

INFORMATION HANDOUT

**For Contract No. 04-3G0804
At 04-Son-1 PM 30.5**

**Identified by
Project ID 0400021272**

PERMITS

U.S. Army Corps of Engineers, Nationwide Permit 14, dated June 27, 2016

Coastal Permit from County of Sonoma Permit and Resource Management
Department, dated June 24, 2016

WATER QUALITY

North Coast California Regional Water Quality Control Board (CRWQCB),
dated June 1, 2016

Water Quality Information Handout, dated April 13, 2016

MATERIALS INFORMATION

Revised Foundation Report (FR) for Two Proposed Soil Nail Walls, dated
February 19, 2016

Revised Material Recommendations, dated June 1, 2016

Memorandum

To: ERIC DENARDO
BRANCH CHIEF
OFFICE OF ENVIRONMENTAL ANALYSIS

Date: June 27, 2016
File: 04-3G080 SON-001

From: GREGORY PERA 
BRANCH CHIEF
OFFICE OF BIOLOGICAL SCIENCE AND PERMITS

Subject: Nationwide Permit 14 – Linear Transportation Projects

Caltrans Biology has applied for authorization of the Blue Slide Retaining Walls Project under Nationwide Permit 14 (NWP 14), “Linear Transportation Projects”. Caltrans provided the United States Army Corps of Engineers San Francisco District Office (Corps) a copy of the NWP application on October 30, 2015. As of this date, the Corps has not provided notification if the project is authorized under NWP 14. Per 33 CFR Ch. II § 330.1,

The permittee may presume that his project qualifies for the NWP unless he is otherwise notified by the DE within a 45-day period. The 45-day period starts on the date of receipt of the notification in the Corps district office and ends 45 calendar days later regardless of weekends or holidays.

Caltrans Biology has been in communication with the Corps beyond the 45-day period, and has requested updates regarding the NWP status. The Corps has not issued notification or indication that the application was incomplete. As this project will RTL today, June 27 2016, and is at risk to lose project funding, Caltrans Biology considers the project to be authorized under NWP 14 as of December 14, 2015. In the event that this decision is challenged by the Corps, Caltrans Biology does not anticipate any additional commitments will be required for construction of this mitigation project.

The text of Nationwide Permit 14 – Linear Transportation Projects is enclosed.

June 27, 2016

Nationwide Permit 14 - Linear Transportation Projects.

Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project. This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 31.) (Sections 10 and 404)

Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Federal Register /Vol. 77, No. 34 /Tuesday, February 21, 2012 /Notices 10269



COUNTY OF SONOMA
PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403
(707) 565-1900 FAX (707) 565-1103

June 24, 2016

Caltrans
111 Grand Avenue
Oakland, CA 94612

Re: File No PLP15-0079
Site address: State Route 1 Postmile 30.5, Fort Ross
APN: Adjacent to 109-120-006 and 109-120-009

Your application for a Coastal Permit with hearing to allow landslide repairs on State Route 1 Postmile 30.5 has been approved subject to the enclosed Conditions of Approval.

A Notice of Pending Action on a Coastal Permit and Notice of Waiver of Public Hearing and was mailed to each property owner within 300 ft of the proposed project and any comments were required to be submitted to the County within 10 days as per Section 26C-344(b) No comments were received. A Notice of Final Action will be sent to the California Coastal Commission upon expiration of the local appeal period.

The Coastal Permit approval is based on a determination by the Permit and Resource Management Department that the project, as described in the application and as conditioned, conforms with the plans, policies, requirements and standards of the Sonoma County Coastal Program and the California Coastal Act. In addition, it is the determination of the Department that it shall act as a responsible agency under the provisions of the California Environmental Quality Act pursuant to the Provisions of Title 14 of the California Administrative Code, Section 15096.

The Coastal Permit shall be issued for the use as described on the application form, the proposal statement, the site plan submitted to this department and as modified by the Conditions of Approval. Any modifications of the use, expansion or alteration shall be submitted for review and approval by the Permit and Resource Management Department, Project Review Division, in advance of the proposed change and may, at the discretion of the department, require a new Coastal Permit with or without a public hearing.

This decision may be appealed to in writing, along with an appeal fee, within 10 (ten) calendar days of the date of this letter to the Sonoma County Board of Zoning Adjustments per Section 26C-347 of the Sonoma County Zoning Ordinance.

If you have any questions, feel free to contact me at (707) 565-1683 or at Jennifer.Faso@sonoma-county.org. Please refer to your file number (PLP15-0079) and site address when making inquiries.

