

INFORMATION HANDOUT

**For Contract No. 11-244004
At 11-SD-5-3.90/9.20**

**Identified by
Project ID 1114000045**

PERMITS

1. California Coastal Commission Coastal Development Permit De Minimis Waiver
Permit No. 6-16-0077-W, dated February 25, 2016
2. California Coastal Commission Coastal Development Permit Amendment
Permit No. 6-11-059-A2, dated March 4, 2016

RAILROAD RELATIONS

3. Railroad Relations and Insurance Requirements
Metropolitan Transit System (MTS) Standard Construction Notes

MATERIALS INFORMATION

4. Water Source Information, City of San Diego, dated August 27, 2015
5. Water Source Information, Sweetwater Authority, dated March 1, 2016
6. Structural Sections/Pavement Rehabilitation Recommendations-Revised, dated March 17, 2015
7. Geotechnical design report, dated February 4, 2015
8. Foundation report for retaining walls, dated February 4, 2015
9. I-5 aerially deposited lead survey report, date January 26, 2015
10. Traffic Elements

ELECTRONIC FILES

1. The horizontal geometric alignment files in XML format
2. The vertical geometric alignment files in XML format
3. Cross sections in PDF format
4. Existing ground surface file in XML format

CALIFORNIA COASTAL COMMISSION

SAN DIEGO COAST DISTRICT OFFICE
7375 METROPOLITAN DRIVE, SUITE 103
SAN DIEGO, CALIFORNIA 92108-4402
(619) 767-2370 FAX: (619) 767-2384

WWW.COASTAL.CA.GOV

**W7****SAN DIEGO COAST DISTRICT
DEPUTY DIRECTOR'S REPORT**

*For the
March 2016 Meeting of the California Coastal Commission*

March 04, 2016

To: Commissioners and Interested Parties
From: Sherilyn Sarb, San Diego Coast District Deputy Director

Following is a listing for the waivers, emergency permits, immaterial amendments and extensions issued by the San Diego Coast District Office for the March 2016 Coastal Commission hearing. Copies of the applicable items are attached for your review. Each item includes a listing of the applicants involved, a description of the proposed development, and a project location.

Pursuant to the Commission's direction and adopted procedures, appropriate notice materials were sent to all applicants for posting at the project site. Additionally, these items have been posted at the District office and are available for public review and comment.

This report may also contain additional correspondence and/or any additional staff memorandum concerning the items to be heard on today's agenda for the San Diego Coast District.

DE MINIMIS WAIVERS

The Executive Director has determined that the following developments do not require a coastal development permit pursuant to Section 30624.7 of the California Coastal Act of 1976.

Applicant	Project Description	Project Location
6-16-0077-W California Department of Transportation, Attn: Shahin Sepassi	Installation of a ramp metering system and widening of existing on ramp to allow for a High Occupancy Vehicle (HOV) preferential lane along the northbound Interstate-5 on ramp at Palm Ave. The project will include construction of a 25 foot tall overhead safety electronic message sign, 4-8 foot tall retaining wall, and guard rails. The project will also include the removal of non-native vegetation and the subsequent planting of 12 new Torrey Pine trees.	Northbound on ramp on Interstate-5 at Palm Avenue, San Diego, San Diego County.

IMMATERIAL AMENDMENTS

The Executive Director has determined that there are no changes in circumstances affecting the conformity of the subject development with the California Coastal Act of 1976. No objections to this determination have been received at this office. Therefore, the Executive Director grants the requested Immaterial Amendment, subject to the same conditions, if any, approved by the Commission.

Applicant	Project Description	Project Location
6-11-059-A2 22nd District Agricultural Association, Attn: Dustin Fuller	Reconfiguration of the existing clover shaped swimming pool into a traditional rectangle for better ease of use for swim lessons and handicap access.	2260 Jimmy Durante Boulevard, Del Mar, San Diego County. APN: 299-04-02.

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February 25, 2016

Coastal Development Permit De Minimis Waiver Coastal Act Section 30624.7

Based on the project plans and information provided in your permit application for the development described below, the Executive Director of the Coastal Commission hereby waives the requirement for a Coastal Development Permit pursuant to Section 13238.1, Title 14, California Code of Regulations. If, at a later date, this information is found to be incorrect or the plans revised, this decision will become invalid; and, any development occurring must cease until a coastal development permit is obtained or any discrepancy is resolved in writing.

Waiver: 6-16-0077-W

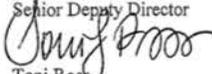
Applicant: California Department of Transportation

Location: Within the Caltrans Right-of-way along Northbound on ramp on Interstate-5 at Palm Avenue, Otay Mesa, San Diego (San Diego County)

Proposed Development: Installation of a ramp metering system and widening of existing on-ramp to allow for a High Occupancy Vehicle (HOV) preferential lane along the northbound Interstate-5 on ramp at Palm Ave. The project will include construction of a 25 foot tall overhead safety electronic message sign, 4-8 foot tall retaining wall, and guard rails. The project will also include the removal of non-native vegetation and the subsequent planting of 12 new Torrey Pine trees.

Rationale: The proposed construction will provide improvements to an existing on-ramp for northbound Interstate-5 that will help promote carpooling and will increase on-ramp safety. The increased size is not intended to accommodate future growth, but rather to meet current needs. All construction will occur on existing paved or disturbed areas and no impacts to sensitive biological resources, visual quality, or public access will occur. The project is consistent with all applicable policies of the Coastal Act.

This waiver will not become effective until reported to the Commission at their March 2016 meeting and the site of the proposed development has been appropriately noticed, pursuant to 13054(b) of the California Code of Regulations. The Notice of Pending Permit shall remain posted at the site until the waiver has been validated and no less than seven days prior to the Commission hearing. If four (4) Commissioners object to this waiver of permit requirements, a coastal development permit will be required.

John Ainsworth
Senior Deputy Director

Toni Ross
Coastal Program Analyst

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**NOTICE OF PROPOSED IMMATERIAL PERMIT
AMENDMENT**Coastal Development Permit Amendment No. **6-11-059-A2**

March 4, 2016

To: All Interested Parties**From:** John Ainsworth, Senior Deputy Director

Subject: Permit No. **6-11-059-A2** granted to **22nd District Agricultural Association (22nd DAA)** for: Placement of a 6,650 sq. ft. fabric tent structure to accommodate existing golf related uses; placement of an approximately 1,500 sq. ft. prefabricated structure on the west side of the existing driving range for golf training; installation of a junior golf area consisting of monkey bars and a grassy area; installation of new putting greens, sand bunkers, and 2-20 ft. light posts, and signage; request for continued usage of the existing 13,500 sq. ft. tent for youth volleyball activities; and after the fact request for an approximately 170 sq. ft. detached bathroom structure, operation of a swimming school, a 2,500 sq. ft. tent, and a swimming pool.

Project Site: 2260 Jimmy Durante Blvd, Del Mar (San Diego County) APN(s): 299-042-02

The Executive Director of the California Coastal Commission has reviewed a proposed amendment to the above referenced permit, which would result in the following change(s):

Reconfiguration of the existing 4.5-ft. deep clover-shaped swimming pool into a 30 ft. by 45 ft. rectangular swimming pool with the same depth.

FINDINGS

Pursuant to 14 Cal. Admin. Code Section 13166(b) this amendment is considered to be IMMATERIAL and the permit will be amended accordingly if no written objections are received within ten working days of the date of this notice. If an objection is received, the amendment must be reported to the Commission at the next regularly scheduled Commission hearing. This amendment has been considered "immaterial" for the following reason(s):

The proposed development is a remodel of an existing approved use within the Surf & Turf athletic complex. The remodeled swimming pool will be in the same location and substantially the same size and volume the existing pool, and thus will not substantially increase the intensity of use or parking demand. The use is consistent with the surrounding uses, and is in conformance with the applicable policies of Chapter 3 of the Coastal Act.

If you have any questions about the proposal or wish to register an objection, please contact Alexander Llerandi at the phone number provided above.

cc: Commissioners/File



Development Services Department

March 9, 2016

Ms. Pauline Lamphere
Permit Specialist
Caltrans-District 11
4050 Taylor St., MS 242
San Diego, CA 92110

SUBJECT: Permit Exemption for Work within the Caltrans North-bound Ramps

Dear Ms. Lamphere:

Ms. Lamphere, this letter is to inform you that the City of Chula Vista has determined to issue a Coastal Development Permit Exemption for the work that Caltrans proposes to conduct on the Interstate 5 at the north-bound ramps within the City of Chula Vista. The proposed work consists of the installation of a ramp metering system, widening of the right side of the ramps to accommodate a 12' lane, addition of a 10' CHP pad, construction of a retaining wall, and other ancillary improvements on the north-bound ramps at Palomar Street, L Street, J Street, H Street, and E Street.

The proposed improvements are intended to promote carpooling and on-ramp safety. The increased size of the ramps is not intended to accommodate future growth, but rather to meet current needs, and make traffic flow more efficient. The construction will occur on existing paved or disturbed areas and no impacts to sensitive biological resources, visual quality, or public access will occur. The project is consistent with the objectives and policies of the City Local Coastal Program.

Based on the project plans and information provided by your office, the City has determined that project meets the exemption criteria of Section 19.83.006 A and B of the Specific Plan of the Chula Vista Local Coastal Program.

If you have any questions or need additional information, please call me at (619) 691-5291 or write me at mtapia@chulavistaca.gov.

Sincerely,



Miguel Z. Tapia, AICP
Senior Planner

CC:

Steve Power, Principal Planner
Kelly Broughton, Director of Development Services

MTS STANDARD CONSTRUCTION NOTES

1. A Right of Entry permit is necessary when entering MTS / San Diego and Arizona Eastern (SD&AE) right-of-way, including airspace, for any purpose. A permit is also required when working in public right-of-way occupied by MTS / SD&AE facilities. Further information to obtain access to railroad facilities can be obtained from MTS website at: <http://www.sdmts.com/Business/Permits.asp> or contact MTS Right of Way Services at Tel. (619) 557-4501.
2. Certificate of Insurance from your insurance company for General Liability, Automobile Liability, and Workman's Compensation must be submitted and approved by MTS before the permit will be processed. San Diego Metropolitan Transit System (MTS) shall be named the Certificate holder and the additional insured listed below to be included:
 - San Diego Metropolitan Transit System (MTS)
 - San Diego Trolley, Inc. (SDTI)
 - San Diego Vintage Trolley, Inc. (SDVTI)
 - San Diego and Arizona Eastern (SD&AE) Railway
 - San Diego and Imperial Valley (SD&IV) Railroad
 - San Diego Transit Corporation (SDTC)
3. Most general liability insurance does not cover railroads. Any exclusions relating to performance of operations within the vicinity of any railroad, bridge, trestle, track, roadbed, tunnel, underpass, or crossing must be deleted from all policies by endorsement. If the exclusions cannot be removed, a separate Railroad Protective Liability Policy will be required. Additional railroad protective coverage may be required per project review as deemed necessary by MTS.
4. SDTI rail flagging will be required anytime work is within 15 feet of any operable track including airspace or as deemed necessary by MTS. A SDTI Flagperson / Right-of-Way Work Request form must be submitted to SDTI a minimum of three (3) business days prior to anticipated work.
5. A pre-construction meeting will be required with MTS/SDTI prior to work commencing within the right-of-way. A written notice of planned start of work must be submitted to MTS a minimum of five (5) business days prior to work starting in the right-of-way. All work will be stopped and Permittee will not be allowed in the right-of-way without proper notification.
6. Permittee must adhere to construction and safety standards required by MTS of their contractors when working within the right-of-way.
7. A written notice shall be submitted to MTS when work is completed within the right-of-way. Any additional work required to replace or repair the railroad facilities in good working order will be the Permittee's responsibility prior to relief from maintenance within the permit area.
8. Casing sleeves under Railroad tracks and across Railroad right-of-way shall meet AREMA standard specifications not be less than 5 ½ feet (1.7m) from the base of the rail to the top of the casing at its closest point. On portions where casing is not directly beneath the tracks, the depth from ground surface to the top of the casing shall not be less than 3 feet (1 m).
9. Permittee agrees to coordinate on a daily basis a reasonable access to all MTS/SD&AE facilities with contract operators, SDTI, and SD&IV. SDTI trolley operations are generally from the hours of 4:00 a.m. to 2:00 a.m. the following day. SD&IV freight trains normal operations are during non-Trolley hours.

10. A SDTI traction power shutdown may be necessary for the work zone to protect and maintain required 10 feet clearance adjacent to the trolley overhead high voltage catenary system (OCS). Permittee shall submit a SDTI Red Tag/ Traction Power Removal Request form to SDTI at least three (3) business days prior to the start of work. Power shutdowns shall only be allowed during non-operating Trolley hours.
11. Permittee agrees to restore all facilities, improvements, landscaping, etc., to their original condition by the completion of work or as shown on project work site plans.
12. Permittee agrees that no work by himself or his authorized agent will interfere with railroad/trolley operations.
13. Permittee shall notify MTS a minimum of five (5) business days prior to the start of work on subject property and within one (1) business day after completion of work.
14. Permittee shall not store equipment, tools, and materials within fifteen (15) feet from trolley operable track and within twenty five (25) feet from freight track operations.
15. Permittee shall remove all of Permittee's tools, equipment, and materials from railroad premises promptly upon completion of work, restoring railroad premises to the same state and condition as when Permittee entered thereon.
16. No vehicular crossing over tracks shall be installed or used by Permittee without prior written permission of Railroad.
17. Permittee shall perform all work in accordance with applicable California Public Utilities Commission and OSHA regulations, MTS LRT Design Criteria, American Railway Engineering and Maintenance of Way Association (AREMA) standard specifications, Manual on Uniform Traffic Control Devices (MUTCD) guidelines and MTS, SDTI and SD&IV Operations and safety policies.
18. Permittee shall provide MTS approved Traffic Control Plans that conform to the Manual on Uniform Traffic Control Devices (MUTCD) and comply in accordance with Part 8 "Traffic Control for Railroad and Light Rail Transit Grade Crossings".
19. Permittee shall maintain safe pedestrian access to all trolley platforms and bus stops at all times. A minimum five-foot-wide accessible pedestrian path through the construction site shall be maintained at all times. The construction boundary shall consist of a top and bottom rail constructed of plastic pipe, OSHA plastic mesh, or approved equal. Yellow caution tape is not acceptable.
20. Permittee shall not use or store hazardous substances, as defined by the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA") or petroleum or oil as defined by applicable Environmental Laws on the Railroad right-of-way.
21. Any contractors or subcontractors performing work on the Railroad right-of-way, or entering the right-of-way on behalf of Permittee, shall be deemed agents of Permittee and require proper MTS Rail Safety Training Certification prior to entering right-of-way.
22. Permittee shall contact and schedule Dig-Alert and Cable Pipe and Leak ("CPL") prior to any excavation in the Right-of-Way. Permittee shall notify MTS minimum of three (3) business days prior to the scheduled utility markout location request and submit SDTI Flagperson / Right-of-Way Work Request form. SDTI personnel shall accompany CPL for any markout of Trolley facilities.

23. Permittee's on-site supervision shall retain/maintain a fully executed copy of the Right of Entry Permit at all times while on the Railroad right-of-way.



THE CITY OF SAN DIEGO

August 27, 2015

Mr. Ken Saylor
Project Engineer
Department of Transportation
District 11
4050 Taylor Street, MS 340
San Diego, CA 92110

Dear Mr. Saylor:

Subject: Installation of ramp meters on eight northbound on-ramps and widen them to add for HOV lanes

This is in response to your letter dated August 21, 2015 regarding water availability for the above subject project. Based upon the volume and duration of the project you provided, the City of San Diego has sufficient and available potable water capacity to serve your project. Please note that segments of this work will take place within the City of Chula Vista boundary.

Please note that effective July 1, 2014, the City of San Diego moved to Level 1 Drought Alert per the attached memo dated June 24, 2014 (see attachment 1). The Level 1 Drought Watch Condition lists voluntary water conservation measures that are added to the City's existing permanent restrictions. Additionally, effective November 1, 2014, the City of San Diego enacted a Drought Alert status, the second phase of citywide conservation that calls for mandatory water use restrictions in response to the severe drought conditions statewide (see attachment 2). In addition to all the conservation measures, on June 1, 2015, San Diego was required by the State of California to cut water use by another 16%.

Please also note that utilizing existing potable water and/or irrigation meters City-wide will be subject to any City of San Diego City Council drought actions to conserve water, if enacted by City Council.

If you have any questions, please call me at 619-446-5420 or email me at Mrastakhiz@sandiego.gov.

Sincerely,

Mehdi Rastakhiz, PE
Associate Civil Engineer
Development Services Department
Water and Sewer Development Review
1222 First Avenue, MS 401
San Diego, CA 92101

Attachment 1: Level 1 Drought Alert memo dated June 24, 2014

Attachment 2: Drought Alert status, the second phase of citywide mandatory water use restrictions
Dated, October 21, 2014





THE CITY OF SAN DIEGO

MEMORANDUM

DATE: June 24, 2014

TO: All Department Directors

FROM: Halla Razak, Director of Public Utilities

SUBJECT: Level 1 Drought Alert starting July 1, 2014

The City of San Diego was in a Stage 2 Drought Alert Condition from June 1, 2009, through May 26, 2011. During that time, City departments played a vital role in saving water and setting a good example for the citizens in our community. During the height of that drought, City departments reduced metered water consumption by 31.4% from pre-drought levels.

The City Council recently approved moving the City to a Level 1 Drought Watch Condition starting July 1, 2014. This memo is provided to assist Departments in identifying water saving opportunities, creating water conservation plans and complying with permanent and voluntary water use regulations.

PRIOR WATER CONSERVATION EFFORTS

From 1992 to 1999, the Water Department implemented a City Facilities Retrofit Program that installed more than 2,384 ultra-low flush toilets and 702 urinals in 494 City owned and operated facilities. The City wanted to show its commitment to water conservation by installing the water conserving plumbing fixtures in our own facilities. That program was completed in 1999 and the biggest retrofit job, that of Qualcomm Stadium in 1998 (365 toilets and 196 urinals) in time for Super Bowl XXXII, was used in a national water conservation publication/article.

The Public Utilities Department has also worked for many years with the Park and Recreation Department to create water use budgets for City parks. Water budgets are estimates of how much water existing landscapes need based on weather information, plant watering needs, type of soil and irrigation systems used, and these estimates are translated into run times per irrigation valve to allow them to use water efficiently. Throughout the last drought, Park and Recreation staff closely monitored water consumption in all its irrigated areas, and this diligence was evident in the achieved 31% water use reduction.

PERMANENT WATER USE RESTRICTIONS

Before the City lifted Level 2 mandatory restrictions in 2011, City Council and City staff agreed that some of these restrictions should remain in place. Hence the San Diego Municipal Code Section SDMC §67.3803 was revised to reflect the permanent water use restrictions that are in effect every day in San Diego. These include the following limitations:

- a) No runoff/excessive irrigation leaving the property;
- b) Repair leaks upon discovery or within seventy-two hours of notification;
- c) No watering of paved areas;
- d) No overfilling swimming pools and spas;
- e) No non-recirculating decorative water fountains;
- f) Car washing only in a commercial car wash or using a hose with shutoff nozzle or a bucket;
- g) New buildings must recycle cooling system water and car wash water;
- h) Restaurants will only serve and refill water upon request;
- i) Hotel guests must have the option of not laundering towels and linens daily; and
- j) No watering after 10 am and before 4 pm (winter)/before 6 pm (summer).

Please ensure that staff within your Department is aware of these permanent water use restrictions.

VOLUNTARY WATER USE RESTRICTIONS

The Level 1 Drought Watch Condition lists voluntary water conservation measures that are added to the City's existing permanent water restrictions. These voluntary measures go into effect on July 1, 2014. Although these measures are voluntary for citizens, it is advised that City Departments take the lead and treat them as mandatory:

- 1) Landscape irrigation limited to three days per week;
- 2) When watering without an irrigation system a shut-off nozzle or garden hose sprinkler system on a timer is required;
- 3) Washing vehicles limited to the same schedule as irrigation (except for: boats which may be washed after use; vehicles with health/safety issues; at a commercial carwash that recycles water);
- 4) Use recycled or non-potable water for construction purposes;

- 5) Fire hydrants for firefighting only;
- 6) Construction operations can use water only as required by regulatory agencies; and
- 7) Irrigation is not permitted during rain event.

RECOMMENDED CONSERVATION MEASURES

Indoor Water Use

If the facility is one of those that received water conserving plumbing fixtures through the City Facilities Retrofit Program, City staff can inspect these fixtures for proper operation and leaks. Self-closing faucets should shut off after a determined amount of seconds. Make sure the valves are not sticking, which would prevent the faucet from shutting off automatically. If faucet aerators have been removed, install new ones that use 1.0 gallons per minute. If the facility has tank style toilets, place dye tablets or food coloring inside the tank and observe if the coloring makes it way to the bowl. This would indicate a leak and would require an adjustment or replacement of the toilet flapper mechanism. Always repair leaks, as even small ones can waste hundreds of gallons of water.

If the facility still has high volume plumbing fixtures, replace them with water efficient ones, such as high-efficiency toilets and urinals, and faucets with self-closing features. There may be some incentives available for replacing these older fixtures. Check with the Water Conservation Program (Luis Generoso at 619-533-5258) for up-to-date information on incentives for public facilities.

Here are a few other measures City staff can take:

- Increase employee awareness of the need to conserve water. The Water Conservation Program (contact Luis Generoso at 619-533-5258) has various brochures and reference materials that can help you.
- Install signs encouraging water conservation in employee and customer restrooms.
- Assign an employee to monitor water use and waste within the facility. Read your water meter weekly to monitor the success of your water conservation efforts, and to detect leaks. Monitor water usage when reviewing water bills. Information on your historic water usage can be obtained calling our Water Conservation Program.
- Check for obvious leaks, where there are consistent water puddles.
- Repair dripping faucets and showers, and continuously running toilets.
- Install faucet aerators where possible.
- Shut off water supply to equipment rooms not in use.
- Shut off cooling equipment when not in use, and minimize water used in cooling units. There may be a need to replace the cooling tower conductivity controller. Check for incentives offered for these controllers.
- Review rebates available in Southern California at <http://www.bewaterwise.com>.

If there are other function areas like cafeterias/food preparation areas, please contact our Water Conservation Program for tips on how to conserve water specific to those areas.

Outdoor Consumption

Significant water savings can be realized if attention is given to how much water we use outdoors. Here are things City staff can readily implement to help reduce outdoor water consumption:

- Stop hosing down sidewalks, driveways and parking lots. If you need to do so for health and safety reasons, consider using a water broom or a water efficient power washer. For more information, visit our website at www.sandiego.gov/water/conservation.
- Operate your irrigation system to water before 10 a.m. or after 6:00 p.m. to minimize water loss from evaporation or windy conditions.
- Water landscape only when needed. Usually two to three times a week is sufficient. Or you can use the Landscape Watering Calculator at the website mentioned above to prepare a water efficient irrigation schedule based on your plants watering needs, weather date, soil type, and irrigation system used. This easy-to-use tool developed by the Public Utilities Department has been recognized with multiple awards, and is endorsed by a number of landscape industry professionals.
- Consider installing a weather based irrigation controller. These "smart controllers" automatically adjust irrigation run times as the season/weather changes and can shut off your system when it rains. Check with our Water Conservation Program for incentives that may be available.
- Make sure your sprinklers irrigate only the landscape area and not driveways and parking lots. Avoid irrigation runoff that causes storm water pollution.
- Do not water on windy days.
- Should landscape conversion be an option, consider water efficient plants and irrigation systems. These plants provide color and beauty, and the plant choices are numerous. Check our website or visit the Water Conservation Garden at Cuyamaca College (www.thegarden.org) for more information. Rebates for landscape and irrigation system conversions are also available.

More information on how you can save water at home and at work can be found on the following websites:

City of San Diego
<http://www.WasteNoWater.org>

San Diego County Water Authority
<http://www.sdcwa.org/whenindrought>

Metropolitan Water District of Southern California
<http://www.bewaterwise.com/>

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All Department Directors
June 24, 2014

RECYCLED WATER OPTION

If the facility is located along the existing recycled water pipeline route you might consider retrofitting your irrigation system to accept recycled water. Irrigation retrofit rebates are now available under a Metropolitan Water District pilot program. For an interactive "recycled water availability zone map" visit <http://www.sandiego.gov/water/recycled/availability/index.shtml> or contact Dawn Jackson at 619-533-4264.

Thank you for the cooperation in conserving water at City facilities and for providing a good example to the public. Please let me know if you should have any questions.



Halia Razak
Director of Public Utilities

LSG/lsg



THE CITY OF SAN DIEGO
PUBLIC UTILITIES

FOR IMMEDIATE RELEASE
October 21, 2014

MEDIA CONTACT:
Robyn Bullard, Senior Public Information Officer
(858) 614-5715

City Enters Drought Alert Status

New Mandatory Water Use Restrictions Go Into Effect Nov. 1

SAN DIEGO – At the recommendation of Mayor Kevin L. Faulconer, the City Council voted Monday to enact a Drought Alert status, the second phase of citywide conservation that calls for mandatory water use restrictions to begin Nov. 1 in response to the severe drought conditions statewide.

“Working together as a community, San Diego has done a tremendous job in the past in responding to the call for water conservation,” Mayor Faulconer said. “For that, we say thank you, and now we must ask for your continued help as we face the uncertainty of future rainfall and water supplies at critical levels.”

The City implemented its voluntary Drought Watch stage on July 1, 2014. Earlier this month, Mayor Faulconer recommended moving to the next level of water conservation based on several factors, including a significant decline in ground water reserves throughout California, a drop in water reservoirs for the San Diego region, a lack of rainfall and diminished prospects for a strong El Niño, and a severe heat wave for the San Diego region in August and September.

The Drought Alert stage doesn’t contain a sunset clause and will stay in effect as long as the City deems necessary.

Relevant to most residents under the Drought Alert stage are the restrictions that mandate assigned watering days, which are dependent on your address. There are also restrictions on what time of day residents can water and how long they can water:

Assigned Watering Days

Residences with odd-numbered addresses	Water only on Sundays, Tuesdays & Thursdays
Residences with even-numbered addresses	Water only on Saturdays, Mondays & Wednesdays
Apartments, condos & businesses	Water only on Mondays, Wednesdays & Fridays

Time of Day and Time Limits

- From November 1 through May 31, water only between 4 p.m. and 10 a.m. for only 7 minutes at each station when using a standard sprinkler system.
- From June 1 through October 31, water only between 6 p.m. and 10 a.m. for only 10 minutes at each station when using a standard sprinkler system.

Other water use restrictions that become effective under Drought Alert status are:

- Use a hand-held hose equipped with a positive shut-off nozzle or timed sprinkler system to water landscaped areas.
- Stop operation of ornamental fountains, except to the extent needed for maintenance purposes.
- The washing of automobiles, trucks, trailers, airplanes and other types of transportation equipment is only allowed during the following times:
 - Between 4 p.m. and 10 a.m. from November 1 to May 31.
 - Between 6 p.m. and 10 a.m. from June 1 through October 31.
- Washing is permitted at any time at a commercial car wash.
- No irrigation is allowed during rain events.
- Potted plants, non-commercial vegetable gardens and fruit trees may be irrigated on any day during the following times:
 - Between 4 p.m. and 10 a.m. from November 1 through May 31
 - Between 6 p.m. and 10 a.m. from June 1 through October 31.
- Irrigation is permitted any day at any time as follows:
 - As required by a landscape permit.
 - For erosion control.
 - For establishment, repair or renovation of public use fields for schools and parks.
 - For landscape establishment following a disaster.
- Use recycled or non-potable water for construction purposes when available.
- Use of water from fire hydrants will be limited to firefighting, meter installation by the Water Department or other activities necessary to maintain the health, safety and welfare of San Diegans.

- Constructions operations receiving water from a fire hydrant or water truck will not use water beyond normal activities.

These restrictions are in addition to permanent, mandatory water use restrictions in effect at all times since 2011. For a list of all current restrictions, as well as conservation resources, rebate programs and other valuable information, visit www.wastenowater.org.

The City of San Diego's Water Conservation Program reduces water demand through promoting or providing incentives for the installation of hardware that provides permanent water savings, and by providing services and information to help San Diegans make better decisions about water use. For more information about Water Conservation, visit www.wastenowater.org or call (619) 515-3500.

Craig Gustafson
Press Secretary & Director of Media Relations

Mayor Kevin L. Faulconer
City of San Diego

Mobile: 619.453.9880
Office: 619.236.7064
Fax: 619-236-7228
www.sandiego.gov/mayor

Disclosure: This email is public information. Correspondence to and from this email address is recorded and may be viewed by third parties and the public upon request.



SWEETWATER AUTHORITY

505 GARRETT AVENUE
POST OFFICE BOX 2328
CHULA VISTA, CALIFORNIA 91912-2328
(619) 420-1413
FAX (619) 425-7469
<http://www.sweetwater.org>

GOVERNING BOARD
ERNESTO ZAMUDIO, CHAIR
TERESA "TERRY" THOMAS, VICE CHAIR
STEVE CASTANEDA
JOSÉ F. CERDA
RON MORRISON
JOSE PRECIADO
JESS VAN DEVENTER

JAMES L. SMYTH
GENERAL MANAGER
JENNIFER H. SABINE
ASSISTANT GENERAL MANAGER

March 1, 2016

Mr. Ken Sayler, P.E.
Project Engineer
California Department of Transportation, District 11
4050 Taylor Street
San Diego, CA 92110

Subject: WATER AVAILABILITY
CALTRANS PROJECT ID: 1114000045
SWA FILE: ST. IMP. 14-15 - CALTRANS PROJECT PLANS FOR
CONSTRUCTION, INTERSTATE 5, SOUTH OF CORONADO AVENUE TO
NORTH OF E STREET

Dear Mr. Sayler:

This is in response to your letter dated August 21, 2015 regarding water availability for the California Department of Transportation (Caltrans) Project for Construction on State Highway, Project ID 1114000045, Contract 11-244000 (Project), and your recent follow-up request of February 29, 2015 for verification of water availability. As presented to Sweetwater Authority (Authority), the Project will install ramp meters on eight northbound on-ramps to Interstate 5 and widen the on-ramps to add high occupancy vehicle lanes. Six of the on-ramps, from Main Street to E street, are within the City of Chula Vista and the Authority's service area. As further provided, the work will require the use of approximately 880,000 gallons of water for construction over an expected duration of 12-months.

Water is available for the Project at the proposed locations within the Authority's service area, and the Authority may provide potable water for construction purposes subject to Authority Rates, Rules, Policies, and Procedures. Caltrans or its contractor(s) shall be responsible for all costs associated with obtaining temporary construction meter(s) and water usage during construction. Temporary construction meter applications can be obtained at the Authority's Administration Office located at 505 Garrett Avenue, Chula Vista, CA, 91910.

Water availability is subject to all Authority requirements in effect at the time of application. Caltrans is strongly encouraged to adopt water conservation measures throughout development. In September 2014, the Authority's

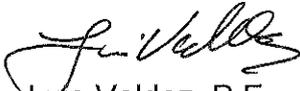
Mr. Ken Sayler
Re: Water Availability – Caltrans Project ID: 1114000045
March 1, 2016
Page 2 of 2

Governing Board activated Level 2 of its Drought Response Plan. On June 24, 2015, the Governing Board amended its Drought Response Plan to include additional conservation measures that are aligned with Governor Brown's state-wide mandate to reduce water use.

Caltrans is advised to contact all necessary agencies, including Fire Departments and sewer purveyor(s), for any additional requirements. If you have any questions, please contact Mr. Francisco Montijo at (619) 409-6756, or jmontijo@sweetwater.org.

Sincerely,

SWEETWATER AUTHORITY



Luis Valdez, P.E.
Engineering Manager

LV:vn

cc: Mr. Rick DeLeon, Sweetwater Authority

Enclosures: Sweetwater Authority Rates and Rules
Sweetwater Authority Supplement to the Rates and Rules
Sweetwater Authority Standard Specifications (CD)

SWEETWATER AUTHORITY
RATES AND RULES
(Effective January 1, 2016)

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Sweetwater Authority
Standard Specifications for
Construction of Water Facilities

August 2006
(Revised
January 2011)

Sweetwater Authority
505 Garrett Avenue, Chula Vista, CA 91910
P.O. Box 2328, Chula Vista, CA 91912-2328
(619) 420-1413 fax: (619) 425-7469
www.sweetwater.org

Memorandum

To : KEN SAYLER (MS 340)
Project Engineer
Design

Date: March 17, 2015

File: 11-SD-5
PM 3.9/9.2
EA 244000
EFIS 1114000045

From : DEPARTMENT OF TRANSPORTATION - DISTRICT 11
PAVEMENT ENGINEERING SECTION

Subject: STRUCTURAL SECTION/PAVEMENT REHABILITATION RECOMMENDATIONS-Revised

In order to comply with the HQ Memorandum, "Crumb Rubber Usage in Hot Mix Asphalt (HMA) Pavements", dated February 10, 2015, an RHMA (Type G) alternate is provided.

The following structural sections are furnished for the Ramp Metering project on NB 5 on-ramps from Coronado Avenue to E Street.

The following structural section recommendations are based on a Traffic Index (TI) of 10.0 for a medium traffic ramp traveled way and a TI of 6.5 for the ramp shoulder, which are in accordance with the Highway Design Manual, Section 600. The basement soil R-value of 10 for the onsite soils were determined in the original materials reports for I-5 within the project limits.

