquefaction Potential

The "Final Seismic Design Recommendations" were provided to you on November 13th 2007 by Reza Mahallati, Office of Geotechnical Design North.

Corrosion Testing

Representative soil samples collected during the foundation investigation for the adjacent Northbound Off-ramp Viaduct were tested for corrosion potential. The results of the corrosion tests are summarized on the Corrosion Test Summary Report dated March 5th

2004. The site is considered to be corrosive to the foundation elements.

Foundation Recommendations

Drilled shafts (Caltrans CIDH piles) are the recommended foundation type. Four hundred millimeter diameter CIDH piles are proposed for the abutments, and six hundred and ten millimeter diameter CIDH piles are proposed for the bent. Analyses of the lateral resistances of the CIDH piles were not requested. Design tip elevations for lateral loads have not been provided in the following tables.

Abutments Foundation Design Recommendations

Support	Pile	Cut-off Elevation (m)	LRFD Service-I Limit State Load (kN) per Support		LRFD Service-I Limit State Total Load (kN) per Pile (Compression)	Nominal Resistance (kN)	Design Tip Elevations (m)	Specified Tip Elevation (m)
			Total	Permanent				
Abut. 1	400 mm CIDH	125.4	12,100	8,900	600	1200	110.2 (a), 119.0 (c)	110.2
Abut. 3	400 mm CIDH	126.0	13,100	9,700	600	1200	108.6 (a), 118.0 (c)	108.6

Notes:

1) *Design tip elevations are controlled by: (a) Compression and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Bent Foundation Design Recommendations

Support Location	Pile Type	Cut-off Elevation (m)	Service I Limit State Load per Support (kN)	Total Permissible Support Settlement (mm)	Required Factored Nominal Resistance (kN)				Design Tip Elevations (m)	Specified Tip Elevation (m)
					Strength Limit		Extreme Event			
					Comp. (φ=0.7)	Tension (φ=0.7)	Comp. (φ=1)	Tension (φ=1)		
Bent 2	610 mm CIDH	118.0, 118.6, 119.3	10,100	25.4	1300	0	800	0	108.6 (a-I), 113.0 (a-II), 118.5 (c)	108.6

Notes:

1) *Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Pile Data Table					
Location	Pile Type	Nominal Resistance (kN)		Design Tip Elevation (m)	Specified Tip Elevation (m)
		Compression	Tension		
Abut. 1	400 mm CIDH	1200	0	110.2 (a), 119.0 (c)	110.2
Bent 2	610 mm CIDH	1860	0	108.6 (a), 118.5 (c)	108.6
Abut. 3	400 mm CIDH	1200	0	108.6 (a), 118.0 (c)	108.6

Notes:

1) *Design tip elevations for Abutments are controlled by: (a) Compression, (c) Settlement*
2) *Design tip elevations for Bents are controlled by: (a) Compression, (c) Settlement*
3) *The specified tip elevation shall not be raised above the design tip elevations for tolerable settlement.*

Project Information

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 "pdf" format to the addressee of this report via electronic mail.

Data and information attached with the project plans are:

A. Log of Test Borings for the Crazy Horse Canyon/Echo Valley Road O.C...

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

A. Foundation Report for the Crazy Horse Canyon/Echo Valley Road Overcrossing, February 3, 2009, Caltrans.

Data and information available for inspection at the District 5 Office:

A. Subsurface samples from boreholes B6-03, B13-06, B7-07 and B8-07.

Data and information available for inspection at the Transportation Laboratory:

A. None

Construction Considerations

A settlement period of 15 days is specified for the embankments at abutments1 and 3. Piles may be installed at the abutments after the completion of the settlement period.

The variable degree of weathering, degree of fracturing and hardness, of the granitic rock must be considered when the contractor selects the method of excavating the drilled shafts.

FHWA Publication No. FHWA–IF–99–025, "Drilled Shafts: Construction Procedures and Design Methods" as cited in the Bridge Construction Memo 130-7.0 indicates the following in regards to CIDH concrete piling: "As a guideline for CIDH pile construction, three (3) inches of water in the bottom of the hole at the time of concrete placement will be acceptable if the pile does not require end bearing." The CIDH piles specified at the abutment and bent supports of the Crazy Horse Canyon/Echo Valley Road Overcrossing have been designed to resist the load demand utilizing side shear only. End bearing resistance was assumed to contribute zero resistance to the Nominal Resistance of the CIDH piles at all support locations. Based on the observations of the soil, rock and ground water conditions at the exploratory boreholes, it is expected that if water is encountered during CIDH pile construction, that the contractor will be able to dewater the hole to the referenced condition of 75 millimeters of water at the time of concrete placement. Additionally, up to 25 mm of loose sediment distributed over the base of the CIDH pile at the time of concrete placement is acceptable.

The Office of Geotechnical Design North is to be contacted if the constructed pile tip elevation is above the specified tip elevation.

Closure

A request for production of a Log-of-Test Boring sheet has been made to the Engineering Graphics Branch of the Office of Geotechnical Services. When complete, the As-Built Log-of-Test Borings will be provided to you for attachment to the contract plans.

If you have any questions or comments, please call me at (805) 549-3385 (CalNet 629-3385).

Ronald L Richman

REGISTERED PROFESSIONAL ENGINEER
RONALD L. RICHMAN
No. CE039869
Exp. 12/31/09
CIVIL ENGINEERING
STATE OF CALIFORNIA

RON RICHMAN, P.E., C.E.G.
Office of Geotechnical Design – North

c: RE Pending
Structure OE (E-copy)
PCE (E-copy)
DME (E-copy)
Branch D File
GDN File
GS File Room

LIST OF ATTACHMENTS

Corrosion Testing Summary Attachment 1

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion Technology Branch
Report Date: 3/5/2004
Reported By: Lopez, Rudy

CORROSION TEST SUMMARY REPORT

Bridge Name: **NB Off-Ramp Viaduct (Crazy Horse Canyon Road)**
Bridge Number:
EA No.: **05-0161E0**
Dist/Co/Rte/PM or KP: **5 / Mon / 101 / PM 98.4**

SIC Number	Sample Location/ Limit	Sample Type	Sample Depth	Minimum Resistivity[1] (ohm-cm)	pH[2]	Chloride Content[3] (ppm)	Sulfate Content[4] (ppm)
C661457	Creek Adjacent to Boring B1-03/	Water	Surface	3800	7.62		
C661466	Observation Well at Boring B3-03/	Water	5.5 m	2000	6.95		
C661458	B3-03/	Soil	10'-15'	7200	7.54		
C661459	B3-03/	Soil	25'-30'	1300	7.15		
C661468	B3-03/	Soil	1'-1.5'	4200	6.4		
C661475	B8-03/	Soil	11'-16'	3600	6.87		
C661476	B8-03/	Soil	21'-26'	5300	6.26		
C661477	B8-03/	Soil	42'-46'	5400	4.7		
C661478	B8-03/	Soil	52.5'-56'	1100	5.5		
C661480	B8-03/	Soil	66'-68'	3000	5.32		
C661481	B8-03/	Soil	69'-70.5'	1300	6.31		
C661482	B8-03/	Soil	76'-78'	1400	6.6		
C661479	B8-03/	Soil	60'-62'	460	7.27	38.23	1850
C661483	Boring B8-03/	Water	3 meters	1750	7		
C661484	Boring B8-03/	Soil	1'-1.5'	8450	5.6		

Attachment 1 1/2

CORROSION TEST SUMMARY REPORT Cont.

Bridge Name: **NB Off-Ramp Viaduct (Crazy Horse Canyon Road)**
Bridge Number:
EA No.: **05-0161E0**
Dist/Co/Rte/PM or KP: **5 / Mon / 101 / PM 98.4**

☐ This site is not corrosive to foundation elements (see note below for MSE wall backfill)

☒ This site is corrosive (if checked). Controlling corrosion parameters are as follows:
4.7 pH
38.23 ppm Chloride
1850 ppm Sulfate

Note: For MSE wall structure backfill material, minimum resisitivity must be 1500 ohm-cm or greater, pH must be between 5.5 and 10.0, chloride content must not be greater than 500 ppm, and sulfate content must not be greater than 2000 ppm.

[1,2]CTM 643, [3]CTM 422, [4]CTM 417

Attachment 1 2/2

Memorandum

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

Date: June 4, 2008

File: 05-0161E1
05-Mon-101-98.4
(kP 158.4)
Crazy Horse Canyon
Viaduct
Bridge No. 44-0288

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

Subject: Foundation Report

A Foundation Report (FR) is provided for the above referenced project per your request. This report is based on the subsurface data collected for this bridge.