Sincerely,

Jennifer Faso
Project Planner

Enclosure: Conditions of Approval dated June 24, 2016

potentially include all by-products of human land use greater than fifty (50) years of age including trash pits older than fifty (50) years of age. When contacted, a member of PRMD Project Review staff and the archaeologist shall visit the site to determine the extent of the resources and to develop and coordinate proper protection/mitigation measures required for the discovery. PRMD may refer the mitigation/protection plan to designated tribal representatives for review and comment. No work shall commence until a protection/mitigation plan is reviewed and approved by PRMD - Project Review staff. Mitigations may include avoidance, removal, preservation and/or recordation in accordance with California law. Archeological evaluation and mitigation shall be at the applicant's sole expense.

"If human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and PRMD staff, County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American, the Native American Heritage Commission must be contacted by the Coroner so that a "Most Likely Descendant" can be designated and the appropriate provisions of the California Government Code and California Public Resources Code will be followed."

7. The Director of PRMD is hereby authorized to modify these conditions for minor adjustments to respond to unforeseen field constraints provided that the goals of these conditions can be safely achieved in some other manner. The applicant must submit a written request to PRMD demonstrating that the conditions is infeasible due to specific constraints (e.g. lack of property rights) and shall include a proposed alternative measure or option to meet the goal or purpose of the condition. PRMD shall consult with affected departments and agencies and may require an application for modification of the approved permit. Changes to conditions that may be authorized by PRMD are limited to those items that are not adopted standards or were not adopted as mitigation measures or that were not at issue during the public hearing process. Any modification of the permit conditions shall be documented with an approval letter from PRMD, and shall not affect the original permit approval date or the term for expiration of the permit.

The owner/operator and all successors in interest, shall comply with all applicable provisions of the Sonoma County Code and all other applicable local, state and federal regulations.

8. This permit shall be subject to revocation or modification by the Board of Zoning Adjustments if:
(a) the Board finds that there has been noncompliance with any of the conditions or (b) the Board finds that the use for which this permit is hereby granted constitutes a nuisance. Any such revocation shall be preceded by a public hearing noticed and heard pursuant to Section 26C-335 and 26C-335.2 of the Sonoma County Code.

In any case where a Use Permit has not been used within two (2) years after the date of the granting thereof, or for such additional period as may be specified in the permit, such permit shall become automatically void and of no further effect, provided however, that upon written request by the applicant prior to the expiration of the two year period the permit approval may be extended for not more than one (1) year by the authority which granted the original permit pursuant to Section 26C-348 of the Sonoma County Code.

North Coast Regional Water Quality Control Board

June 1, 2016

**In the Matter of
Water Quality Certification**

for the

**California Department of Transportation
State Route 1 Storm Damage Repair Project
38.501114, -123.217358¹
WDID No. 1B15154WNSO, ECM PIN CW-820044
Caltrans EA No. 04-3G080, EFIS No. 04-0002-1272**

APPLICANT: California Department of Transportation
RECEIVING WATER: Pacific Ocean
HYDROLOGIC AREA: Russian Gulch Hydrologic Area No. 113.90
COUNTY: Sonoma
FILE NAME: CDOT SON-1-PM 30.5

FINDINGS BY THE EXECUTIVE OFFICER:

1. On December 2, 2015, the North Coast Regional Water Quality Control Board (Regional Water Board) received an application from the California Department of Transportation (Caltrans), requesting Federal Clean Water Act, section 401, Water Quality Certification (certification) for activities related to the proposed State Route 1 Storm Damage Repair Project (Project).
2. **Public Notice:** The Regional Water Board provided public notice of the application pursuant to title 23, California Code of Regulations, section 3858 on May 6, 2016, and

¹ WGS84 datum

posted information describing the Project on the Regional Water Board's website. No comments were received.

3. **Receiving Waters:** The proposed Project would cause disturbances to drainage systems discharging into the Pacific Ocean (Russian Gulch Hydrologic Area).
4. **Project Description:** The purpose of the Project is to stabilize a landslide so that the danger of soil and rocks sliding onto the existing highway would be minimized through the Project area. The Project area is on State Route 1 (SR 1) South of Fort Ross in Sonoma County at post-mile (PM) 30.5. The scope of the proposed work includes constructing two soil nail walls, realigning the north bound lane of Highway 1 slightly to the north and replacing a drainage pipe in kind in the eastern end of the project footprint. Caltrans is proposing the following activities:
 - a. **Soil nail walls:** A 434-foot-long soil nail wall (retaining wall #1) and a 288-foot-long soil nail wall (retaining wall #2) shall be constructed on the north bound side. Construction of the walls would include excavation, drilling of soil nails, grouting the nails in place, placement of a drainage system, and the application of shotcrete and bearing plates. The lower retaining wall #2 shall be completely buried after construction is completed. The upper 434 foot wall shall be partially buried and the slope shall be graded to 2:1 or flatter.
 - b. **Realignment:** The north bound lane shall be moved slightly to the north and east, and widened for a distance of 563 feet. When completed, the roadway would have two 12-foot-wide lanes, a 4-foot-wide shoulder on the north bound, and a 1- to 10-foot-wide shoulder on the south bound lane.
 - c. **Drainage System:** A new 620-foot-long drainage system would be installed beside the north bound lane. The drainage system would include eight drainage inlets and nine 18-inch diameter alternative pipe culverts (APC). The existing 36-inch-diameter corrugated steel pipe (CSP) drainage system would be replaced with a 36-inch-diameter plastic pipe and a new drainage inlet. The replacement pipe is 49.6 feet long, and it will be reconnected to an existing outlet pipe.