STRUCTURAL SECTION

Ramp Traveled Way

(TI = 10.0, R-value = 5)

Alternate 1

0.50' HMA (Type A)
2.00' AB - Class 2

Alternate 2

0.50' HMA (Type A)
0.55' AB - Class 2
1.60' AS - Class 4

Alternate 3

0.15' RHMA (Type G)
0.35' HMA (Type A)
2.00' AB - Class 2

Ramp Shoulder

(TI = 6.5, R-value = 5)

Alternate 1

0.30' HMA (Type A)
1.25' AB - Class 2

Alternate 2

0.30' HMA (Type A)
0.35' AB - Class 2
1.00' AS - Class 4

Alternate 3

0.15' RHMA (Type G)
0.15' HMA (Type A)
1.25' AB - Class 2

CHP Enforcement Pads and Maintenance Vehicle Pullouts

Alternate 1

0.30' HMA (Type A)
1.00' AB - Class 2

Alternate 2

0.15' RHMA (Type G)
0.15' HMA (Type A)
1.00' AB - Class 2

PAVEMENT REHABILITATION

Ramp Traveled Way and Shoulder

(NB on ramps at Coronado Ave, Palm Ave, Main St, Palomar St, L St/Industrial Blvd, J St, H St, and E St)

Repair failed areas with full depth HMA (AC pavement layer only)
Cold plane 0.15' existing AC
Place 0.15' RHMA (Type G)

Design Notes

1. The existing shoulder structural section does not meet the structural adequacy requirements for use as a traveled way. The shoulder structural section shall be removed where the proposed traveled way widening will occur.
2. According to the Highway Design Manual, Section 600, when shoulders are 5' or less in width, the structural section of the adjacent ramp traveled way will be extended to the outer edge of shoulder.
3. For HMA-A and RHMA-G lifts between 0.15 ft. and 0.20 ft., the recommended aggregate grading for HMA-A and RHMA-G is 1/2 in. maximum graduation. For HMA-A and RHMA-G lifts greater than 0.20 ft., the recommended aggregate grading for HMA-A and RHMA-G is 3/4 in. maximum graduation.

If you have questions with regards to this memorandum, please contact me at 619-954-8568



David Evans
District Pavement Engineer
District 11 Materials Lab



cc: A Padilla (DME)
J Hull (MS 330)
5.244000.ss2.doc



GEOTECHNICAL DESIGN REPORT

Ramp Widening at Various Locations on Interstate 5

11-SD-5-3.9/9.0

**EA 11-24400
EFIS 1114000045**

February 4, 2015

Prepared By:

**OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2 BRANCH D
7177 OPPORTUNITY ROAD
SAN DIEGO, CA 92111**

Memorandum

To: Shahin Sepassi
Project Manager
Advanced Transportation Systems Engineering Branch

Date: February 4, 2015

File: 11-SD-5-3.9/9.0
EA: 11-24400
EFIS: 1114000045

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design – South 2 Branch D

Subject: Geotechnical Design Report for Proposed Ramps Widening and Retaining Walls at Various Locations on Interstate 5 near National City.

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) has prepared this Geotechnical Design Report (GDR) for the proposed ramp widening and retaining walls at various locations on Interstate 5. This report presents the geotechnical conditions as evaluated from field reconnaissance, research of archives, and engineering analyses. This report provides recommendations relevant to project design and construction.

OGDS2 staff will be available for further assistance. Should you have any questions or comments regarding this report, please contact OGDS2 Branch-D.

Ali Lari, P.E.
Transportation Engineer (Civil)
Office of Geotechnical Design - South 2
(858) 457-6922



CC:

Art Padilla
Abbas Abghari
Ken Saylor
Shawn Wei
<http://10.160.173.158/>
District Construction RE Pending File

District Materials Engineer
Office Chief, OGDS2
Project Engineer
Branch Chief, Branch D, OGDS2
Geotechnical Services Archives
RE_Pending_File@dot.ca.gov

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APPENDICES

Appendix I: Project Plans

Appendix II: Boring Records

Appendix III: Laboratory Test Data

Appendix IV: Geologic Overview Map

1.0 INTRODUCTION

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) is providing this Geotechnical Design Report (GDR) to be used for project design and construction. The proposed project includes widening of seven northbound on ramps at Interstate-5 (I-5) near National City, California. The project also includes construction of four retaining walls. This GDR provides geotechnical evaluations and recommendations for ramp widening. Geotechnical recommendations for proposed retaining walls will be provided in separate Foundation Reports. The Project Title and Location Maps are depicted in the Appendix I.

The purpose of this GDR is to document subsurface geotechnical conditions, provide engineering evaluation of site conditions, and provide recommendations relevant to the design and construction of the project features. This report establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions. The geotechnical information, evaluation, recommendations, and advisories contained in this GDR supersede any information that may have been previously conveyed through correspondences or documents concerning the project features addressed herein.

2.0 PROJECT DESCRIPTION

In the project area, I-5 is a multi-lane, urban freeway with numerous interchanges and freeway connectors. Dense residential and commercial development abuts the freeway right-of-way. The project will widen seven northbound on-ramps from Coronado Avenue to H Street. To accommodate the ramps widening, four retaining walls are necessary as the ramps encroach into adjacent slopes.

3.0 FIELD INVESTIGATION AND TESTING

A subsurface investigation program was conducted by OGDS2 in the fall of 2014. Numerous exploratory borings were conducted to help characterize the soil conditions present along the project alignment. Five borings, A-14-001, A-14-002, A-14-004, A-14-005, and A-14-006, were developed for the ramp widening subgrades at Locations 1, 3, and 5, and eight borings, A-14-003, A-14-007, A-14-008, A-14-011, A-14-012, HA-14-001, HA-14-002, and HA-14-003 were developed in proximity to the proposed retaining wall alignments. The boring records for Locations 1, 3 and 5 are included in Appendix II. Log Of Test Borings (LOTB) for retaining walls are included with the project plans.

4.0 LABORATORY TESTING

Laboratory testing of collected soil samples included corrosion testing. Laboratory test results are included in Appendix III.

5.0 GEOTECHNICAL CONDITIONS

The following subsections describe the geotechnical conditions that will affect the project.

5.1 Site Geology

The project geologic overview map is displayed in Appendix IV. The geology depicted in the map was acquired from the *California Division of Mines and Geology, by Michael P Kennedy, 1977*. The map depicts an overview of the geologic formations present at the project site and surrounding area.

The project site lies within the coastal plain section of the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are a group of mountain ranges that extend 900-miles from the

Transverse Ranges and the Los Angeles Basin in Southern California to the southern tip of Mexico's Baja California (Wikipedia 1). The southern segment of the Peninsular Ranges in Southern California is referred to as the San Diego Embayment. The San Diego Embayment consists of thick sequences of marine and non-marine sediments. The sedimentary rocks within the San Diego Embayment form an eastward thinning wedge of continental margin deposits that extend from Oceanside to the US-Mexico border. The main formation in the project area is the Bay Point Formation. Artificial fill has been placed atop this natural formation.

The geologic units in the project area are described as follows:

Artificial Fill (Qaf) in the project area appears to be derived from material excavated from nearby cuts in the surrounding formations. The embankment fill primarily consists of silty sand with variable amounts of gravel and cobbles. The freeway embankment fill was evaluated to be engineered fill conforming to Caltrans standards.

Alluvium and Slope Wash (Qal and Qsw): Poorly consolidated stream and slope raveling deposits of silt and sand and cobble sized particles.

Bay Point Formation (Qbp+Qn) consists of dense to very dense, fine grained sand with variable amounts of clay. The Bay point Formation underlies the majority of the fill soils or is exposed at the surface in the absence of fill.

5.1.1 Slope Stability of the Existing Slopes

The existing slopes are inclined as steep as two horizontal to one vertical (2.0H:1.0V). Field reconnaissance revealed that the slopes exhibit satisfactory long-term performance. Therefore, no slope stability analysis has been conducted for the existing slopes.

5.2 Subsurface Conditions

The following subsections describe geotechnical characteristics of the project site that may influence design and construction.

5.2.1 Roadway Subgrade

The subsurface investigation revealed that upper eleven feet of the proposed ramp widening subgrades are primarily comprised of medium dense to dense silty sand with variable amount of gravel and cobbles. Other adverse conditions such as sanitary landfill, collapsible, or expansive soils were not observed along the proposed ramp widening alignments. Caltrans Environmental should provide any pertinent information regarding Aerially Deposited Lead.

5.2.2 Ground Water

Ground water was not encountered during the subsurface exploration program. According to the archived LOTB for the nearby structures, the groundwater is anticipated to exist at depths below the features presented for this project and consequently groundwater is not anticipated to impact the project. Archived LOTB are attached to the Foundation Reports.

5.2.3 Surface Water

Permanent surface water bodies do not exist in proximity to the project features. Urban storm runoff and landscape irrigation runoff are the primary sources of surface water in proximity to project features.

5.2.4 Erosion

Existing slopes are generally well vegetated and performing well. It is anticipated that some slopes may be disturbed and re-graded during construction. Newly graded areas will be prone to erosion.

5.2.5 Site Seismicity

A seismic study is included in the Foundation Reports for the proposed retaining walls. Site seismicity does not affect the design of roadway features on this project..

5.2.6 Corrosion Potential

Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: Chloride concentration is greater than or equal to 500-ppm, sulfate concentration is greater than or equal to 2,000 ppm, or the pH is 5.5 or less.

Corrosion test results were obtained for selected soil samples and are included in Appendix III. The test results indicate that the on-site subsurface materials at the top 5 feet are corrosive, however, the materials at deeper depths are not potentially corrosive.

6.0 MATERIAL SOURCES

There is no plan to import material for this project.

7.0 MATERIAL DISPOSAL

Material generated during construction should be placed in a suitable location within the project limits or properly disposed. Excess material should not be placed on slopes. No other locations were identified that would be adversely impacted by the placement of excess material within the project limits.

8.0 RECOMMENDATIONS

- Appropriate erosion control measures should be implemented to protect the newly graded slope faces.
- Concentrated runoff should not be directed to drain over the slopes.

9.0 DESIGN CONSIDERATIONS

- No adverse conditions related to the proposed ramp improvements were discovered
- The excavated materials within the retaining wall areas will be suitable for use as embankment fill but will not likely meet structure back fill requirements.
- It is recommended that the newly graded slopes have an inclination of two horizontal to one vertical (2.0 H: 1.0 V).

- Appropriate erosion control measures should be implemented to protect the newly graded slope faces.

10.0 CONSTRUCTION CONSIDERATIONS

- The on-site soils may generally be excavated with conventional equipment.
- No load shall be placed within five feet of the temporary cut slopes.

11.0 ACTUAL VS. REPORTED SITE CONDITIONS

The characterizations of geotechnical conditions along the project alignment and presented in this report are based on the review of the design information provided, proposed project features, as-built plans, geologic maps, geologic literature, archival reports, exploration by OGDS2, and laboratory testing. The evaluations and recommendations contained in this report are based on the information discovered and data gathered. If conditions are encountered during the project that appear to differ from the conditions conveyed in this report, or if construction difficulties related to soil conditions are encountered, a representative of OGDS2 Branch D should be consulted to assist with the assessment of the prevailing geotechnical conditions and to assist in formulating appropriate strategies to facilitate project completion.

Should project design features vary significantly from those described in this report an updated GDR should be prepared by OGDS2 Branch D to address the geotechnical considerations related to those features.

APPENDICES

APPENDIX I
PROJECT PLANS

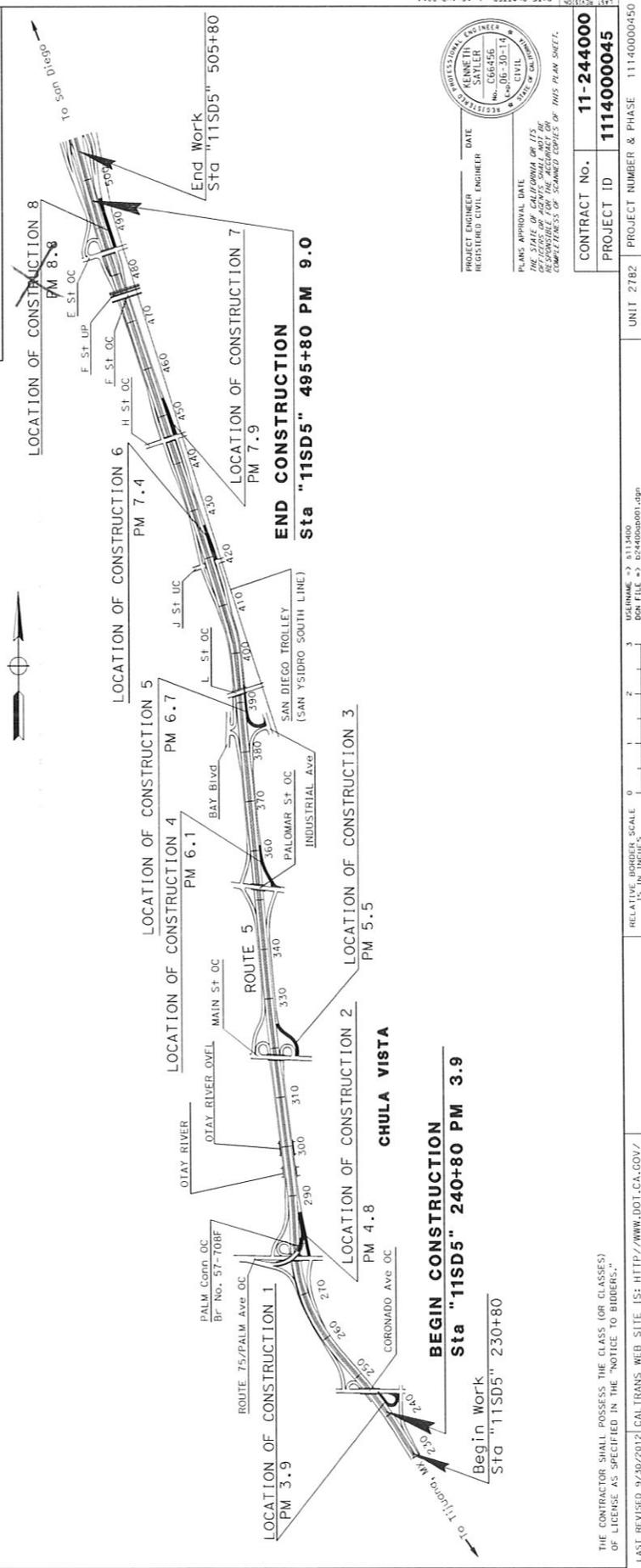
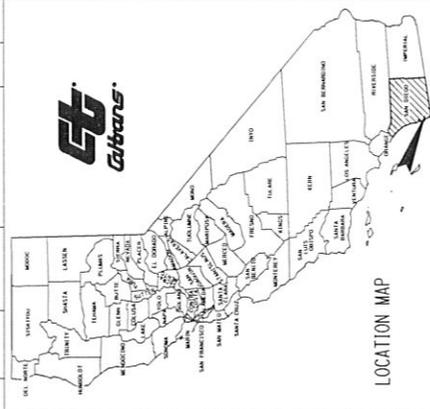
INDEX OF PLANS

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

IN SAN DIEGO COUNTY NEAR CHULA VISTA AT VARIOUS LOCATIONS FROM 0.1 MILES SOUTH OF CORONADO OVERCROSSING TO 0.5 MILES NORTH OF E STREET OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
11	SD	5	3.9/9.3	1	1



BEGIN CONSTRUCTION
Sta "11SD5" 240+80 PM 3.9

END CONSTRUCTION
Sta "11SD5" 495+80 PM 9.0

PLANS APPROVAL DATE: _____
 PROJECT ENGINEER: _____ DATE: _____
 REGISTERED CIVIL ENGINEER

REGISTERED PROFESSIONAL ENGINEER
 KENNETH SATLER
 No. CGE4506
 Exp. 06-30-11
 CIVIL
 STATE OF CALIFORNIA

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

CONTRACT NO.	11-244000
PROJECT ID	1114000045
UNIT	2782
PROJECT NUMBER & PHASE	11140000450

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

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045

EXHIBIT 1



OUTER RD

25TH ST

LOCATION 1
 CORONADO AVE

SHEET 1 OF 8

SCALE 1"=100'

PROJECT NUMBER & PHASE 11140000451

UNIT 2/82

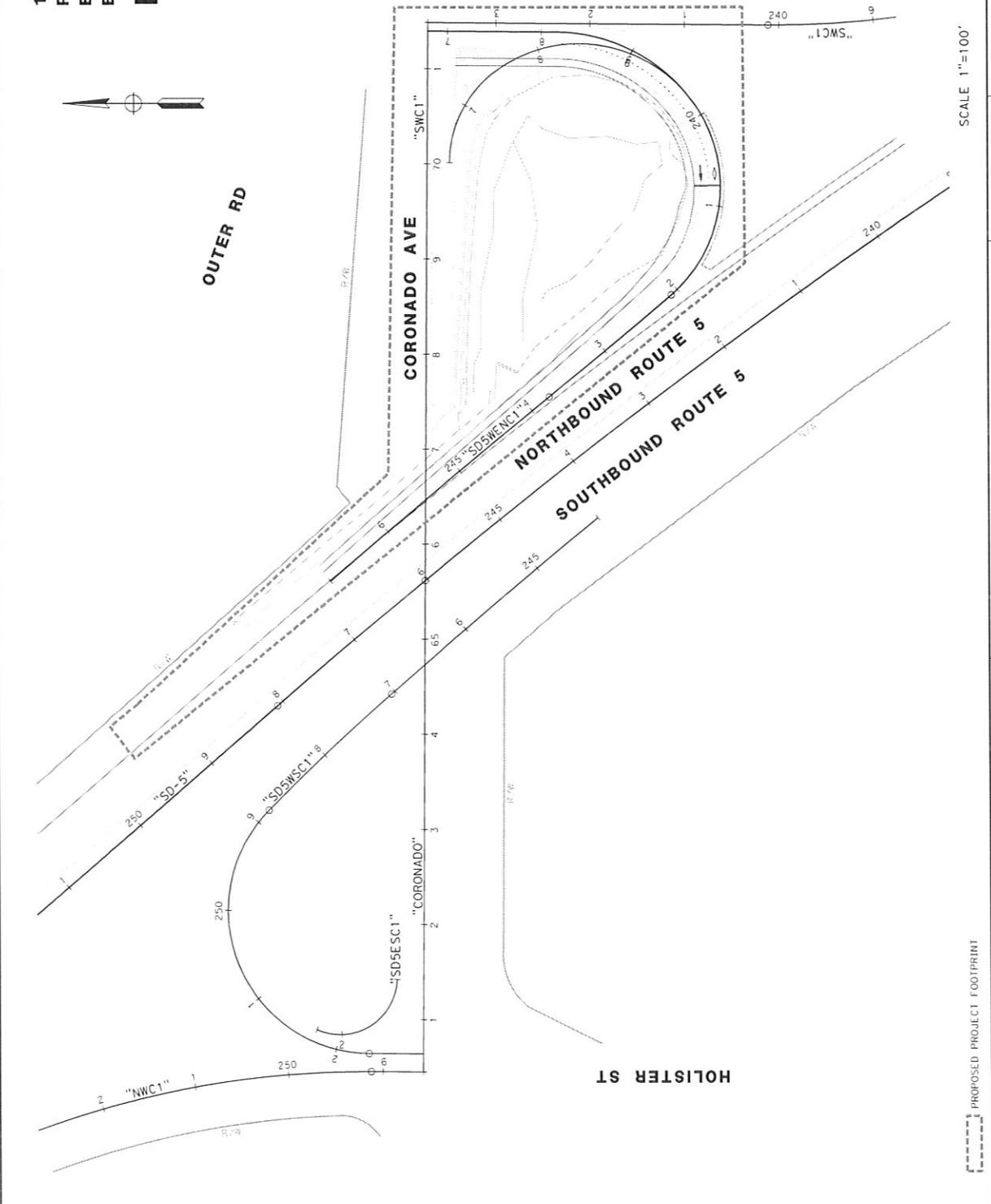
RELATIVE BORDER SCALE
 15" IN INCHES

PROPOSED PROJECT FOOTPRINT

BORDER LAST REVISED 7/2/2010

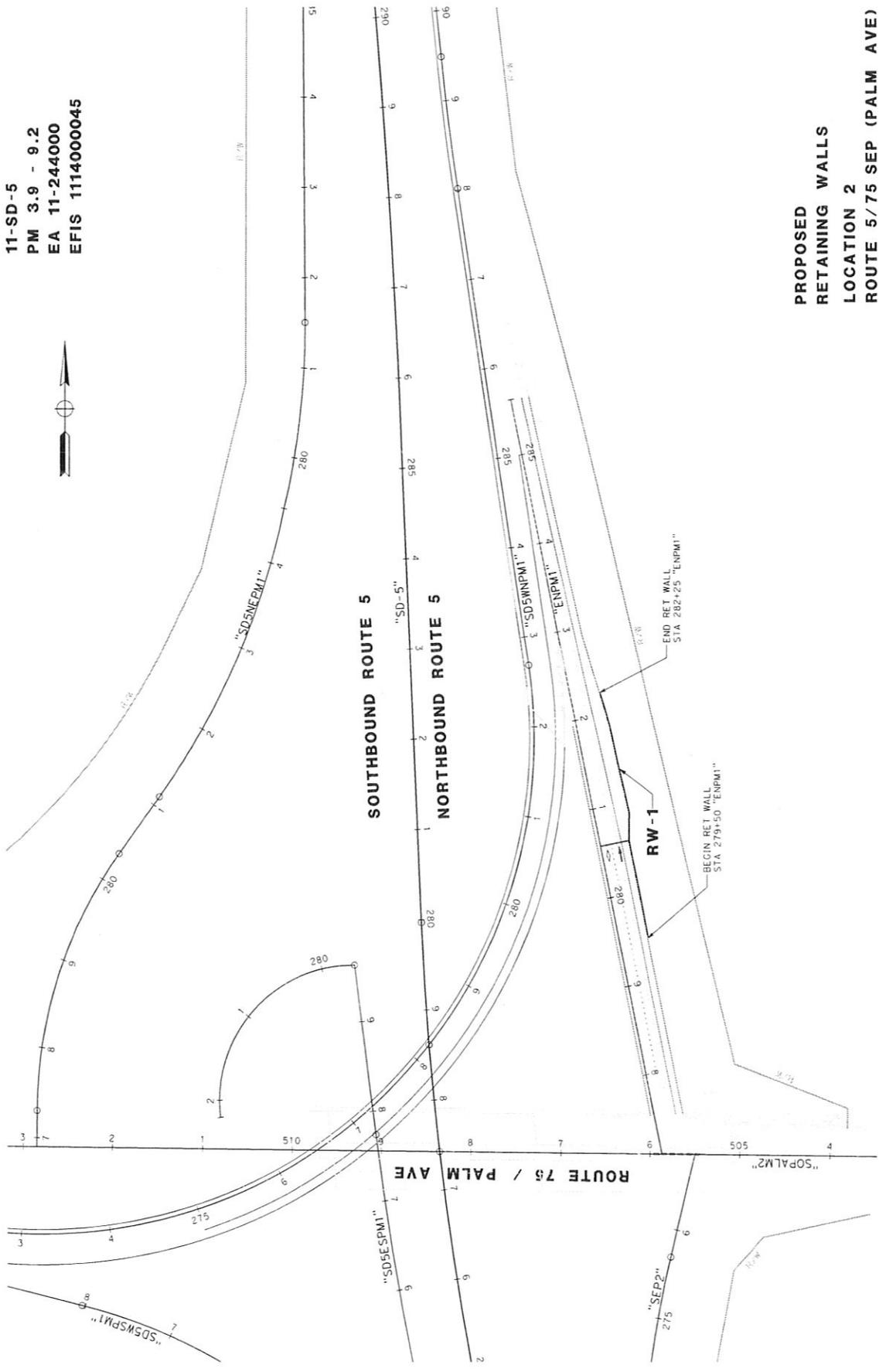
USERNAME: 11140000451
 DGN FILE: 11-SD-5 - Coronado Ave

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



DATE PLOTTED: 26-JUN-2014
 TIME PLOTTED: 14:53
 00-00-00

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045



**PROPOSED
 RETAINING WALLS
 LOCATION 2
 ROUTE 5/75 SEP (PALM AVE)**

SCALE 1"=100'
 SHEET 1 OF 5

PROJECT NUMBER & PHASE
 UNIT 2782

RELATIVE BORDER SCALE
 15 IN INCHES

USERNAME → 3113400
 DGN FILE → Loc 2 - Route 75_Palm Ave

BORDER LAST REVISED 7/2/2010

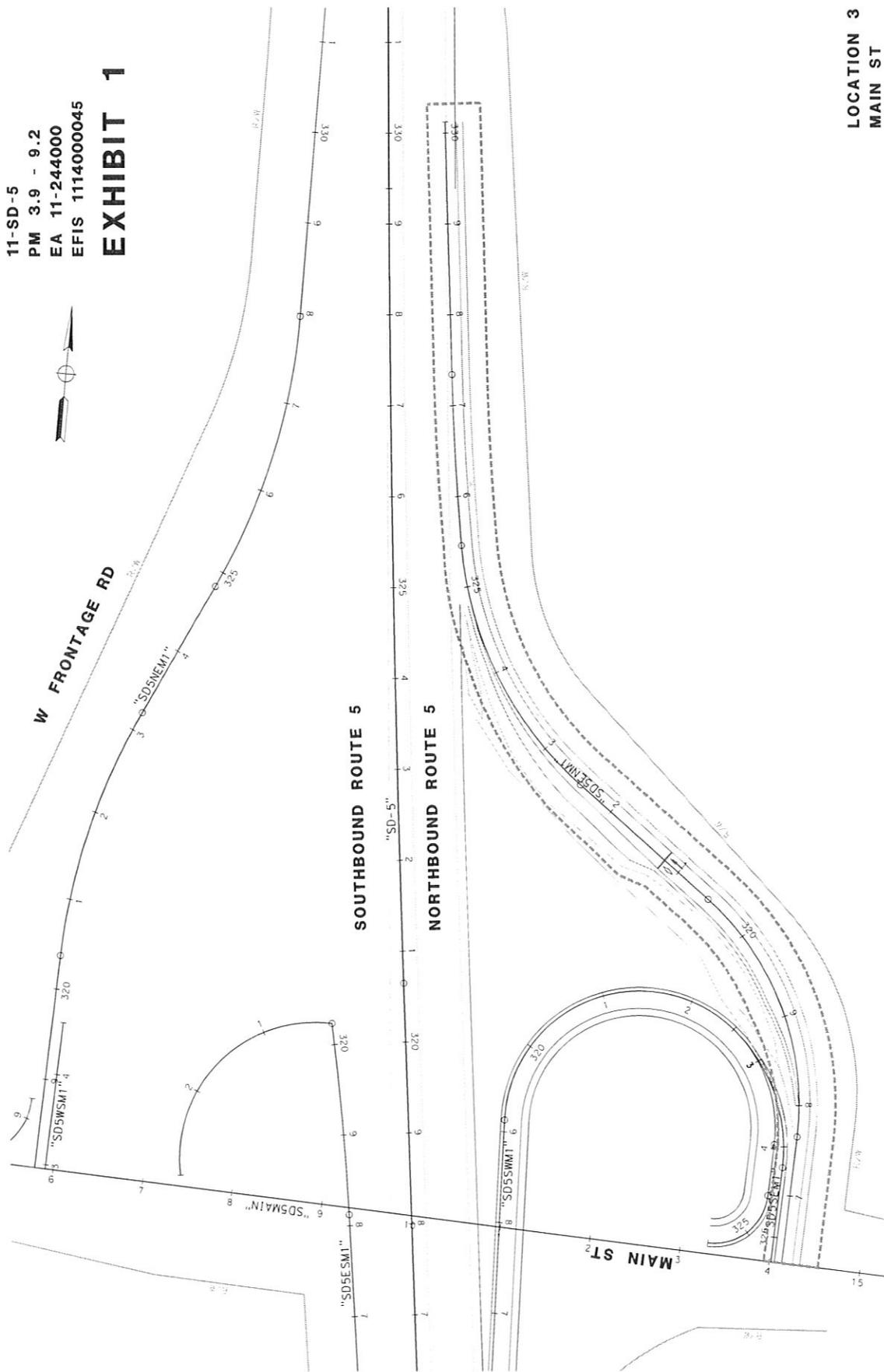
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
 FUNCTIONAL SUPERVISOR

DESIGNED BY	REVISOR	DATE REVISED
CHECKED BY		
CALCULATED BY		



11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045

EXHIBIT 1



**LOCATION 3
 MAIN ST**

SHEET 3 OF 8

SCALE 1"=100'

PROJECT NUMBER & PHASE

UNIT 2782

RELATIVE BORDER SCALE
 15" IN INCHES

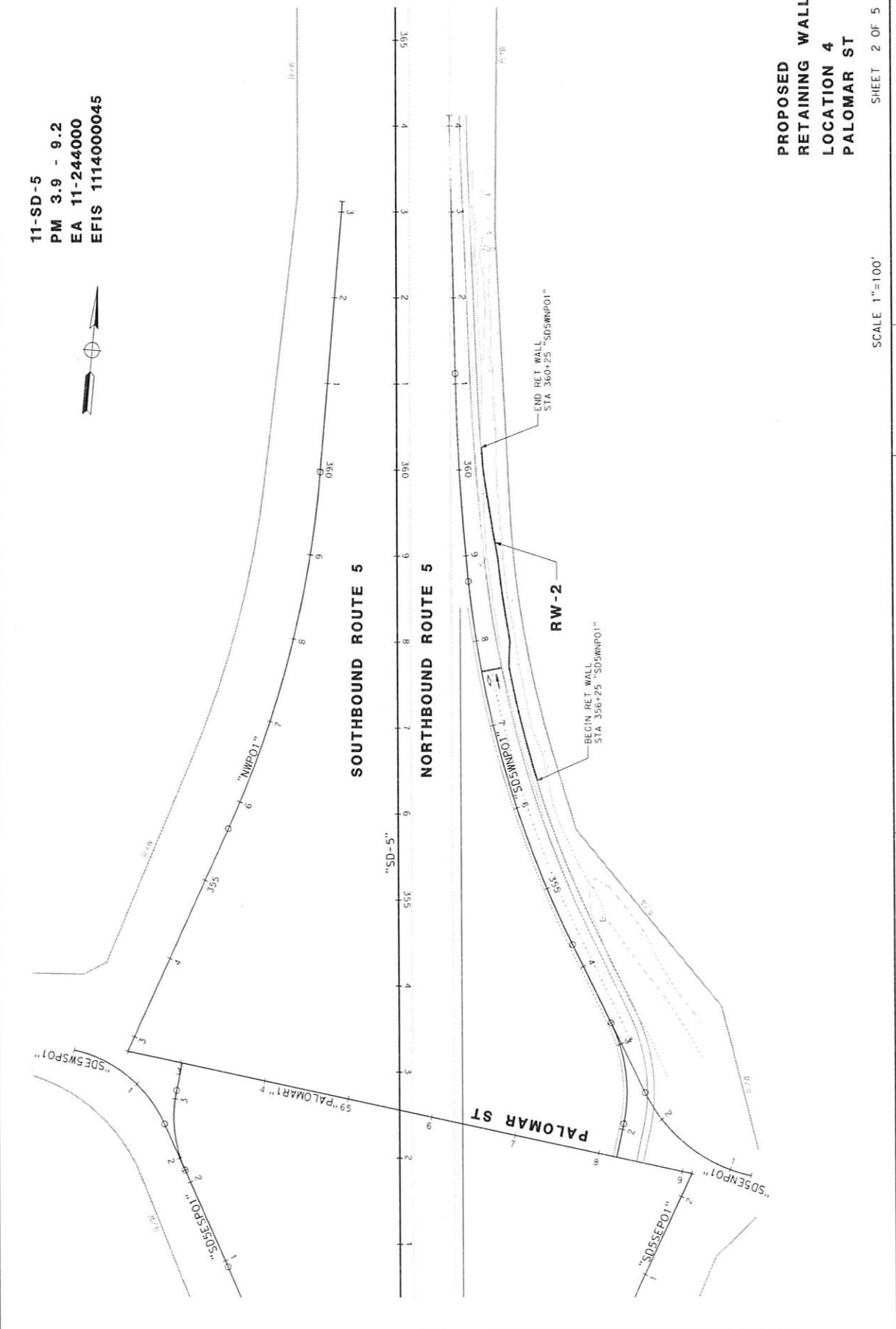
USERNAME => 4171170
 DDK FILE => Loc 3 - Main ST

PROPOSED PROJECT FOOTPRINT

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISED	REVISOR
ST. Gilvins						

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045



**PROPOSED
 RETAINING WALLS
 LOCATION 4
 PALOMAR ST**

SHEET 2 OF 5

SCALE 1"=100'