Proposed Improvements

The proposed improvements include construction of a new viaduct structure at the location shown on the General Plan dated October 4th 2007. The proposed structure is a 145.0 meter long, three-span CIP/PS girder bridge. The abutment 1 and abutment 4 foundations are founded within embankments that have heights of approximately 5.2 meters and 14.9 meters, respectively. The Bent 2 and Bent 3 supports of the proposed structure will be founded in existing ground.

Physical Setting

The project is located within the Coast Ranges Geomorphic Province. It lies within the Gabilan Range. The topography is semi-mountainous with rock outcrops. The predominant land uses in the project vicinity are agricultural and low density residential. The surface elevation in the vicinity of the proposed bridge lies between approximately 111 and 118 meters.

Geology and Soil Conditions

The surficial deposits within the project area are Quaternary aged Alluvial Deposits (Q_{al}). There are two geologic formations bordering the Alluvial Deposits and found at depth, in the vicinity of the proposed structure: Colluvium (Q_c) and Aromas Sand (Q_a).

Alluvial Deposits (Q_{al}) are found along drainage courses. Highly variable groundwater levels should be anticipated in Alluvial Deposits. Colluvial soils are typically found at the base of slopes and bordering alluvial deposits. Colluvium (Q_c) is the product of landslide and slope wash processes. Heterogeneous mixtures of silt, sand, and gravel are typical. Colluvial soils may exhibit highly variable groundwater levels. The Aromas Sand (Q_a) near this location consists of interbedded alluvial and eolian deposits.

Caltrans personnel performed five boreholes in 2003, one borehole in 2006, and one borehole in 2007. The 2003 field investigation consisted of five rotary wash boreholes: B1-03 in the vicinity of Bent 2, B2-03 near Bent 3, and B4-03, B5-03 and B6-03 in the vicinity of Abutment 4. The deepest point reached by the 2003 boreholes was approximately elevation 85.80 meters. The observed subsurface materials include sandy lean clay, clayey sand, sandy silt, silty sand, poorly graded sand, and decomposed granitic rock.

The 2006 field investigation by Caltrans for the Viaduct structure consisted of one rotary wash borehole, B12-06, located in the proximity of Bent 3. The deepest point reached by B12-06 was approximately elevation 81.11 meters. The observed subsurface materials include sandy fat clay, fat clay with sand, clayey sand and silty sand.

The 2007 field investigation by Caltrans for the Viaduct structure consisted of one rotary wash borehole, B6-07, located in the proximity of Abutment 1. The deepest point reached by B6-07 was approximately elevation 92.07 meters. The observed subsurface materials include sandy fat clay, clayey sand, silty sand and well graded sand.

Laboratory Data

The results of the corrosion tests and soils laboratory tests on selected specimens are attached to this report.

Groundwater

Groundwater was observed in boreholes B1-03, B12-06 and B6-07 between 1.19 and 4.80 meters below the ground surface. The elevation of the ground water surface varied between 107.6 and 117.0 meters. Additional information regarding groundwater observations may be found on the Log-of-Test Borings. In addition to these phreatic surfaces, saturated soils were observed in the boreholes. The saturated soils are shown as "wet" on the Log-of-Test Borings.

Seismic Data and Liquefaction Potential

The "Final Seismic Design Recommendations" were provided to you on November 29th 2007 by Reza Mahallati, Office of Geotechnical Design North.

Corrosion Testing

Representative soil samples collected during the foundation investigation were tested for corrosion potential. The results of the corrosion tests are summarized on the Corrosion Test Summary Report dated March 5th 2004. The site is considered to be corrosive to the foundation elements.

Foundation Recommendations

Caltrans Standard Plan driven open-ended pipe piles are the recommended foundation type. Class 625 Alternative W piles are proposed for the abutments, and Class 900 Alternative W piles are proposed for the bents (Caltrans Standard Plans dated July 2004). Analyses of the lateral resistances of the driven piles were not requested. Design tip elevations for lateral loads have not been provided in the following tables.

Abutments Foundation Design Recommendations

Support	Pile	Cut-off Elevation (m)	LRFD Service-I Limit State Load (kN) per Support		LRFD Service-I Limit State Total Load (kN) per Pile (Compression)	Nominal Resistance (kN)	Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
			Total	Permanent					
Abut. 1	Class 625 Alt. W	118.325	11,150	9,350	618	1240	97.0 (a) 98.0 (c)	97.0	1240
Abut. 4	Class 625 Alt. W	121.525	12,550	10,850	618	1240	99.6 (a) 108.2 (c)	99.6	1240

Notes:

1) *Design tip elevations are controlled by: (a) Compression and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Bent Foundation Design Recommendations

Support Location	Pile Type	Cut-off Elevation (m)	Service I Limit State Load per Support (kN)	Total Permissible Support Settlement (mm)	Required Factored Nominal Resistance (kN)				Design Tip Elevations (m)	Specified Tip Elevation (m)	Nominal Driving Resistance Required (kN)
					Strength Limit		Extreme Event				
					Comp. (φ=0.7)	Tension (φ=0.7)	Comp. (φ=1)	Tension (φ=1)			
Bent 2	Class 900 Alt. W with closed tip	110.725	13,600	12.7	1180	0	770	0	102.3 (a-I) 106.1 (a-II) 103.6 (c)	102.3	1690
Bent 3	Class 900 Alt. W	109.625	13,600	12.7	1180	0	770	0	98.0 (a-I) 104.7 (a-II) 103.6 (c)	98.0	1690

Notes:

1) *Design tip elevations are controlled by: (a-I) Compression (Strength Limit), (a-II) Compression (Extreme Event), and (c) Settlement, respectively.*
2) *The specified tip elevation shall not be raised if controlled by settlement.*

Pile Data Table

Location	Pile Type	Nominal Resistance (kN)		Design Tip Elevation (m)	Specified Tip Elevation (m)	Nominal Driving Resistance (kN)
		Compression	Tension			
Abut. 1	Class 625 Alt. W	1240	0	97.0 (a) 98.0 (c)	97.0	1240
Bent 2	Class 900 Alt. W with closed tip	1690	0	102.3 (a) 103.6 (c)	102.3	1690
Bent 3	Class 900 Alt. W	1690	0	98.0 (a) 103.6 (c)	98.0	1690
Abut. 4	Class 625 Alt. W	1240	0	99.6 (a) 108.2 (c)	99.6	1240

Notes:

1) *Design tip elevations for Abutments are controlled by: (a) Compression, (c) Settlement, (d) Lateral Load*
2) *Design tip elevations for Bents are controlled by: (a) Compression, (c) Settlement (d) Lateral Load*
3) *The specified tip elevation shall not be raised above the design tip elevations for lateral load and tolerable settlement.*

Project Information

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 "pdf" format to the addressee of this report via electronic mail.

Data and information attached with the project plans are:

A. Log of Test Borings for the Crazy Horse Canyon Viaduct

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

A. Foundation Report for the Crazy Horse Canyon Viaduct, June 4, 2008, Caltrans.

Data and information available for inspection at the District 5 Office:

A. Subsurface samples from boreholes B1-03, B6-03, B6-07 and B12-06.

Data and information available for inspection at the Transportation Laboratory:

A. None

Construction Considerations

The embankments shall undergo settlement periods of 45 days at abutment 1, and 30 days at abutment 4. Piles may be driven after the completion of the settlement periods.

Piles shall be driven in oversized drilled holes in conformance with the provisions in Section 49-1.06, "Predrilled Holes," of the Standard Specifications at the locations and to the corresponding bottom of hole elevations listed in the following table:

Bridge Name or Number	Abutment Number	Bent Number	Elevation of Bottom of Hole
Crazy Horse Canyon Viaduct (Br. No. 44-0288)	4	-	111 meters

For piles that are driven to the specified tip elevation and do not indicate the nominal resistance per the method prescribed in Section 49-1.08 of the Standard Specifications, the pile shall be re-struck with the same impact hammer not less than 48 hours after completion of the initial installation. Prior to the monitored restrike, the pile hammer should be warmed-up by impacting another pile or object a minimum of 10 combustion

cycles.

The Office of Geotechnical Design North is to be contacted if the constructed pile tip elevations are above the specified tip elevations.

Closure

A request for production of a Log-of-Test Boring sheet has been made to the Engineering Graphics Branch of the Office of Geotechnical Services. When complete, the As-Built Log-of-Test Borings will be provided to you for attachment to the contract plans.

If you have any questions or comments, please call me at (805) 549-3385 (CalNet 629-3385).