One-way reversing traffic control would also be required during construction. Staging would be located on paved roadway, existing pullouts, and private property within the Project limits.

5. **Construction Timing:** The Project is expected to require 2 years of construction. The Project is proposed to begin in April 2017, and be completed in October 2019. In-channel work will occur within the dry season. Erosion control and storm water best management practices (BMPs) will be in place during winterization.
6. **Project Impacts:** The proposed Project would result in approximately 0.012 acres of permanent impacts and 0.0031 acres of temporary impacts to wetlands due to the new road alignment. The proposed Project would also result in approximately 224 linear

feet (0.015 acres) of temporary impacts to jurisdictional waters due to the new drainage system being installed.

7. **Mitigation for Project Impacts:** To compensate for 0.030 acres of permanent and temporary impacts to jurisdictional waters and wetlands, Caltrans is proposing to purchase 0.2 acres of riparian habitat credits from the East Austin Creek Conservation Bank. Caltrans is proposing to revegetate temporarily impacted areas.
8. **Post-Construction Storm Water:** Project implementation would result in approximately 0.15 acres of new and reworked impervious surface. To control roadway pollutants, post-construction, Caltrans shall install a bioretention swale onsite to treat 0.56 acres of stormwater runoff.
9. **Disturbed Soil Area:** Project implementation would result in greater than one acre of disturbed soil area. Caltrans shall apply for coverage under the National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ) and prepare a Stormwater Pollution Prevention Plan detailing BMPs to control pollution from the Project area during construction. All temporarily disturbed areas within the Project area shall be appropriately stabilized and/or replanted with appropriate native vegetation.
10. **Utility Relocations:** Utility relocations affecting jurisdictional waters are not proposed for this Project.
11. **Other Agency Actions:** Caltrans has applied for coverage under a reporting U.S. Army Corps of Engineers Nationwide Permit No. 33, Temporary Construction, Access, and Dewatering, pursuant to section 404 of the Clean Water Act. Caltrans has also applied for a Biological Assessment and a Biological Opinion from the U.S. Fish and Wildlife Service.
12. **CEQA Compliance:** On June 26, 2014, Caltrans signed a Notice of Determination approving a Mitigated Negative Declaration for the Project (State Clearinghouse No. 2015021063) in order to comply with the California Environmental Quality Act.
13. **Antidegradation Policy:** The federal antidegradation policy requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. This certification is consistent with applicable federal and State antidegradation policies, as

it does not authorize the discharge of increased concentrations of pollutants or increased volumes of treated wastewater, and does not otherwise authorize degradation of the waters affected by this Project.

14. This discharge is also regulated under State Water Resources Control Board Order No. 2003-0017-DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges That Have Received State Water Quality Certification," which requires compliance with all conditions of this certification. Order No. 2003-0017-DWQ can be found here: http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0017.pdf.

Receiving Water:	Unnamed tributary to the Pacific Ocean Russian Gulch Hydrologic Area 113.90	
Filled and/or Excavated Areas:	Permanent – wetlands	0.027 acres
	Temporary – wetlands	0.0031 acres
	Temporary – jurisdictional waters	224 linear feet (0.015 acres)
Dredge Volume:	None	
Latitude/Longitude:	38.501114, -123.217358	

Accordingly, based on its independent review of the record, the Regional Water Board certifies that the State Route 1 Storm Damage Repair Project (WDID No. 1B15154WNSO), as described in the application will comply with sections 301, 302, 303, 306 and 307 of the Clean Water Act, and with applicable provisions of state law, provided that Caltrans complies with the following terms and conditions:

All conditions of this certification apply to Caltrans (and all its employees) and all contractors (and their employees), sub-contractors (and their employees), and any other entity or agency that performs activities or work on the Project as related to this Water Quality Certification.

Project-Specific Conditions

1. Caltrans shall install a 200-foot long bioretention swale from post mile markers SON 30.64 to SON 30.68 to treat no less than 0.56 acres of impervious surface runoff. The bioswale shall be amended with imported biofiltration soil incorporated to total a depth of 3 feet. Caltrans shall submit photographs of the completed bioretention swale no later than October 31, 2019.