PROJECT NUMBER & PHASE

UNIT 2782

RELATIVE BORDER SCALE
 IS IN INCHES

0 1 2 3

0 1 2 3

USERNAME => 1114000
 DOK FILE => Loc 4 - Palomar ST

BORDER LAST REVISED 7/2/2010

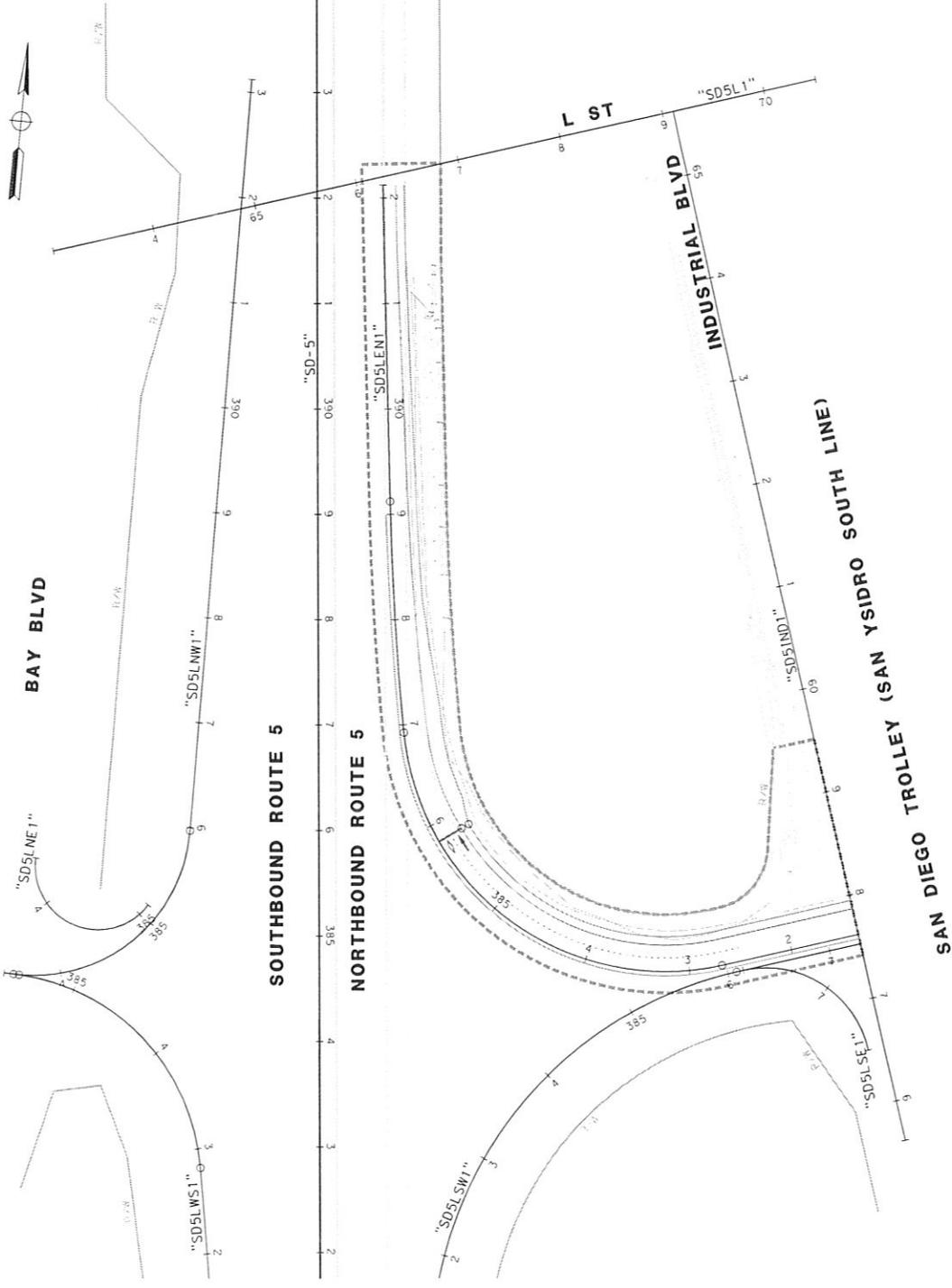
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CHECKED BY	DATE REVISED
DESIGNED BY	REVISOR	REVISOR	DATE REVISED



DATE PLOTTED => 25-SEP-2014
 TIME PLOTTED => 11:39

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045

EXHIBIT 1



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	DESIGNED BY	CHECKED BY	DATE REVISION
ST. CULVERS				
BORDER LAST REVISED 7/2/2010	PROPOSED PROJECT FOOTPRINT	RELATIVE BORDER SCALE 15" IN INCHES	UNIT 2782	SCALE 1"=100'

LOCATION 5
 INDUSTRIAL BLVD

SHEET 5 OF 8

PROJECT NUMBER & PHASE

UNIT 2782

RELATIVE BORDER SCALE
15" IN INCHES

USERNAME: s212126
 DOK FILE: s212126 - Industrial Blvd

DATE PLOTTED: 26-JUN-2014
 TIME PLOTTED: 14:53

11140000451

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045

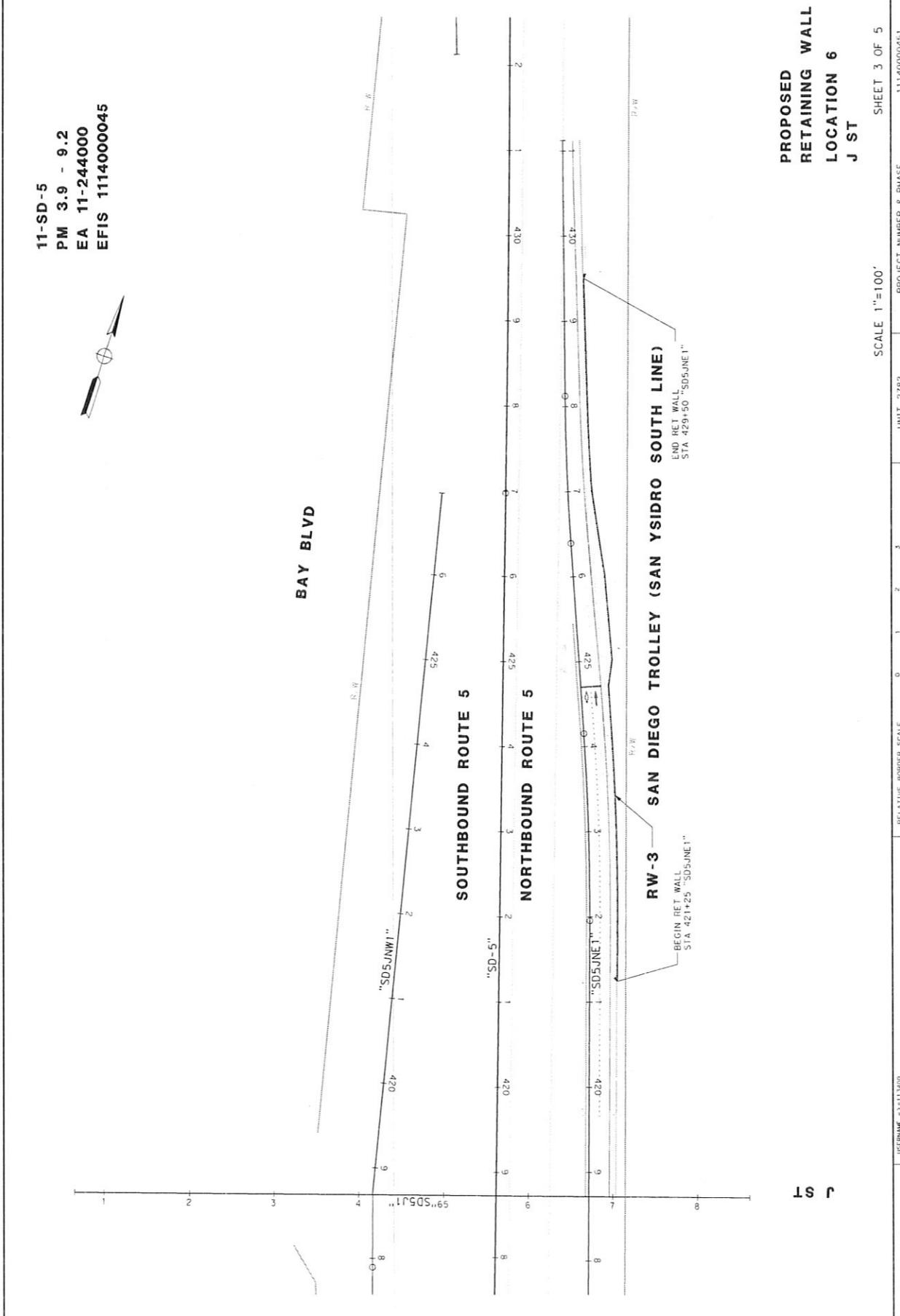


BAY BLVD

SOUTHBOUND ROUTE 5

NORTHBOUND ROUTE 5

SAN DIEGO TROLLEY (SAN YSIDRO SOUTH LINE)



PROPOSED
 RETAINING WALL
 LOCATION 6
 J ST

SHEET 3 OF 5

SCALE 1"=100'

UNIT 2782

PROJECT NUMBER & PHASE

RELATIVE BORDER SCALE
 IS IN INCHES

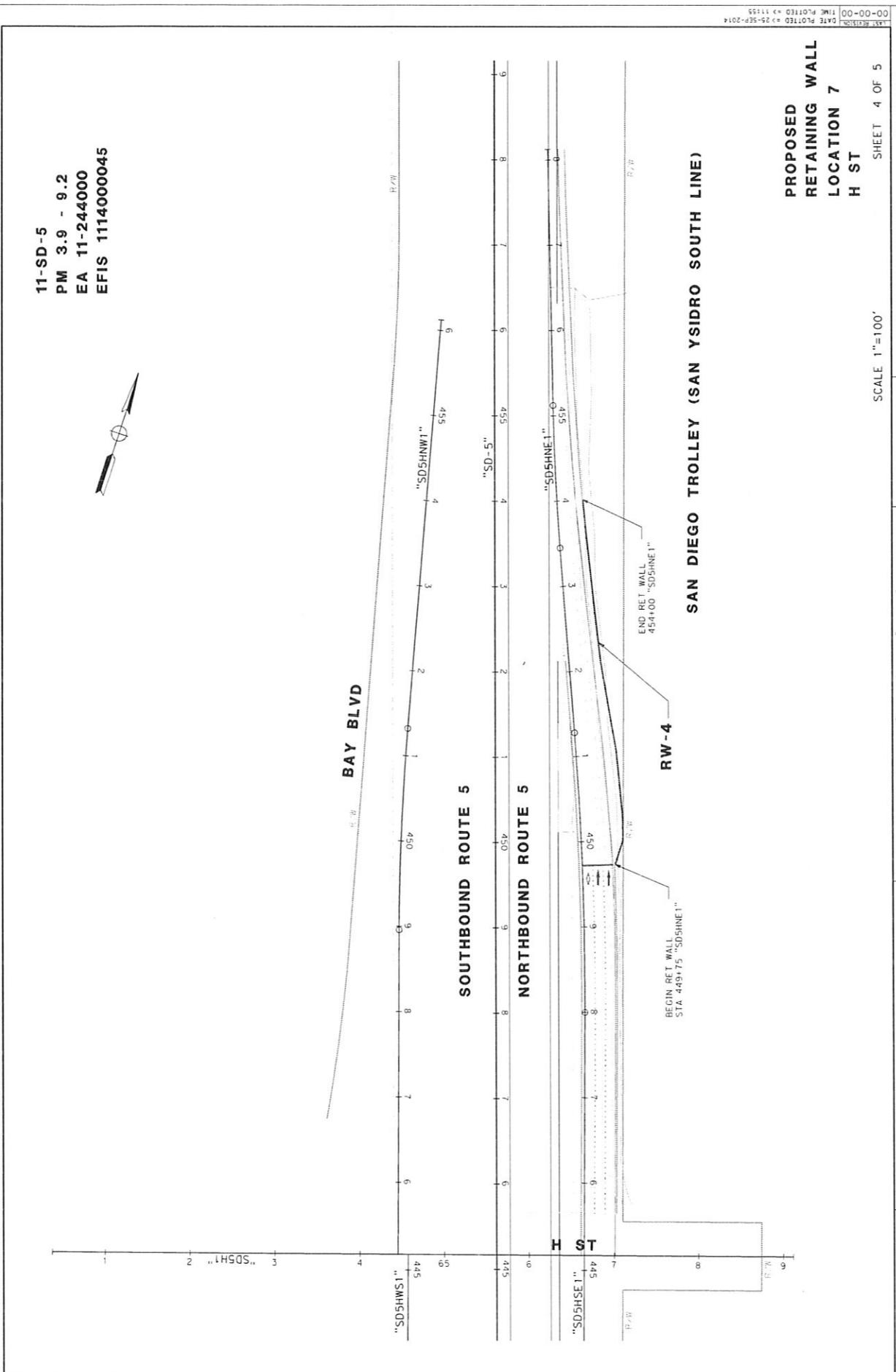
USERNAME: 22113400
 DGN FILE: 22 Loc 6 - J ST

BORDER LAST REVISED: 7/2/2010

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



11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045



SAN DIEGO TROLLEY (SAN YSIDRO SOUTH LINE)

PROPOSED
 RETAINING WALL
 LOCATION 7
 H ST

SHEET 4 OF 5

SCALE 1"=100'

PROJECT NUMBER & PHASE

UNIT 2782

RELATIVE BORDER SCALE
 IS IN INCHES

USERNAME → 1113400
 DON FILE → Loc 7 - H ST

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR BY	DATE REVISED
CIVIL ENGINEERS		CHECKED BY	DESIGNED BY	REVISOR BY	DATE REVISED

APPENDIX II
BORING RECORDS

LOGGED BY A. Lari	BEGIN DATE 12/09/14	COMPLETION DATE 12/09/14	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID: A-14-001
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Station, Offset, and Line) 239+00, 36.0 Rt., SD5WENC1		SURFACE ELEVATION 33.0 ft	
DRILLING METHOD Auger	DRILL RIG Diedrich Trailer		BOREHOLE DIAMETER 6"	
SAMPLER TYPE(S) AND SIZE(S) [ID] SPT 1.4"	SPT HAMMER TYPE Auto		HAMMER EFFICIENCY (ER.) 82 %	
BOREHOLE BACKFILL AND COMPLETION Bentonite Chips- 2 Bags	GROUNDWATER READINGS	DURING DRILLING Not Encountered	AFTER DRILLING (DATE) NA	TOTAL DEPTH OF BORING 11.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows Per 6 in	Blows Per 1.0 ft	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	REMARKS	
33.0	1		CLAYEY SAND (SC), dense, reddish brown, fine SAND, trace of fine and coarse GRAVEL, medium placticity.													
	2															
	3															
	4															
28.5	5					9										
	6					10										
	7					13	23									
	8															
	9															
23.5	10					5										
	11				12											
22.0	11		Bottom of borehole at 11.0 ft. Boring terminated at planned depth.		18	30										
	12															
	13															
	14															
	15															
	16															
	17															
	18															
	19															
	20															

	DEPARTMENT OF TRANSPORTATION	REPORT TITLE Geotechnical Design Report	HOLE ID: A-14-001
	DIVISION OF ENGINEERING SERVICES	DISTRICT COUNTY 11 SD	ROUTE POSTMILE(KP) EA 5 3.9/9.0 11-24400
	GEOTECHNICAL SERVICES	PROJECT OR BRIDGE NAME I-5 Ramp Widening at Various Locations	DATE SHEET 12/09/14 1 of 1
	OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2	BRIDGE NUMBER PREPARED BY NA A. Lari	

LOGGED BY A. Lari	BEGIN DATE 12/09/14	COMPLETION DATE 12/09/14	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID: A-14-002
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Station, Offset, and Line) 242+00, 36.0 Rt., SD5WENC1		SURFACE ELEVATION 33.0 ft	
DRILLING METHOD Auger	DRILL RIG Diedrich Trailer		BOREHOLE DIAMETER 6"	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT 1.4"	SPT HAMMER TYPE Auto		HAMMER EFFICIENCY (ER.) 82 %	
BOREHOLE BACKFILL AND COMPLETION Bentonite Chips, 2 bags	GROUNDWATER READINGS	DURING DRILLING Not Encountered	AFTER DRILLING (DATE) NA	TOTAL DEPTH OF BORING 11.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows Per 6 in	Blows Per 1.0 ft	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	REMARKS	
33.0	0		SILTY SAND (SM), dense, reddish brown, mostly fine SAND, trace of fine and coarse GRAVEL.													
	1															
	2															
	3															
	4															
28.5	5					19										
	6					21										
	7					14	35									
	8															
	9															
23.5	10					8										
	11				11											
22.0	11		Bottom of borehole at 11.0 ft. Boring terminated at planned depth.		15	26										
	12															
	13															
	14															
	15															
	16															
	17															
	18															
	19															
	20															

	DEPARTMENT OF TRANSPORTATION	REPORT TITLE Geotechnical Design Report	HOLE ID: A-14-002
	DIVISION OF ENGINEERING SERVICES	DISTRICT COUNTY 11 SD	ROUTE POSTMILE(KP) EA 5 3.9/9.0 11-24400
	GEOTECHNICAL SERVICES	PROJECT OR BRIDGE NAME I-5 Ramp Widening at Various Locations	DATE SHEET 12/09/14 1 of 1
	OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2	BRIDGE NUMBER PREPARED BY NA A. Lari	

LOGGED BY A. Lan	BEGIN DATE 12/16/14	COMPLETION DATE 12/16/14	BOREHOLE LOCATION (Lat/Long or North/East and Datum) 320+00, 20.0 Left, SD5ENM1	HOLE ID: A-14-004
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Station, Offset, and Line) 320+00, 20.0 Left, SD5ENM1		SURFACE ELEVATION 26.0 ft	
DRILLING METHOD Auger	DRILL RIG Diedrich Traler		BOREHOLE DIAMETER 6"	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT 1.4"	SPT HAMMER TYPE Auto		HAMMER EFFICIENCY (ER) 82 %	
BOREHOLE BACKFILL AND COMPLETION Bentonite Chips, 2 bags	GROUNDWATER READINGS	DURING DRILLING Not Encountered	AFTER DRILLING (DATE) NA	TOTAL DEPTH OF BORING 11.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows Per 6 in	Blows Per 1.0 ft	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	REMARKS
26.0			SILTY SAND (SM), medium dense, brown, fine SAND.												
	1														
	2														
	3														
	4														
21.5						7									
	5					10									
	6					11	21								
	7														
	8														
	9														
16.5			dense			10									
	10					10									
	11					13	23								
15.0			Bottom of borehole at 11.0 ft. Boring terminated at planned depth.												
	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														

	DEPARTMENT OF TRANSPORTATION	REPORT TITLE Geotechnical Design Report	HOLE ID: A-14-004
	DIVISION OF ENGINEERING SERVICES	DISTRICT COUNTY 11 SD	ROUTE POSTMILE(KP) EA 5 3.9/9.0 11-24400
	GEOTECHNICAL SERVICES	PROJECT OR BRIDGE NAME I-5 Ramp Widening at Various Locations	
	OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2	BRIDGE NUMBER PREPARED BY NA A. Lari	DATE SHEET 12/09/14 1 of 1

LOGGED BY A Lari	BEGIN DATE 12/16/14	COMPLETION DATE 12/16/14	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID: A-14-005
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Station, Offset, and Line) 324+00, 12.0 Left, SD5ENM1		SURFACE ELEVATION 26.0 ft	
DRILLING METHOD Auger	DRILL RIG Diedrich Traler		BOREHOLE DIAMETER 6"	
SAMPLER TYPE(S) AND SIZE(S) [ID] SPT 1.4"	SPT HAMMER TYPE Auto		HAMMER EFFICIENCY (ER.) 82 %	
BOREHOLE BACKFILL AND COMPLETION Bentonite Chips, 2 bags	GROUNDWATER READINGS	DURING DRILLING Not Encountered	AFTER DRILLING (DATE) NA	TOTAL DEPTH OF BORING 11.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows Per 6 in	Blows Per 1.0 ft	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	REMARKS	
26.0	1		SILTY SAND with GRAVEL (SM), very dense, brown, from fine to coarse SAND and little fine and coarse GRAVEL.													
	2															
	3															
	4															
21.5	5					11										
	6					30	67									
	7		SILT with SAND (ML), medium dense, light brown, fine SAND													
19.0	8															
	9															
	10					3										
16.5	11		Bottom of borehole at 11.0 ft. Boring terminated at planned depth.													
	12															
	13															
	14															
	15															
	16															
	17															
	18															
	19															
	20															

	DEPARTMENT OF TRANSPORTATION	REPORT TITLE Geotechnical Design Report	HOLE ID: A-14-005
	DIVISION OF ENGINEERING SERVICES	DISTRICT COUNTY 11 SD	ROUTE POSTMILE(KP) EA 5 3.9/9.0 11-24400
	GEOTECHNICAL SERVICES	PROJECT OR BRIDGE NAME I-5 Ramp Widening at Various Locations	DATE SHEET 12/09/14 1 of 1
	OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2	BRIDGE NUMBER PREPARED BY NA A. Lari	

LOGGED BY A. Lari	BEGIN DATE 12/16/14	COMPLETION DATE 12/16/14	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID: A-14-006
DRILLING CONTRACTOR Caltrans	BOREHOLE LOCATION (Station, Offset, and Line) 385+00, 25.0 Rt., SD5LEN1		SURFACE ELEVATION 31.0 ft	
DRILLING METHOD Auger	DRILL RIG Diedrich Trailer		BOREHOLE DIAMETER 6"	
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT 1.4"	SPT HAMMER TYPE Auto		HAMMER EFFICIENCY (ER) 82 %	
BOREHOLE BACKFILL AND COMPLETION Bentonite Chips, 2 bags	GROUNDWATER READINGS	DURING DRILLING Not Encountered	AFTER DRILLING (DATE) NA	TOTAL DEPTH OF BORING 11.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Location	Sample Number	Blows Per 6 in	Blows Per 1.0 ft	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	REMARKS	
31.0	0		SILTY SAND (SM), medium dense, brown, mostly fine SAND, trace of fine GRAVEL.													
	1															
	2															
	3															
	4															
26.5	5					6										
	6					6										
	7					5	11									
	8															
21.5	9					5										
	10					6										
20.0	11		Bottom of borehole at 11.0 ft. Boring terminated at planned depth.		6	12										
	12															
	13															
	14															
	15															
	16															
	17															
	18															
	19															
	20															

	DEPARTMENT OF TRANSPORTATION	REPORT TITLE Geotechnical Design Report	HOLE ID: A-14-006
	DIVISION OF ENGINEERING SERVICES	DISTRICT COUNTY 11 SD	ROUTE POSTMILE(KP) EA 5 3.9/9.0 11-24400
	GEOTECHNICAL SERVICES	PROJECT OR BRIDGE NAME I-5 Ramp Widening at Various Locations	DATE SHEET 12/09/14 1 of 1
	OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2	BRIDGE NUMBER PREPARED BY NA A. Lari	

APPENDIX III
LABORATORY TEST DATA

Results sent to: ALI LARI

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 1/16/2015
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: 1114000045

Dist/Co/Rte/PM 11 / SD /005/ / 3.9-9 PM

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT)		MINIMUM RESISTIVITY ¹ (ohm-cm)	pH ¹	CHLORIDE CONTENT ² (ppm)	SULFATE CONTENT ³ (ppm)	IS SAMPLE CORROSIVE?
			START	END					
SOIL SAMPLE FROM: STA 281+00									
CR20150001	C410103	HA-14-003	2	5	526	8.13	500	400	YES

This site is corrosive to foundation elements (see note below).

Controlling corrosion parameters are as follows:

- Chloride concentration is 500 ppm or greater

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

¹CT 643, ²CT 422, ³CT 417

CR20150001 - C410103

1/20/2015

Results sent to: ALI LARI

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 1/20/2015
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: 1114000045

Dist/Co/Rte/PM 11 / SD /005/ / 3.9-9 PM

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT)		MINIMUM RESISTIVITY ¹ (ohm-cm)	pH ¹	CHLORIDE CONTENT ² (ppm)	SULFATE CONTENT ³ (ppm)	IS SAMPLE CORROSIVE?
			START	END					
SOIL SAMPLE FROM: STA 356+25									
CR20150015	C585399	HA-14-001	0	5	370	8.19	796	367	YES
SOIL SAMPLE FROM: STA 360+25									
CR20150016	C585400	HA-14-002	5	15	1079	8.57	257	107	NO

This site is corrosive to foundation elements (see note below).

Controlling corrosion parameters are as follows:

- Chloride concentration is 500 ppm or greater

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

¹CT 643, ²CT 422, ³CT 417

CR20150015 - CR20150016

1/21/2015

Results sent to: ALI LARI

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 1/16/2015
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: 1114000045

Dist/Co/Rte/PM 11 / SD /005/ / 3.9-9 PM

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT)		MINIMUM RESISTIVITY ¹ (ohm-cm)	pH ¹	CHLORIDE CONTENT ² (ppm)	SULFATE CONTENT ³ (ppm)	IS SAMPLE CORROSIVE?
			START	END					
SOIL SAMPLE FROM: STA 281+00									
CR20150001	C585395B	A-14-003	2	5	526	8.13	500	400	YES
CR20150002	C585395A	A-14-003	5	10	723	8.22	366	387	NO
CR20150003	C585396	A-14-003	15	20	1153	8.06			NO

This site is corrosive to foundation elements (see note below).

Controlling corrosion parameters are as follows:

- Chloride concentration is 500 ppm or greater

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

¹CT 643, ²CT 422, ³CT 417

1/16/2015

APPENDIX IV
GEOLOGIC OVERVIEW MAP



Geotechnical Design Report
For Ramp Widening at I-5
EA-24400/EFIS-114000045



FOUNDATION REPORT

Ramp Widening at Various Locations on Interstate 5

**Retaining Wall 1
At Palm Avenue Northbound On-Ramp**

11-SD-5-3.9/9.0

**EA 11-244000
EFIS 1114000045**

February 4, 2015

Prepared By:

**OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2, BRANCH-D
7177 OPPORTUNITY ROAD
SAN DIEGO, CA 92111**

Memorandum

*Flex your power!
Be energy efficient!*

To: Shahin Sepassi
Project Manager
Advanced Transportation System Engineering Branch

Date: February 4, 2015

File: 11-SD-5-(PM) 3.9/9.0
EA: 11-244000
EFIS:1114000045

From: DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design-South 2, Branch-D

Subject: Foundation Report for Proposed Retaining Wall1 at Palm Avenue Northbound On-Ramp.

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) Branch-D has prepared this Foundation Report (FR) for Retaining Wall 1 (RW-1) on the Interstate 5 Ramp Widening at Various Locations Project. This FR documents existing soil conditions that influence the design and construction of RW-1 and provides foundation recommendations and specifications.

No Structure Preliminary Geotechnical Report and/or Preliminary Foundation Report for RW-1 were prepared prior to the preparation of this FR.

Please ensure that this FR is included in both the District and Structure Construction Resident Engineer (RE) Pending Files. OGDS2 Branch-D staff will be available for further assistance. Should you have any questions or comments regarding this report, please contact OGDS2 Branch-D.

Ali Lari P.E.
Transportation Engineer (Civil)
(858) 467-6922



BH

CARBON COPY (CC) LIST

Art Padilla	District Materials Engineer
Abbas Abghari	Office Chief, OGDS2
Shawn Wei	OGDS2 Senior Supervisor
Ken Saylor	Design Project Engineer
http://10.160.173.158/	Geotechnical Archive
Structure Construction R.E. Pending File	RE_Pending_File@dot.ca.gov

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TABLES

TABLE 1:	SOIL STRENGTH DESIGN PARAMETERS
TABLE 2:	SHALLOW FOUNDATION DESIGN RECOMMENDATIONS

APPENDICES

APPENDIX I	PROJECT PLANS
APPENDIX II	ARCHIVED DATA
APPENDIX III	LABORATORY TEST RESULTS
APPENDIX IV	GEOLOGIC MAP
APPENDIX V	SIEMIC DATA
APPENDIX VI	ANALYSES AND CALCULATIONS

1.0 INTRODUCTION

This Foundation Report (FR) has been prepared by the Office of Geotechnical Design-South 2 (OGDS2), Branch-D to address the geotechnical design and construction considerations for Retaining Wall 1 (RW-1). RW-1 is a propose Type 1 retaining wall within the Interstate 5 (I-5) Ramp Widening Project that extends from South of Coronado Avenue to North of E Street, near National City, San Diego County, California, hereafter referred to as the project. The project Title and Location Map for RW-1 were provided by District 11 Design and is included in Appendix I. At the time of finalizing this report the General Plan for this wall was not provided by Design.

The purpose of this FR is to document subsurface geotechnical conditions, provide engineering evaluation of site conditions, and provide recommendations relevant to the design and construction of RW-1. This report also establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions. The geotechnical information, evaluations, recommendations, and advisories contained in this FR supersede any information that may have been previously conveyed through correspondences or documents concerning the retaining wall addressed herein.

This FR was prepared in accordance with the guidelines set forth in the *Caltrans: Foundation Report Preparation for Earth Retaining Systems, August 2014 Draft*. No Structure Preliminary Geotechnical Report (SPGR) and/or Preliminary Foundation Report (PFR) were prepared prior to the preparation of this FR.

The geotechnical investigation consisted of site reconnaissance, research of archived resources, subsurface exploration, and engineering analyses. A list of documents referenced to prepare this FR is contained in Section 15.0.

All stations are referenced to the "SD5ENPM1" LINE and all elevations are referenced to mean sea level.

2.0 PROJECT DESCRIPTION

In the project area, I-5 is a multi-lane, urban freeway with numerous interchanges and freeway connectors. Dense residential and commercial development abuts the freeway right-of-way. The project will widen eight northbound on-ramps on I-5 from Coronado Avenue to H Street. To accommodate the ramp widening, numerous retaining walls are necessary as some of the ramps encroach into adjacent slopes.

RW-1 is a proposed Type 1 retaining wall that will be constructed at the Palm Avenue on-ramp between Station 279+50 and Station 282+25. The wall will be approximately 275-feet in length with a maximum design height of approximately 8-feet. RW-1 will be constructed within a cut of an existing slope.

3.0 ARCHIVED DATA RESEARCH

A review of as-built plans provided LOTB of existing bridges in proximity to RW-1. As-built LOTB for Route 75 (Palm Avenue)/I-5 Separation, Bridge Number 57-180 and Otay River Overflow Bridge (Widen), Bridge Number 57-263 were utilized for the characterization of site conditions. Otay River Bridge is located approximately 0.5 mile north of RW-1.

Archived as-built LOTB are presented in Appendix II.

4.0 FIELD INVESTIGATION AND TESTING

A subsurface investigation program was conducted by OGDS2 in the fall of 2014. Numerous exploratory borings were conducted for various features along the project alignment. One boring, A-14-003, was developed in proximity to the proposed RW-1 alignment. The LOTB are included with the project plans.

5.0 LABORATORY TESTING

Laboratory testing of collected soil samples included corrosion testing. Laboratory test results are included in Appendix III and have been factored into soil descriptions and evaluations included in this report.

No laboratory shear strength testing of soils was conducted specifically for this retaining wall. The shear strengths of the geologic units affecting wall design were derived from previous geotechnical investigations involving sedimentary formations of the San Diego Embayment.

6.0 GEOLOGY AND SUBSURFACE CONDITIONS

The project geologic overview map is displayed in Appendix IV. The geology depicted in the map was acquired from the *California Division of Mines and Geology, by Michael P Kennedy, 1977*. The maps depict an overview of the geologic formations present at the project site and surrounding area.

The project site lies within the coastal plain section of the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are a group of mountain ranges that extend 900-miles from the Transverse Ranges and the Los Angeles Basin in Southern California to the southern tip of Mexico's Baja California (Wikipedia 1). The southern segment of the Peninsular Ranges in Southern California is referred to as the San Diego Embayment. The San Diego Embayment consists of thick sequences of marine and non-marine sediments. The sedimentary rocks within the San Diego Embayment form an eastward thinning wedge of continental margin deposits that extend from Oceanside to the US-Mexico border. The main formation in the project area is the Bay Point Formation. Artificial fill has been placed atop this natural formation.

The geologic units in the project area are described as follows:

Artificial Fill (Qaf) in the project area appears to be derived from material excavated from nearby cuts in the surrounding formations. Freeway embankments within the canyons are comprised of Artificial Fill. The freeway embankment fill was evaluated to be engineered fill conforming to Caltrans standards.

Alluvium and Slope Wash (Qal and Qsw): Poorly consolidated stream and slope raveling deposits of silt and sand and cobble sized particles.

Bay Point Formation (Qbp+Qn) consists of dense to very dense, fine grained sand with variable amounts of clay. The Bay point Formation underlies the majority of the fill soils or is exposed at the surface in the absence of fill.

RW-1 will be on a cut of an existing slope comprised of fill overlying formation. The slope is inclined at two horizontal to one vertical (2:1). The retaining wall will rest upon and retain dense to very dense silty sand. Adverse conditions such as sanitary landfill, collapsible, or expansive soils were not observed along the proposed alignment of RW-1.

Groundwater was not encountered in exploratory borings in proximity to RW-1. Seepage was not observed on the existing slope that will host RW-1. Relatively deeper borings conducted for bridge foundation exploration at the Otay River Overflow Bridge revealed the presence of groundwater at an elevation of approximately 6.0 feet which is significantly lower than RW-1.

The soil strength parameters utilized for the design of project features are provided in Table 1. These strength parameters should also be utilized for the design of temporary features necessary to facilitate project completion.

7.0 SEISMICITY

No active faults have been identified that transect the alignment of RW-1. The project does not lie within an Alquist-Priolo Special Study Zone. Ground surface rupture due to a seismic event is considered unlikely.

There is a potential that regional earthquakes will produce ground motion at the project site due to the proximity of active and potentially active faults. The closest regional active fault to the project site is the Newport Inglewood Rose Canyon Fault (Silver Strand section - Downtown Graben fault) running on a north-northwest trend and located approximately 2 mi to the west of the project site.

The Caltrans Acceleration Response Spectra (ARS) Online Tool Version 1.0.4 (Caltrans ARS Online Tool) was used to determine pertinent seismic data. The Caltrans ARS Online Tool is a web based tool that calculates both deterministic and probabilistic ARS for any location in California based on the criteria set for in *Caltrans, Seismic Design Criteria Version 1.6, November 2010, Appendix B* (SDC Appendix B).

The anticipated Peak Ground Acceleration (PGA) for the project site, which is the Spectral Acceleration at a period of 0sec, is 0.4g. The results produced by the Caltrans ARS Online Tool and the Caltrans ARS Online Tool QA/QC Checklist are included in Appendix V.

The project site is approximately 40 feet above sea level. There is no potential for the project site to be impacted by a tsunami.

RW-1 will be located within dense to very dense fill over formation. There is no potential for seismically induced settlement.

There is no potential for liquefaction or lateral spreading at the wall site.

Features that would create a potential for seismically induced instability in the form of landslides, mudslides, and/or rockslides as it relates to the safety and performance of RW-1 do not exist at the project site.