REGISTERED PROFESSIONAL ENGINEER
RONALD L. RICHMAN
No. CE039869
Exp. 12/31/09
CIVIL ENGINEERING
STATE OF CALIFORNIA

RON RICHMAN, P.E., C.E.G.
Office of Geotechnical Design – North

c: RE Pending
Structure OE (E-copy)
PCE (E-copy)
DME (E-copy)
Branch D File
GDN File
GS File Room

LIST OF ATTACHMENTS

Material Properties Summary	Attachment 1
Corrosion Testing Summary	Attachment 2

05-Mon-001-KP 158.4
05-0161E1
Crazy Horse Canyon Viaduct

MATERIAL PROPERTIES SUMMARY

DESCRIPTION	BORING OR SAMPLE No.	B1-03-1	B4-03-1	B4-03-2
	DATE SAMPLED	9/23/2003	10/1/2003	10/1/2003
	STATION	12+80	13+70	13+70
	LINE	CHC/EV	CHC/EV	CHC/EV
	DISTANCE FROM LINE (Rt. OR Lt.)	3 m Lt.	13 m Lt.	13 m Lt.
	DEPTH OR ELEVATION (METERS)	1.5 to 3.0	1.4 to1.8	2.1 to 2.6
	USCS CLASSIFICATION	SM	SC	SC
SIEVE ANALYSIS	37.5 mm (1 1/2")			
	19 mm (3/4")			
	12 mm (1/2")			
	9.5 mm (3/8")		100	
	4.75 mm (No. 4)		97	
	2.36 mm (No. 8)		94	
	1.18 mm (No. 16)	100	91	100
	600 µm (No. 30)	99	87	99
	300 µm (N0. 50)	96	72	72
	150 µm (No. 100)	31	40	29
	75 µm (N0. 200)	13	30	20
	5 µm	9	18	10
	1µm	3	9	4
CLASSIFICATION TEST SUMMARY	IN-PLACE DENSITY (DRY WT. kN/m3)			
	IN-PLACE MOISTURE (PERCENT)			
	SPECIFIC GRAVITY			
	LIQUID LIMIT			
	PLASTICITY INDEX			
	SAND EQUIVALENT			
SOIL STRENGTH CUe Triax Shear	EFFECTIVE STRESS			
	FRICTION ANGLE (DEGREES)			
	COHESION (kPa)			
	TOTAL STRESS			
	FRICTION ANGLE (DEGREES)			
	COHESION (kPa)			

Attachment 1 1/1

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion Technology Branch
Report Date: 3/5/2004
Reported By: Lopez, Rudy

CORROSION TEST SUMMARY REPORT

Bridge Name: **Retaining Walls #2 and #3 (Crazy Horse Canyon Road)**
Bridge Number:
EA No.: **05-0161E0**
Dist/Co/Rte/PM or KP: **5 / Mon / 101 / PM 98.4**

SIC Number	Sample Location/ Limit	Sample Type	Sample Depth	Minimum Resistivity[1] (ohm-cm)	pH[2]	Chloride Content[3] (ppm)	Sulfate Content[4] (ppm)
C661465	Observation Well at Boring B1-03/	Water	5 m below GS	3900	7		
C661457	Creek Adjacent to Boring B1-03/	Water	Surface	3800	7.62		
C661451	Boring B1-03/	Soil	6.5'-9'	2300	6.77		
C661452	Boring B1-03/	Soil	13'-17'	1500	7.39		
C661454	Boring B1-03/	Soil	28'-30'	3500	6.8		
C661453	Boring B1-03/	Soil	17.5'-20'	730	7.62	16	250
C661455	B1-03/	Soil	30'-34'	2800	7.4		
C561456	B1-03/	Soil	34'-40'	2200	6.55		
C661467	B1-03/	Soil	1'-2'	3700	5.48		

Attachment 2 1/2

CORROSION TEST SUMMARY REPORT Cont.

Bridge Name: **Retaining Walls #2 and #3 (Crazy Horse Canyon Road)**
Bridge Number:
EA No.: **05-0161E0**
Dist/Co/Rte/PM or KP: **5 / Mon / 101 / PM 98.4**

☐ This site is not corrosive to foundation elements (see note below for MSE wall backfill)

☒ This site is corrosive (if checked). Controlling corrosion parameters are as follows:
5.48 pH
16 ppm Chloride
250 ppm Sulfate

Note: For MSE wall structure backfill material, minimum resisitivity must be 1500 ohm-cm or greater, pH must be between 5.5 and 10.0, chloride content must not be greater than 500 ppm, and sulfate content must not be greater than 2000 ppm.

[1,2]CTM 643, [3]CTM 422, [4]CTM 417

Attachment 2 2/2

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Preliminary Report
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

Date: 4/13/09

Espinosa Rd. UC
Structure Name

05 - Mon - 101 - 147.9
District County Route Post Km

District Project Development
District Project Engineer

05-0161E1 44-0282 R/L
E.A. Number Structure Number

Foundation Report By: R. Richmond Dated: 12/29/08

Reviewed By: H Perez (OSD) R. Price (GS)

General Plan Dated: 2/26/09 Foundation Plan Dated: 2/27/09

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- ✓ Substitution of H Piles For Concrete Piles ☐ Yes ☑ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

Rev. 10/02

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Preliminary Report
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

Date: 4/13/09

Sala Rd OC
Structure Name

05 - Mon - 101 - 148.9
District County Route Post Km

District Project Development
District Project Engineer

05-0161E1 44-283
E.A. Number Structure Number

Foundation Report By: R. Richman Dated: 12/29/08

Reviewed By: H. Peraz (OSD) R. Price (GS)

General Plan Dated: 2/28/09 Foundation Plan Dated: 8/7/08

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- Substitution of H Piles For
- ✓ Concrete Piles ☐ Yes ☒ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

Rev. 10/02

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Preliminary Report
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

District Project Development
District Project Engineer

Date: 4/13/09

Prunedale South Rd OC
Structure Name

05 - Mon - 101 - 151.4
District County Route Post Km

05-0161E1 44-284
E.A. Number Structure Number

Foundation Report By: R. Richman Dated: 2/3/09

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 2/26/09 Foundation Plan Dated: 2/16/09

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- ✓ Substitution of H Piles For Concrete Piles ☐ Yes ☒ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

Rev. 10/02

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Preliminary Report
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

District Project Development
District Project Engineer

Date: 4/13/09

San Miguel Canyon Rd. OC
Structure Name

05 - Mon - 101 - R.154.7
District County Route Post Km

05-0161E1 44-271
E.A. Number Structure Number

Foundation Report By: R. Richmann Dated: 5/30/08

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 2/12/09 Foundation Plan Dated: 1/11/09

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- ✓ Substitution of H Piles For Concrete Piles ☐ Yes ☒ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design Branch No. 6 Geotechnical Services

Rev. 10/02

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Preliminary Report
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

Date: 4/13/09

NB Offramp Viaduct
Structure Name

05 - Mon - 101 - 158.2
District County Route Post Km

District Project Development
District Project Engineer

05-0161E1 44-285
E.A. Number Structure Number

Foundation Report By: R. Richmond Dated: 8/25/08

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 2/28/09 Foundation Plan Dated: 2/26/09

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- ✓ Substitution of H Piles For Concrete Piles ☐ Yes ☒ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

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FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
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Geotechnical Services
1. GS (Sacramento)
2. GS

District Project Development
District Project Engineer

Date: 4/13/09

Crazy Horse Cyn / Echo Valley Rd. OC
Structure Name

05 - Mon - 101 - 158.4
District County Route Post Km

05-0161E1 44-0286
E.A. Number Structure Number

Foundation Report By: R. Richman Dated: 2/3/09

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 3/23/09 Foundation Plan Dated: 2/13/09

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- ✓ Substitution of H Piles For Concrete Piles ☐ Yes ☑ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

Rev. 10/02

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Preliminary Report
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4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

District Project Development
District Project Engineer

Date: 4/13/09

Crazy Horse Canyon Viaduct
Structure Name

05 - Mon - 101 - 158.8
District County Route Post Km

05-0161E1 44-0288
E.A. Number Structure Number

Foundation Report By: R. Richman Dated: 6/4/08

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 3/6/09 Foundation Plan Dated: 12/23/08

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- Substitution of H Piles For Concrete Piles ☐ Yes ☒ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

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FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: Structure Design
1. Preliminary Report
2. R.E. Pending File
3. Specifications & Estimates
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Geotechnical Services
1. GS (Sacramento)
2. GS

District Project Development
District Project Engineer

Date: 4/13/09

Retaining Wall - Cross Rd
Structure Name

05 - MON - 101 - R.14.8/16.1
District County Route Post Km

05-0161E1 —
E.A. Number Structure Number

Foundation Report By: M. Jurasius Dated: 2/9/09

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 3/2/09 ~~Foundation~~ Str. Plan Dated: 3/2/09

☑ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- Pile Load Test
- ✓ Substitution of H Piles For Concrete Piles ☐ Yes ☐ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

Rev. 10/02

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
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4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

District Project Development
District Project Engineer

Date: 4/13/09

Retaining Wall No. 16
Structure Name

05 - Mon - 101 - R154.7
District County Route Post Km

05-0161E1 44E0012
E.A. Number Structure Number

Foundation Report By: R. Turner Dated: 6/8/08

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 10/8/08 Foundation Plan Dated: 6/30/08

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- Substitution of H Piles For
- ✓ Concrete Piles ☐ Yes ☐ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Hernan Perez 6
Office of Structure Design Branch No.