Project-Specific Conditions Requiring Reports

2. Caltrans shall provide the Regional Water Board a receipt of purchase for no less than 0.20 acres of riparian habitat credits from the East Austin Creek Conservation Bank, no later than October 31, 2019.

Project-Specific Conditions Requiring Reports

3. The Regional Water Board shall be notified in writing (e-mail is acceptable) at least five working days prior to commencement of ground disturbing activities for each construction season.

Standard Conditions

4. Herbicides and other pesticides shall not be used within the Project limits. If Caltrans has a compelling case as to why pesticides should be used, then a request for pesticide use and a BMP plan may be submitted to the Regional Water Board staff for review and acceptance.
5. All Project activities and BMPs shall be implemented according to the submitted application package and the findings and conditions of this certification. Subsequent changes to the Project that could significantly impact water quality shall first be submitted to Regional Water Board staff for prior review, consideration, and written concurrence. If the Regional Water Board is not notified of an alteration to the Project that results in an impact to water quality, it will be considered a violation of this certification, and Caltrans may be subject to Regional Water Board enforcement actions.
6. All conditions required by this certification shall be included in the Contract Documents prepared by Caltrans for the contractor. In addition, Caltrans shall require compliance with all conditions included in this certification in the bid contract for this Project.
7. Caltrans is prohibited from discharging waste to waters of the State, unless explicitly authorized by this certification. For example, no debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or concrete washings, welding slag, oil or petroleum products, or other organic or earthen material from any construction or associated activity of whatever nature, shall be allowed to enter into State waters.
8. Except for temporary stockpiling of waste generated during demolition operations ("temporary" in this instance means generated and removed during the same working day), waste materials shall not be placed in a manner where the materials may be transported into waters of the State. Waste materials shall not be placed within 100 linear feet of State waters. Exceptions to the 100-foot limit may be granted on a case-by-case basis provided Caltrans first submits a proposal in writing that is found acceptable by Regional Water Board staff.
9. Caltrans is liable and responsible for the proper disposal, reuse, and/or recycling of all Project-generated waste in compliance with applicable State and Federal laws and regulations, and as described in Caltrans 2010 Standard Specifications 13-4.03D, Waste Management. Additionally, when handling, transporting, disposing, reusing, and/or recycling Project-generated waste, Caltrans and their contractors shall:

- a. Provide the Regional Water Board with a copy of the Solid Waste Disposal and Recycling Report prepared for Caltrans by the contractor per Caltrans 2010 Standard Specification 14-10.02A(1), Submittals. These reports shall be provided not later than January 31 for each year work is performed during the previous calendar year. A copy of the final Solid Waste Disposal and Recycling Report shall be submitted to the Regional Water Board within 30 days after being received by Caltrans from the contractor.
 - b. For waste other than solid waste, obtain evidence that waste has been appropriately disposed, reused, and/or recycled. Evidence shall include type and quantity of waste and may include, but not be limited to, property owner agreements, permits, licenses, and environmental clearances. Evidence shall be provided to the Regional Water Board upon request.
 - c. For waste other than solid waste, ensure the Resident Engineer has given written permission for disposal, reuse, and/or recycling, prior to the actual disposal, reuse, and/or recycling.
10. Asphalt-concrete grindings shall not be placed in any location where they may, at any time, be directly exposed to surface waters or seasonally high ground water, except asphalt-concrete grindings may be re-used and incorporated into hot mix asphalt products or encapsulated within the roadway structural section.
11. Caltrans and their contractors shall comply with the activity restrictions detailed in Caltrans 2010 Standard Specifications 13-4.03C(1). In addition, fueling, maintenance, storage and staging of vehicles and equipment shall be prohibited within waters of the State (e.g., gravel bars, seeps, ephemeral streams) and riparian areas.
12. Fueling, maintenance, and/or staging of individual equipment types within waters of the State or riparian areas may be authorized if Caltrans first prepares a plan for review and approval by Regional Water Board staff that:
- a. Identifies the specific piece of machinery that may require fueling, maintenance, and/or staging within waters of the State or riparian areas;
 - b. Provides justification for the need to refuel, maintain, or stage within State waters or riparian areas. The justification shall describe why conducting the activity outside of jurisdictional waters is infeasible; and
 - c. Includes a narrative of specific BMPs that shall be employed to prevent discharges to State waters and riparian areas.
13. Caltrans shall not use leaking vehicles or equipment within State waters or riparian areas.