8.0 SCOUR

RW-1 is not located along a stream course. A scour evaluation for the retaining wall is not applicable.

9.0 CORROSION

Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: Chloride concentration is greater than or equal to 500-ppm, sulfate concentration is greater than or equal to 2,000 ppm, or the pH is 5.5 or less.

Corrosion test results were obtained for selected soil samples and are included in Appendix III. The test results indicate that the on-site subsurface materials at the top 5 feet are corrosive, however, the materials at deeper depths are not potentially corrosive.

10.0 STABILITY

The stability of Type 1 retaining walls was evaluated using LRFD design specifications for shallow foundations. The foundation data that may be used for retaining wall design are presented in Table 2.

Global slope stability analyses for RW-1 were performed using STEDWIN with GSTABL7 v2.0. Both static and pseudo-static/seismic stability analyses were conducted for the retaining wall and slope stability configuration. The influence of external loading such as possible transient loads were factored into the stability analyses. The graphic results of the stability analyses are presented in Appendix VI.

The stability analyses reveal that the proposed configuration satisfies both static and pseudo-static stability criteria.

11.0 FOUNDATION RECOMMENDATIONS

OGDS2 recommends that RW-1 be designed and constructed as a Type 1 retaining wall. The foundation data that may be used for retaining wall design are presented in Table 2.

12.0 DESIGN ADVISORIES

- The excavated materials within the Retaining Wall 1 area will be suitable for use as embankment fill but will not likely meet structure backfill requirements.
- It is recommended that the newly graded slopes have an inclination of two horizontal to one vertical (2.0 H: 1.0 V).

13.0 CONSTRUCTION CONSIDERATIONS

- The embankment fill and formation hosting RW-1 may generally be excavated using standard excavation equipment.
- The occurrence of caving soils is anticipated to be minimal and is not anticipated to significantly impact retaining wall construction.
- Groundwater is not anticipated to impact retaining wall construction.
- The inclination of the temporary cut slope should be no steeper than 1.0 H:1.0 V

14.0 ACTUAL VS. REPORTED SITE CONDITIONS

The recommendations contained in this report are based on specific project information regarding structure type and locations that have been provided to OGDS2. If any conceptual changes are made during final project design, OGDS2 should review those changes to determine if these foundation recommendations are still applicable.

The information used to characterize the geotechnical conditions in this area was gathered from project plans, pertinent maps, geologic literature, archived reports, field reconnaissance, subsurface investigation, testing, and engineering analysis. Project design features may change, and localized soil conditions encountered during construction grading and excavation may vary from those described in this report. If suspected differing site conditions are encountered during construction, or if construction difficulties related to soil conditions are encountered, a representative of OGDS2 should be consulted to assist with the assessment of the prevailing geotechnical conditions and to assist in formulating appropriate strategies to facilitate project completion. Any questions regarding the above recommendations should be directed to the attention of Ali Lari (858-467-6922).

15.0 REFERENCES

- California Division of Mines and Geology, *Geology of the San Diego Metropolitan Area, California: Del Mar, La Jolla, Point Loma, La Mesa, Poway, and SW1/4 Escondido 7/12-Minute Quadrangles*, Bulletin 200, 1975
- Caltrans, Foundation Report, in San Diego, 11-SD-5, EA 1126161, February 14, 2014
- Caltrans, *Corrosion Guidelines*, Version 1.0, September 2003
- Caltrans, *Seismic Design Criteria Version 1.6, Appendix B*, November 2010
- Caltrans, *Soil and Rock Logging, Classification and Presentation Manual*, 2010
- Wikipedia 1: http://en.wikipedia.org/wiki/Peninsular_Ranges

TABLES

DRAFT

Table 1

Soil Strength Properties

Geologic Unit	Angle of Internal Friction (Degree)	Cohesion (psf)	Dry Density (pcf)
Engineered Fill	32	100	120
Sandstone Baypoint Formation	34	100	125

TABLE 2

PALM AVENUE

Shallow Foundation Design Recommendations, Standard Plan Type I Retaining Wall, RW-1

Begin Station	End Station	Design Height (ft)	Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	Bottom of Subexcavation Elevation (ft)	Settlement Calculated at Net Bearing Pressure (in)	Total Permissible Settlement (in)	Loading Type	Effective Footing Width B' (ft)	Net Bearing Stress q _o (ksf)	Permissible Net Contact Stress q _{pn} (ksf)	Gross Uniform Bearing Stress q _o (ksf)	Factored Gross Nominal Bearing Resistance q _r (ksf)
279+50	282+25	8.0	35.0	3.3	N/A	< 1.0	1.0	Service I	6.2	1.3	4.0	N/A	N/A
								Strength I	3.6	N/A	N/A	2.3	7.0
								Extreme I	3.9	N/A	N/A	2.2	16.2
								Extreme II	2.8	N/A	N/A	3.1	14.2
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		

CALCULATIONS:

$q_r = \gamma \cdot D_f \cdot N_q + 0.5 \gamma \cdot B \cdot N_\gamma$
 $q_r = 320 \cdot 8.0 + 0.5 \cdot 120 \cdot 30.2 = 2332 + 1806 = 4138 \text{ psf}$
 $N_q = 233.2$
 $N_\gamma = 30.2$

$q_r = 0.12 \times 3.3 \times 23.2 + 0.5 \times 0.12 \times 30.2 \times B = 9.2 + 1.8B$
 $q_{STR} = 9.2 + 1.8 \times 3.6 = 15.68 \times 0.45 = 7.0 \text{ ksf}$
 $q_{EX I} = 9.2 + 1.8 \times 3.9 = 16.2 \text{ ksf}$
 $q_{EX II} = 9.2 + 1.8 \times 2.8 = 14.2 \text{ ksf}$

APPENDICES

DRAFT

APPENDIX I
PROJECT PLANS

D

A

F

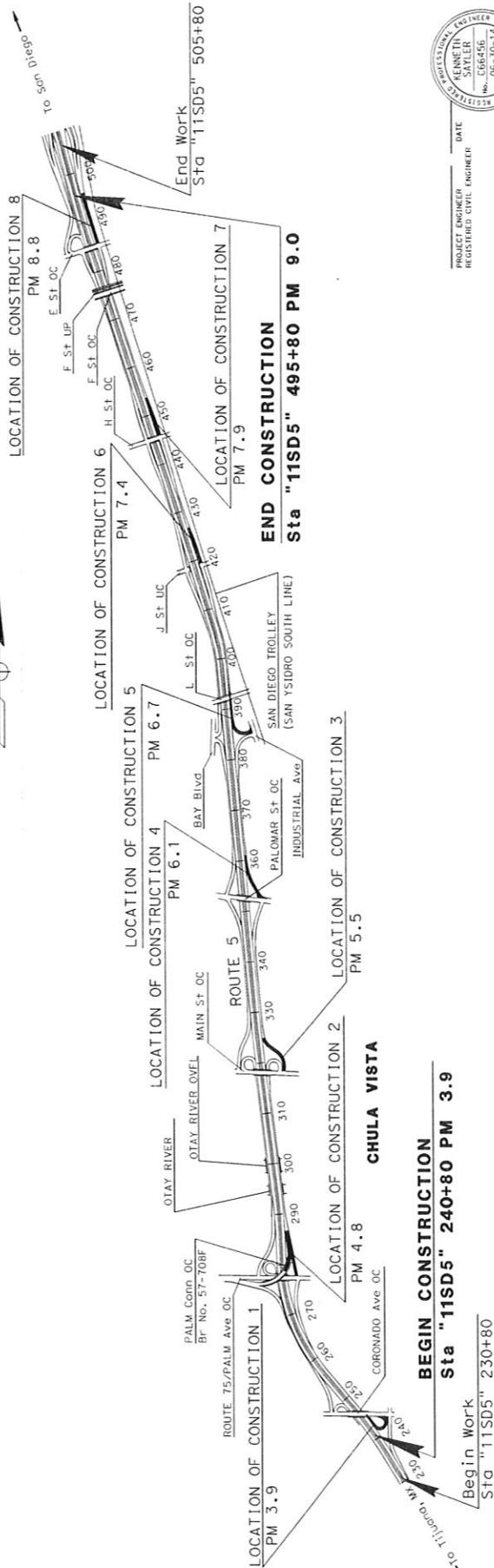
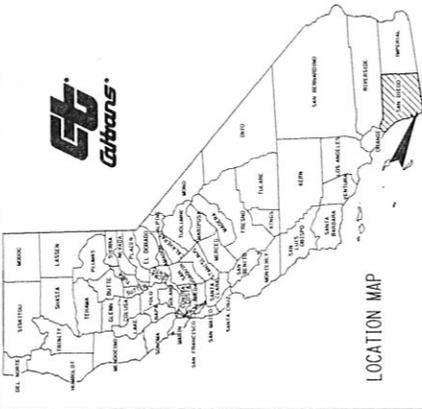
INDEX OF PLANS

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

IN SAN DIEGO COUNTY NEAR CHULA VISTA AT VARIOUS LOCATIONS FROM 0.1 MILES SOUTH OF CORONADO OVERCROSSING TO 0.5 MILES NORTH OF E STREET OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

Dist	County	Route	Post-Mileage Total Distance	Sheet No.	Total Sheets
11	SD	5	3+9/9.3	1	1



BEGIN CONSTRUCTION
Sta "11SD5" 240+80 PM 3.9

Begin Work
Sta "11SD5" 230+80

END CONSTRUCTION
Sta "11SD5" 495+80 PM 9.0

End Work
Sta "11SD5" 505+80

PROFESSIONAL ENGINEER
KENNETH J. GLENN
No. 06510-14
Exp. 06/30/14
CIVIL
REGISTERED CIVIL ENGINEER

PROJECT ENGINEER REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."
COMPLETION OF ISSUED DURING OF THIS PLAN SHEET.

CONTRACT NO.	11-244000
PROJECT ID	1114000045
PROJECT NUMBER & PHASE	11140000450

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."
BORDER LAST REVISED 9/10/2012 CAL TRANS WEB SITE IS: [HTTP://WWW.DOT.CA.GOV/](http://www.dot.ca.gov/)

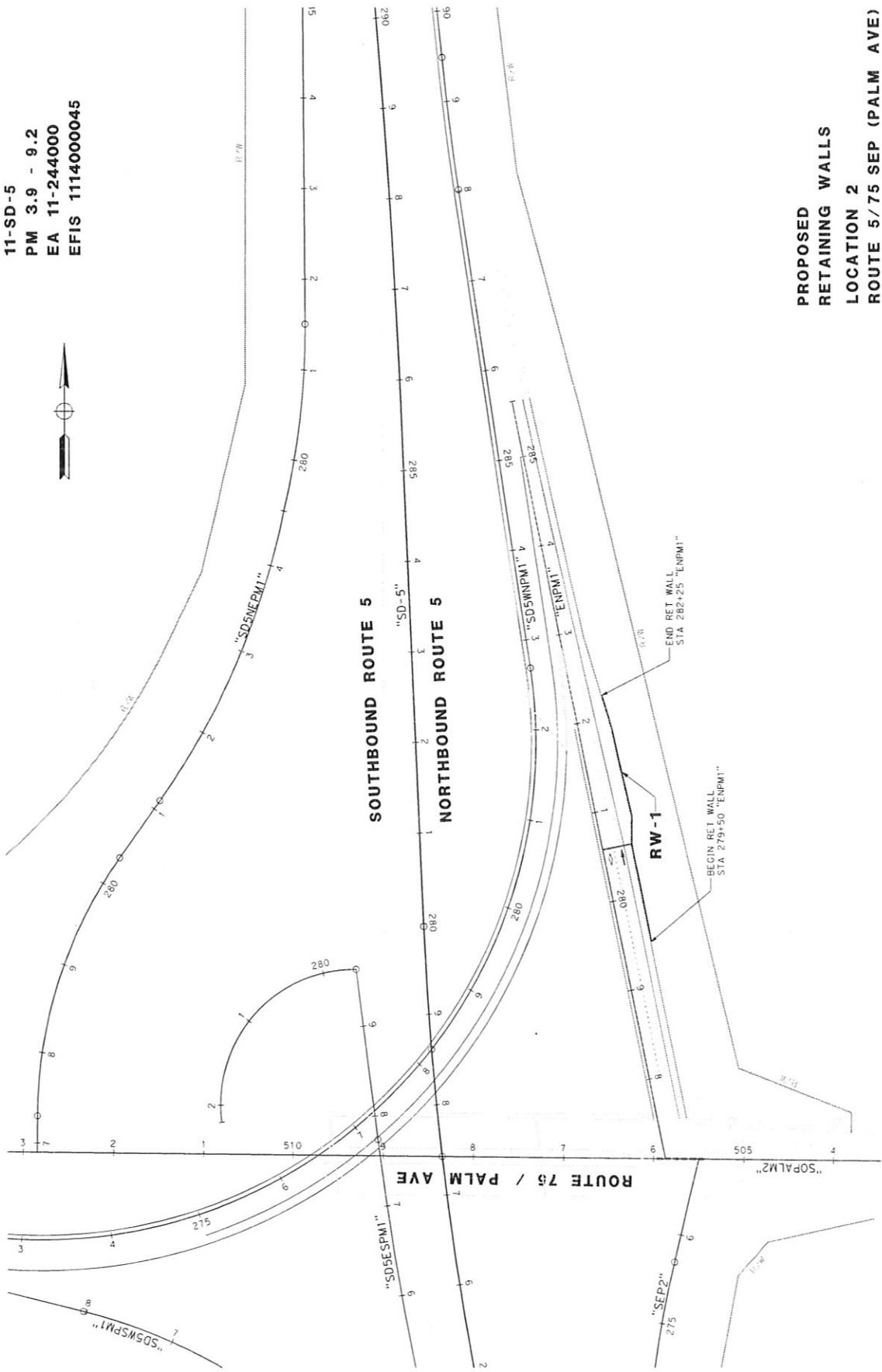
RELATIVE BORDER SCALE IS IN INCHES. 0 1 2 3 USINCHES = 5' 11.1600' BORDER FILE # 0444000001.dwg

DATE PLOTTED = 19-AUG-2014
TIME PLOTTED = 14:13
14-07-14

DESIGN ENGINEER

PROJECT MANAGER

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045



**PROPOSED
 RETAINING WALLS
 LOCATION 2
 ROUTE 5/75 SEP (PALM AVE)**

SCALE 1"=100'
 SHEET 1 OF 5

PROJECT NUMBER & PHASE

UNIT 2782

RELATIVE BORDER SCALE
 IS IN INCHES

0 1 2 3

USERAME: 1114400
 DGN FILE: 11-244000-2 - Route 75 Palm Ave

BORDER LAST REVISED: 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

FUNCTIONAL SUPERVISOR

DESIGNED BY

CHECKED BY

DATE REVISED

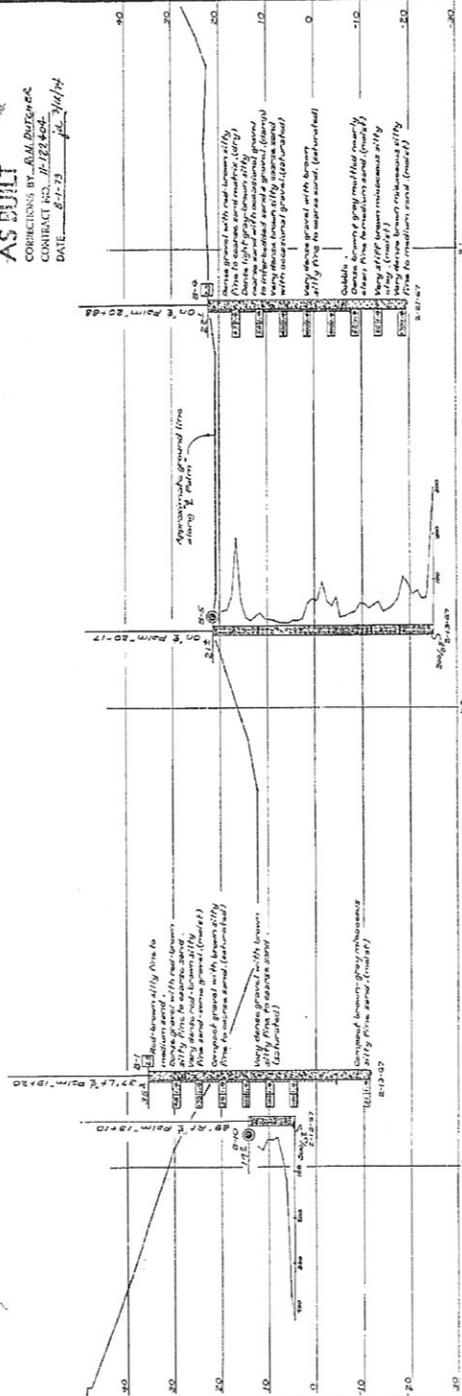
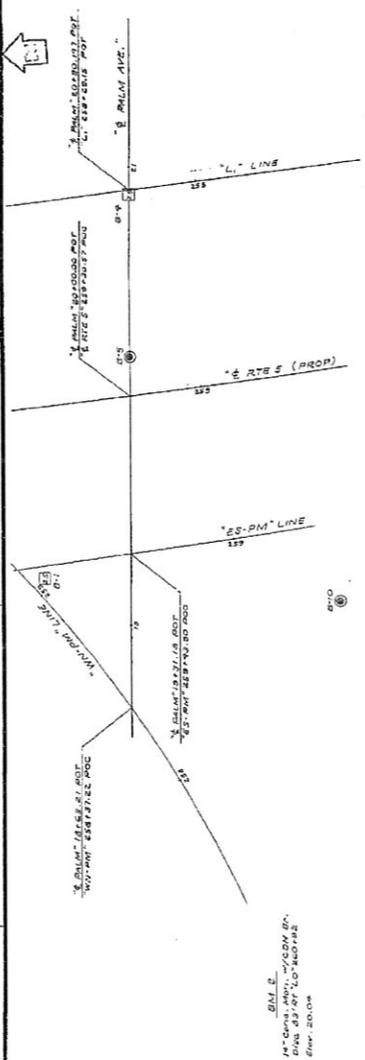
REVISED BY

APPENDIX II
ARCHIVED DATA

DRAFT

SHEET NO. 5
 PROJECT NO. 12345
 DATE: July 27, 1970
 DRAWN BY: [Signature]
 CHECKED BY: [Signature]

NO AS BUILT CHANGES
AS BUILT
 CORRECTIONS BY: B.M. DUTCHER
 CONTRACT NO. 12345
 DATE: 8-1-73



LOG OF TEST BORINGS

BORING NO.	DATE	DEPTH (FEET)	DESCRIPTION
1	7/27/70	10	...
2	7/27/70	15	...
3	7/27/70	20	...
4	7/27/70	25	...
5	7/27/70	30	...

ROUTE 75/5 SEPARATION
 PROJECT NO. 12345
 DATE COMPLETED: 7-27-70
 DOCUMENT NO. 2600

BRIDGE DEPARTMENT

EXHIBIT NO. 1

AS BUILT PLANS
 Contract No. 12345
 Date Completed 7-27-70
 Document No. 2600

NOTICE: Qualification of work shall be on the basis of the information shown on these plans. It is the responsibility of the contractor to verify actual conditions before construction.

LEGEND OF EXHIBIT MATERIALS

- EXISTING ROADWAY
- PROPOSED ROADWAY
- EXISTING SIDEWALK
- PROPOSED SIDEWALK
- EXISTING CURB
- PROPOSED CURB
- EXISTING GUTTER
- PROPOSED GUTTER
- EXISTING DRAINAGE
- PROPOSED DRAINAGE
- EXISTING UTILITIES
- PROPOSED UTILITIES
- EXISTING ELEVATIONS
- PROPOSED ELEVATIONS

APPENDIX III
LABORATORY TEST RESULTS

DRAFT

Results sent to: ALI LARI

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 1/16/2015
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: 1114000045

Dist/Co/Rte/PM 11 / SD /005/ / 3.9-9 PM

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT)		MINIMUM RESISTIVITY ¹ (ohm-cm)	pH ¹	CHLORIDE CONTENT ² (ppm)	SULFATE CONTENT ³ (ppm)	IS SAMPLE CORROSIVE?
			START	END					
SOIL SAMPLE FROM: STA 281+00									
CR20150002	C585395A	A-14-003	5	10	723	8.22	366	387	NO
CR20150003	C585396	A-14-003	15	20	1153	8.06			NO

This site is not corrosive to foundation elements (see note below).

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

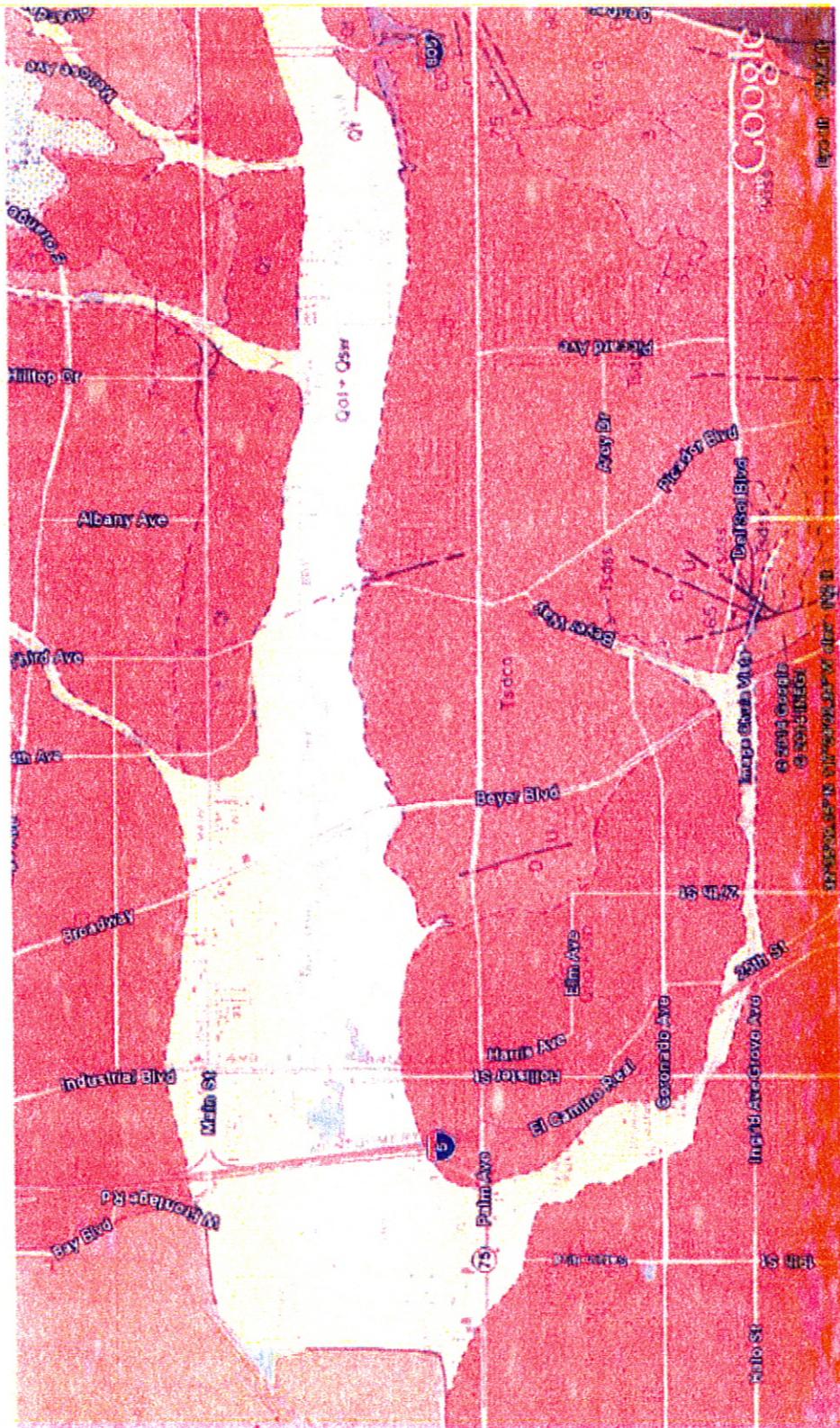
¹CT 643, ²CT 422, ³CT 417

CR20150002 - CR20150003

1/20/2015

**APPENDIX IV
GEOLOGIC MAP**

DRAFT



Geotechnical Design Report
For Ramp Widening at I-5
EA.24400 EFIS:11-4000045

APPENDIX V
SEISMIC DATA

DRAFT

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

Caltrans ARS Online (v2.3.06)

This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in [Appendix B of Caltrans Seismic Design Criteria](#). [More...](#)

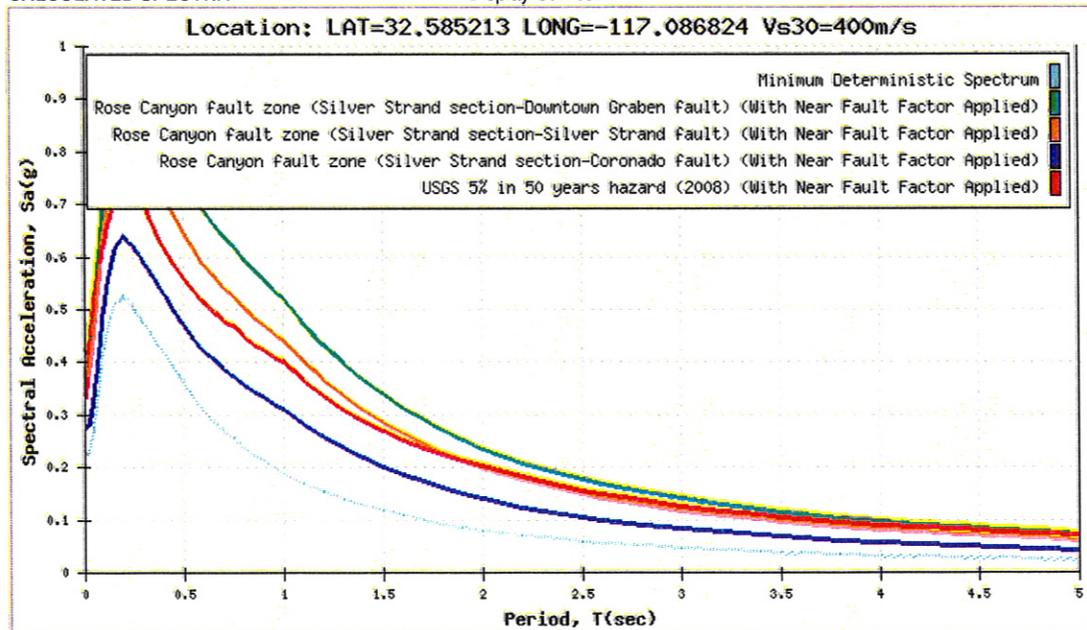
SELECT SITE LOCATION



Latitude: Longitude: Vs30: m/s

CALCULATED SPECTRA

Display Curves: 3

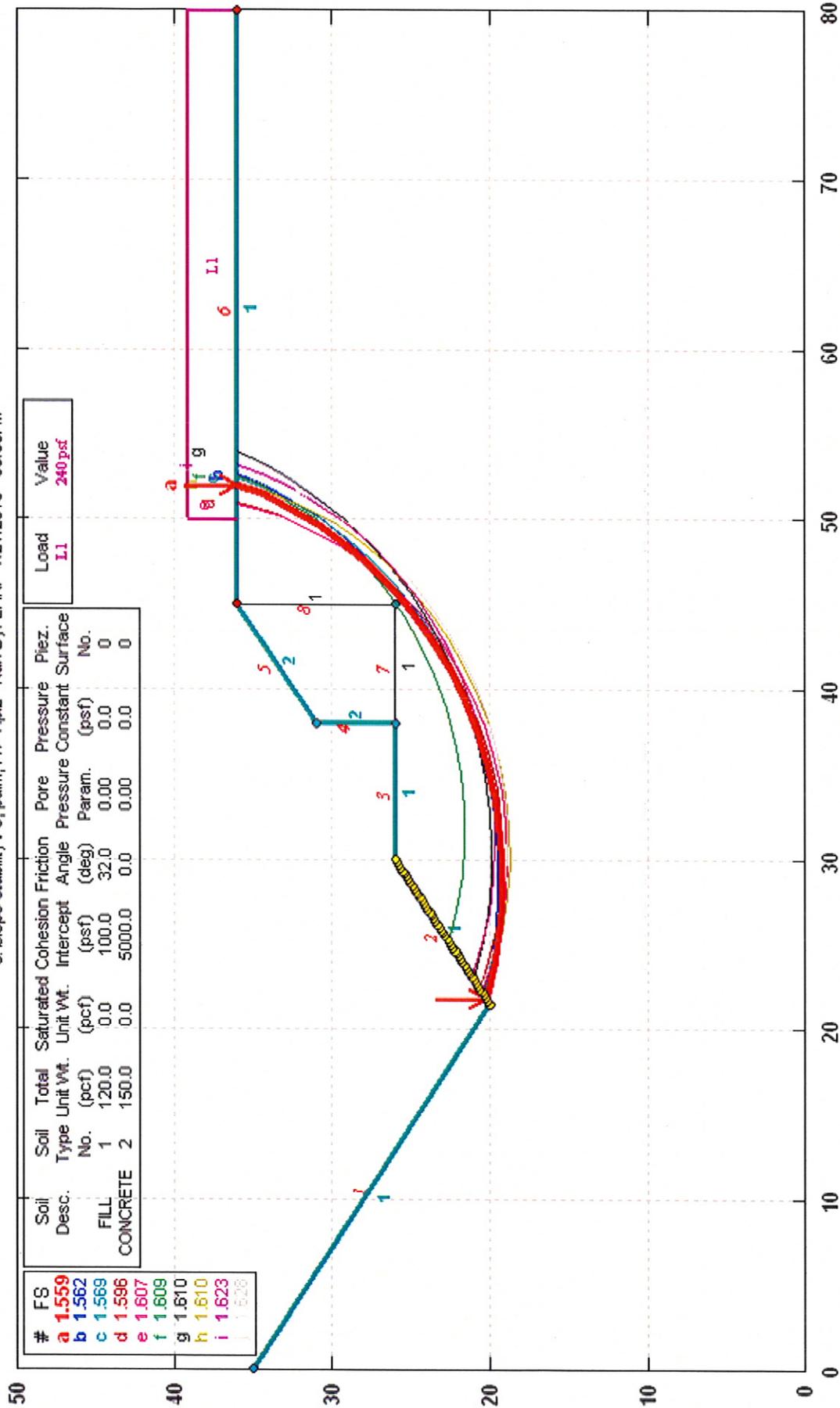


APPENDIX VI
ANALYSIS AND CALCULATIONS

REF

I-5, PALM, RW-1 GLOBAL STABILITY

c:\slope stability\i-5, palm, rw-1.pl2 Run By: LARI 1/21/2015 03:33PM



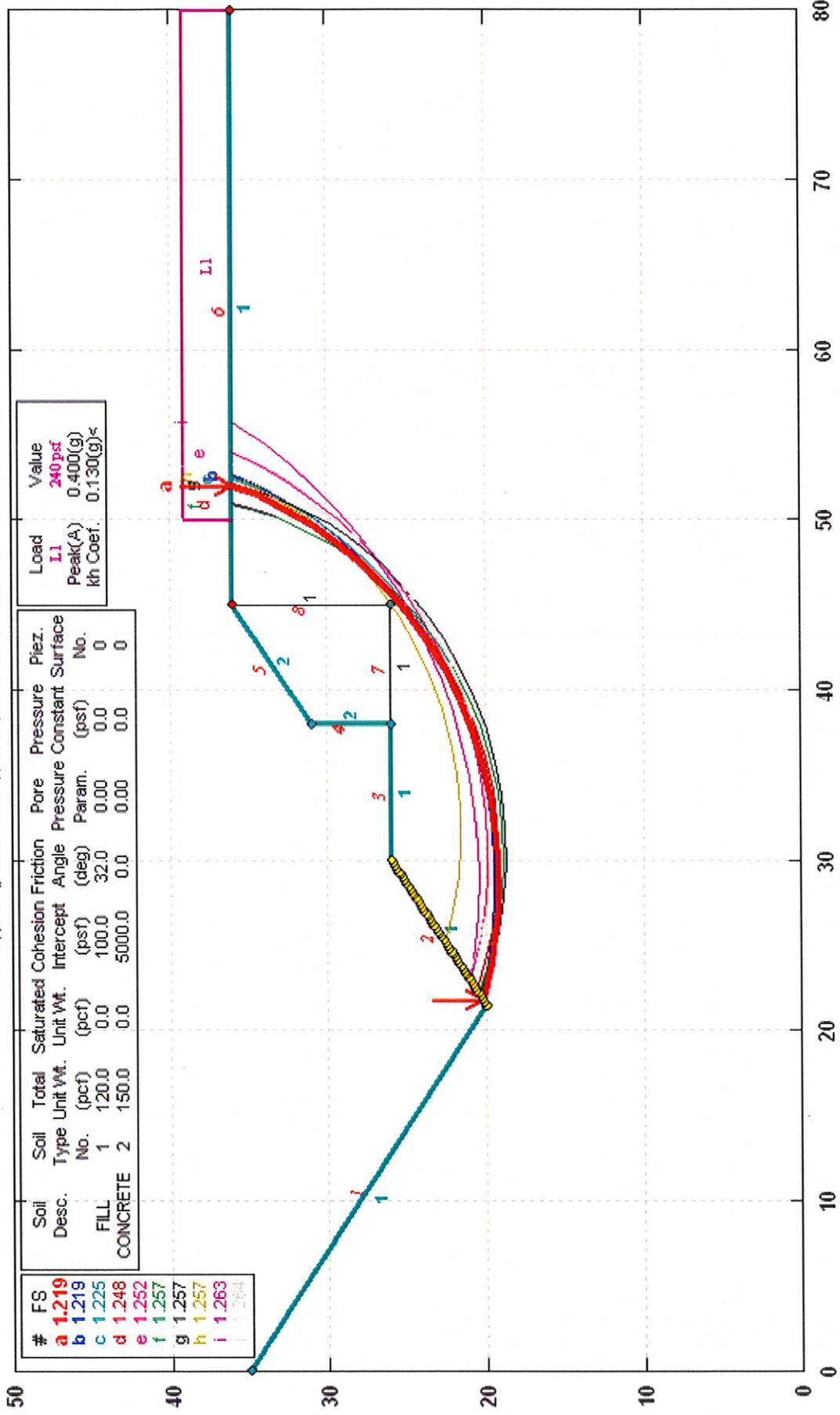
GSTABL7 v.2 FSmin=1.559

Safety Factors Are Calculated By The Simplified Janbu Method



I-5, PALM, RW-1 GLOBAL STABILITY

f:\i-5, palm (pseudo-static), rw-1.pl2 Run By: LARI 1/28/2015 10:40AM



#	FS	Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Constant Surface No.	Piez. No.
a	1.219	FILL	1	120.0	0.0	100.0	32.0	0.00	0.0	0
b	1.218	FILL	1	120.0	0.0	100.0	32.0	0.00	0.0	0
c	1.225	CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0
d	1.248	CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0
e	1.252	CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0
f	1.257	CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0
g	1.257	CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0
h	1.257	CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0
i	1.263	CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0
j	1.264	CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0

Load	Value
LL	240 psf
Peak(A)	0.400(g)
kh Coef.	0.130(g)<

GSTABL7 v.2 FSmin=1.219
Safety Factors Are Calculated By The Simplified Janbu Method





FOUNDATION REPORT

Ramp Widening at Various Locations on Interstate 5

**Retaining Wall 2
At Palomar Street Northbound On-Ramp**

11-SD-5-3.9/9.0

**EA 11-244000
EFIS 1114000045**

February 4, 2015

Prepared By:

**OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2, BRANCH-D
7177 OPPORTUNITY ROAD
SAN DIEGO, CA 92111**

Memorandum

*Flex your power!
Be energy efficient!*

To: Shahin Sepassi
Project Manager
Advanced Transportation System Engineering Branch

Date: February 4, 2015

File: 11-SD-5-(PM) 3.9/9.0
EA: 11-244000
EFIS:1114000045

From: DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design-South 2, Branch-D

Subject: Foundation Report for Proposed Retaining Wall 2 at Palomar Street Northbound On-Ramp.