RT Price
Geotechnical Services

Rev. 10/02

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Design
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GD - North ; South ; West
2 GS File Room

Date: August 18, 2010

Retaining Wall No. 23
Structure Name

05	MON	101	151.4
District	County	Route	km Post

District Project Development
District Project Engineer

0161E1
E.A. Number

44-E0014
Structure Number

Foundation Report By: Michael S. Finegan Dated: October 1.2007

Reviewed By: Fritz Hoffman (SD) Dan Appelbaum (GS)

General Plan Dated: 5/6/10 Foundation Plan Dated: 5/6/10

[ ] No changes. [X] The following changes are necessary.

SSP S5-280 states that subsurface samples from boreholes for Foundation Drilling are available for inspection. All subsurface materials encountered consisted of soil, and no samples were retained for inspection.

FOUNDATION CHECKLIST

NA	Pile Types and Design Loads	X	Footing Elevations, Design Loads, and Locations	X	LOTB's
NA	Pile Lengths	NA	Seismic Data	NA	Fill Surcharge
NA	Predrilling	X	Location of Adjacent Structures and Utilities	NA	Approach Paving Slabs
NA	Pile Load Test	NA	Stability of Cuts or Fills	NA	Scour
NA	Substitution of H Piles For	NA	Fill Time Delay	NA	Ground Water
NA	Concrete Piles [ ] Yes [ ] No	NA	Effect of Fills on Abutments and Bents	NA	Tremie Seals/Type D Excavation

Fritz Hoffman — Structure Design

6 — Branch No.

Dan Appelbaum — Geotechnical Services

Rev. 11/04

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Preliminary Report
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

District Project Development
District Project Engineer

Date: 4/23/09

Retaining Wall No 60
Structure Name

05 - Mon - 101 - R 154.7
District County Route Post Km

05-0K1E1 44E0013
E.A. Number Structure Number

Foundation Report By: R. Turner Dated: 6/6/08

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 11/26/08 Foundation Plan Dated: 12/1/08

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- Substitution of H Piles For Concrete Piles ☐ Yes ☐ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

Rev. 10/02

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Design
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GD - North ; South ; West
2. GS File Room

Date: August 18, 2010

Retaining Wall No. 144
Structure Name

05	MON	101	147.9
District	County	Route	km Post

District Project Development
District Project Engineer

0161E1 — E.A. Number
44-E0015 — Structure Number

Foundation Report By: Michael S. Finegan
Dated: December 4, 2007

Reviewed By: Fritz Hoffman (SD)
Dan Appelbaum (GS)

General Plan Dated: 5/6/10
Foundation Plan Dated: 5/6/10

[ ] No changes. [X] The following changes are necessary.

SSP S5-280 states that subsurface samples from boreholes for Foundation Drilling are available for inspection. All subsurface materials encountered consisted of soil, and no samples were retained for inspection.

FOUNDATION CHECKLIST

NA	Pile Types and Design Loads	X	Footing Elevations, Design Loads, and Locations	X	LOTB's
NA	Pile Lengths	NA	Seismic Data	NA	Fill Surcharge
NA	Predrilling	X	Location of Adjacent Structures and Utilities	NA	Approach Paving Slabs
NA	Pile Load Test	NA	Stability of Cuts or Fills	NA	Scour
NA	Substitution of H Piles For	NA	Fill Time Delay	NA	Ground Water
NA	Concrete Piles [ ] Yes [ ] No	NA	Effect of Fills on Abutments and Bents	NA	Tremie Seals/Type D Excavation

Fritz Hoffman — Structure Design
6 — Branch No.
Dan Appelbaum — Geotechnical Services

Rev. 11/04

FOUNDATION REVIEW

DIVISION OF ENGINEERING SERVICES
GEOTECHNICAL SERVICES

To: **Structure Design**
1. Preliminary Report
2. R.E. Pending File
3. Specifications & Estimates
4. File

Geotechnical Services
1. GS (Sacramento)
2. GS

District Project Development
District Project Engineer

Date: 4/13/09

Retaining Wall No 200
Structure Name

05 - Mon - 201 - R14.6, 8/16.1
District County Route Post Km

05-0161E1 44E0016
E.A. Number Structure Number

Foundation Report By: M. Finegan Dated: 1/30/08

Reviewed By: H. Perez (OSD) R. Price (GS)

General Plan Dated: 2/26/09 Foundation Plan Dated: 2/10/08

☒ No changes. ☐ The following changes are necessary.

FOUNDATION CHECKLIST

- ✓ Pile Types and Design Loads
- ✓ Pile Lengths
- ✓ Predrilling
- ✓ Pile Load Test
- ✓ Substitution of H Piles For Concrete Piles ☐ Yes ☐ No
- ✓ Footing Elevations, Design Loads, and Locations
- ✓ Seismic Data
- ✓ Location of Adjacent Structures and Utilities
- ✓ Stability of Cuts or Fills
- ✓ Fill Time Delay
- ✓ Effect of Fills on Abutments and Bents
- ✓ LOTB's
- ✓ Fill Surcharge
- ✓ Approach Paving Slabs
- ✓ Scour
- ✓ Ground Water
- ✓ Tremie Seals/Type D Excavation

Office of Structure Design — Branch No. 6 — Geotechnical Services

Rev. 10/02

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

Theresa Gabriel 12-20-07
REGISTERED ELECTRICAL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Theresa A. Gabriel No. E15129 Exp. 6-30-10 ELECT STATE OF CALIFORNIA

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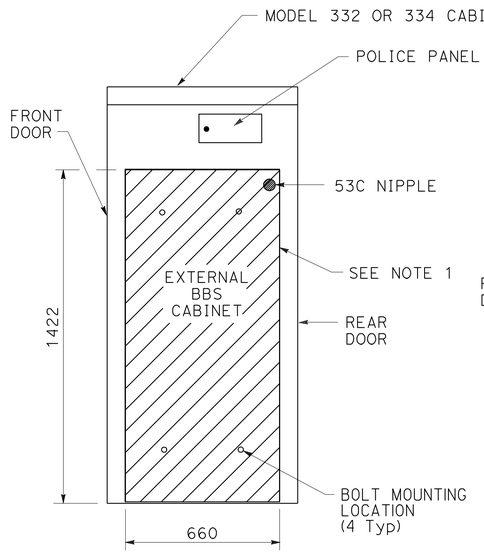
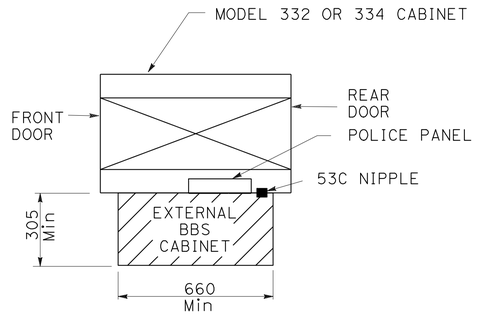