14. Only 100-percent biodegradable erosion and sediment control products that will not entrap or harm wildlife shall be used. Photodegradable synthetic products are not considered biodegradable. If Caltrans finds that erosion control netting or products have entrapped or harmed wildlife, personnel shall remove the netting or product and replace it with wildlife-friendly biodegradable products. This condition does not prohibit the use of plastic sheeting used in water diversion or dewatering activities. Caltrans shall request approval from the Regional Water Board if an exception to this requirement is needed for a specific location.
15. Work in flowing or standing surface waters, unless otherwise proposed in the project description and approved by the Regional Water Board, is prohibited.
16. Non-stormwater discharges are prohibited unless the discharge is first approved by the Regional Water Board and in compliance with the Basin Plan. If dewatering of groundwater is necessary, then Caltrans shall use a method of water disposal other than disposal to ground or surface waters, such as land disposal. Groundwater disposed of to land shall not enter State waters. Alternatively, Caltrans may apply for coverage under the Low Threat Discharge Permit or an individual National Pollutant Discharge Elimination System (NPDES) Permit. If Caltrans applies for coverage under either of these permits, then discharge is prohibited until Caltrans has received notification of coverage under the respective permit.
17. Gravel bags used within State waters shall:
 - a. Comply with Caltrans 2010 Standard Specifications sections 13-5.02G and 88-1.02F;
 - b. Be immediately removed and replaced if the bags have developed or are developing holes or tears; and
 - c. Be filled only with clean washed gravel.Exceptions to these criteria are subject to the review and acceptance of Regional Water Board staff.
18. This certification does not authorize drafting of surface waters.
19. Caltrans shall provide access to the Project construction site upon request by Regional Water Board staff.
20. Initial water pollution control training described in Caltrans 2010 Standard Specifications 13-1.01D(2), Training, shall apply to all Caltrans employees, contractors, and sub-contractors. Initial water pollution control training topics shall include Regional Water Board 401 certification and construction general permit requirements, identification of state waters and riparian areas, and violation avoidance and discharge reporting procedures.

21. Caltrans shall maintain logs of all Caltrans staff, contractors, and sub-contractors trained pursuant to the Caltrans 2010 Standard Specifications 13-1.01D(2). The logs shall include the names of trainees, training dates, and summary of the scope of training. Caltrans shall provide evidence of this documentation upon the request of the Regional Water Board.
22. If an unauthorized discharge to surface waters (including wetlands, rivers or streams) occurs, or any other threat to water quality arises as a result of Project implementation, the associated Project activities shall cease immediately until the threat to water quality is otherwise abated. If there is a discharge to State waters, the Regional Water Board shall be notified no more than 24 hours after the discharge occurs.
23. Uncured concrete shall not be exposed to State waters or surface waters that may discharge to State waters. Concrete sealants may be applied to the concrete surface where difficulty in excluding flow for a long period may occur. If concrete sealant is used, water shall be excluded from the site until the sealant is cured. If groundwater comes into contact with fresh concrete, it shall be prevented from flowing towards surface water.
24. Ground and surface water that has come into contact with fresh concrete, and all other wastewater, shall not be discharged to State waters or to a location where it may discharge to State waters; the wastewater shall be collected and re-used or disposed of in a manner approved by the Regional Water Board.
25. All imported fill material shall be clean and free of pollutants. All fill material shall be imported from a source that has the appropriate environmental clearances and permits. The reuse of low-level contaminated solids as fill on-site shall be performed in accordance with all State and Federal policies and established guidelines and must be submitted to the Regional Water Board for review and consideration of acceptance.
26. Caltrans shall provide a copy of this certification and State Water Resources Control Board (SWRCB) Order No. 2003-0017-DWQ (web link referenced below) to the contractor and all subcontractors conducting the work, and require that copies remain in their possession at the work site. Caltrans shall be responsible for work conducted by its contractor and subcontractors.
27. The validity of this certification is conditioned upon total payment of any fee required under title 23, California Code of Regulations, section 3833. The total application fee is \$5,254. The Regional Water Board received \$5,254 from Caltrans on December 7, 2015.
28. This certification will be subject to annual billing during the construction phase ("Annual Active Discharge Fee") and during the monitoring phase of the Project

(“Annual Post Discharge Monitoring Fee”), per the current fee schedule, which can be found on our website:

http://www.swrcb.ca.gov/northcoast/water_issues/programs/water_quality_certification.shtml. These fees will be automatically invoiced to Caltrans.

29. Caltrans shall notify the Regional Water Board upon Project construction completion to request termination of the Annual Active Discharge Fee and to receive a “Notice of Completion of Discharges Letter.” If the Project is subject to the Annual Post Discharge Monitoring Fee, then Caltrans shall also notify the Regional Water Board at the end of the monitoring period to request termination of the fee and receive a “Notice of Project Complete Letter.” Caltrans may be required to submit completion reports at the end of each of these phases. Regional Water Board staff may request site visits at the end of each Project phase to confirm Project status and compliance with this certification.
30. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to title 23, California Code of Regulations, section 3855, subdivision (b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
31. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under applicable state or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process or sanctions for the violation or threatened violation constitutes a limitation necessary to assure compliance with the water quality standards and other pertinent requirements incorporated into this certification. In response to a suspected violation of any condition of this certification, the State Water Board may require the holder of any federal permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In response to any violation of the conditions of this certification, the Regional Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.
32. This certification action is subject to modification or revocation upon administrative or judicial review; including review and amendment pursuant to Water Code section 13330 and title 23, California Code of Regulations, section 3867.
33. In the event of any change in control of ownership of land presently owned or controlled by Caltrans, Caltrans shall notify the successor-in-interest of the existence of

this certification by letter and shall forward a copy of the letter to the following email address: NorthCoast@waterboards.ca.gov.