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) Branch-D has prepared this Foundation Report (FR) for Retaining Wall 2 (RW-2) on the Interstate 5 Ramp Widening at Various Locations Project. This FR documents existing soil conditions that influence the design and construction of RW-2 and provides foundation recommendations and specifications.

No Structure Preliminary Geotechnical Report and/or Preliminary Foundation Report for RW-2 were prepared prior to the preparation of this FR.

Please ensure that this FR is included in both the District and Structure Construction Resident Engineer (RE) Pending Files. OGDS2 Branch-D staff will be available for further assistance. Should you have any questions or comments regarding this report, please contact OGDS2 Branch-D.

Ali Lari P.E.
Transportation Engineer (Civil)
(858) 467-6922



CARBON COPY (CC) LIST

Art Padilla	District Materials Engineer
Abbas Abghari	Office Chief, OGDS2
Shawn Wei	OGDS2 Senior Supervisor
Ken Sayler	Design Project Engineer
http://10.160.173.158/	Geotechnical Archive
Structure Construction R.E. Pending File	RE_Pending_File@dot.ca.gov

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APPENDIX I	PROJECT PLANS
APPENDIX II	ARCHIVED DATA
APPENDIX III	LABORATORY TEST RESULTS
APPENDIX IV	GEOLOGIC MAP
APPENDIX V	SEISMIC DATA
APPENDIX VI	ANALYSES AND CALCULATIONS

1.0 INTRODUCTION

This Foundation Report (FR) has been prepared by the Office of Geotechnical Design-South 2 (OGDS2), Branch-D to address the geotechnical design and construction considerations for Retaining Wall-2 (RW-2). RW-2 is a propose Type 7B retaining wall within the Interstate 5 (I-5) Ramp Widening Project that extends from South of Coronado Avenue to North of E Street, near National City, San Diego County, California, hereafter referred to as the project. The project Title and Location Map for RW-2 were provided by District 11 Design and is included in Appendix I. At the time of finalizing this report the General Plan for this wall was not provided by Design.

The purpose of this FR is to document subsurface geotechnical conditions, provide engineering evaluation of site conditions, and provide recommendations relevant to the design and construction of RW-2. This report also establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions. The geotechnical information, evaluations, recommendations, and advisories contained in this FR supersede any information that may have been previously conveyed through correspondences or documents concerning the retaining wall addressed herein.

This FR was prepared in accordance with the guidelines set forth in the *Caltrans: Foundation Report Preparation for Earth Retaining Systems, August 2014 Draft*. No Structure Preliminary Geotechnical Report (SPGR) and/or Preliminary Foundation Report (PFR) were prepared prior to the preparation of this FR.

The geotechnical investigation consisted of site reconnaissance, research of archived resources, subsurface exploration, engineering analyses. A list of documents referenced to prepare this FR is contained in Section 15.0.

All stations are referenced to the "SD5WNPO1" LINE and all elevations are referenced to mean sea level.

2.0 PROJECT DESCRIPTION

In the project area, I-5 is a multi-lane, urban freeway with numerous interchanges and freeway connectors. Dense residential and commercial development abuts the freeway right-of-way. The project will widen eight northbound on-ramps on I-5 from Coronado Avenue to H Street. To accommodate the ramp widening, numerous retaining walls are necessary as some of the ramps encroach into adjacent slopes.

RW-2 is a proposed Type 7B retaining wall that will be constructed at the Palomar Street on-ramp between Station 356+25 and Station 360+25. The wall will be approximately 400-feet in length with a maximum design height of approximately 12-feet. RW-2 will be constructed in a cut within an existing slope.

3.0 ARCHIVED DATA RESEARCH

A review of as-built plans provided LOTB of existing bridges in proximity to RW-2. As-built LOTB for Palomar Street Overcrossing, Bridge Number 57-354 were utilized for the characterization of site conditions.

Archived as-built LOTB are presented in Appendix II.

4.0 FIELD INVESTIGATION AND TESTING

A subsurface investigation program was conducted by OGDS2 in the fall of 2014. Numerous exploratory borings were conducted for various features along the project alignment. Four borings, HA-14-001, HA-14-002, A-14-011, and A-14-012 were developed in proximity to the proposed RW-2 alignment. The LOTB are included with the project plans.

5.0 LABORATORY TESTING

Laboratory testing of collected soil samples included corrosion testing. Laboratory test results are included in Appendix III and have been factored into soil descriptions and evaluations included in this report.

No laboratory shear strength testing of soils was conducted specifically for this retaining wall. The shear strengths of the geologic units affecting wall design were derived from previous geotechnical investigations involving sedimentary formations of the San Diego Embayment.

6.0 GEOLOGY AND SUBSURFACE CONDITIONS

The project geologic overview map is displayed in Appendix IV. The geology depicted in the map was acquired from the *California Division of Mines and Geology, by Michael P Kennedy, 1977*. The map depicts an overview of the geologic formations present at the project site and surrounding area.

The project site lies within the coastal plain section of the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are a group of mountain ranges that extend 900-miles from the Transverse Ranges and the Los Angeles Basin in Southern California to the southern tip of Mexico's Baja California (Wikipedia 1). The southern segment of the Peninsular Ranges in Southern California is referred to as the San Diego Embayment. The San Diego Embayment consists of thick sequences of marine and non-marine sediments. The sedimentary rocks within the San Diego Embayment form an eastward thinning wedge of continental margin deposits that extend from Oceanside to the US-Mexico border. The main formation in the project area is the Bay Point Formation. Artificial fill has been placed atop this natural formation.

The geologic units in the project area are described as follows:

Artificial Fill (Qaf) in the project area appears to be derived from material excavated from nearby cuts in the surrounding formations. Freeway embankments within the canyons are comprised of Artificial Fill. The freeway embankment fill was evaluated to be engineered fill conforming to Caltrans standards.

Alluvium and Slope Wash (Qal and Qsw): Poorly consolidated stream and slope raveling deposits of silt and sand and cobble sized particles.

Bay Point Formation (Qbp+Qn) consists of dense to very dense, fine grained sand with variable amounts of clay. The Bay point Formation underlies the majority of the fill soils or is exposed at the surface in the absence of fill.

RW-2 will be within a cut of an existing slope comprised of Bay Point Formation. The slope is inclined at two horizontal to one vertical (2:1). The retaining wall will rest upon and retain very dense silty sand. Adverse conditions such as sanitary landfill, collapsible, or expansive soils were not observed along the proposed alignment of RW-2.

Groundwater was not encountered in exploratory borings in proximity to RW-2. Seepage was not observed on the existing slope that will host RW-2. Relatively deeper borings conducted for bridge foundation exploration at the Palomar Street Overcrossing revealed the presence of groundwater at an elevation of approximately 9.0 feet which is significantly lower than RW-2.

The soil strength parameters utilized for the design of project features are provided in Table 1. These strength parameters should also be utilized for the design of temporary features necessary to facilitate project completion.

7.0 SEISMICITY

No active faults have been identified that transect the alignment of RW-2. The project does not lie within an Alquist-Priolo Special Study Zone. Ground surface rupture due to a seismic event is considered unlikely.

There is a potential that regional earthquakes will produce ground motion at the project site due to the proximity of active and potentially active faults. The closest regional active fault to the project site is the Newport Inglewood Rose Canyon Fault (Silver Strand section - Downtown Graben fault) running on a north-northwest trend and located approximately 2 mi to the west of the project site.

The Caltrans Acceleration Response Spectra (ARS) Online Tool Version 1.0.4 (Caltrans ARS Online Tool) was used to determine pertinent seismic data. The Caltrans ARS Online Tool is a web based tool that calculates both deterministic and probabilistic ARS for any location in California based on the criteria set for in *Caltrans, Seismic Design Criteria Version 1.6, November 2010, Appendix B* (SDC Appendix B).

The anticipated Peak Ground Acceleration (PGA) for the project site, which is the Spectral Acceleration at a period of 0sec, is 0.4g. The results produced by the Caltrans ARS Online Tool and the Caltrans ARS Online Tool QA/QC Checklist are included in Appendix VI.

The project site is approximately 30 feet above sea level. There is no potential for the project site to be impacted by a tsunami.

RW-2 will be located within very dense formation. There is no potential for seismically induced settlement.

There is no potential for liquefaction or lateral spreading at the wall site.

Features that would create a potential for seismically induced instability in the form of landslides, mudslides, and/or rockslides as it relates to the safety and performance of RW-2 do not exist at the project site.

8.0 SCOUR

RW-2 is not located along a stream course. A scour evaluation for the retaining wall is not applicable.

9.0 CORROSION

Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: Chloride concentration is greater than or equal to 500-ppm, sulfate concentration is greater than or equal to 2,000-ppm, or the pH is 5.5 or less.

Corrosion test results were obtained for selected soil samples and are included in Appendix III. The test results indicate that the on-site subsurface materials at the top 5 feet are corrosive, however, the materials at deeper depths are not potentially corrosive.

10.0 STABILITY

The stability of Type 7B retaining wall was evaluated using LRFD design specifications for shallow foundations. The foundation data that may be used for retaining wall design are presented in Table 2.

Global slope stability analyses for RW-2 were performed using STEDWIN with GSTABL7 v2.0. Both static and pseudo-static/seismic stability analyses were conducted for the retaining wall and slope configuration. The influence of external loading such as possible transient loads were factored into the stability analyses. The graphic results of the stability analyses are presented in Appendix VI.

The stability analyses reveal that the proposed configuration satisfies both static and pseudo-static stability criteria.

11.0 FOUNDATION RECOMMENDATIONS

Due to the limited space available to accommodate a temporary back cut OGDS2 recommends that RW-2 be designed and constructed as a Type 7B retaining wall. The foundation data that may be used for retaining wall design are presented in Table 2.

12.0 DESIGN ADVISORIES

- not The excavated materials within the RW-2 area will be suitable for use as embankment fill but will likely meet structure backfill requirements.
- It is recommended that the newly graded slopes have an inclination of two horizontal to one vertical (2.0 H: 1.0 V).

13.0 CONSTRUCTION CONSIDERATIONS

- The formation hosting RW-2 may generally be excavated using standard excavation equipment.
- The occurrence of caving soils is anticipated to be minimal and is not anticipated to significantly impact retaining wall construction.
- Groundwater is not anticipated to impact retaining wall construction.
- The inclination of the temporary cut slope should be no steeper than 1.0 H:1.0 V

14.0 ACTUAL VS. REPORTED SITE CONDITIONS

The recommendations contained in this report are based on specific project information regarding structure type and locations that have been provided to OGDS2. If any conceptual changes are made during final project design, OGDS2 should review those changes to determine if these foundation recommendations are still applicable.

The information used to characterize the geotechnical conditions in this area was gathered from project plans, pertinent maps, geologic literature, archived reports, field reconnaissance, subsurface investigation, testing, and engineering analysis. Project design features may change, and localized soil conditions encountered during construction grading and excavation may vary from those described in this report. If suspected differing site conditions are encountered during construction, or if construction difficulties related to soil conditions are encountered, a representative of OGDS2 should be consulted to assist with the assessment of the prevailing geotechnical conditions and to assist in formulating appropriate strategies to facilitate project completion. Any questions regarding the above recommendations should be directed to the attention of Ali Lari (858) 467-6922, or Brian Hinman, (858) 467-4051.

15.0 REFERENCES

- California Division of Mines and Geology, *Geology of the San Diego Metropolitan Area, California: Del Mar, La Jolla, Point Loma, La Mesa, Poway, and SW1/4 Escondido 7/12-Minute Quadrangles*, Bulletin 200, 1975
- Caltrans, Foundation Report, in San Diego, 11-SD-5, EA 11-26161, February 14, 2014
- Caltrans, *Corrosion Guidelines*, Version 1.0, September 2003
- Caltrans, *Seismic Design Criteria Version 1.6, Appendix B*, November 2010
- Caltrans, *Soil and Rock Logging, Classification and Presentation Manual*, 2010
- Wikipedia 1: http://en.wikipedia.org/wiki/Peninsular_Ranges

TABLES

DRAFT

Table 1

Soil Strength Properties

Geologic Unit	Angle of Internal Friction (Degree)	Cohesion (psf)	Dry Density (pcf)
Engineered Fill	32	100	120
Sandstone Baypoint Formation	34	100	125

TABLE 2

PALOMAR STREET

7B

Shallow Foundation Design Recommendations, Standard Plan Type / Retaining Wall, RW-2

Begin Station	End Station	Design Height H (ft)	Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	Bottom of Subexcavation Elevation (ft)	Settlement Calculated at Net Bearing Pressure (in)	Total Permissible Settlement (in)	Loading Type	Effective Footing Width B' (ft)	Net Bearing Stress q' (ksf)	Permissible Net Contact Stress q _{pn} (ksf)	Gross Uniform Bearing Stress q _o (ksf)	Factored Gross Nominal Bearing Resistance q _r (ksf)
356+25	360+25	12.0	26.5	4.0		< 1.0	1.0	Service I	7.1	0.8	4.0	N/A	N/A
								Strength I	6.2	N/A	N/A	1.8	9.4
								Extreme I	5.0	N/A	N/A	1.7	18.7
								Extreme II	3.3	N/A	N/A	2.7	15.6
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		

$\phi = 32^\circ \quad \gamma = 120 \text{ pcf}$
 $N_q = 23.2 \quad N_\gamma = 30.2$
 $q_v = \gamma \cdot D_f \cdot N_q + 0.5 \cdot \gamma \cdot B \cdot N_\gamma$
 $q_v = 0.12 \times 3.5 \times 23.2 + 0.5 \times 0.12 \times 30.2 \times 12 = 9.7 + 1.8 B$
 $q_{STR} = 9.7 + 1.8 \times 6.2 = 20.86 \times 0.45 = 9.4 \text{ ksf}$
 $q_{EX I} = 9.7 + 1.8 \times 5.0 = 18.7 \text{ ksf}$
 $q_{EX II} = 9.7 + 1.8 \times 3.3 = 15.6 \text{ ksf}$

APPENDICES

REF

APPENDIX I
PROJECT PLANS

DRAFT

INDEX OF PLANS

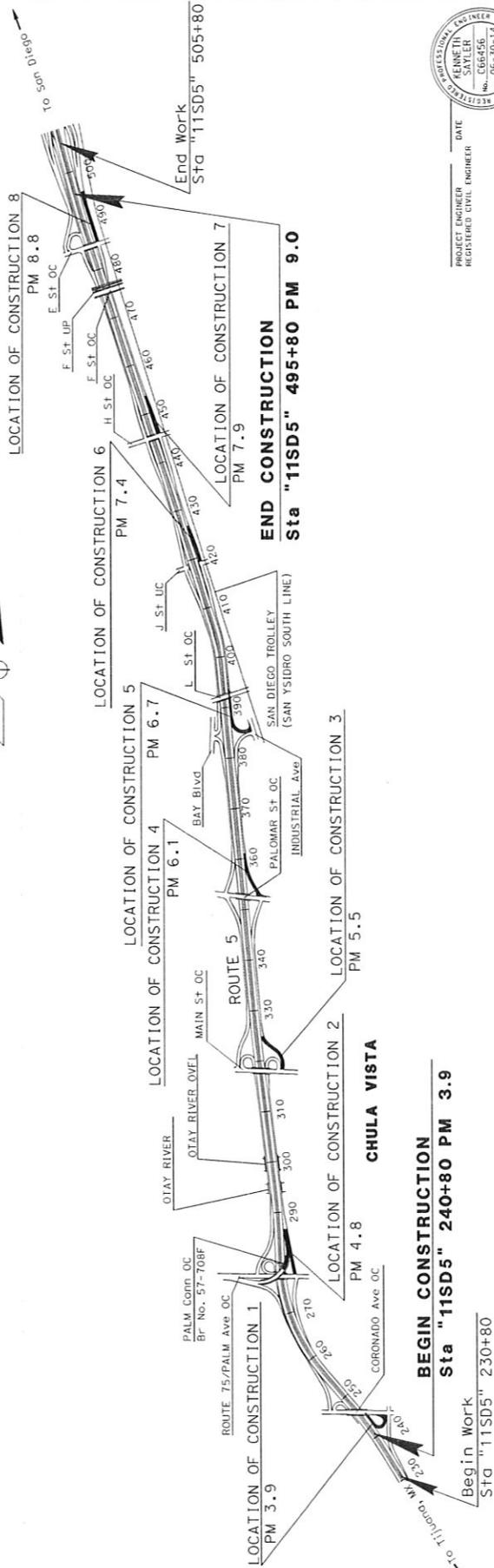
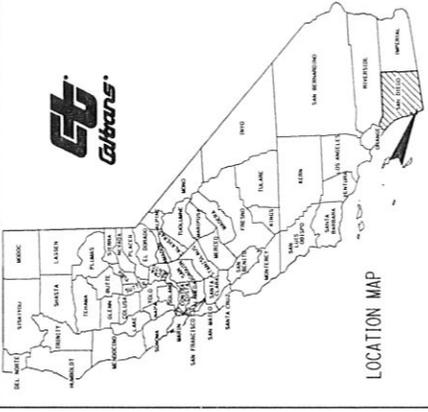
STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION PROJECT PLANS FOR CONSTRUCTION ON STATE HIGHWAY

IN SAN DIEGO COUNTY NEAR CHULA VISTA AT VARIOUS LOCATIONS FROM 0.1 MILES SOUTH OF CORONADO OVERCROSSING TO 0.5 MILES NORTH OF E STREET OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

DIST	COUNTY	ROUTE	POST MILE(S) TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
11	SD	5	3.9/9.3	1	1



BEGIN CONSTRUCTION
Sta "11SD5" 240+80 PM 3.9

Begin Work
Sta "11SD5" 230+80

END CONSTRUCTION
Sta "11SD5" 495+80 PM 9.0

End Work
Sta "11SD5" 505+80



PROJECT ENGINEER: KENNETH J. GELLES
REGISTERED CIVIL ENGINEER
DATE: 19-AUG-2014
PLANS APPROVAL DATE: 19-AUG-2014
TIME PLOTTED: 14:13

CONTRACT NO. 11-244000
PROJECT ID 1114000045
PROJECT NUMBER & PHASE 11140000450

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

BORDER LAST REVISED 9/30/2012 CALTRANS WEB SITE IS: HTTP://WWW.DOT.CA.GOV/

RELATIVE BORDER SCALE 0 1 2 3
15 IN. INCHES
USE LINE # 1114000045
DOT FILE # 0114000001.dwg

UNIT 2782

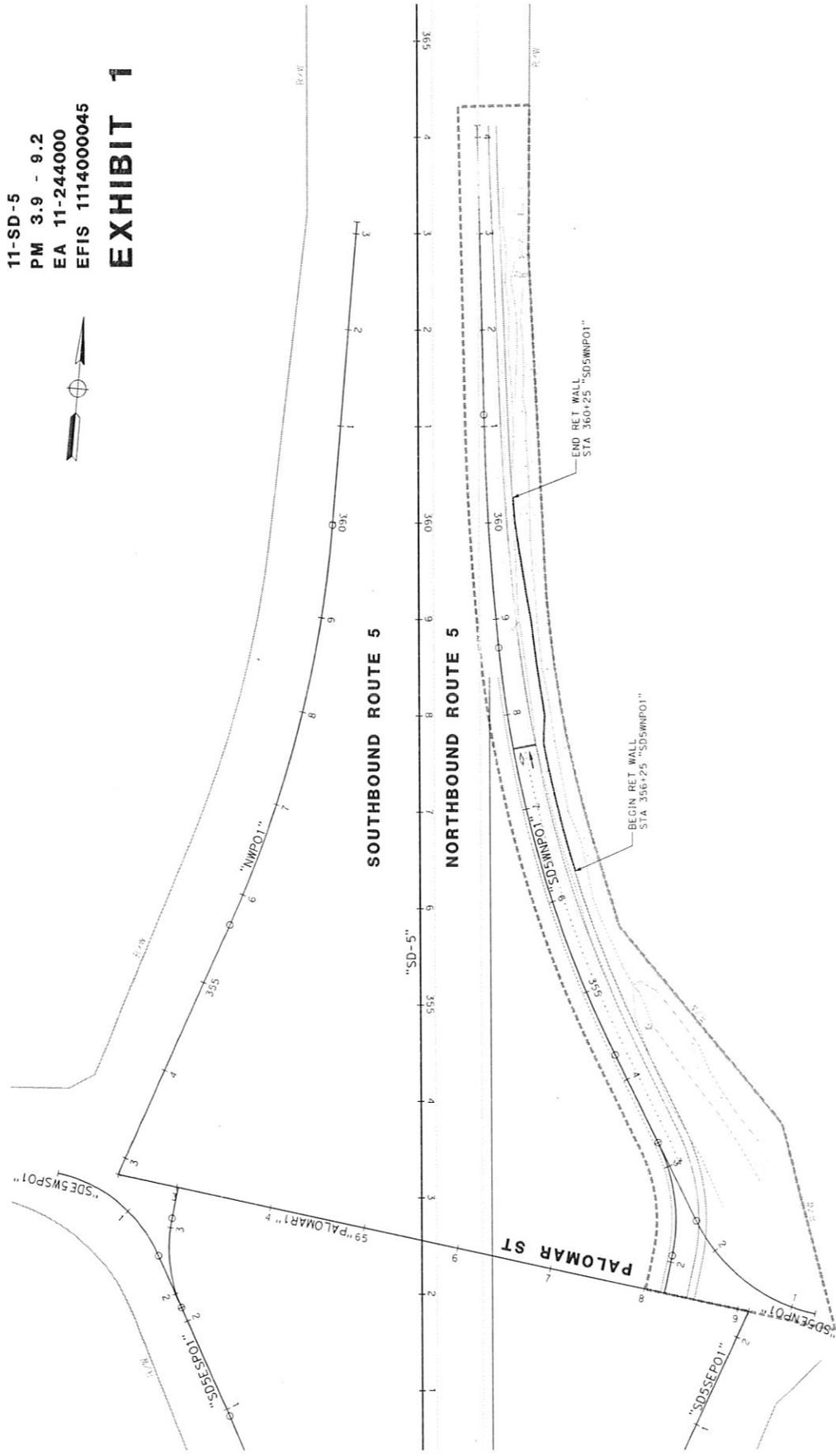
DESIGN ENGINEER

PROJECT MANAGER

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045



EXHIBIT 1



**LOCATION 4
 PALOMAR ST**

SHEET 4 OF 8

SCALE 1"=100'

PROJECT NUMBER & PHASE

UNIT 2782

RELATIVE BORDER SCALE
 IS IN INCHES

PROPOSED PROJECT FOOTPRINT

USERNAME: 0512126
 DGN FILE: 9 Loc 4 - Palomar ST

BORDER LAST REVISED 7/22/2010

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



DATE PLOTTED: 28-JUN-2014
 TIME PLOTTED: 14:53

APPENDIX II
ARCHIVED DATA

DATA

APPENDIX III
LABORATORY TEST RESULTS

REF
R

Results sent to: ALI LARI

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 1/20/2015
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: 1114000045

Dist/Co/Rte/PM 11 / SD /005/ / 3.9-9 PM

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT)		MINIMUM RESISTIVITY ¹ (ohm-cm)	pH ¹	CHLORIDE CONTENT ² (ppm)	SULFATE CONTENT ³ (ppm)	IS SAMPLE CORROSIVE?
			START	END					
SOIL SAMPLE FROM: STA 356+25									
CR20150015	C585399	HA-14-001	0	5	370	8.19	796	367	YES
SOIL SAMPLE FROM: STA 360+25									
CR20150016	C585400	HA-14-002	5	15	1079	8.57	257	107	NO

This site is corrosive to foundation elements (see note below).

Controlling corrosion parameters are as follows:

- Chloride concentration is 500 ppm or greater

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

¹CT 643, ²CT 422, ³CT 417

CR20150015 - CR20150016

1/21/2015

APPENDIX IV
GEOLOGIC MAP





Geotechnical Design Report
For Ramp Widening at I-5
EA.24400/EFIS:114000045

APPENDIX V
SEISMIC DATA

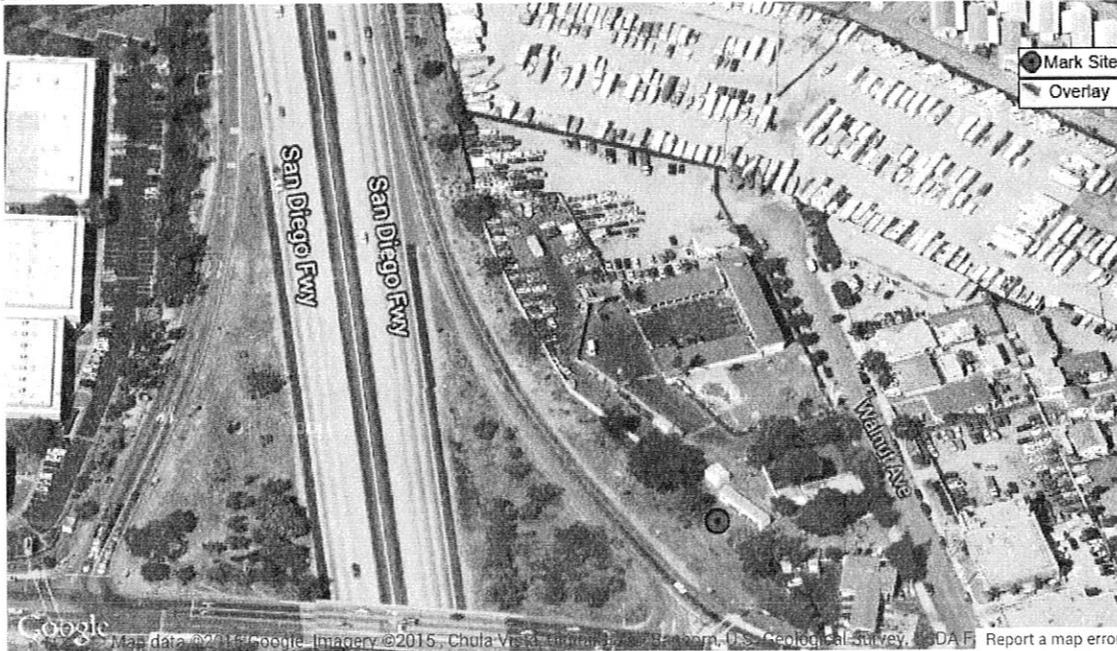
DRAFT

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

Caltrans ARS Online (v2.3.06)

This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in *Appendix B of Caltrans Seismic Design Criteria*. More...