SIDE VIEW

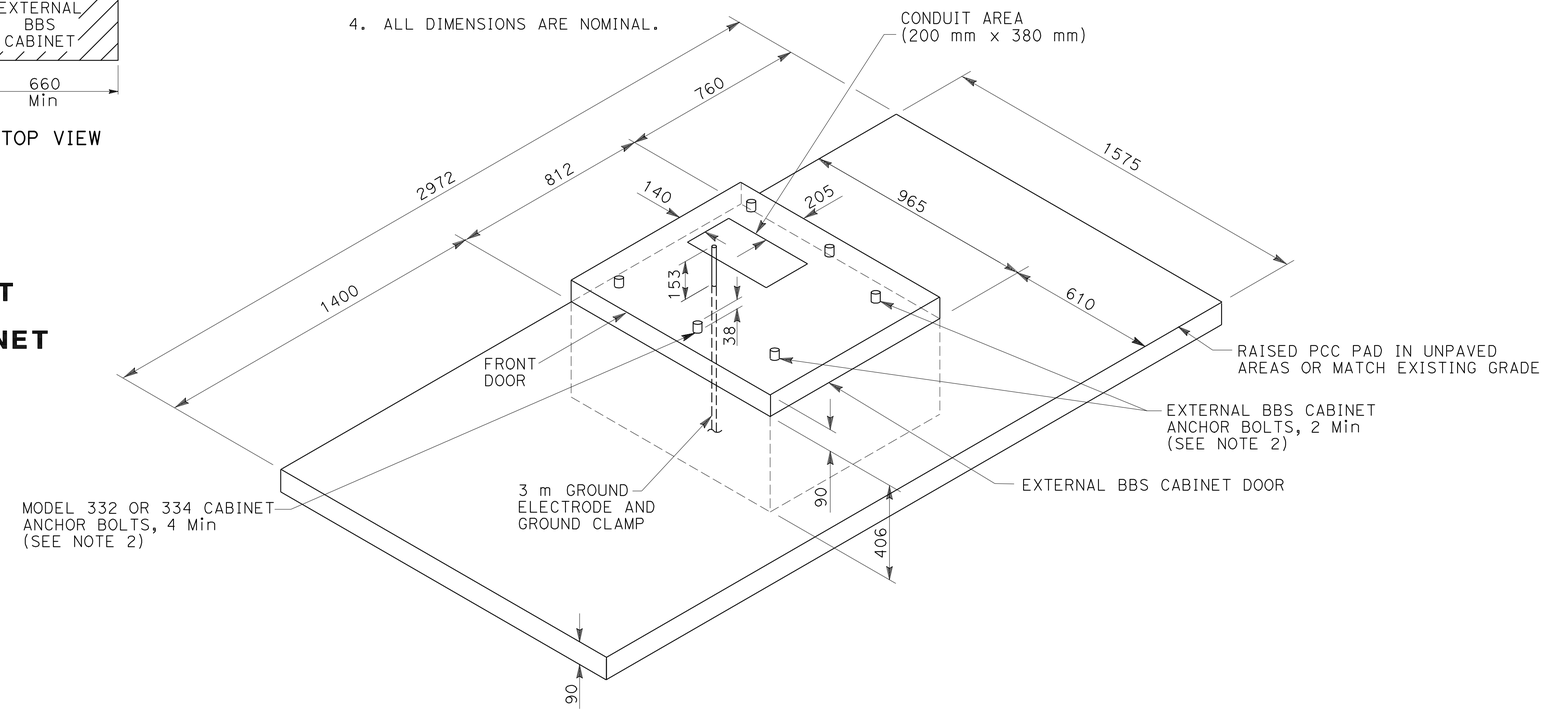


TOP VIEW

EXTERNAL BBS CABINET MOUNTED TO THE MODEL 332 OR 334 CABINET

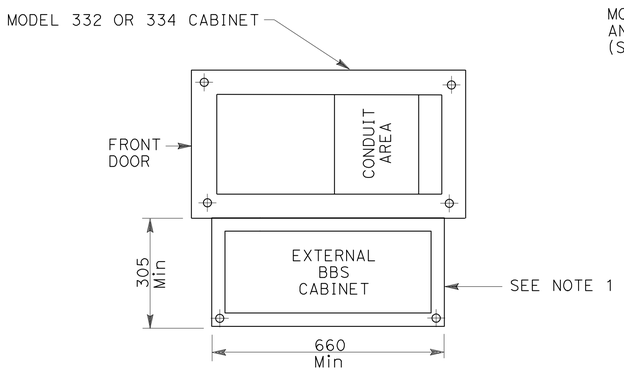
NOTE: (THIS SHEET ONLY)

1. THE EXTERNAL BBS CABINET SHALL BE MOUNTED TO THE MODEL 332 OR 334 CABINET WITH FOUR 18-8 STAINLESS STEEL HEX HEAD, FULLY-THREADED, 9.5 mm-16 X 25.4 mm BOLTS; TWO WASHERS PER BOLT, DESIGNED FOR 9.5 mm BOLTS AND ARE 18-8 STAINLESS STEEL, 25.4 mm OUTSIDE DIAMETER, ROUND, AND FLAT; AND ONE K-LOCK NUT PER BOLT, THAT IS 18-8 STAINLESS STEEL AND A HEX-NUT. THE ENGINEER WILL HAVE TO APPROVE THE BOLT MOUNTING LOCATION PRIOR TO INSTALLATION.
2. THE ANCHOR BOLTS SHALL BE 19 mm Dia X 380 mm WITH A 50 mm-90° BEND. THE CABINET MANUFACTURER'S SPECIFICATION SHALL DETERMINE THE LOCATION OF THE ANCHOR BOLTS IN THE FOUNDATION. THE ENGINEER WILL HAVE TO APPROVE ANCHOR BOLTS AND ITS LOCATION IN THE FOUNDATION PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL VERIFY THE DIMENSIONS OF THE BBS CABINET PRIOR TO CONSTRUCTING THE FOUNDATION OF THE MODIFIED PORTION OF THE Std MODEL 332 AND 334 CABINET FOUNDATION. THE ENGINEER WILL HAVE TO APPROVE ANY NECESSARY DEVIATIONS PRIOR TO CONSTRUCTION.
4. ALL DIMENSIONS ARE NOMINAL.



MODIFIED MODEL 332 AND 334 CABINET FOUNDATION DETAIL FOR BATTERY BACKUP SYSTEM (BBS)

(FOR DIMENSIONS AND DETAILS NOT SHOWN AND ADDITIONAL NOTES, SEE SHEET ES-3C OF THE STANDARDS PLANS FOR MODEL 332 AND 334 CABINETS)



BASE PLAN FOR BBS MOUNTED TO THE MODEL 332 OR 334 CABINET

(FOR DIMENSIONS AND DETAILS NOT SHOWN, SEE SHEET A6-1 TO A6-4, CABINET HOUSING DETAILS OF THE TRANSPORTATION ELECTRICAL EQUIPMENT SPECIFICATION (TEES))

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

ELECTRICAL SYSTEMS
(BBS FOUNDATION DETAILS)

NO SCALE

THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.

REVISED BY | DATE REVISED
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 2-2-09 | DATE PLOTTED => 13-APR-2010 | TIME PLOTTED => 11:41

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

Theresa Gabriel 12-20-07
REGISTERED ELECT ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Theresa A. Gabriel No. E15129 Exp. 6-30-10 ELECT STATE OF CALIFORNIA

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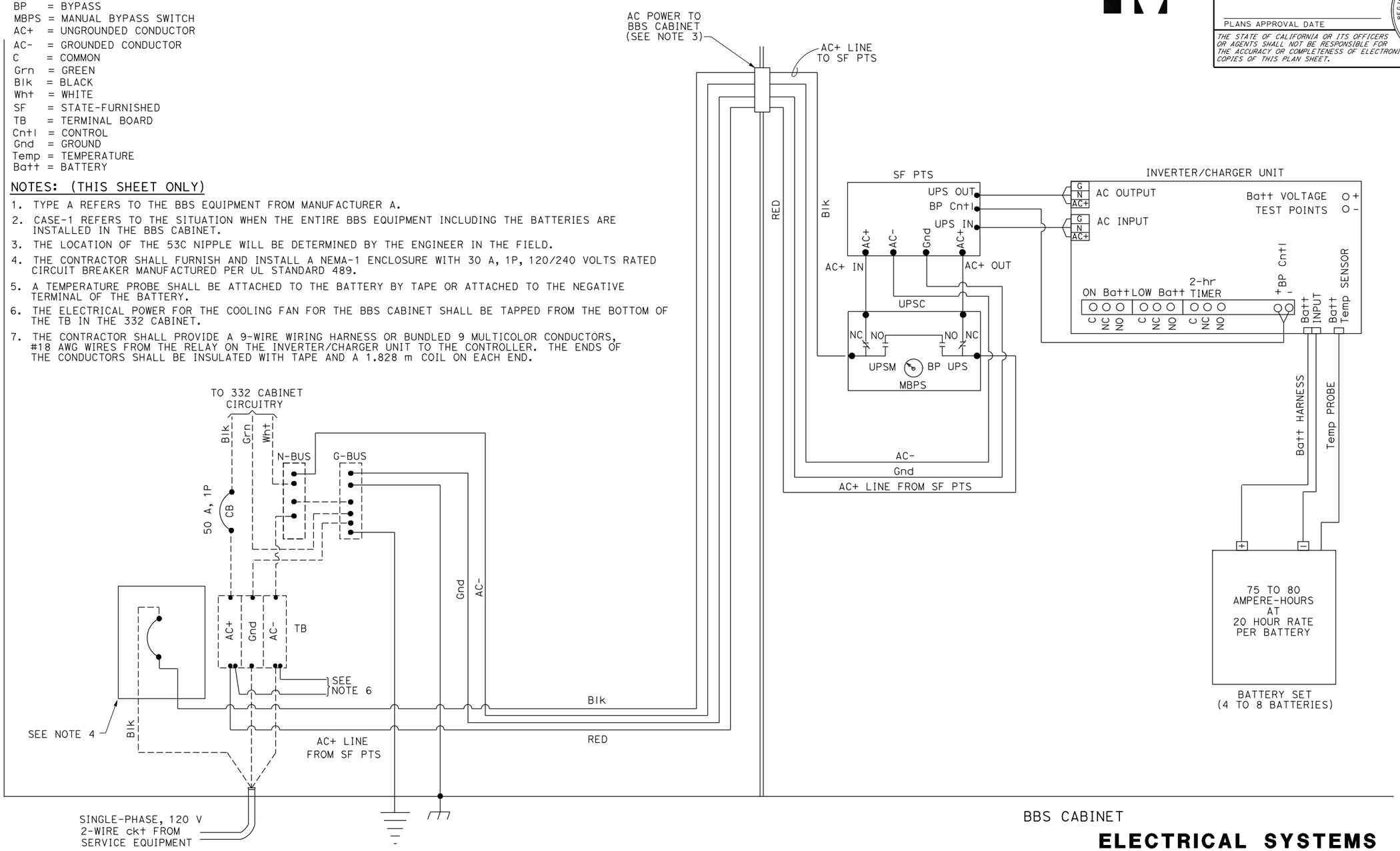
Caltrans Metric