The successor-in-interest shall e-mail the Regional Water Board Executive Officer at: NorthCoast@waterboards.ca.gov to request authorization to discharge dredged or fill material under this certification. The request must contain the following:

- a. Effective date of ownership change;
- b. Requesting entity's full legal name;
- c. The state of incorporation, if a corporation;
- d. The address and phone number of contact person; and
- e. A description of any changes to the project or confirmation that the successor-in-interest intends to implement the project as described in this certification.

34. Except as may be modified by any preceding conditions, all certification actions are contingent on:

- a. The discharge being limited, and all proposed revegetation, avoidance, minimization, and mitigation measures being completed, in strict compliance with Caltrans's project description and CEQA documentation, as approved herein;
- b. Caltrans shall construct the Project in accordance with the project described in the application and the findings above; and
- c. Compliance with all applicable water quality requirements and water quality control plans including the requirements of the Water Quality Control Plan for the North Coast Region (Basin Plan), and amendments thereto.

35. Any change in the design or implementation of the Project that would have a significant or material effect on the findings, conclusions, or conditions of this certification must be submitted to the Executive Officer of the Regional Water Board for prior review, consideration, and written concurrence. If the Regional Water Board is not notified of a significant alteration to the project, it will be considered a violation of this certification, and Caltrans may be subject to Regional Water Board enforcement actions.

36. The authorization of this certification for any dredge and fill activities expires five years from the date of this certification. Conditions and monitoring requirements outlined in this certification are not subject to the expiration date outlined above, and remain in full effect and are enforceable.

Conditions 2 and 3 are requirements for information and reports. Any requirement for a report made as a condition to this certification is a formal requirement pursuant to California Water Code section 13267, and failure or refusal to provide, or falsification of such required report is subject to civil liability as described in California Water Code, Section 13268.

The Regional Water Board may add to or modify the conditions of this certification, as appropriate, to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act.

Please contact our staff Environmental Scientist, Brandon Stevens at (707) 576-2377, or via e-mail, at Brandon.Stevens@waterboards.ca.gov, if you have any questions.

Matthias St. John
Executive Officer

160601_BDS_dp_Hwy1_StormDamage Repair_401

Original to: Ms. Lilian Acorda, Caltrans, District 4, 111 Grand Ave. Oakland, CA 94612
Lilian.A.Acorda@dot.ca.gov

cc: William Connor, U.S. Army Corps of Engineers William.M.Connor@usace.army.mil
Melissa Escaron, US Fish and Wildlife Service Melissa.Escaron@wildlife.ca.gov
State Water Resources Control Board Stateboard401@waterboards.ca.gov
Environmental Protection Agency, Region 9 R9-WTR8-Mailbox@epa.gov
Cyrus Vafai, Caltrans Cyrus.Vafai@dot.ca.gov

Water Quality Information Handout

Construct soil nail walls on State Route 1 at post mile 30.5 in Sonoma County

Contract No. 04-3G0801
04-Son - 1 PM 30.5

California Department of Transportation
District 04
Office of Water Quality
111 Grand Avenue, Oakland, CA 94612

April 13, 2016

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 - 2A. Risk Level
3. Temporary Construction Site BMPs
 - 3A. Run-on Discharges

Attachments

1. Vicinity Map
2. Rainfall Data
3. Construction Risk Level

Disclaimer:

The non-storm water information handout is a guideline and is to be used for informational purposes only. It is not a waiver of the provisions in the National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP), Number CAS 000002, adopted on September 2, 2009. Bidders and Contractors are to make all necessary investigations and examinations to satisfy conditions encountered to perform work and to conform to the requirements of the contract documents and the CGP.

1. Project Information

1A. Project Description

Located on Route 1 in Sonoma County near Fort Ross, 2.6 miles south of Fort Ross Road at post mile 30.5, the project involves constructing two soil nail walls and drainage work. The replacement of the cross culvert will require a temporary water diversion system.

Latitude and Longitude:	<u>38.5014 & -123.2162</u>
Construction Start Date and End Date	<u>04/01/2017 to 10/30/2018</u>
Project Area	<u>2 ac</u>
Disturbed Soil Area	<u>1.2 ac</u>

1B. Receiving Water Bodies

The receiving water bodies are Mill Gulch and eventually the Pacific Ocean.