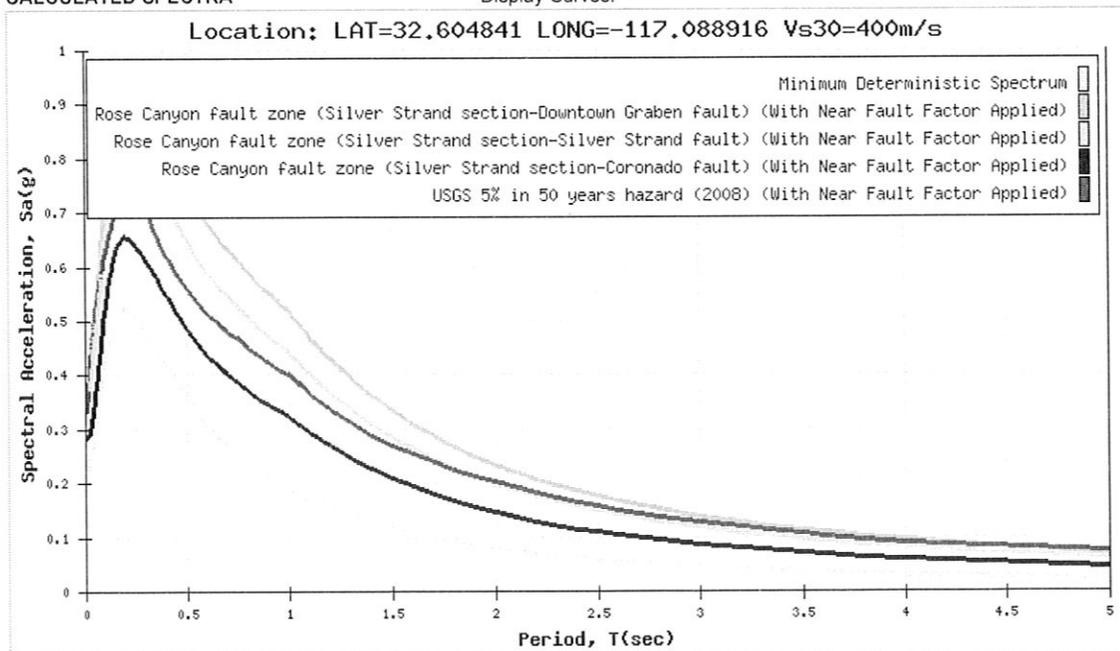
SELECT SITE LOCATION



Latitude: 32.60484117 Longitude: -117.0889163 Vs30: 400 m/s

CALCULATED SPECTRA

Display Curves: 3

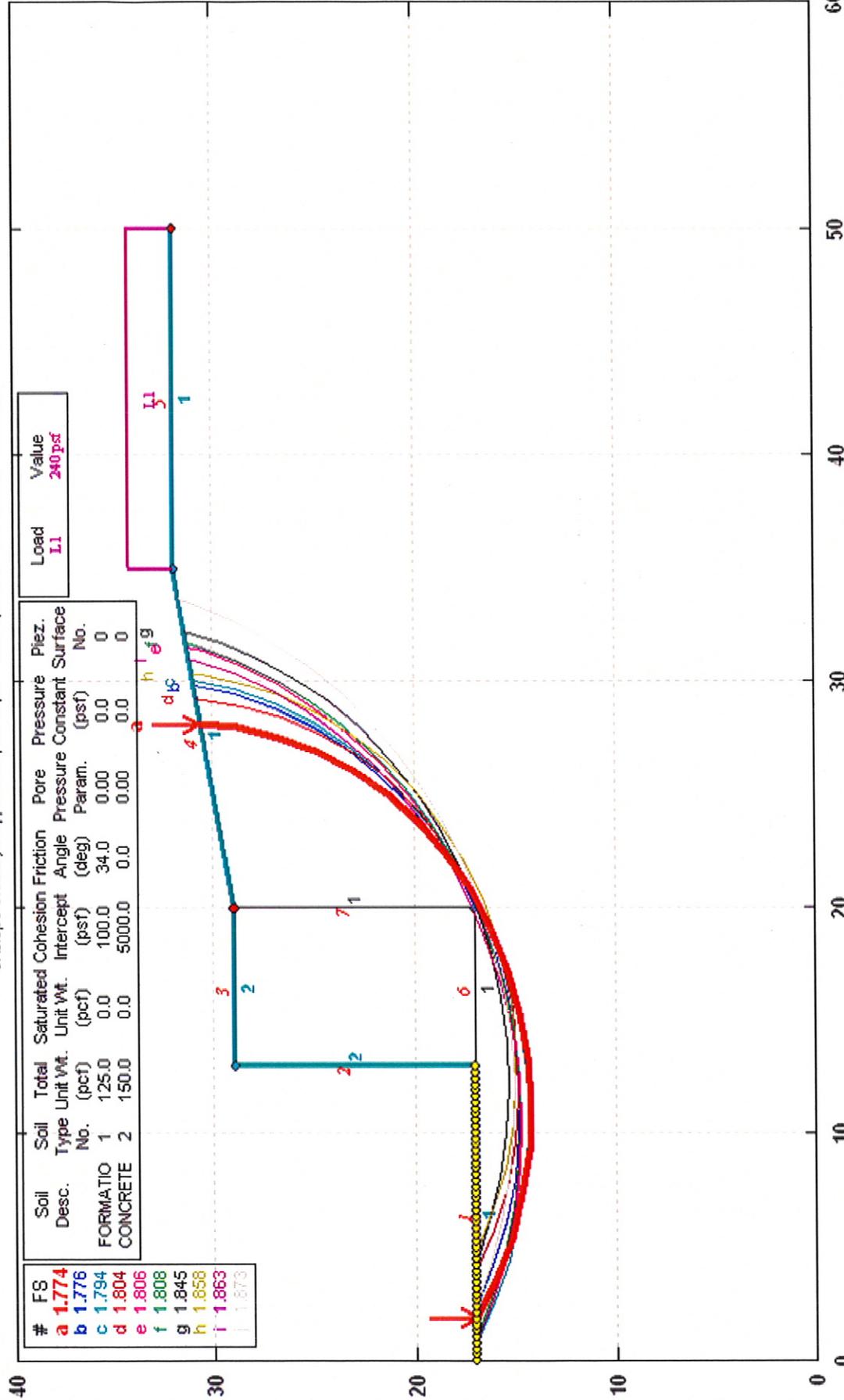


APPENDIX VI
ANALYSES AND CALCULATIONS

REF

I-5, PALMOMAR, RW-2 GLOBAL STABILITY

c:\slope stability\i-5, palomar, rw-2.pl2 Run By: LARI 1/21/2015 03:36PM

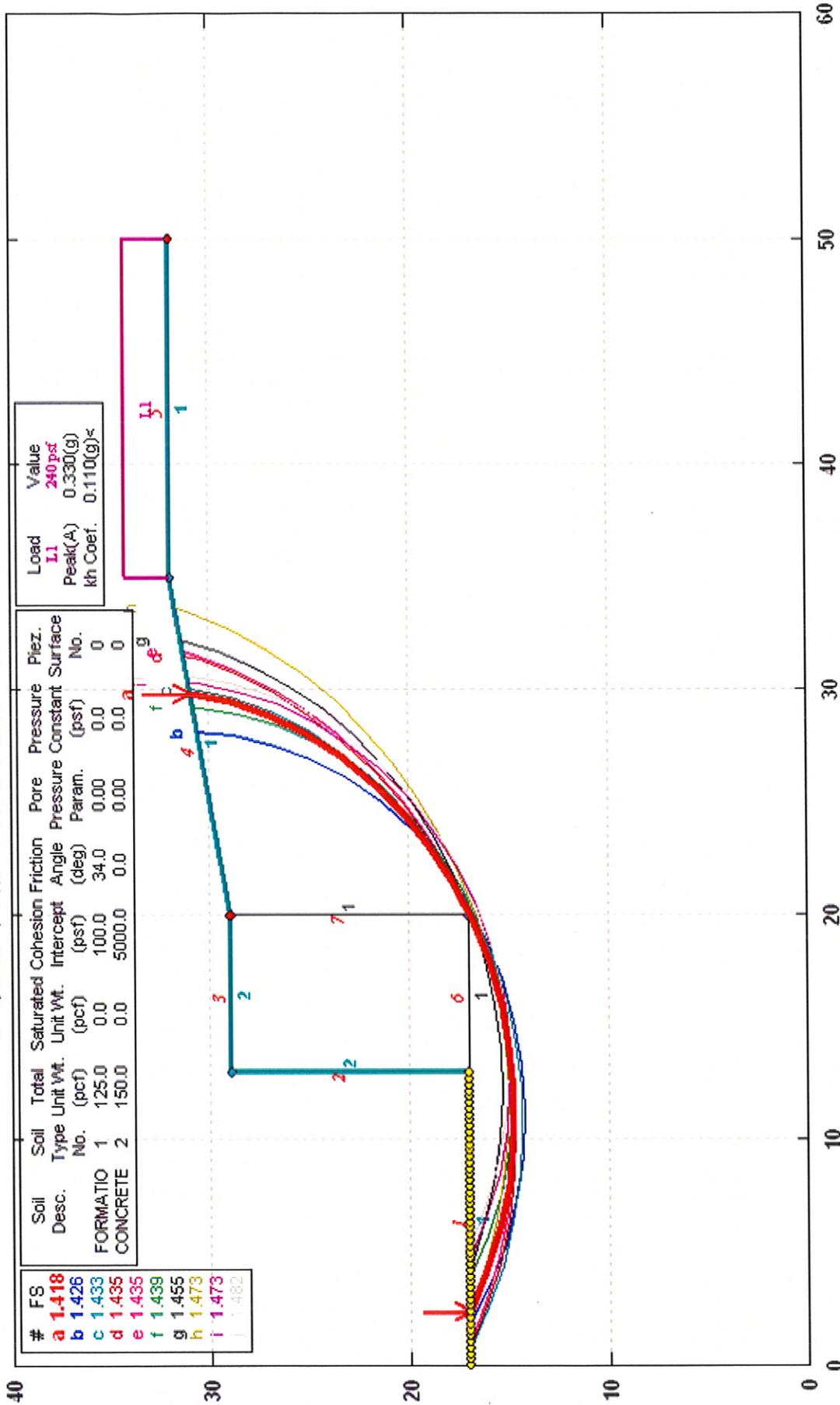


GSTABL7 v.2 FSmin=1.774
Safety Factors Are Calculated By The Simplified Janbu Method



I-5, PALMOMAR, RW-2 GLOBAL STABILITY

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GSTABL7 v.2 FSmin=1.418

Safety Factors Are Calculated By The Simplified Janbu Method





FOUNDATION REPORT

Ramp Widening at Various Locations on Interstate 5

**Retaining Wall 3
At J Street Northbound On-Ramp**

11-SD-5-3.9/9.0

**EA 11-244000
EFIS 1114000045**

February 4, 2015

Prepared By:

**OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2, BRANCH-D
7177 OPPORTUNITY ROAD
SAN DIEGO, CA 92111**

Memorandum

*Flex your power!
Be energy efficient!*

To: Shahin Sepassi
Project Manager
Advanced Transportation System Engineering Branch

Date: February 4, 2015

File: 11-SD-5 (PM) 3.9/9.0
EA: 11-244000
EFIS:1114000045

From: DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design-South 2, Branch-D

Subject: Foundation Report for Proposed Retaining Wall 3 at J Street Northbound On-Ramp.

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) Branch-D has prepared this Foundation Report (FR) for Retaining Wall 3 (RW-3) on the Interstate 5 Ramp Widening at Various Locations Project. This FR documents existing soil conditions that influence the design and construction of RW-3 and provides foundation recommendations and specifications.

No Structure Preliminary Geotechnical Report and/or Preliminary Foundation Report for RW-3 were prepared prior to the preparation of this FR.

Please ensure that this FR is included in both the District and Structure Construction Resident Engineer (RE) Pending Files. OGDS2 Branch-D staff will be available for further assistance. Should you have any questions or comments regarding this report, please contact OGDS2 Branch-D.

Ali Lari P.E.
Transportation Engineer (Civil)
(858) 467-6922



CARBON COPY (CC) LIST

Art Padilla	District Materials Engineer
Abbas Abghari	Office Chief, OGDS2
Shawn Wei	OGDS2 Senior Supervisor
Ken Sayler	Design Project Engineer
http://10.160.173.158/	Geotechnical Archive
Structure Construction R.E. Pending File	RE_Pending_File@dot.ca.gov

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TABLE 2:	SHALLOW FOUNDATION DESIGN RECOMMENDATIONS

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APPENDIX II	ARCHIVED DATA
APPENDIX III	LABORATORY TEST RESULTS
APPENDIX IV	GEOLOGIC MAP
APPENDIX V	SEISMIC DATA
APPENDIX VI	ANALYSES AND CALCULATIONS

1.0 INTRODUCTION

This Foundation Report (FR) has been prepared by the Office of Geotechnical Design-South 2 (OGDS2), Branch-D to address the geotechnical design and construction considerations for Retaining Wall 3 (RW-3). RW-3 is a propose Type 1 retaining wall within the Interstate 5 (I-5) Ramp Widening Project that extends from South of Coronado Avenue to North of E Street, near National City, San Diego County, California, hereafter referred to as the project. The project Title and Location Map for RW-3 were provided by District 11 Design and is included in Appendix I. At the time of finalizing this report the General Plan for this wall was not provided by Design.

The purpose of this FR is to document subsurface geotechnical conditions, provide engineering evaluation of site conditions, and provide recommendations relevant to the design and construction of RW-3. This report also establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions. The geotechnical information, evaluations, recommendations, and advisories contained in this FR supersede any information that may have been previously conveyed through correspondences or documents concerning the retaining wall addressed herein.

This FR was prepared in accordance with the guidelines set forth in the *Caltrans: Foundation Report Preparation for Earth Retaining Systems, August 2014 Draft*. No Structure Preliminary Geotechnical Report (SPGR) and/or Preliminary Foundation Report (PFR) were prepared prior to the preparation of this FR.

The geotechnical investigation consisted of site reconnaissance, research of archived resources, subsurface exploration, engineering analyses. A list of documents referenced to prepare this FR is contained in Section 15.0.

All stations are referenced to the "SD5JNE1" LINE and all elevations are referenced to mean sea level.

2.0 PROJECT DESCRIPTION

In the project area, I-5 is a multi-lane, urban freeway with numerous interchanges and freeway connectors. Dense residential and commercial development abuts the freeway right-of-way. The project will widen eight northbound on-ramps on I-5 from Coronado Avenue to H Street. To accommodate the ramp widening, numerous retaining walls are necessary as some of the ramps encroach into adjacent slopes.

RW-3 is a proposed Type 1 retaining wall that will be constructed at the J Street on-ramp between Station 421+25 and Station 429+50. The wall will be approximately 725-feet in length with a maximum design height of approximately 11-feet. RW-3 will be constructed within a cut of an existing slope.

3.0 ARCHIVED DATA RESEARCH

A review of as-built plans provided LOTB of existing bridges in proximity to RW-3. As-built LOTB for J Street Undercrossing, Bridge Number 57-710 were utilized for the characterization of site conditions.

Archived as-built LOTB are presented in Appendix II

4.0 FIELD INVESTIGATION AND TESTING

A subsurface investigation program was conducted by OGDS2 in the fall of 2014. Numerous exploratory borings were conducted for various features along the project alignment. Two borings, A-14-007, A-14-008, were developed in proximity to the proposed RW-3 alignment. The LOTB are included with the project plans.

5.0 LABORATORY TESTING

Laboratory testing of collected soil samples included corrosion testing. Laboratory test results are included in Appendix III and have been factored into soil descriptions and evaluations included in this report.

No laboratory shear strength testing of soils was conducted specifically for this retaining wall. The shear strengths of the geologic units affecting wall design were derived from previous geotechnical investigations involving sedimentary formations of the San Diego Embayment.

6.0 GEOLOGY AND SUBSURFACE CONDITIONS

The project geologic overview map is displayed in Appendix IV. The geology depicted in the map was acquired from the *California Division of Mines and Geology, by Michael P Kennedy, 1977*. The map depicts an overview of the geologic formations present at the project site and surrounding area.

The project site lies within the coastal plain section of the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are a group of mountain ranges that extend 900-miles from the Transverse Ranges and the Los Angeles Basin in Southern California to the southern tip of Mexico's Baja California (Wikipedia 1). The southern segment of the Peninsular Ranges in Southern California is referred to as the San Diego Embayment. The San Diego Embayment consists of thick sequences of marine and non-marine sediments. The sedimentary rocks within the San Diego Embayment form an eastward thinning wedge of continental margin deposits that extend from Oceanside to the US-Mexico border. The main formation in the project area is the Bay Point Formation. Artificial fill has been placed atop this natural formation.

The geologic units in the project area are described as follows:

Artificial Fill (Qaf) in the project area appears to be derived from material excavated from nearby cuts in the surrounding formations. Freeway embankments within the canyons are comprised of Artificial Fill. The freeway embankment fill was evaluated to be engineered fill conforming to Caltrans standards.

Alluvium and Slope Wash (Qal and Qsw): Poorly consolidated stream and slope raveling deposits of silt and sand and cobble sized particles.

Bay Point Formation (Qbp+Qn) consists of dense to very dense, fine grained sand with variable amounts of clay. The Bay point Formation underlies the majority of the fill soils or is exposed at the surface in the absence of fill.

RW-3 will be on a cut of an existing slope comprised of fill overlying alluvium. The slope is inclined at two horizontal to one vertical (2:1). The retaining wall will rest upon and retain medium dense to very dense silty sand. Adverse conditions such as sanitary landfill, collapsible, or expansive soils were not observed along the proposed alignment of RW-3.

Groundwater was not encountered in exploratory borings in proximity to RW-3. Seepage was not observed on the existing slope that will host RW-3. Relatively deeper borings conducted for bridge foundation exploration at the J Street Undercrossing revealed the presence of groundwater at an elevation of approximately 2.0 feet which is significantly lower than RW-3.

The soil strength parameters utilized for the design of project features are provided in Table 1. These strength parameters should also be utilized for the design of temporary features necessary to facilitate project completion.

7.0 SEISMICITY

No active faults have been identified that transect the alignment of RW-3. The project does not lie within an Alquist-Priolo Special Study Zone. Ground surface rupture due to a seismic event is considered unlikely.

There is a potential that regional earthquakes will produce ground motion at the project site due to the proximity of active and potentially active faults. The closest regional active fault to the project site is the Newport Inglewood Rose Canyon Fault (Silver Strand section - Downtown Graben fault) running on a north-northwest trend and located approximately 2 mi to the west of the project site.

The Caltrans Acceleration Response Spectra (ARS) Online Tool Version 1.0.4 (Caltrans ARS Online Tool) was used to determine pertinent seismic data. The Caltrans ARS Online Tool is a web based tool that calculates both deterministic and probabilistic ARS for any location in California based on the criteria set for in *Caltrans, Seismic Design Criteria Version 1.6, November 2010, Appendix B* (SDC Appendix B).

The anticipated Peak Ground Acceleration (PGA) for the project site, which is the Spectral Acceleration at a period of 0sec, is 0.4g. The results produced by the Caltrans ARS Online Tool and the Caltrans ARS Online Tool QA/QC Checklist are included in Appendix VI.

The project site is approximately 40 feet above sea level. There is no potential for the project site to be impacted by a tsunami.

RW-3 will be located within medium dense to very dense fill over medium dense alluvium. There is little potential for seismically induced settlement.

There is little potential for liquefaction or lateral spreading at the wall site.

Features that would create a potential for seismically induced instability in the form of landslides, mudslides, and/or rockslides as it relates to the safety and performance of RW-3 do not exist at the project site.

8.0 SCOUR

RW-3 is not located along a stream course. A scour evaluation for the retaining wall is not applicable.

9.0 CORROSION

Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: Chloride concentration is greater than or equal to 500-ppm, sulfate concentration is greater than or equal to 2,000-ppm, or the pH is 5.5 or less.

Corrosion test results were obtained for selected soil samples and are included in Appendix III. The test results indicate that the on-site subsurface materials at the top 5 feet are corrosive, however, the materials at deeper depths are not potentially corrosive.

10.0 STABILITY

The stability of Type 1 retaining walls was evaluated using LRFD design specifications for shallow foundations. The foundation data that may be used for retaining wall design are presented in Table 2.

Global slope stability analyses for RW-3 were performed using STEDWIN with GSTABL7 v2.0. Both static and pseudo-static/seismic stability analyses were conducted for the retaining wall and slope configuration. The influence of external loading such as possible transient loads were factored into the stability analyses. The graphic results of the stability analyses are presented in Appendix VI.

The stability analyses reveal that the proposed configuration satisfies both static and pseudo-static stability criteria.

11.0 FOUNDATION RECOMMENDATIONS

OGDS2 recommends that RW-3 be designed and constructed as a Type 1 retaining wall. The foundation data that may be used for retaining wall design are presented in Table 2.

12.0 DESIGN ADVISORIES

- The excavated materials within the Retaining Wall 3 area will be suitable for use as embankment fill but will not likely meet structure backfill requirements.
- It is recommended that the newly graded slopes have an inclination of two horizontal to one vertical (2.0 H: 1.0 V).

13.0 CONSTRUCTION CONSIDERATIONS

- The embankment fill hosting RW-3 may generally be excavated using standard excavation equipment.
- The occurrence of caving soils is anticipated to be minimal and is not anticipated to significantly impact retaining wall construction.
- Groundwater is not anticipated to impact retaining wall construction.
- The inclination of the temporary cut slope should be no steeper than 1.0 H:1.0 V

14.0 ACTUAL VS. REPORTED SITE CONDITIONS

The recommendations contained in this report are based on specific project information regarding structure type and locations that have been provided to OGDS2. If any conceptual changes are made during final project design, OGDS2 should review those changes to determine if these foundation recommendations are still applicable.

The information used to characterize the geotechnical conditions in this area was gathered from project plans, pertinent maps, geologic literature, archived reports, field reconnaissance, subsurface investigation, testing, and engineering analysis. Project design features may change, and localized soil conditions encountered during construction grading and excavation may vary from those described in this report. If suspected differing site conditions are encountered during construction, or if construction difficulties related to soil conditions are encountered, a representative of OGDS2 should be consulted to assist with the assessment of the prevailing geotechnical conditions and to assist in formulating appropriate strategies to facilitate project completion. Any questions regarding the above recommendations should be directed to the attention of Ali Lari (858) 467-6922, or Brian Hinman, (858) 467-4051.

15.0 REFERENCES

- California Division of Mines and Geology, *Geology of the San Diego Metropolitan Area, California: Del Mar, La Jolla, Point Loma, La Mesa, Poway, and SW1/4 Escondido 7/12-Minute Quadrangles*, Bulletin 200, 1975
- Caltrans, Foundation Report, 11-SD-5, EA 11-26161, February 14, 2014
- Caltrans, Geotechnical Caltrans, *Corrosion Guidelines*, Version 1.0, September 2003
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Geologic Unit	Angle of Internal Friction (Degree)	Cohesion (psf)	Dry Density (pcf)
Engineered Fill	32	100	120
Sandstone Baypoint Formation	34	100	125

TABLE 2
J STREET

Shallow Foundation Design Recommendations, Standard Plan Type I Retaining Wall, RW-3

Begin Station	End Station	Design Height H (ft)	Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	Bottom of Subexcavation Elevation (ft)	Settlement Calculated at Net Bearing Pressure (in)	Total Permissible Settlement (in)	Loading Type	Effective Footing Width B' (ft)	Net Bearing Stress q _n (ksf)	Permissible Net Contact Stress q _{pn} (ksf)	Gross Uniform Bearing Stress q _o (ksf)	Factored Gross Nominal Bearing Resistance q _r (ksf)
421+25	429+50	11.0	23.0	3.5		< 1.0	1.0	Service I	6.3	2.0	4.0	N/A	N/A
								Strength I	3.2	N/A	N/A	4.0	7.0
								Extreme I	2.8	N/A	N/A	4.8	14.7
								Extreme II	3.7	N/A	N/A	3.6	16.4
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		

$q_v = 0.12 \times 3.5 \times 23.2 + 0.5 \times 0.12 \times 30.2 \times 11.0 = 9.7 + 1.88$
 $q_{STR} = 9.7 + 1.8 \times 3.2 = 15.5 \text{ ksf} \times 0.45 = 7.0 \text{ ksf}$
 $q_{EXT I} = 9.7 + 1.8 \times 2.8 = 14.7 \text{ ksf}$
 $q_{EXT II} = 9.7 + 1.8 \times 3.7 = 16.4 \text{ ksf}$

$\phi = 32^\circ \quad \gamma = 120 \text{ pcf}$
 $N_q = 23.2 \quad N_\gamma = 30.2$
 $q_v = \gamma \cdot D_f \cdot N_q + 0.5 \cdot \gamma \cdot B \cdot N_\gamma$

APPENDICES

REF

APPENDIX I
PROJECT PLANS

DRAFT

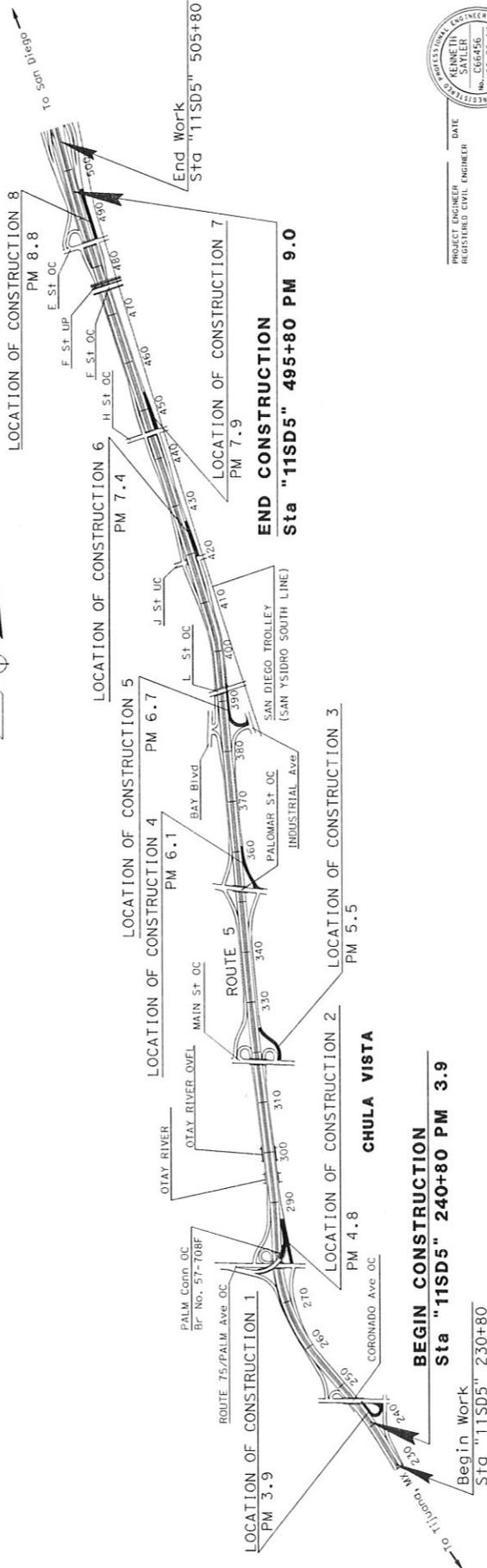
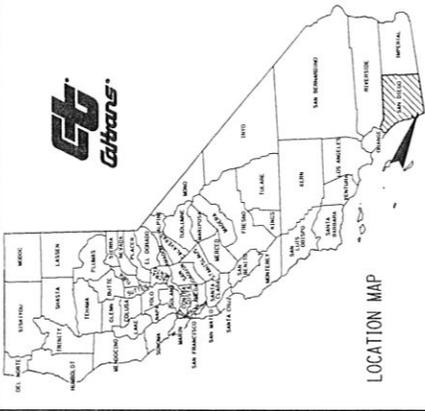
INDEX OF PLANS

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

IN SAN DIEGO COUNTY NEAR CHULA VISTA AT VARIOUS LOCATIONS FROM 0.1 MILES SOUTH OF CORONADO OVERCROSSING TO 0.5 MILES NORTH OF E STREET OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

DIS+ COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET TOTAL NO. SHEETS
11 SD	5	3.9/9.3	1



BEGIN CONSTRUCTION
Sta "11SD5" 240+80 PM 3.9

Begin Work
Sta "11SD5" 230+80

END CONSTRUCTION
Sta "11SD5" 495+80 PM 9.0



PROJECT ENGINEER
REGISTERED CIVIL ENGINEER

DATE

PLANS APPROVAL DATE

BY: KENNETH SATTLER
No. 44895B
Exp. 06-30-11
STATE OF CALIFORNIA
DIVISION OF HIGHWAYS
DESIGN DIVISION

DESIGNER SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE NOTICE TO BIDDERS.

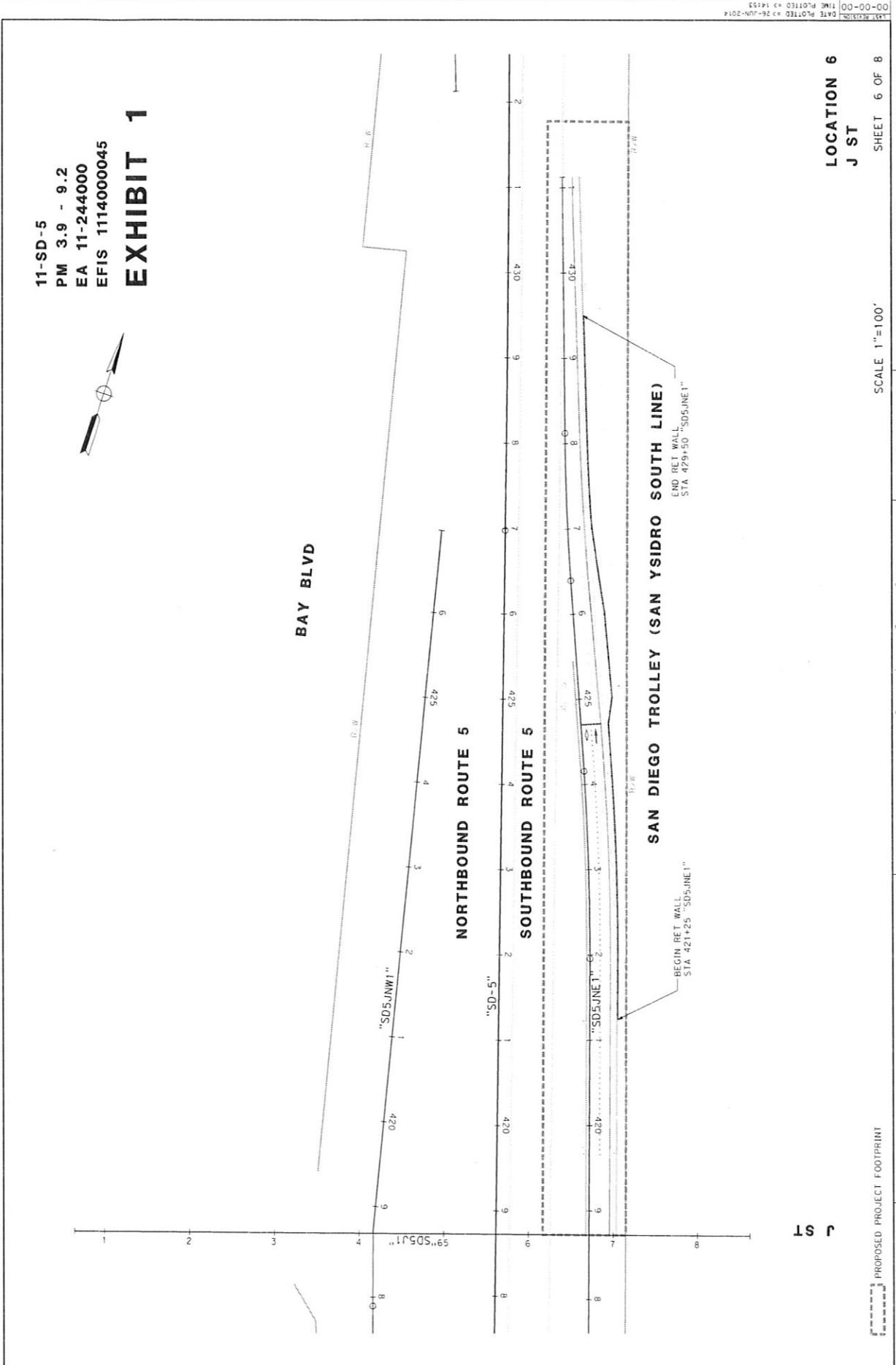
CONTRACT NO.	11-244000
PROJECT ID	1114000045
UNIT	2782
PROJECT NUMBER & PHASE	11140000450

DATE PLOTTED: 19-AUG-2014
TIME PLOTTED: 14:13

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045



EXHIBIT 1



LOCATION 6
 J ST

SHEET 6 OF 8
 PROJECT NUMBER & PHASE
 UNIT 2782

SCALE 1"=100'

11140000451

PROPOSED PROJECT FOOTPRINT

RELATIVE BORDER SCALE
 15" IN INCHES

USERNAME -> 3121126
 DGN FILE -> LOC 6 - J ST

BORDER LAST REVISED 7/2/2010

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



LAST REVISION DATE PLOTTED 26-JUN-2014 TIME PLOTTED 14:55

APPENDIX II
ARCHIVED DATA

REF

APPENDIX III
LABORATORY TEST RESULTS

REF

Results sent to: ALI LARI

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 1/20/2015
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: 1114000045

Dist/Co/Rte/PM 11 / SD /005/ / 3.9-9 PM

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT)		MINIMUM RESISTIVITY ¹ (ohm-cm)	pH ¹	CHLORIDE CONTENT ² (ppm)	SULFATE CONTENT ³ (ppm)	IS SAMPLE CORROSIVE?
			START	END					
SOIL SAMPLE FROM: STA 421+25									
CR20150004	C585397	A-14-007	5	10	1617	8.28			NO
CR20150014	C585398	A-14-007	15	20	625	8.52	302	467	NO

This site is not corrosive to foundation elements (see note below).

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

¹CT 643, ²CT 422, ³CT 417

CR20150004 - CR20150014

1/21/2015

**APPENDIX IV
GEOLOGIC MAP**

DRAFT



Geotechnical Design Report
For Ramp Widening at I-5
EA.24400/EFIS:114000045

APPENDIX V
SEISMIC DATA

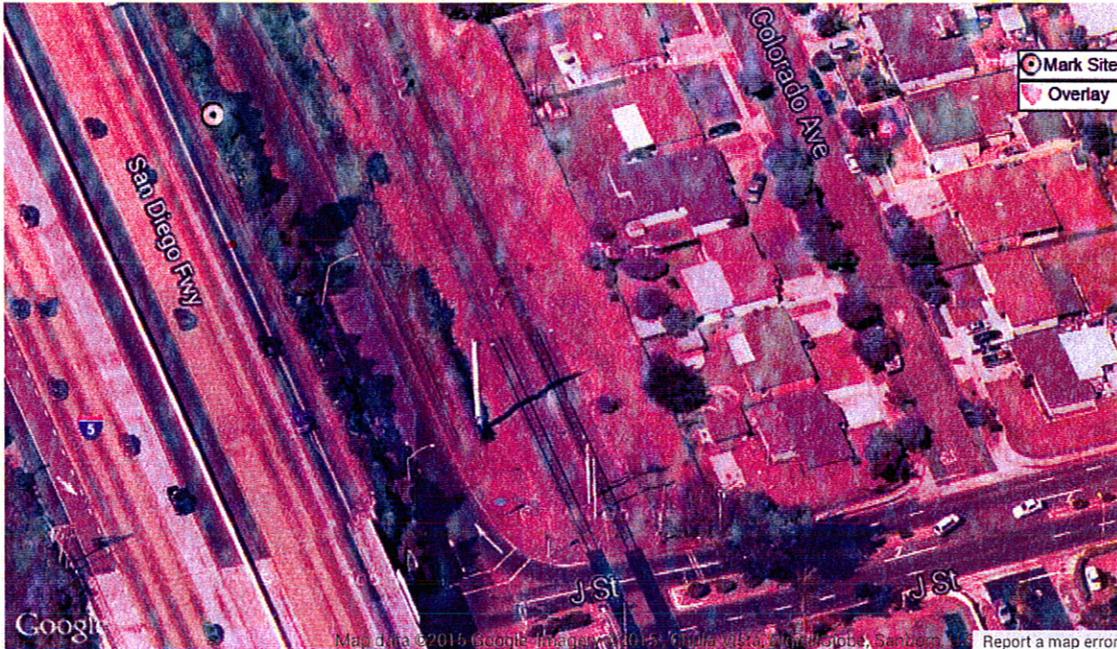
REF

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

Caltrans ARS Online (v2.3.06)

This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in *Appendix B of Caltrans Seismic Design Criteria*. More...