LEGEND: (THIS SHEET ONLY)

PTS = POWER TRANSFER SWITCH
UPS = UNINTERRUPTIBLE POWER SUPPLY
UPSC = UNINTERRUPTIBLE POWER SUPPLY CONTROLLER
UPSM = UPS MODE
BP = BYPASS
MBPS = MANUAL BYPASS SWITCH
AC+ = UNGROUNDED CONDUCTOR
AC- = GROUNDED CONDUCTOR
C = COMMON
Grn = GREEN
Blk = BLACK
Wht = WHITE
SF = STATE-FURNISHED
TB = TERMINAL BOARD
Cntl = CONTROL
Gnd = GROUND
Temp = TEMPERATURE
Batt = BATTERY

NOTES: (THIS SHEET ONLY)

1. TYPE A REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER A.
2. CASE-1 REFERS TO THE SITUATION WHEN THE ENTIRE BBS EQUIPMENT INCLUDING THE BATTERIES ARE INSTALLED IN THE BBS CABINET.
3. THE LOCATION OF THE 53C NIPPLE WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE SHALL BE ATTACHED TO THE BATTERY BY TAPE OR ATTACHED TO THE NEGATIVE TERMINAL OF THE BATTERY.
6. THE ELECTRICAL POWER FOR THE COOLING FAN FOR THE BBS CABINET SHALL BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR SHALL PROVIDE A 9-WIRE WIRING HARNESS OR BUNDLED 9 MULTICOLOR CONDUCTORS, #18 AWG WIRES FROM THE RELAY ON THE INVERTER/CHARGER UNIT TO THE CONTROLLER. THE ENDS OF THE CONDUCTORS SHALL BE INSULATED WITH TAPE AND A 1.828 m COIL ON EACH END.



ELECTRICAL SYSTEMS
(BBS POWER CONNECTION DIAGRAM, TYPE A, CASE-1)

NO SCALE

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FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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Dist	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS

Caltrans Metric

Theresa Gabriel 12-20-07
REGISTERED ELECT ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Theresa A. Gabriel No. E15129 Exp. 6-30-10 ELECT STATE OF CALIFORNIA

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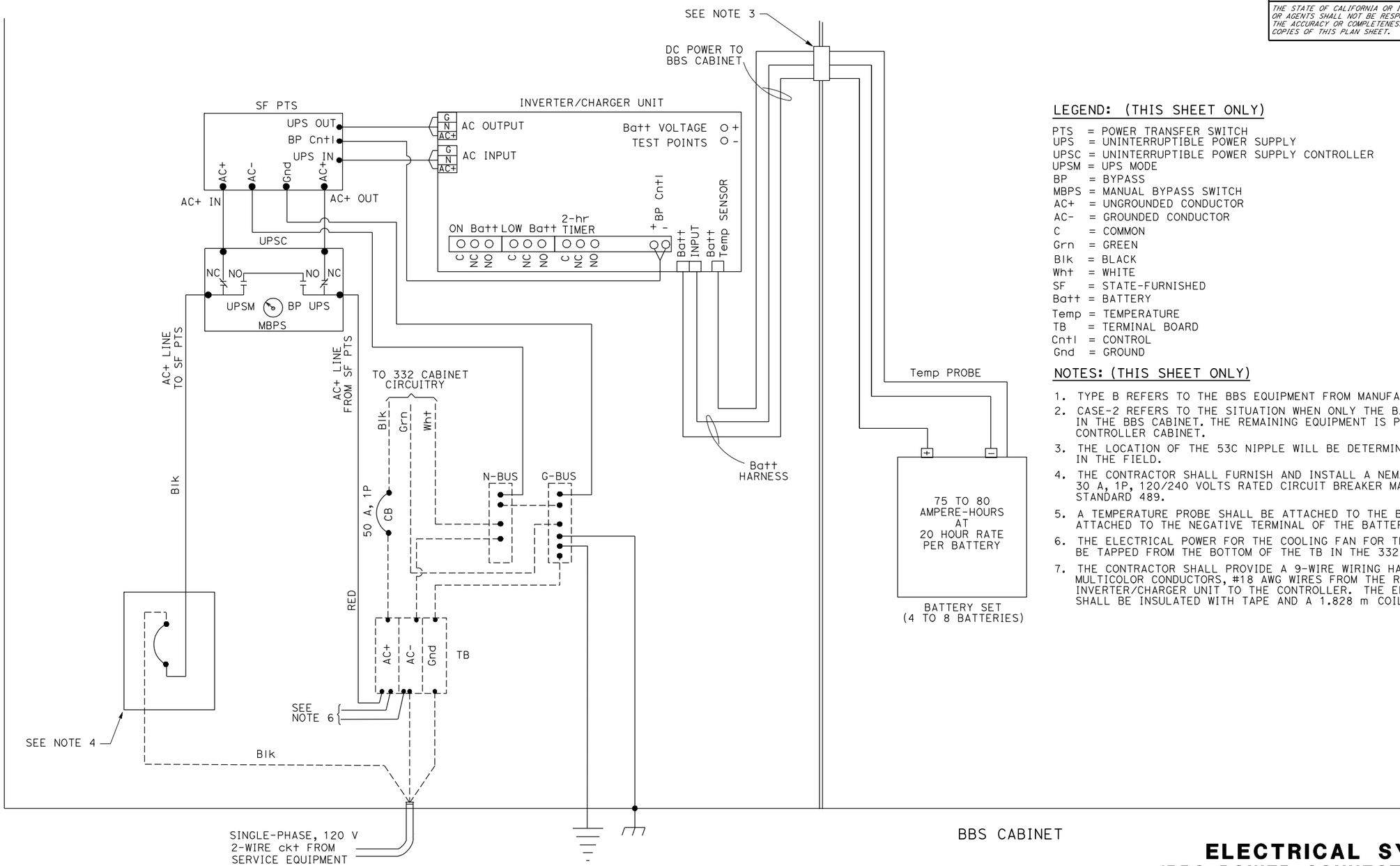

LEGEND: (THIS SHEET ONLY)

PTS = POWER TRANSFER SWITCH
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UPSC = UNINTERRUPTIBLE POWER SUPPLY CONTROLLER
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BP = BYPASS
MBPS = MANUAL BYPASS SWITCH
AC+ = UNGROUNDED CONDUCTOR
AC- = GROUNDED CONDUCTOR
C = COMMON
Grn = GREEN
Blk = BLACK
Wht = WHITE
SF = STATE-FURNISHED
Batt = BATTERY
Temp = TEMPERATURE
TB = TERMINAL BOARD
Cntl = CONTROL
Gnd = GROUND

NOTES: (THIS SHEET ONLY)

1. TYPE B REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER B.
2. CASE-2 REFERS TO THE SITUATION WHEN ONLY THE BATTERIES ARE INSTALLED IN THE BBS CABINET. THE REMAINING EQUIPMENT IS PLACED IN THE 332 CONTROLLER CABINET.
3. THE LOCATION OF THE 53C NIPPLE WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE SHALL BE ATTACHED TO THE BATTERY BY TAPE OR ATTACHED TO THE NEGATIVE TERMINAL OF THE BATTERY.
6. THE ELECTRICAL POWER FOR THE COOLING FAN FOR THE BBS CABINET SHALL BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR SHALL PROVIDE A 9-WIRE WIRING HARNESS OR BUNDLED 9 MULTICOLOR CONDUCTORS, #18 AWG WIRES FROM THE RELAY ON THE INVERTER/CHARGER UNIT TO THE CONTROLLER. THE ENDS OFTHE CONDUCTORS SHALL BE INSULATED WITH TAPE AND A 1.828 m COIL ON EACH END.