1C. Climate and Rainfall Data

A National Oceanic and Atmospheric Administration (NOAA) weather station in Fort Ross, CA was used to obtain the estimated number of rainy days per year and qualifying rain events.

Rainy days per year (precipitation 0.10 inches or greater)	<u>52.4</u> days
Qualifying rain events per year (precipitation 0.5 inches or greater)	<u>24.5</u> days
Compliance Storm Event (rainfall total for the 5 year, 24 hr storm)	<u>2.2</u> inches

2. Construction General Permit

A Storm Water Pollution Prevention Plan is required since the disturbed soil area is over 1 acre.

2A. Risk Level

Sediment Risk (R factor: <u>118.69</u> x K factor: <u>0.37</u> x LS factor: <u>7.14</u>) =	<u>313.56</u>
Receiving Water Body Risk	<u>No</u>
Risk Level	<u>2</u>

3. Temporary Construction Site BMPs

The estimated quantities of temporary construction site BMPs are in the PSE package.

3A. Run-on Discharges

Run-on discharges are off-site storm water that can potentially run to the site. Run-on discharges should be calculated based on a rainfall intensity for a 2-year 24-hour event per the PPDG. The Rational Method is typically used to calculate run-on discharges.

Equation: $Q=CiA$ where Q = Run-on discharge (cubic feet per second)
 C = Runoff coefficient (see HDM Figure 819.2A)
 i = 2-year, 24-hour rainfall intensity (inches/hour)

The Contractor needs to verify all run-on for the proposed project.

ATTACHMENT 1 VICINITY MAP

INDEX OF PLANS

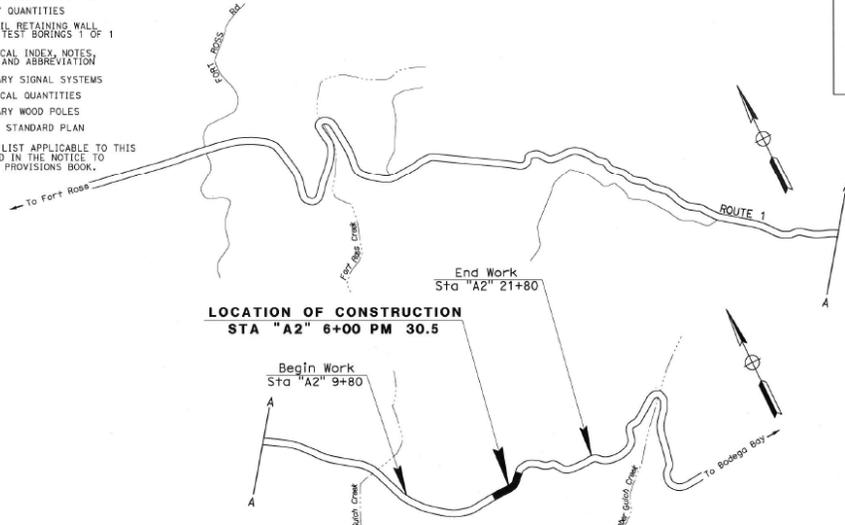
SHEET No.	DESCRIPTION
1	TITLE SHEET AND LOCATION MAP
2 - 5	TYPICAL CROSS SECTIONS
6	LAYOUT
7	PROFILE
8 - 11	CONSTRUCTION DETAILS
12 - 14	WATER POLLUTION CONTROL PLAN, DETAILS AND QUANTITIES
XX - XX	EROSION CONTROL PLAN, DETAILS AND QUANTITIES
15 - 19	DRAINAGE PLAN, DETAILS AND QUANTITIES
20 - 21	CONSTRUCTION AREA SIGNS
22 - 24	STAGE CONSTRUCTION AND TRAFFIC HANDLING PLAN
25	STAGE CONSTRUCTION QUANTITIES
26	PAVEMENT DELINEATION PLAN
27	SUMMARY QUANTITIES
28	SOIL NAIL RETAINING WALL LOG OF TEST BORINGS 1 OF 1
29	ELECTRICAL INDEX, NOTES, LEGEND AND ABBREVIATION
30 - 34	TEMPORARY SIGNAL SYSTEMS
35	ELECTRICAL QUANTITIES
36 - 42	TEMPORARY WOOD POLES
43 - 50	REVISED STANDARD PLAN

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
PROJECT PLANS FOR CONSTRUCTION ON STATE HIGHWAY
IN SONOMA COUNTY
NEAR FORT ROSS
AT 2.6 MILES SOUTH OF FORT ROSS ROAD

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010



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



NOTE:
THE TABLE OF LOCATIONS OF CONSTRUCTION IS SHOWN ON THE LOCATIONS OF CONSTRUCTION SHEET.