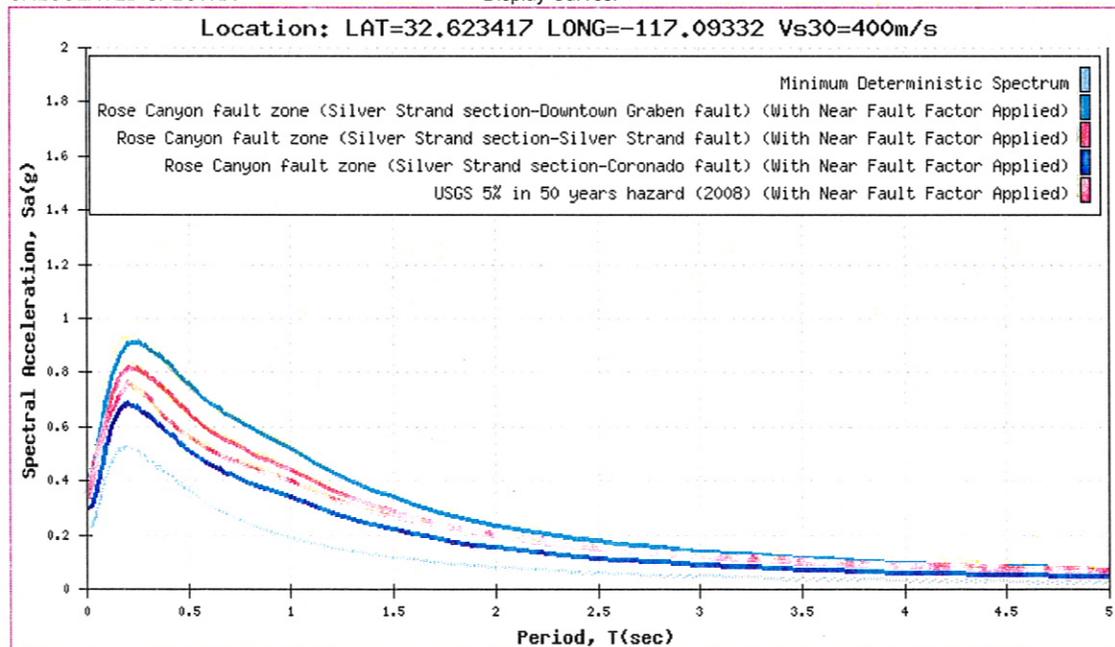
SELECT SITE LOCATION



Latitude: Longitude: Vs30: m/s

CALCULATED SPECTRA

Display Curves: 3

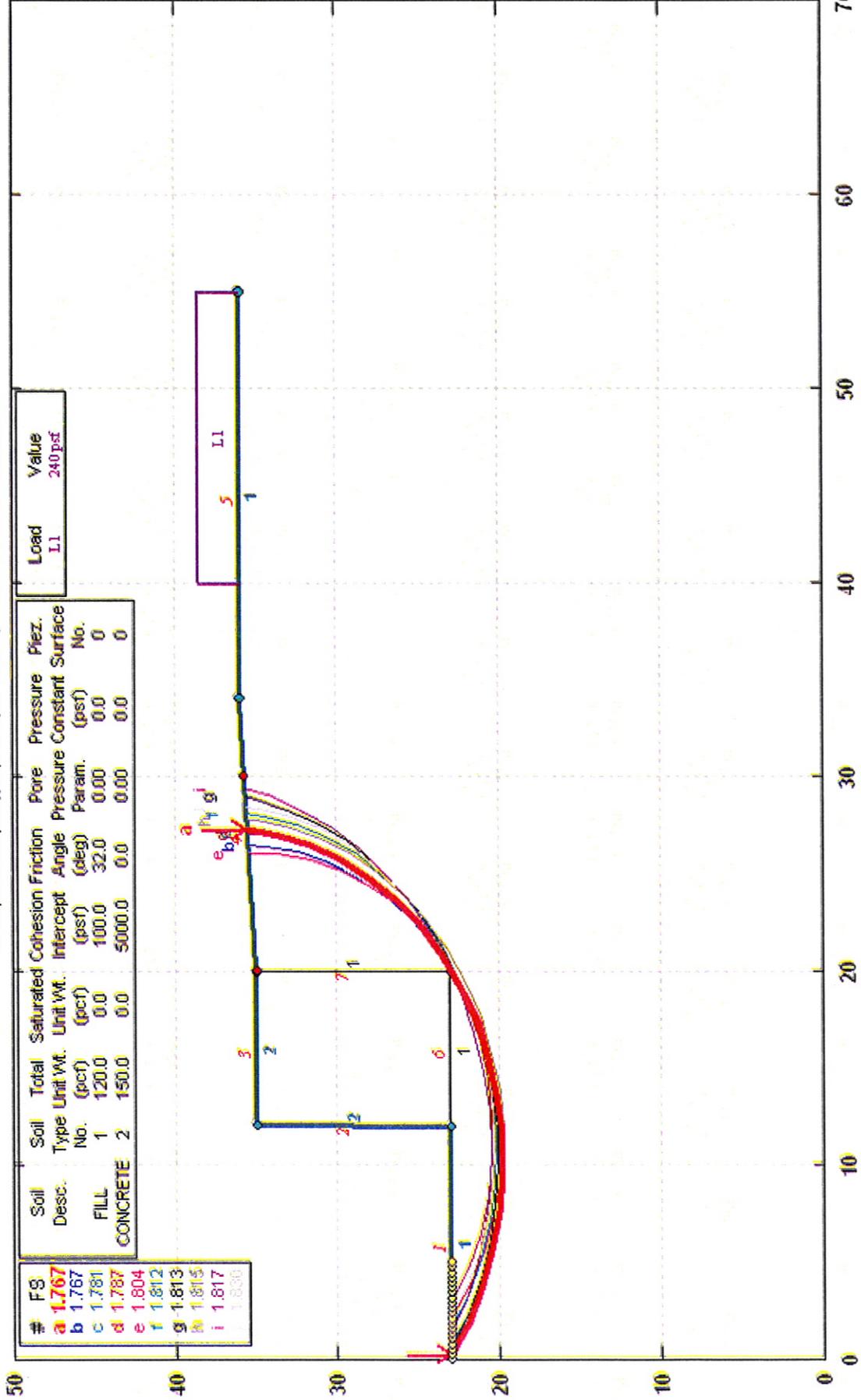


APPENDIX VI
ANALYSES AND CALCULATIONS

REF

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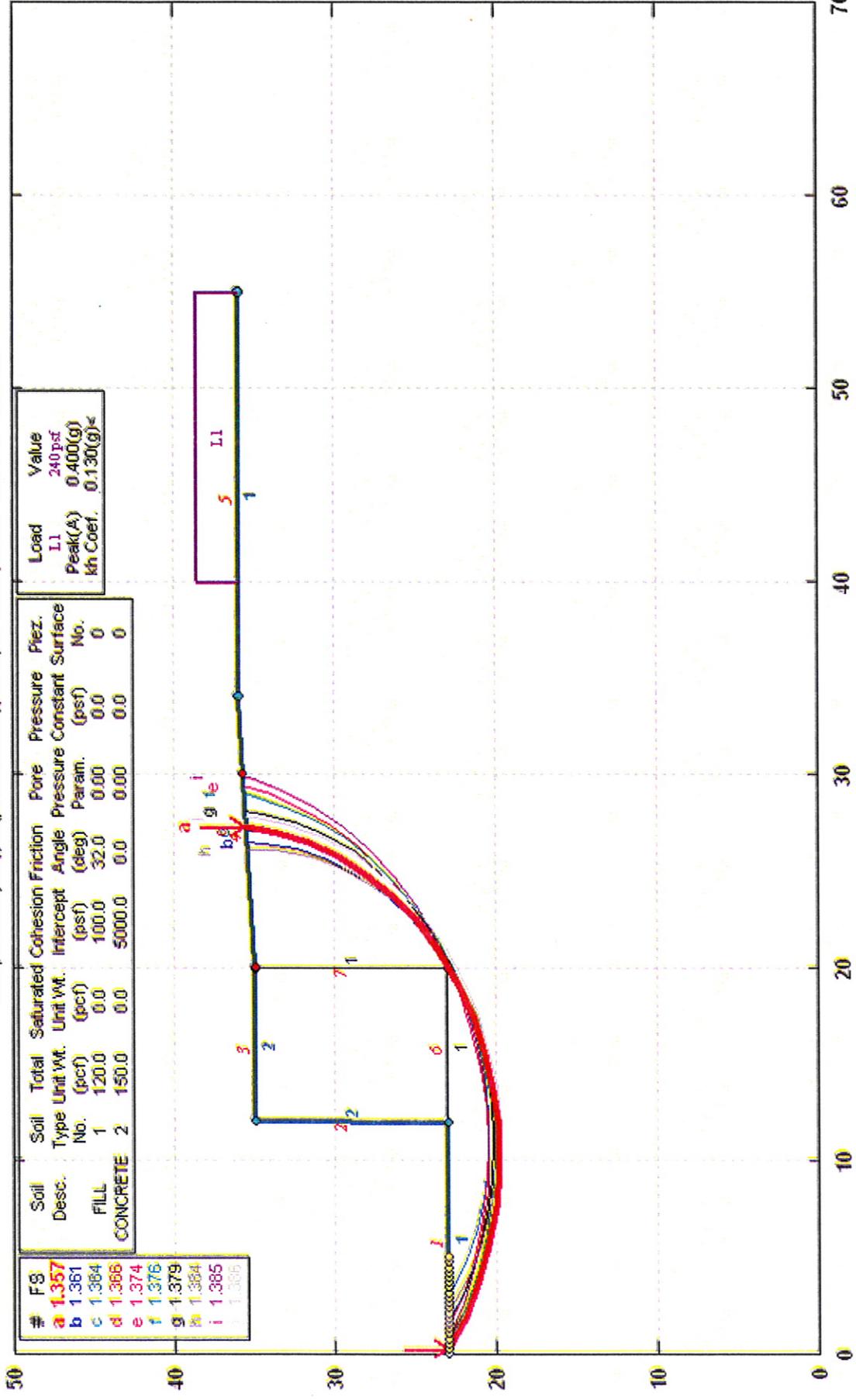
GSTABL7 v.2 FSmin=1.767

Safety Factors Are Calculated By The Simplified Janbu Method



I-5, J St, RW-3 GLOBAL STABILITY

c:\slope stability\5_j st (pseudo-static), rw-3.p02 Run By: LARI 2/5/2015 10:51AM



Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion (psf)	Friction Angle (deg)	Pore Pressure Param.	Piez. Constant (psf)	Surface No.
FILL	1	120.0	0.0	100.0	32.0	0.00	0.0	0
CONCRETE	2	150.0	0.0	5000.0	0.0	0.00	0.0	0

Load	Value
L1	240 psf
Peak(A)	0.400(g)
kh Coef.	0.1300(g) <

#	FS
a	1.357
b	1.361
c	1.364
d	1.366
e	1.374
f	1.376
g	1.379
h	1.384
i	1.385
j	1.386



GSTABL7 v.2 FSmin=1.357
Safety Factors Are Calculated By The Simplified Janbu Method



FOUNDATION REPORT

Ramp Widening at Various Locations on Interstate 5

**Retaining Wall 4
At H Street Northbound On-Ramp**

11-SD-5-3.9/9.0

**EA 11-244000
EFIS 1114000045**

February 4, 2015

Prepared By:

**OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2, BRANCH-D
7177 OPPORTUNITY ROAD
SAN DIEGO, CA 92111**

Memorandum

*Flex your power!
Be energy efficient!*

To: Shahin Sepassi
Project Manager
Advanced Transportation System Engineering Branch

Date: February 4, 2015

File: 11-SD-5-3.9/9.0
EA: 11-244000
EFIS:1114000045

From: DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design-South 2, Branch-D

Subject: Foundation Report for Proposed Retaining Wall 4 at H Street Northbound On-Ramp.

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) Branch-D has prepared this Foundation Report (FR) for Retaining Wall 4 (RW-4) on the Interstate 5 Ramp Widening at Various Locations Project. This FR documents existing soil conditions that influence the design and construction of RW-4 and provides foundation recommendations and specifications.

No Structure Preliminary Geotechnical Report and/or Preliminary Foundation Report for RW-4 were prepared prior to the preparation of this FR.

Please ensure that this FR is included in both the District and Structure Construction Resident Engineer (RE) Pending Files. OGDS2 Branch-D staff will be available for further assistance. Should you have any questions or comments regarding this report, please contact OGDS2 Branch-D.

Ali Lari P.E.
Transportation Engineer (Civil)
(858) 467-6922



CARBON COPY (CC) LIST

Art Padilla	District Materials Engineer
Abbas Abghari	Office Chief, OGDS2
Shawn Wei	OGDS2 Senior Supervisor
Ken Sayler	Design Project Engineer
http://10.160.173.158/	Geotechnical Archive
Structure Construction R.E. Pending File	RE_Pending_File@dot.ca.gov

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4.0 FIELD INVESTIGATION AND TESTING	1
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TABLE 2:	SHALLOW FOUNDATION DESIGN RECOMMENDATIONS

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APPENDIX II	ARCHIVED DATA
APPENDIX III	LABORATORY TEST RESULTS
APPENDIX IV	GEOLOGIC MAP
APPENDIX V	SEISMIC DATA
APPENDIX VI	ANALYSES AND CALCULATIONS

1.0 INTRODUCTION

This Foundation Report (FR) has been prepared by the Office of Geotechnical Design-South 2 (OGDS2), Branch-D to address the geotechnical design and construction considerations for Retaining Wall 4 (RW-4). RW-4 is a propose Type 1 retaining wall within the Interstate 5 (I-5) Ramp Widening Project that extends from South of Coronado Avenue to North of E Street, near National City, San Diego County, California, hereafter referred to as the project. The project Title and Location Map for RW-4 were provided by District 11 Design and is included in Appendix I. At the time of finalizing this report the General Plan for this wall was not provided by Design.

The purpose of this FR is to document subsurface geotechnical conditions, provide engineering evaluation of site conditions, and provide recommendations relevant to the design and construction of RW-4. This report also establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions. The geotechnical information, evaluations, recommendations, and advisories contained in this FR supersede any information that may have been previously conveyed through correspondences or documents concerning the retaining wall addressed herein.

This FR was prepared in accordance with the guidelines set forth in the *Caltrans: Foundation Report Preparation for Earth Retaining Systems, August 2014 Draft*. No Structure Preliminary Geotechnical Report (SPGR) and/or Preliminary Foundation Report (PFR) were prepared prior to the preparation of this FR.

The geotechnical investigation consisted of site reconnaissance, research of archived resources, subsurface exploration, and engineering analyses. A list of documents referenced to prepare this FR is contained in Section 15.0.

All stations are referenced to the "SD5HNE1" LINE and all elevations are referenced to mean sea level.

2.0 PROJECT DESCRIPTION

In the project area, I-5 is a multi-lane, urban freeway with numerous interchanges and freeway connectors. Dense residential and commercial development abuts the freeway right-of-way. The project will widen eight northbound on-ramps on I-5 from Coronado Avenue to H Street. To accommodate the ramp widening, numerous retaining walls are necessary as some of the ramps encroach into adjacent slopes.

RW-4 is a proposed Type 1 retaining wall that will be constructed at the H Street on-ramp between Station 449+75 and Station 454+00. The wall will be approximately 425-feet in length with a maximum design height of approximately 11-feet. RW-4 will be constructed within a cut of an existing slope.

3.0 ARCHIVED DATA RESEARCH

A review of as-built plans provided LOTB of existing bridges in proximity to RW-4. As-built LOTB for H Street Overcrossing, Bridge Number 57-256 were utilized for the characterization of site conditions.

Archived as-built LOTB are presented in Appendix II.

4.0 FIELD INVESTIGATION AND TESTING

A subsurface investigation program was conducted by OGDS2 in the summer and fall of 2014. Numerous exploratory borings were conducted for various features along the project alignment. One boring, HA-14-003 was developed in proximity to the proposed RW-4 alignment. The LOTB is included with the project plans.

5.0 LABORATORY TESTING

Laboratory testing of collected soil samples included corrosion testing. Laboratory test results are included in Appendix III and have been factored into soil descriptions and evaluations included in this report.

No laboratory shear strength testing of soils was conducted specifically for this retaining wall. The shear strengths of the geologic units affecting wall design were derived from previous geotechnical investigations involving sedimentary formations of the San Diego Embayment.

6.0 GEOLOGY AND SUBSURFACE CONDITIONS

The project geologic overview map is displayed in Appendix IV. The geology depicted in the map was acquired from the *California Division of Mines and Geology, by Michael P Kennedy, 1977*. The map depicts an overview of the geologic formations present at the project site and surrounding area.

The project site lies within the coastal plain section of the Peninsular Ranges Geomorphic Province of California. The Peninsular Ranges are a group of mountain ranges that extend 900-miles from the Transverse Ranges and the Los Angeles Basin in Southern California to the southern tip of Mexico's Baja California (Wikipedia 1). The southern segment of the Peninsular Ranges in Southern California is referred to as the San Diego Embayment. The San Diego Embayment consists of thick sequences of marine and non-marine sediments. The sedimentary rocks within the San Diego Embayment form an eastward thinning wedge of continental margin deposits that extend from Oceanside to the US-Mexico border. The main formation in the project area is the Bay Point Formation. Artificial fill has been placed atop this natural formation.

The geologic units in the project area are described as follows:

Artificial Fill (Qaf) in the project area appears to be derived from material excavated from nearby cuts in the surrounding formations. Freeway embankments within the canyons are comprised of Artificial Fill. The freeway embankment fill was evaluated to be engineered fill conforming to Caltrans standards.

Alluvium and Slope Wash (Qal and Qsw): Poorly consolidated stream and slope raveling deposits of silt and sand and cobble sized particles.

Bay Point Formation (Qbp+Qn) consists of dense to very dense, fine grained sand with variable amounts of clay. The Bay point Formation underlies the majority of the fill soils or is exposed at the surface in the absence of fill.

RW-4 will be cut into an existing slope comprised of fill overlying Alluvium. The slope is inclined at two horizontal to one vertical (2:1). The retaining wall will rest upon and retain medium dense silty sand. Adverse conditions such as sanitary landfill, collapsible, or expansive soils were not observed along the proposed alignment of RW-4.

Groundwater was not encountered in exploratory borings in proximity to RW-4. Seepage was not observed on the existing slope that will host RW-4. Relatively deeper borings conducted for bridge foundation exploration at the H Street Overcrossing revealed the presence of groundwater at an elevation of approximately 4.5 feet which is approximately 2.0 feet lower than RW-4.

The soil strength parameters utilized for the design of project features are provided in Table 1. These strength parameters should also be utilized for the design of temporary features necessary to facilitate project completion.

7.0 SEISMICITY

No active faults have been identified that transect the alignment of RW-4. The project does not lie within an Alquist-Priolo Special Study Zone. Ground surface rupture due to a seismic event is considered unlikely.

There is a potential that regional earthquakes will produce ground motion at the project site due to the proximity of active and potentially active faults. The closest regional active fault to the project site is the Newport Inglewood Rose Canyon Fault (Silver Strand section - Downtown Graben fault) running on a north-northwest trend and located approximately 2 mi to the west of the project site.

The Caltrans Acceleration Response Spectra (ARS) Online Tool Version 1.0.4 (Caltrans ARS Online Tool) was used to determine pertinent seismic data. The Caltrans ARS Online Tool is a web based tool that calculates both deterministic and probabilistic ARS for any location in California based on the criteria set for in *Caltrans, Seismic Design Criteria Version 1.6, November 2010, Appendix B* (SDC Appendix B).

The anticipated Peak Ground Acceleration (PGA) for the project site, which is the Spectral Acceleration at a period of 0sec, is 0.4g. The results produced by the Caltrans ARS Online Tool and the Caltrans ARS Online Tool QA/QC Checklist are included in Appendix VI.

The project site is approximately 25 feet above sea level. There is no potential for the project site to be impacted by a tsunami.

RW-4 will be located within medium dense fill over loose to medium dense alluvium. There is little potential for seismically induced settlement.

There is little potential for liquefaction or lateral spreading at the wall site.

Features that would create a potential for seismically induced instability in the form of landslides, mudslides, and/or rockslides as it relates to the safety and performance of RW-4 do not exist at the project site.

8.0 SCOUR

RW-4 is not located along a stream course. A scour evaluation for the retaining wall is not applicable.

9.0 CORROSION

Caltrans currently considers a site to be corrosive to foundation elements if one or more of the following conditions exist: Chloride concentration is greater than or equal to 500-ppm, sulfate concentration is greater than or equal to 2,000-ppm, or the pH is 5.5 or less.

Corrosion test results were obtained for selected soil samples and are included in Appendix IV. The test results indicate that the on-site subsurface materials at the top 5 feet are corrosive, however, the materials at deeper depths are not potentially corrosive.

10.0 STABILITY

The stability of Type 7B retaining wall was evaluated using LRFD design specifications for shallow foundations. The foundation data that may be used for retaining wall design are presented in Table 2.

Global slope stability analyses for RW-4 were performed using STEDWIN with GSTABL7 v2.0. Both static and pseudo-static/seismic stability analyses were conducted for the retaining wall and slope configuration. The influence of external loading such as possible transient loads were factored into the stability analyses. The graphic results of the stability analyses are presented in Appendix VI.

The stability analyses reveal that the proposed configuration satisfies both static and pseudo-static stability criteria.

11.0 FOUNDATION RECOMMENDATIONS

OGDS2 recommends that RW-4 be designed and constructed as a Type 1 retaining wall. The foundation data that may be used for retaining wall design are presented in Table 2.

12.0 DESIGN ADVISORIES

- The excavated materials within the RW-4 area will be suitable for use as embankment fill but will not likely meet structure backfill requirements.
- It is recommended that the newly graded slopes have an inclination of two horizontal to one vertical (2.0 H: 1.0 V).

13.0 CONSTRUCTION CONSIDERATIONS

- The embankment fill hosting RW-4 may generally be excavated using standard excavation equipment.
- The occurrence of caving soils is anticipated to be minimal and is not anticipated to significantly impact retaining wall construction.
- Groundwater is not anticipated to impact retaining wall construction.
- The inclination of the temporary cut slope should be no steeper than 1.0 H:1.0 V

14.0 ACTUAL VS. REPORTED SITE CONDITIONS

The recommendations contained in this report are based on specific project information regarding structure type and locations that have been provided to OGDS2. If any conceptual changes are made during final project design, OGDS2 should review those changes to determine if these foundation recommendations are still applicable.

The information used to characterize the geotechnical conditions in this area was gathered from project plans, pertinent maps, geologic literature, archived reports, field reconnaissance, subsurface investigation, testing, and engineering analysis. Project design features may change, and localized soil conditions encountered during construction grading and excavation may vary from those described in this report. If suspected differing site conditions are encountered during construction, or if construction difficulties related to soil conditions are encountered, a representative of OGDS2 should be consulted to assist with the assessment of the prevailing geotechnical conditions and to assist in formulating appropriate strategies to facilitate project completion. Any questions regarding the above recommendations should be directed to the attention of Ali Lari (858) 467-6922, or Brian Hinman, (858) 467-4051.

15.0 REFERENCES

- California Division of Mines and Geology, *Geology of the San Diego Metropolitan Area, California: Del Mar, La Jolla, Point Loma, La Mesa, Poway, and SW1/4 Escondido 7/12-Minute Quadrangles*, Bulletin 200, 1975
- Caltrans, Foundation Report, in San Diego, 11-SD-5, EA 11-26161, February 14, 2014
- Caltrans, *Corrosion Guidelines*, Version 1.0, September 2003
- Caltrans, *Seismic Design Criteria Version 1.6, Appendix B*, November 2010
- Caltrans, *Soil and Rock Logging, Classification and Presentation Manual*, 2010
- Wikipedia 1: http://en.wikipedia.org/wiki/Peninsular_Ranges

TABLES

DRAFT

Table 1

Soil Strength Properties

Geologic Unit	Angle of Internal Friction (Degree)	Cohesion (psf)	Dry Density (pcf)
Engineered Fill	32	100	120
Sandstone Baypoint Formation	34	100	125

TABL 2

H STREET

Shallow Foundation Design Recommendations, Standard Plan Type I Retaining Wall, RW-4

Begin Station	End Station	Design Height H (ft)	Bottom of Footing Elevation (ft)	Minimum Footing Embedment Depth (ft)	Bottom of Subexcavation Elevation (ft)	Settlement Calculated at Net Bearing Pressure (in)	Total Permissible Settlement (in)	Loading Type	Effective Footing Width B' (ft)	Net Bearing Stress q _o (ksf)	Permissible Net Contact Stress q _{pn} (ksf)	Gross Uniform Bearing Stress q _o (ksf)	Factored Gross Nominal Bearing Resistance q _r (ksf)
449+75	454+00	9.0	13.0	3.3		< 1.0	1.0	Service I	6.0	1.6	4.0	N/A	N/A
								Strength I	3.0	N/A	N/A	3.3	6.6
								Extreme I	3.1	N/A	N/A	3.4	14.8
								Extreme II	2.9	N/A	N/A	3.6	14.4
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		
								Service I				N/A	N/A
								Strength I		N/A	N/A		
								Extreme I		N/A	N/A		
								Extreme II		N/A	N/A		

$q_c = 32^\circ \quad \gamma = 120 \text{ Pcf}$
 $N_q = 23.2 \quad N_\gamma = 30.2$
 $q_c = \gamma \cdot D_f \cdot N_q + 0.5 \cdot \gamma \cdot B \cdot N_\gamma$
 $q_c = 0.12 \times 3.3 \times 23.2 + 0.5 \times 0.12 \times 30.2 \times 120 = 9.2 + 1.8B$
 $q_{STR} = 9.2 + 1.8 \times 3.0 = 14.6 \times 0.45 = 6.6 \text{ Ksf}$
 $q_{EXT I} = 9.2 + 1.8 \times 3.1 = 14.8 \text{ Ksf}$
 $q_{EXT II} = 9.2 + 1.8 \times 2.9 = 14.4 \text{ Ksf}$

APPENDICES

DRAFT

APPENDIX I
PROJECT PLANS

D

A

F

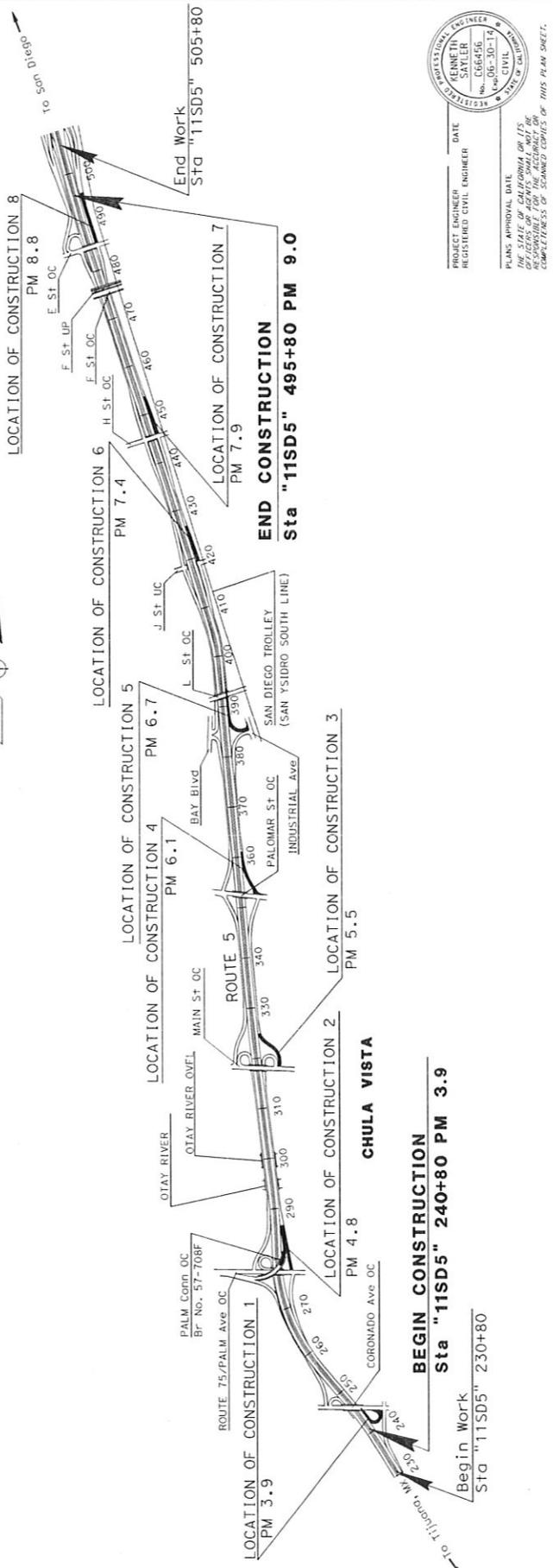
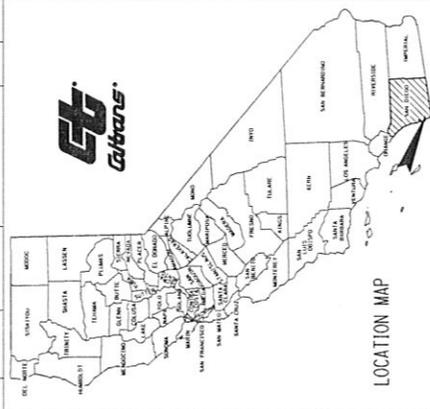
INDEX OF PLANS

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

IN SAN DIEGO COUNTY NEAR CHULA VISTA AT VARIOUS LOCATIONS FROM 0.1 MILES SOUTH OF CORONADO OVERCROSSING TO 0.5 MILES NORTH OF E STREET OVERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010

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



BEGIN CONSTRUCTION
Sta "11SD5" 240+80 PM 3.9

Begin Work
Sta "11SD5" 230+80

END CONSTRUCTION
Sta "11SD5" 495+80 PM 9.0



PROJECT ENGINEER
REGISTERED CIVIL ENGINEER
DATE

PLANS APPROVAL DATE
BY
DATE OF APPROVAL
RESERVING THE RIGHT TO
ACCEPT OR REJECT ANY
COMPLETION OF THESE PLANS SHEET.

CONTRACT NO.	11-244000
PROJECT ID	1114000045
PROJECT NUMBER & PHASE	UNIT 2782

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

BORDER LAST REVISED 9/20/2012 | CALTRANS WEB SITE IS: [HTTP://WWW.DOT.CA.GOV/](http://www.dot.ca.gov/)

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15 IN. TYPICAL

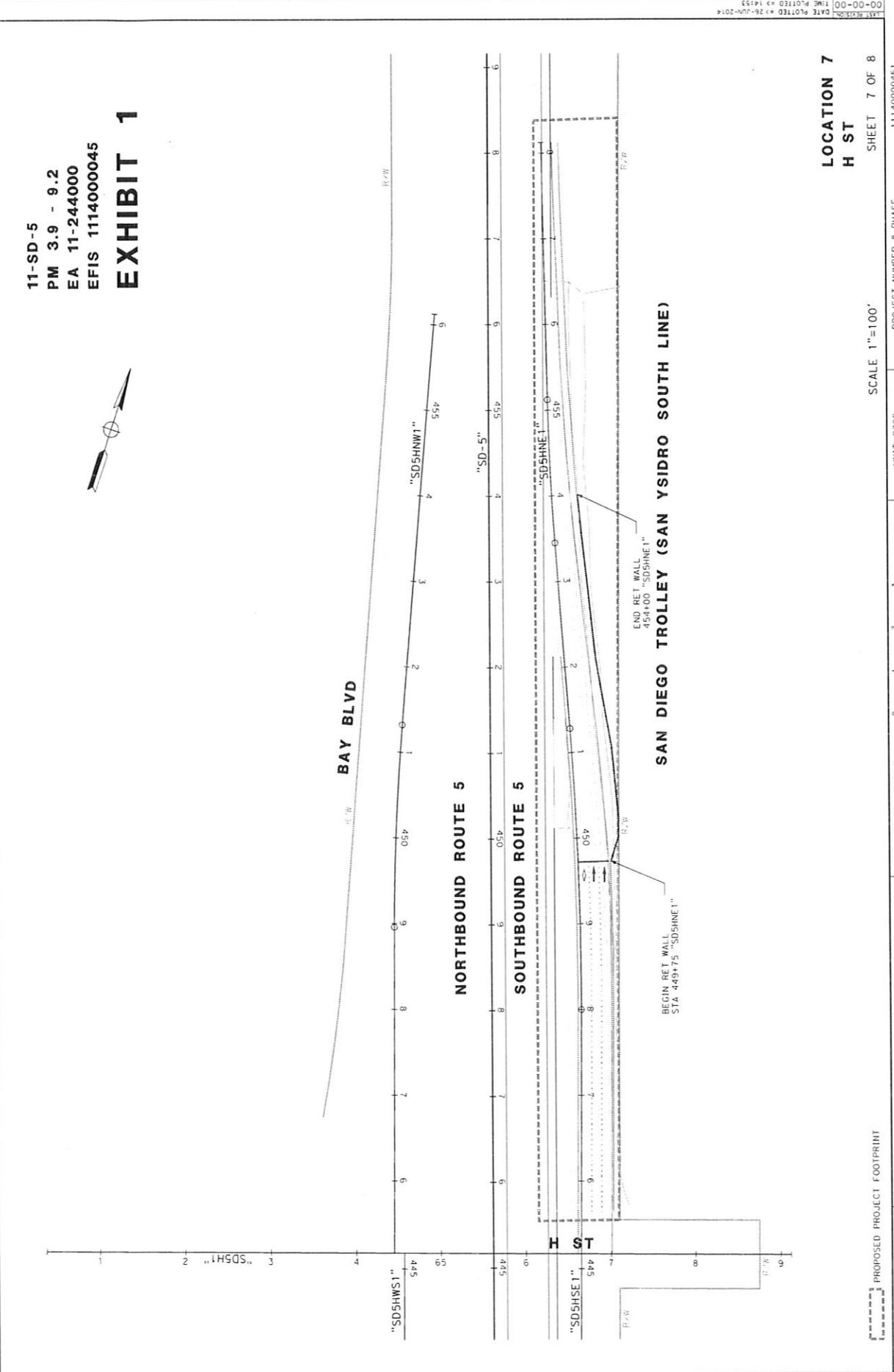
DATE PLOTTED 18-AUG-2014
TIME PLOTTED 1413

DATE PLOTTED 18-AUG-2014
TIME PLOTTED 1413

DESIGN ENGINEER PROJECT MANAGER

11-SD-5
 PM 3.9 - 9.2
 EA 11-244000
 EFIS 1114000045

EXHIBIT 1



LOCATION 7
H ST
 SHEET 7 OF 8

SCALE 1"=100'

PROJECT NUMBER & PHASE

UNIT 2782

RELATIVE BORDER SCALE
 IS IN INCHES

PROPOSED PROJECT FOOTPRINT

USERNAME => 312126
 BDN FILE => LOC 7 - H ST

BORDER LAST REVISED 7/2/2010

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	DESIGNED BY	REVISOR BY	DATE REVISED
CHUCKER		CHECKED BY		

APPENDIX II
ARCHIVED DATA

DRAFT

APPENDIX III
LABORATORY TEST RESULTS

DRAFT

Results sent to: ALI LARI

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 1/16/2015
Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EFIS: 1114000045

Dist/Co/Rte/PM 11 / SD /005/ / 3.9-9 PM

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT)		MINIMUM RESISTIVITY ¹ (ohm-cm)	pH ¹	CHLORIDE CONTENT ² (ppm)	SULFATE CONTENT ³ (ppm)	IS SAMPLE CORROSIVE?
			START	END					
SOIL SAMPLE FROM: STA 281+00									
CR20150001	C410103	HA-14-003	2	5	526	8.13	500	400	YES

This site is corrosive to foundation elements (see note below).