ELECTRICAL SYSTEMS
(BBS POWER CONNECTION DIAGRAM, TYPE A, CASE-2)

NO SCALE

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FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
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LAST REVISION 2-2-09
DATE PLOTTED => 13-MAR-2009
TIME PLOTTED => 09:06

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

Caltrans Metric

Theresa Gabriel 12-20-07
REGISTERED ELECT ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Theresa A. Gabriel No. E15129 Exp. 6-30-10 ELECT STATE OF CALIFORNIA

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AC- = GROUNDED CONDUCTOR
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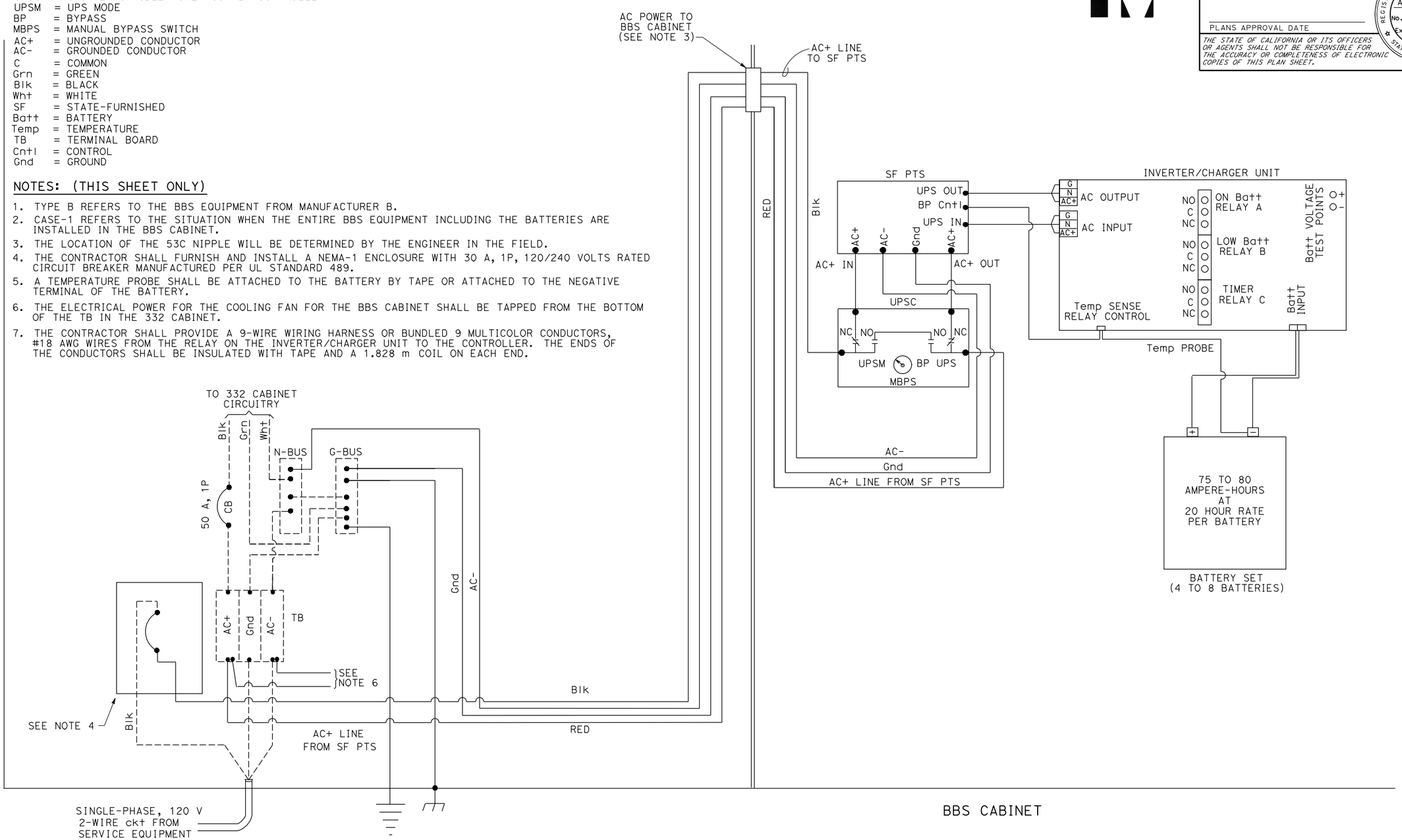
Grn = GREEN
Blk = BLACK
Wht = WHITE
SF = STATE-FURNISHED
Batt = BATTERY
Temp = TEMPERATURE
TB = TERMINAL BOARD
Cntl = CONTROL
Gnd = GROUND

NOTES: (THIS SHEET ONLY)

1. TYPE B REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER B.
2. CASE-1 REFERS TO THE SITUATION WHEN THE ENTIRE BBS EQUIPMENT INCLUDING THE BATTERIES ARE INSTALLED IN THE BBS CABINET.
3. THE LOCATION OF THE 53C NIPPLE WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE SHALL BE ATTACHED TO THE BATTERY BY TAPE OR ATTACHED TO THE NEGATIVE TERMINAL OF THE BATTERY.
6. THE ELECTRICAL POWER FOR THE COOLING FAN FOR THE BBS CABINET SHALL BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR SHALL PROVIDE A 9-WIRE WIRING HARNESS OR BUNDLED 9 MULTICOLOR CONDUCTORS, #18 AWG WIRES FROM THE RELAY ON THE INVERTER/CHARGER UNIT TO THE CONTROLLER. THE ENDS OF THE CONDUCTORS SHALL BE INSULATED WITH TAPE AND A 1.828 m COIL ON EACH END.



ELECTRICAL SYSTEMS
(BBS POWER CONNECTION DIAGRAM, TYPE B, CASE-1)

NO SCALE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

FUNCTIONAL SUPERVISOR | CALCULATED-DESIGNED BY | CHECKED BY | REVISED BY | DATE REVISED

LAST REVISION 2-2-09 | DATE PLOTTED => 13-MAR-2009 | TIME PLOTTED => 09:07

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

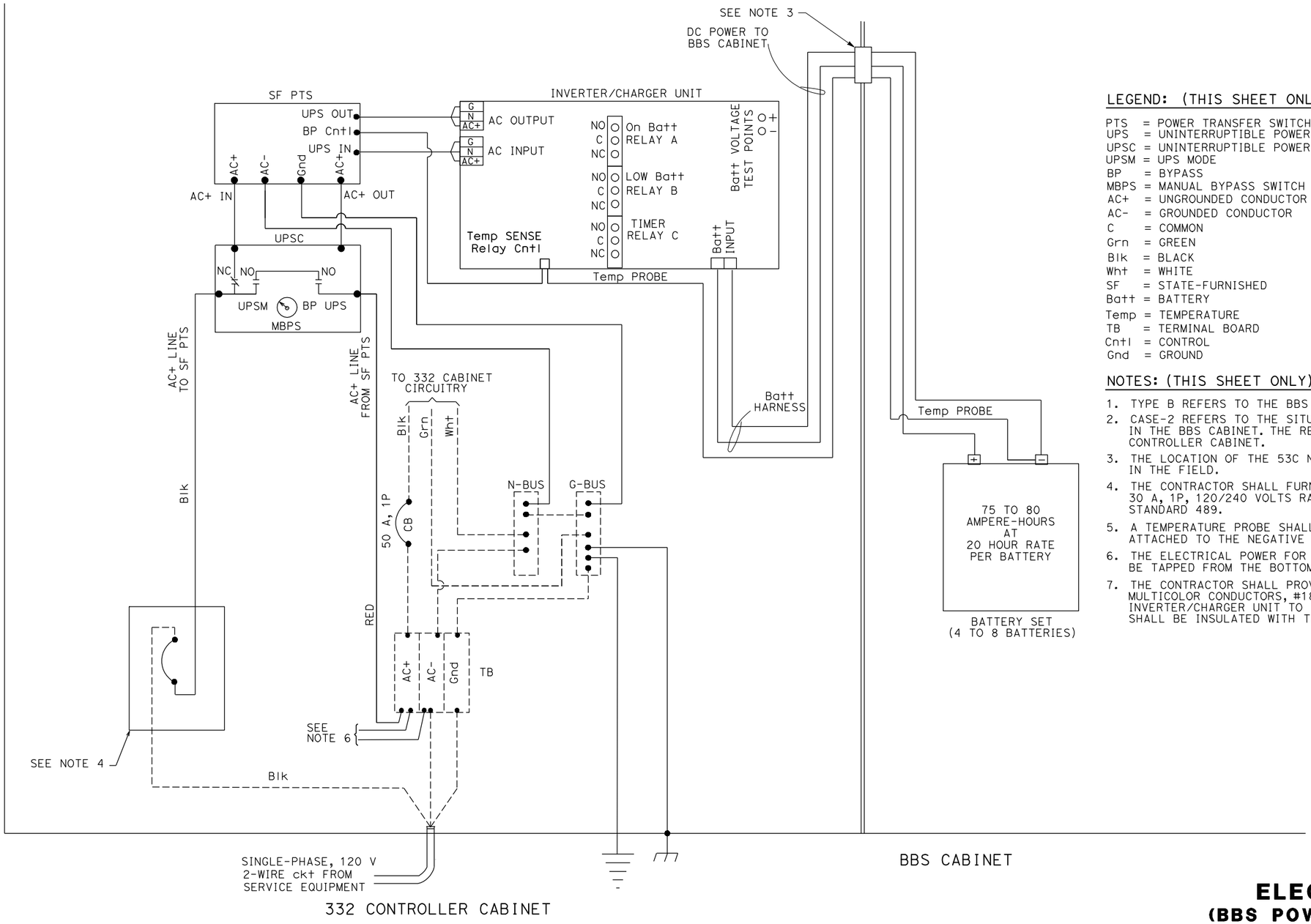
Caltrans Metric

Theresa Gabriel 12-20-07
REGISTERED ELECT ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Theresa A. Gabriel No. E15129 Exp. 6-30-10 ELECT 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.



LEGEND: (THIS SHEET ONLY)

PTS = POWER TRANSFER SWITCH
UPS = UNINTERRUPTIBLE POWER SUPPLY
UPSC = UNINTERRUPTIBLE POWER SUPPLY CONTROLLER
UPSM = UPS MODE
BP = BYPASS
MBPS = MANUAL BYPASS SWITCH
AC+ = UNGROUNDED CONDUCTOR
AC- = GROUNDED CONDUCTOR
C = COMMON
Grn = GREEN
Blk = BLACK
Wht = WHITE
SF = STATE-FURNISHED
Batt = BATTERY
Temp = TEMPERATURE
TB = TERMINAL BOARD
Cntl = CONTROL
Gnd = GROUND

NOTES: (THIS SHEET ONLY)

1. TYPE B REFERS TO THE BBS EQUIPMENT FROM MANUFACTURER B.
2. CASE-2 REFERS TO THE SITUATION WHEN ONLY THE BATTERIES ARE INSTALLED IN THE BBS CABINET. THE REMAINING EQUIPMENT IS PLACED IN THE 332 CONTROLLER CABINET.
3. THE LOCATION OF THE 53C NIPPLE WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL A NEMA-1 ENCLOSURE WITH 30 A, 1P, 120/240 VOLTS RATED CIRCUIT BREAKER MANUFACTURED PER UL STANDARD 489.
5. A TEMPERATURE PROBE SHALL BE ATTACHED TO THE BATTERY BY TAPE OR ATTACHED TO THE NEGATIVE TERMINAL OF THE BATTERY.
6. THE ELECTRICAL POWER FOR THE COOLING FAN FOR THE BBS CABINET SHALL BE TAPPED FROM THE BOTTOM OF THE TB IN THE 332 CABINET.
7. THE CONTRACTOR SHALL PROVIDE A 9-WIRE WIRING HARNESS OR BUNDLED 9 MULTICOLOR CONDUCTORS, #18 AWG WIRES FROM THE RELAY ON THE INVERTER/CHARGER UNIT TO THE CONTROLLER. THE ENDS OFTHE CONDUCTORS SHALL BE INSULATED WITH TAPE AND A 1.828 m COIL ON EACH END.

ELECTRICAL SYSTEMS
(BBS POWER CONNECTION DIAGRAM, TYPE B, CASE-2)

NO SCALE

REVISED BY	DATE REVISED

CALCULATED-DESIGNED BY
CHECKED BY
FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

LAST REVISION 2-2-09
DATE PLOTTED => 13-MAR-2009
TIME PLOTTED => 09:09

STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, Governor

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

June 17, 2010

Department of Transportation
1150 Laurel Lane, Suite 175
San Luis Obispo, CA 93401

Attention: Roy Shaver (via e-mail)

Subject: Underground Classification No's.: C191-053-10T thru C217-053-10T

Prunedale Improvement Project – Monterey County

Mr. Shaver:

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 tunnels 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 tunnels.

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,

John R. Leahy
Senior Engineer

cc: Ned McDougald
File

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C191-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-1

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 153 feet long bored tunnel located beneath Route 101, approximately 2,200 feet south of the intersection of Route 101 and Espinosa Road, Prunedale, Monterey County.

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

Date June 17, 2010

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C192-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-3

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 167 feet long bored tunnel located beneath Route 101, approximately 2,000 feet south of the intersection of Route 101 and Espinosa Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C193-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-6

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 198 feet long bored tunnel located beneath Route 101, approximately 1,700 feet south of the intersection of Route 101 and Espinosa Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C194-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-12

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 48-inch diameter by 480 feet long bored tunnel located beneath Route 101, approximately 750 feet south of the intersection of Route 101 and Espinosa Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C195-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-85

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 468 feet long bored tunnel located beneath Route 101, approximately 2,575 feet south of the intersection of Route 101 and Martines Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C196-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-91

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 twin 30-inch diameter by 571 feet long bored tunnels located beneath Route 101, approximately 2,400 feet south of the intersection of Route 101 and Martines Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C197-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-96

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 83 feet long bored tunnel located beneath Route 101, approximately 1,300 feet south of the intersection of Route 101 and Martines Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C198-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-100

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 86 feet long bored tunnel located beneath Route 101, approximately 1,000 feet south of the intersection of Route 101 and Martines Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C199-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-101

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 86 feet long bored tunnel located beneath Route 101, approximately 650 feet south of the intersection of Route 101 and Martines Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C200-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-102

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 120 feet long bored tunnel located beneath Route 101, approximately 400 feet south of the intersection of Route 101 and Martines Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C201-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-103

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 49 feet long bored tunnel located beneath Route 101, approximately 550 feet south of the intersection of Route 101 and Ralph Lane, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C202-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-120

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 75 feet long bored tunnel located beneath Route 101, approximately 775 feet south of the intersection of Route 101 and Reese Circle, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C203-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-191

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 41 feet long bored tunnel located beneath Route 101, approximately 125 feet northeast of the intersection of Route 101 and Mallory Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C204-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-192

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 46 feet long bored tunnel located beneath Route 101, approximately 475 feet northeast of the intersection of Route 101 and Mallory Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C205-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-193

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 42-inch diameter by 56 feet long bored tunnel located beneath Route 101, approximately 875 feet northeast of the intersection of Route 101 and Mallory Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C206-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-196

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 73 feet long bored tunnel located beneath Route 101, approximately 1,200 feet northeast of the intersection of Route 101 and Mallory Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C207-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-197

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 67 feet long bored tunnel located beneath Route 101, approximately 1,375 feet northeast of the intersection of Route 101 and Mallory Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C208-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-200

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 79 feet long bored tunnel located beneath Route 101, approximately 1,500 feet northeast of the intersection of Route 101 and Mallory Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C209-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-203

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 72 feet long bored tunnel located beneath Route 101, approximately 2,100 feet northeast of the intersection of Route 101 and Mallory Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C210-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-205i

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 51 feet long bored tunnel located beneath Route 101, approximately 75 feet southwest of the intersection of Route 101 and Crazy Horse Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C211-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-205o

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 51 feet long bored tunnel located beneath Route 101, approximately 50 feet northeast of the intersection of Route 101 and Crazy Horse Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C212-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-211

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 28 feet long bored tunnel located beneath Route 101, approximately 150 feet northeast of the intersection of Route 101 and Crazy Horse Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C213-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-214

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 74 feet long bored tunnel located beneath Route 101, approximately 1,100 feet northeast of the intersection of Route 101 and Crazy Horse Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C214-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-216

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 38 feet long bored tunnel located beneath Route 101, approximately 1,300 feet northeast of the intersection of Route 101 and Crazy Horse Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C215-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-218

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 42-inch diameter by 118 feet long bored tunnel located beneath Route 101, approximately 1,450 feet northeast of the intersection of Route 101 and Crazy Horse Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C216-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-219

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 30-inch diameter by 28 feet long bored tunnel located beneath Route 101, approximately 1,500 feet northeast of the intersection of Route 101 and Crazy Horse Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R. Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089

State of California

Department of Industrial Relations

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH
MINING AND TUNNELING UNIT

Underground Classification

C217-053-10T

DEPARTMENT OF TRANSPORTATION

(NAME OF TUNNEL OR MINE AND COMPANY NAME)

of 2015 East Shields Ave., Suite A-100, Fresno, CA 93726

(MAILING ADDRESS)

at PRUNEDALE IMPROVEMENT PROJECT – DS-205e

(LOCATION)

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

(CLASSIFICATION)

as required by the California Labor Code Section 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 42-inch diameter by 92 feet long bored tunnel located beneath Route 101, approximately 460 feet southwest of the intersection of Route 101 and Crazy Horse Canyon Road, Prunedale, Monterey County.

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

Date June 17, 2010

John R Leahy

(SENIOR ENGINEER)

John R. Leahy

03 77089