Controlling corrosion parameters are as follows:

- Chloride concentration is 500 ppm or greater

Note: For Structural Elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. Resistivity is not considered for Structural Elements. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

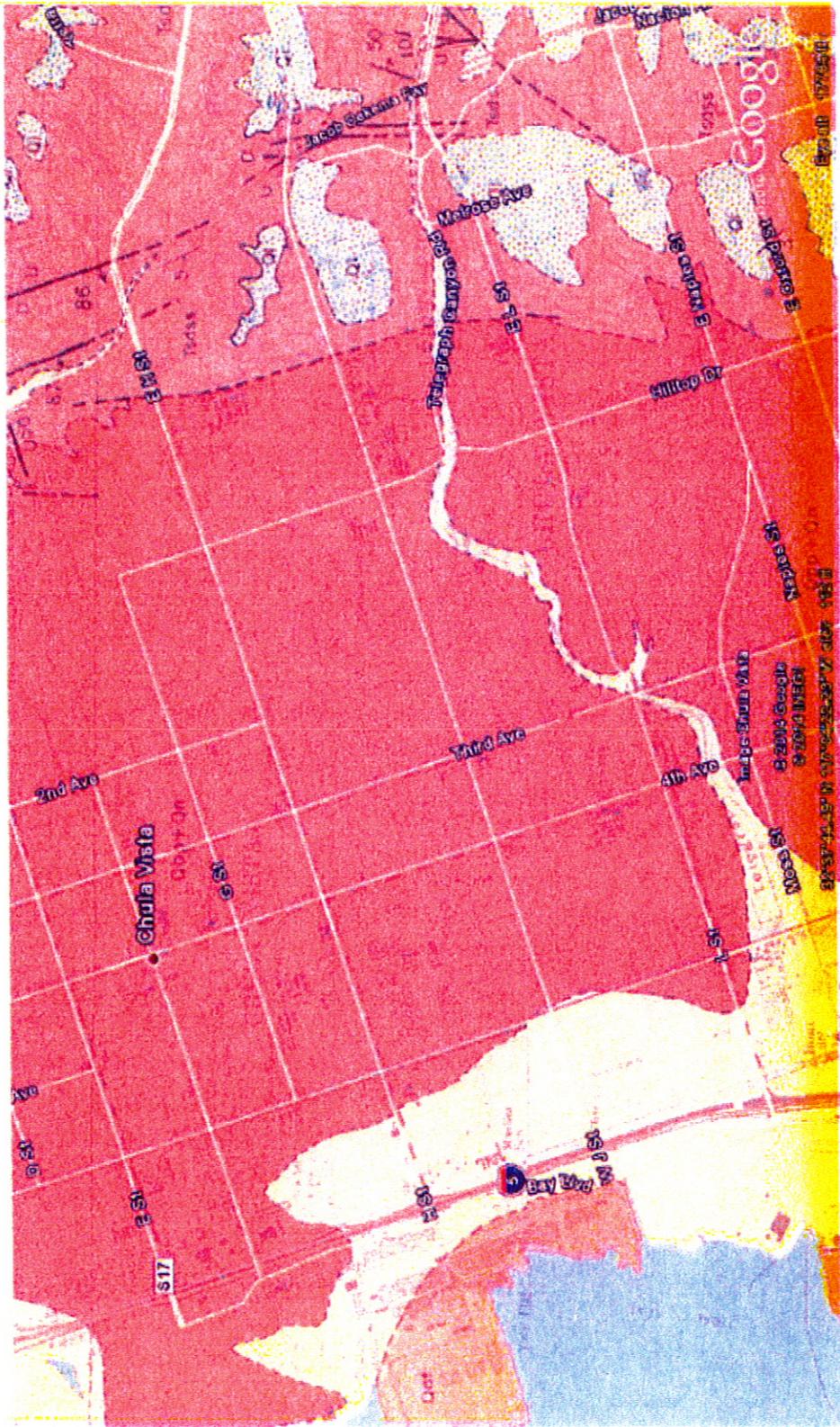
¹CT 643, ²CT 422, ³CT 417

CR20150001 - CR20150001

1/20/2015

**APPENDIX IV
GEOLOGIC MAP**

DRAFT



Geotechnical Design Report
For Ramp Widening at I-5
E.A.24400/EFIS.114000045

APPENDIX V
SEISMIC DATA

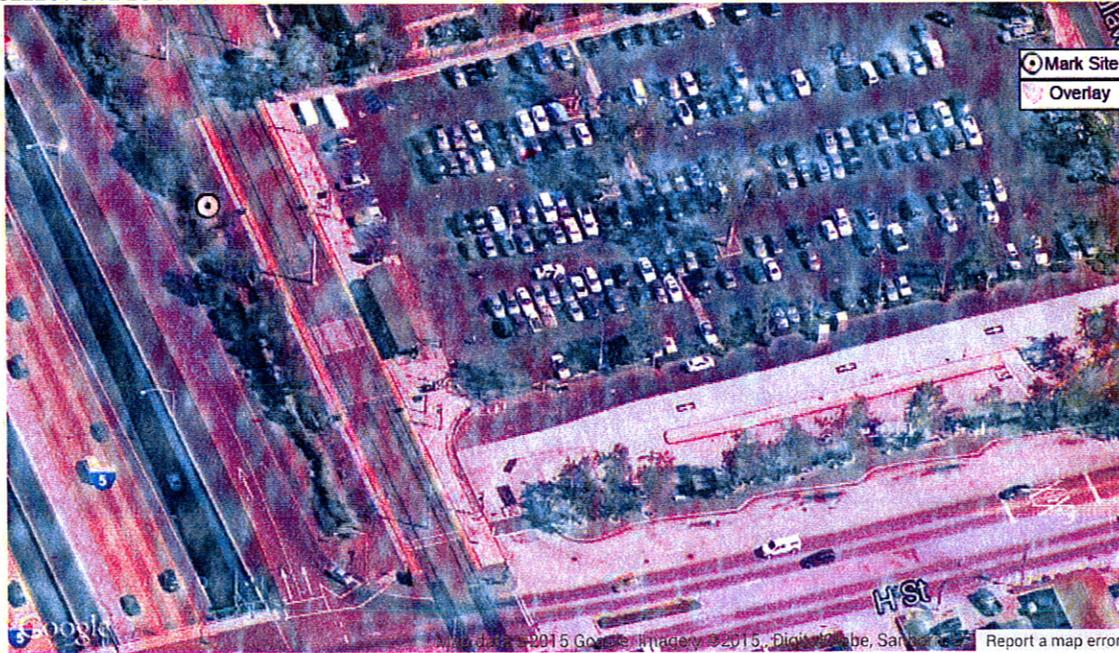
DRAFT

CALIFORNIA DEPARTMENT OF
TRANSPORTATION

Caltrans ARS Online (v2.3.06)

This web-based tool calculates both deterministic and probabilistic acceleration response spectra for any location in California based on criteria provided in *Appendix B of Caltrans Seismic Design Criteria*. [More...](#)

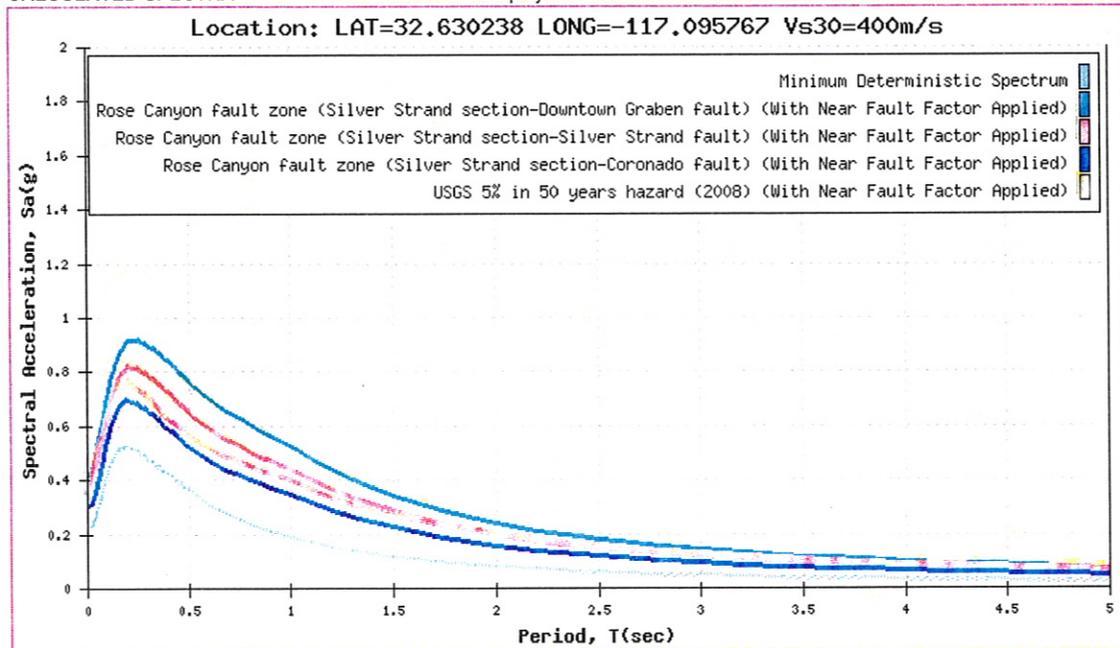
SELECT SITE LOCATION



Latitude: 32.63023805 Longitude: -117.09576666 Vs30: 400 m/s [Calculate](#)

CALCULATED SPECTRA

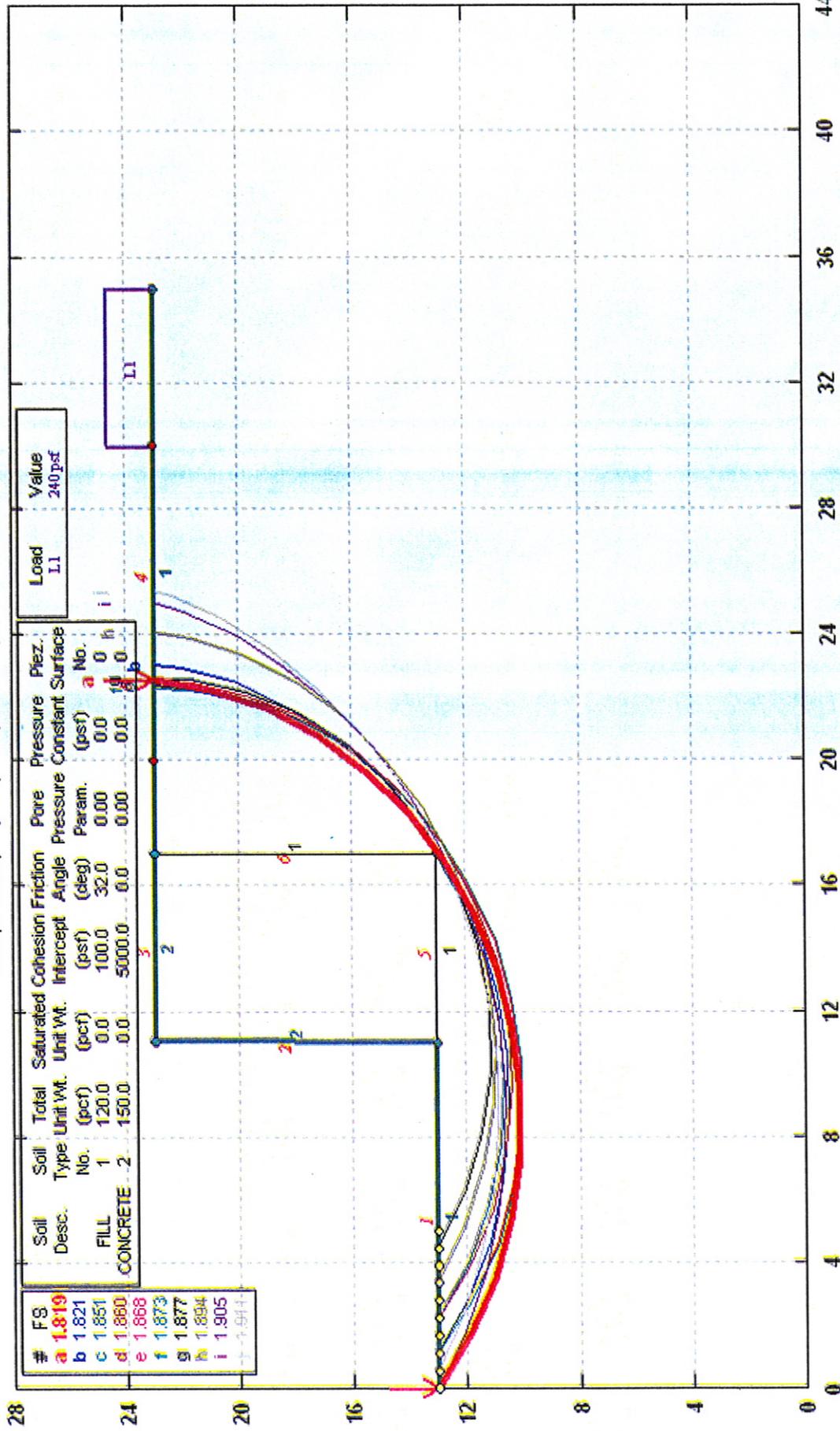
Display Curves: 3



APPENDIX VI
ANALYSES AND CALCULATIONS

I-5, H St, RW-4 GLOBAL STABILITY

c:\slope stability\i-5, h st , rw-4.pl2 Run By: LARI 2/5/2015 11:01AM



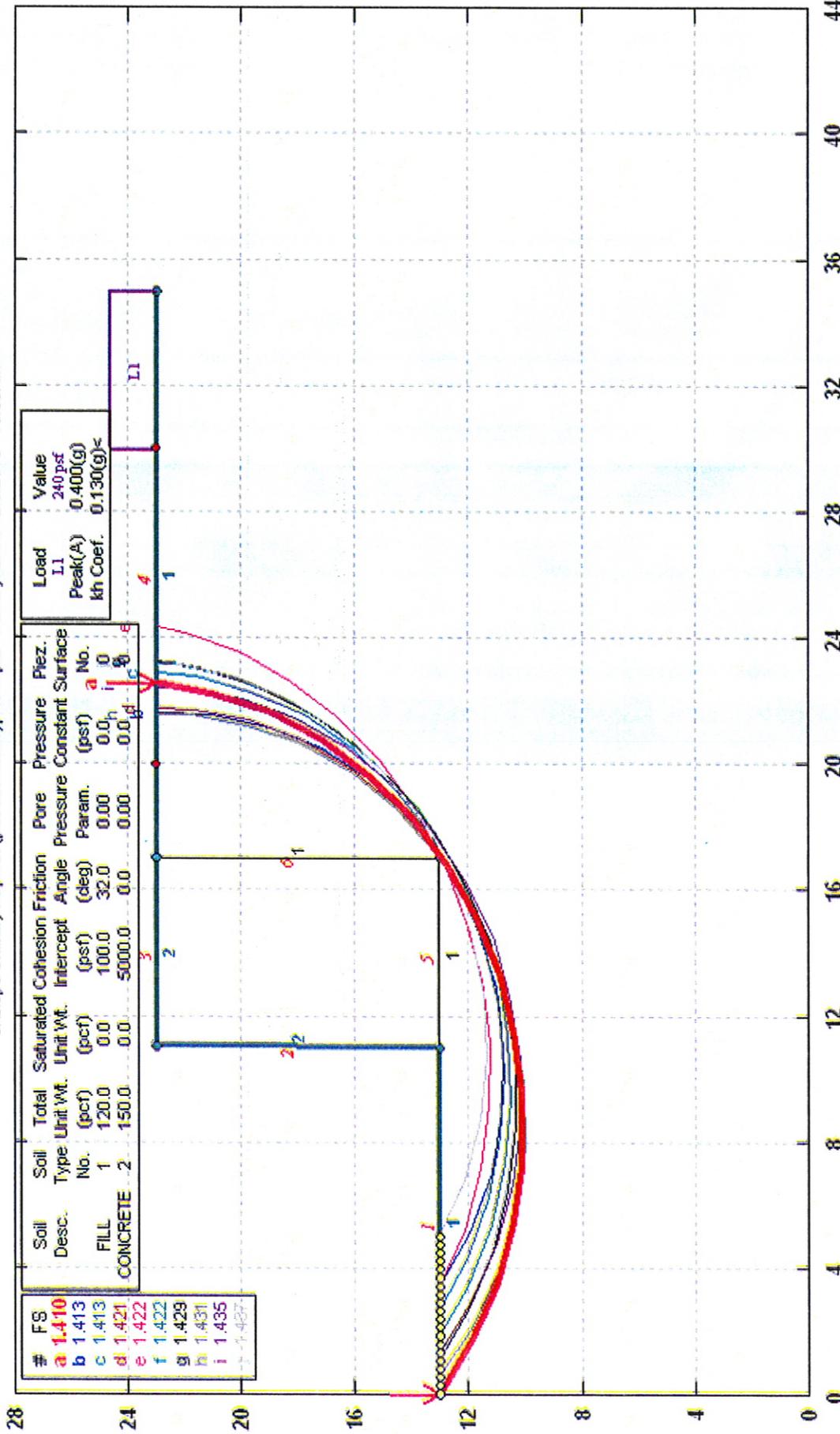
GSTABL7 v.2 FSmin=1.819

Safety Factors Are Calculated By The Simplified Janbu Method



I-5, H St, RW-4 GLOBAL STABILITY

c:\slope stability\i-5, h st (pseudo-static), rw-4.pl2 Run By: LARI 2/5/2015 10:58AM



GSTABL7 v.2 FSmin=1.410
Safety Factors Are Calculated By The Simplified Janbu Method



**I-5 AERIALY DEPOSITED LEAD SURVEY REPORT
FOR I-5 RAMP METER PROJECT
CITIES OF SAN DIEGO AND CHULA VISTA
SAN DIEGO COUNTY, CA
CALTRANS DISTRICT 11, EA 244000
PI 1114000045 100.0 FED
CONTRACT NO. 11A1996
TASK ORDER NO. 21**

Project: 20152475.001A

January 26, 2015

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only for the specific project for which this report was prepared.**

A Report Prepared for:
Ms. Diane Vermeulen, P.E.
State of California Department of Transportation
Environmental Division, MS 242
4050 Taylor Street
San Diego, California 92110

**AERIALLY DEPOSITED LEAD SURVEY REPORT
FOR I-5 RAMP METER PROJECT
CITIES OF SAN DIEGO AND CHULA VISTA
SAN DIEGO COUNTY, CA
CALTRANS DISTRICT 11, EA 244000
PI 1114000045 100.0 FED
CONTRACT NO. 11A1996
TASK ORDER NO. 21**

Kleinfelder Project No. 20152475.001A

Prepared by:



Chris Noland, P.G. 8099
Project Geologist



Exp. 7/31/2016

Peer Reviewed by:



Lizanne Simmons, P.G. 7431
Principal Geologist



KLEINFELDER, INC.
550 West C Street Suite 1200
San Diego, California 92101
(619) 831-4600

January 26, 2015

Table 1
Soil Analytical Results



		Chemical Method Preparation Units		Lead SW6010B TTLC mg/kg	Lead SW6010B STLC-WET mg/L	Lead SW6010B STLC-WET_DI mg/L	Lead SW6010B TCLP mg/L	pH SW9045D METHOD pH units
Location Name	Sample Name	Date	Depth					
I-5-LW-01	I-5-LW-01-0.5	11/03/2014	0.5	256	21.9	0.017 J	0.16	--
I-5-LW-01	I-5-LW-01-1.0	11/03/2014	1	34.1	1.7	--	--	--
I-5-LW-01	I-5-LW-01-3.0	11/03/2014	3	17.8	0.20 J	--	--	--
I-5-LW-02	I-5-LW-02-0.5	11/03/2014	0.5	72.3	2.7	0.0035 J	--	--
I-5-LW-02	I-5-LW-02-1.0	11/03/2014	1	7.0	0.18 J	--	--	--
I-5-LW-02	I-5-LW-02-3.0	11/03/2014	3	5.5	0.049 J	--	--	--
I-5-LW-02	I-5-LW-02-100	11/03/2014	3	4.3	0.018 J	--	--	--
I-5-LW-03	I-5-LW-03-0.5	11/03/2014	0.5	523	12.4	0.0069 J	0.089	5.50
I-5-LW-03	I-5-LW-03-1.0	11/03/2014	1	106	4.5	0.0049 J	0.49	--
I-5-LW-03	I-5-LW-03-3.0	11/03/2014	3	8.6	0.18 J	--	--	--
I-5-LW-04	I-5-LW-04-0.5	11/04/2014	0.5	116	7.8	< 0.030 U	0.047 J	--
I-5-LW-04	I-5-LW-04-1.0	11/04/2014	1	179	7.7	0.010 J	0.046 J	--
I-5-LW-04	I-5-LW-04-3.0	11/04/2014	3	8.8	0.092 J	--	--	--
I-5-LW-05	I-5-LW-05-0.5	11/04/2014	0.5	99.2	6.2	0.016 J	--	--
I-5-LW-05	I-5-LW-05-1.0	11/04/2014	1	38.4	1.8	--	--	--
I-5-LW-05	I-5-LW-05-3.0	11/04/2014	3	37.1	3.2	--	--	--
I-5-LW-06	I-5-LW-06-0.5	11/04/2014	0.5	812	6.7	< 0.030 U	0.13	--
I-5-LW-06	I-5-LW-06-1.0	11/04/2014	1	5.9	0.069 J	--	--	--
I-5-LW-06	I-5-LW-06-3.0	11/04/2014	3	2.3	< 0.50 U	--	--	--
I-5-LW-07	I-5-LW-07-0.5	11/04/2014	0.5	335	19.9	0.043	0.27	--
I-5-LW-07	I-5-LW-07-1.0	11/04/2014	1	549	39.2	0.045	0.013 J	--
I-5-LW-07	I-5-LW-07-2.5	11/04/2014	2.5	123	6.8	0.012 J	0.0041 J	--
I-5-LW-08	I-5-LW-08-0.5	11/04/2014	0.5	117	8.3	0.024 J	0.078	--
I-5-LW-08	I-5-LW-08-1.0	11/04/2014	1	12.9	0.26 J	--	--	--
I-5-LW-08	I-5-LW-08-3.0	11/04/2014	3	10.1	0.22 J	--	--	--
I-5-LW-09	I-5-LW-09-0.5	11/04/2014	0.5	1070	83.2	0.12	2.2	--
I-5-LW-09	I-5-LW-09-1.0	11/04/2014	1	221	2.6	0.0056 J	0.055	8.32
I-5-LW-09	I-5-LW-09-2.5	11/04/2014	2.5	220	15.2	0.017 J	0.31	--
I-5-LW-10	I-5-LW-10-0.5	11/05/2014	0.5	169	6.6	< 0.030 U	0.056	--
I-5-LW-10	I-5-LW-10-100	11/05/2014	0.5	122	6.5	--	--	--
I-5-LW-10	I-5-LW-10-1.0	11/05/2014	1	22.2	1.9	--	--	--
I-5-LW-10	I-5-LW-10-3.0	11/05/2014	3	4.2	0.058 J	--	--	--
I-5-LW-11	I-5-LW-11-0.5	11/05/2014	0.5	1190	75.3	0.049	0.82	--
I-5-LW-11	I-5-LW-11-1.0	11/05/2014	1	32.0	14.2	--	--	--
I-5-LW-11	I-5-LW-11-3.0	11/05/2014	3	38.7	1.6	--	--	--
I-5-LW-12	I-5-LW-12-0.5	11/05/2014	0.5	466	41.5	< 0.030	0.39	--
I-5-LW-12	I-5-LW-12-1.0	11/05/2014	1	41.5	2.0	--	--	--
I-5-LW-12	I-5-LW-12-2.0	11/05/2014	2	127	7.5	< 0.030 U	0.13	--
I-5-LW-13	I-5-LW-13-0.5	11/05/2014	0.5	1580	138	--	--	7.70 J
I-5-LW-13	I-5-LW-13-1.0	11/05/2014	1	28.3	2.4	--	--	--
I-5-LW-13	I-5-LW-13-3.0	11/05/2014	3	78.1	3.0	< 0.030 U	--	--
I-5-LW-14	I-5-LW-14-0.5	11/06/2014	0.5	5.4	0.072 J	--	--	--
I-5-LW-14	I-5-LW-14-1.0	11/06/2014	1	13.3	0.37 J	--	--	--
I-5-LW-14	I-5-LW-14-2.0	11/06/2014	2	13.0	0.47 J	--	--	8.28
I-5-LW-14	I-5-LW-14-100	11/06/2014	2	12.7	0.45 J	--	--	--
I-5-RW-01	I-5-RW-01-0.5	11/03/2014	0.5	420	21.9	0.070	0.26	--
I-5-RW-01	I-5-RW-01-1.0	11/03/2014	1	200	6.1	< 0.030 U	0.089	--
I-5-RW-01	I-5-RW-01-2.0	11/03/2014	2	282	20.1	0.019 J	0.17	--
I-5-RW-02	I-5-RW-02-0.5	11/04/2014	0.5	140	12.0	0.036	0.97	7.86
I-5-RW-02	I-5-RW-02-1.0	11/04/2014	1	31.2	0.52	--	--	--
I-5-RW-02	I-5-RW-02-3.5	11/04/2014	3.5	30.1	1.7	--	--	--
I-5-RW-03	I-5-RW-03-0.5	11/05/2014	0.5	68.5	4.2	< 0.030 U	--	--
I-5-RW-03	I-5-RW-03-1.0	11/05/2014	1	77.1	5.5	< 0.030 U	--	--
I-5-RW-03	I-5-RW-03-3.5	11/05/2014	3.5	12.2	0.40 J	--	--	--
I-5-RW-04	I-5-RW-04-0.5	11/05/2014	0.5	493	54.8	< 0.030 U	0.97	--
I-5-RW-04	I-5-RW-04-1.0	11/05/2014	1	79.1	57.4	< 0.030 U	0.026 J	--
I-5-RW-04	I-5-RW-04-4.0	11/05/2014	4	200	8.8	< 0.030 U	0.41	8.08 J
I-5-RW-05	I-5-RW-05-0.5	11/05/2014	0.5	1050	81.1	0.67	2.7	--
I-5-RW-05	I-5-RW-05-1.0	11/05/2014	1	15.1	0.10 J	--	--	--
I-5-RW-05	I-5-RW-05-4.0	11/05/2014	4	4.0	< 0.50 U	--	--	--
I-5-RW-06	I-5-RW-06-0.5	11/06/2014	0.5	17.6	0.86	--	--	7.49
I-5-RW-06	I-5-RW-06-100	11/06/2014	0.5	14.2	0.78	--	--	--
I-5-RW-06	I-5-RW-06-1.0	11/06/2014	1	0.97	< 0.50 U	--	--	--
I-5-RW-06	I-5-RW-06-4.0	11/06/2014	4	0.80	< 0.50 U	--	--	--
I-5-RW-07	I-5-RW-07-0.5	11/06/2014	0.5	3.3	< 0.50 U	--	--	--
I-5-RW-07	I-5-RW-07-1.0	11/06/2014	1	8.3	0.32 J	--	--	--
I-5-RW-07	I-5-RW-07-4.0	11/06/2014	4	2.3	0.019 J	--	--	--

Notes:
 J = Estimated value
 mg/kg = milligrams per kilogram
 mg/L = milligrams per liter
 pH = hydrogen ion potential
 STLC = soluble threshold limit concentration
 STLC-WET = STLC using citric acid extractant
 STLC-WET-DI = STLC using deionized water as extractant
 TCLP = toxicity characteristics leaching procedure
 TTLC = total threshold limit concentration
 U = concentration below laboratory reporting limit
BOLD indicates total lead concentrations exceeding 1,000 mg/kg and STLC concentrations exceeds 5.0 mg/L.

Table A-1
Sample Location Coordinates

Location ID	Longitude	Latitude
I-5-LW-01	-117.0817000	32.57619217
I-5-LW-02	-117.0809685	32.57576508
I-5-LW-03	-117.0869976	32.58590195
I-5-LW-04	-117.0875358	32.59582237
I-5-LW-05	-117.0886927	32.59679215
I-5-LW-06	-117.0892358	32.60490833
I-5-LW-07	-117.0899584	32.60692961
I-5-LW-08	-117.0896975	32.61335541
I-5-LW-09	-117.0908529	32.61458618
I-5-LW-10	-117.0928918	32.62283709
I-5-LW-11	-117.0941108	32.62546662
I-5-LW-12	-117.0956989	32.62993927
I-5-LW-13	-117.0966172	32.63184702
I-5-LW-14	-117.1005430	32.6424610
I-5-RW-01	-117.0866828	32.58464503
I-5-RW-02	-117.0897538	32.60587229
I-5-RW-03	-117.0931809	32.62344865
I-5-RW-04	-117.0937136	32.62456446
I-5-RW-05	-117.0963679	32.63128243
I-5-RW-06	-117.0998081	32.64053921
I-5-RW-07	-117.1001480	32.64137000

Location	Depth (ft)	Total (mg/kg)			WET (mg/L)			ADL Soil Type
		Mean	Maximum	95% UCL	Mean	Maximum	95% UCL	
Near E Street	All (0-4)	7.2	17.6	11.0	0.3	0.9	0.5	X
Near H Street	All (0-4)	376.7	1580.0	712.5	30.6	138.0	115.0	Y1
Near J Street	All (0-4)	198.8	1190.0	526.0	19.2	75.3	56.8	Y1
Near L Street	All (0-4)	275.2	1070.0	575.2	18.3	83.2	41.7	Y1
Near Palomar Street	All (0-4)	225.4	812.0	402.4	9.7	39.2	17.7	Y1
Near Main Street	All (0-4)	79.8	179.0	131.9	4.5	7.8	7.1	Y1
Near Palm Avenue	All (0-4)	256.6	523.0	415.1	10.9	21.9	18.1	Y1
Near Coronado Avenue	All (0-4)	65.5	256.0	144.9	4.5	21.9	17.5	Y1

The resulting statistical results indicate that soil represented by sample data near E Street has a soil type of X (non-hazardous) that has no restrictions on soil reuse (may require notification and a Lead Compliance Plan for worker safety). All other locations had a soil type of Y1, hazardous waste. The Variance allows Y1 soil to be reused with a minimum cover of 12-inches of clean soil.

3.4. Excavated Soil Categorized by Location and Depth

The above grouping of sample data were further categorized by depth. At all 21 sample locations, samples were collected at 0.5 and 1 foot, respectively. The third (and deepest) sample was collected at depths between 2 and 4 feet (they were not always collected at the same depth). Based on the depth of samples collected, lead concentrations in samples collected at and shallower than 1-foot depth were evaluated separately from lead concentrations in samples collected at depths greater than 1-foot. The results of statistical evaluation are summarized below.

Area	Depth (ft)	No. of samples	Maximum Total Lead (mg/kg)	95% UCL Total Lead (mg/kg)	Maximum WET Lead (mg/kg)	95% UCL WET Lead (mg/kg)	ADL Soil Type
Near E Street	0-1	6	17.6	13.3	0.86	0.6	X
Near E Street	> 1 to 4	3	13	NC	0.5	NC	X
Near H Street	0-1	6	1580	1067	138	90.2	Y1
Near H Street	> 1 to 4	3	127	NC	7.5	NC	Y1
Near J Street	0-1	8	1190	1003	75.3	47.5	Y1
Near J Street	> 1 to 4	4	200	NC	8.8	NC	Y1
Near L Street	0-1	4	1070	NC	83.2	NC	Y1
Near L Street	> 1 to 4	2	220	NC	15.2	NC	Y1
Near Palomar St	0-1	6	812	574.6	39.2	25.3	Y1
Near Palomar St	> 1 to 4	3	123	NC	6.8	NC	Y1
Near Main St	0-1	4	179	NC	7.8	NC	Y1
Near Main St	> 1 to 4	2	37.1	NC	3.2	NC	X
Near Palm Avenue	0-1	4	523	NC	21.9	NC	Y1
Near Palm Avenue	> 1 to 4	2	282	NC	20.1	NC	Y1
Near Coronado Avenue	0-1	4	256	NC	21.9	NC	Y1
Near Coronado Avenue	> 1 to 4	2	17.8	NC	0.2	NC	X

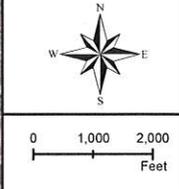
NC = not calculated because of insufficient distinct values to be statistically significant

The results show that soil sampled near E Street at all depths sampled, near Main Street at depths greater than 1-foot, and near Coronado Avenue at depths greater than 1 foot is non-hazardous; i.e., no restrictions on soil reuse (may require notification and a Lead Compliance Plan for worker safety). All other locations and depths had a soil type of Y1, hazardous waste. The Variance allows Y1 soil to be reused with a minimum cover of 12-inches of clean soil

Figures



Legend
 Sample locations



Project No. 9061013
 Date: 01/2015
 Drawn By: SG



Sample Locations
 Aerially Deposited Lead Analysis
 I-5 Between SR54 and SR905
 San Diego County, California

Figure 1

TRAFFIC ELEMENTS				
SYSTEM	CABINET ID	STATUS FUNCTIONING/ NON-OPERATIONAL	PRE-CONSTRUCTION STATUS*	POST-CONSTRUCTION STATUS*
Microwave vehicle detection system	U4.093	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Microwave vehicle detection system	U9.668	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Microwave vehicle detection system	U6.035	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Microwave vehicle detection system	U6.716	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Microwave vehicle detection system	U7.291	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Microwave vehicle detection system	U7.909	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Microwave vehicle detection system	U8.614	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Traffic monitoring station	U5.414	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Closed circuit television camera system	S6.041T (#106)	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Closed circuit television camera system	S7.909T (#107)	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Closed circuit television camera system	S8.579T (#108)	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL
Changeable message sign system	I6.66	FUNCTIONING	FUNCTIONING : NONOPERATIONAL	FUNCTIONING : NONOPERATIONAL

* NOTE: CIRCLE STATUS