NO SCALE

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

PROJECT ENGINEER REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	
FOR STATE OF CALIFORNIA OR ITS OFFICERS OF PUBLIC WORKS OR COMPLETION OF WORKED COPIES BY THIS PLAN SHEET.	
CONTRACT No.	04-3G0804
PROJECT ID	0400021272

ATTACHMENT 2 RAINFALL DATA

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

FORT ROSS
Elevation: 112 feet
Start Year: 1948
End Year: 2005
Number of Years: 58

Average number of days per month with precipitation:

Month	>=0.1 in	>=0.5 in
January	9.2	4.8
February	7.8	3.9
March	7.5	3.5
April	4.5	1.7
May	2.2	0.6
June	0.6	0.2
July	0.2	0
August	0.5	0.1
September	1.1	0.3
October	3.6	1.6
November	6.8	3.7
December	8.4	4.2
Yearly Total	52.4	24.5

Postmile Lookup
PM Click PM Point PM Line

Select a County, Route and Postmile

County: SON-Sonoma

Route: 1

PM: 30.45

Lat: 38.50092
Long: -123.21522

Validate Clear Map Clear

COMPLIANCE STORM EVENT

USGS Topo Maps

Watershed Boundary Dataset

Zip Codes

Soil Loss Factors

Erosivity Index

Soils (K Factors)

R Factor (calculations)

LS Factor

Compliance Storm Events

5-yr 24-hr North

10-yr 24-hr North

5-yr 24-hr South

10-yr 24-hr South

Distance and Area

Measure

Feet: 0

Acres: 0

Postmile Lookup

Show postmile lookup

Information

Hover over a layer name for a description. Additional information, tables, coordinates, and links are below the map.

[Help](#)

Compliance Storm Event = $55 / 24.5 = 2.2$

ATTACHMENT 3 CONSTRUCTION RISK ASSESSMENT

Project Risk Level: **2**

Sediment Risk Factor Worksheet	Entry
A) R Factor	
<p>Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.</p>	
http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm	
R Factor Value	118.69
B) K Factor (weighted average, by area, for all site soils)	
<p>The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.</p>	
Site-specific K factor guidance	
K Factor Value	0.37
C) LS Factor (weighted average, by area, for all slopes)	
<p>The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.</p>	
LS Table	
LS Factor Value	7.14
Watershed Erosion Estimate (=RxKxLS) in tons/acre	313.555242
Site Sediment Risk Factor	High
Low Sediment Risk: < 15 tons/acre	
Medium Sediment Risk: >=15 and <75 tons/acre	
High Sediment Risk: >= 75 tons/acre	

Receiving Water (RW) Risk Factor Worksheet		Entry	Score
A. Watershed Characteristics		yes/no	
A.1. Does the disturbed area discharge (either directly or indirectly) to a 303(d)-listed waterbody impaired by sediment (For help with impaired waterbodies please visit the link below) or has a USEPA approved TMDL implementation plan for sediment?: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010_shtml OR		no	Low
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? (For help please review the appropriate Regional Board Basin Plan) http://www.waterboards.ca.gov/waterboards_map.shtml			

TABLE 2-1: BENEFICIAL USES OF WATERS OF THE NORTH COAST REGION

HUI/HA/ HSA	HYDROLOGIC UNIT/AREA/ SUBUNIT/DRAINAGE FEATURE	BENEFICIAL USES																											
		MUN	AGR	IND	PRO	GWR	FRSH	NAV	POW	REC1	REC2	COMM	WARM	COLD	ASBS	SAL	WILD	RARE	MAR	MIGR	SPWN	SHELL	EST	AQUA	CUL	FLD	WET	WGE	
113.70	Garcia River Hydrologic Area	E	E	E	P		E	E	P	E	E	E	E			E	E		E	E		E	P						
113.80	Gualala River Hydrologic Area																												
113.81	North Fork Gualala Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E			E	E		E	E		E	P						
113.82	Rockpile Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E			E	E		E	E		E	P						
113.83	Buckeye Creek Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E			E	E		E	E		E	P						
113.84	Wheatfield Fork Hydrologic Subarea	E	E	E	P	E		E	P	E	E	E	E			E	E		E	E		E	P						
113.85	Gualala Hydrologic Subarea	E	E	E	P	E	E	E	P	E	E	E	E			E	E		E	E		E	P						

Although project is in HAS 113.85, project directly discharges in Pacific Ocean .

Combined Risk Level Matrix				
		Sediment Risk		
		Low	Medium	High
Receiving Water Risk	Low	Level 1	Level 2	
	High	Level 2		Level 3
Project Sediment Risk:		High		
Project RW Risk:		Low		
Project Combined Risk:		Level 2		

LEW Results

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

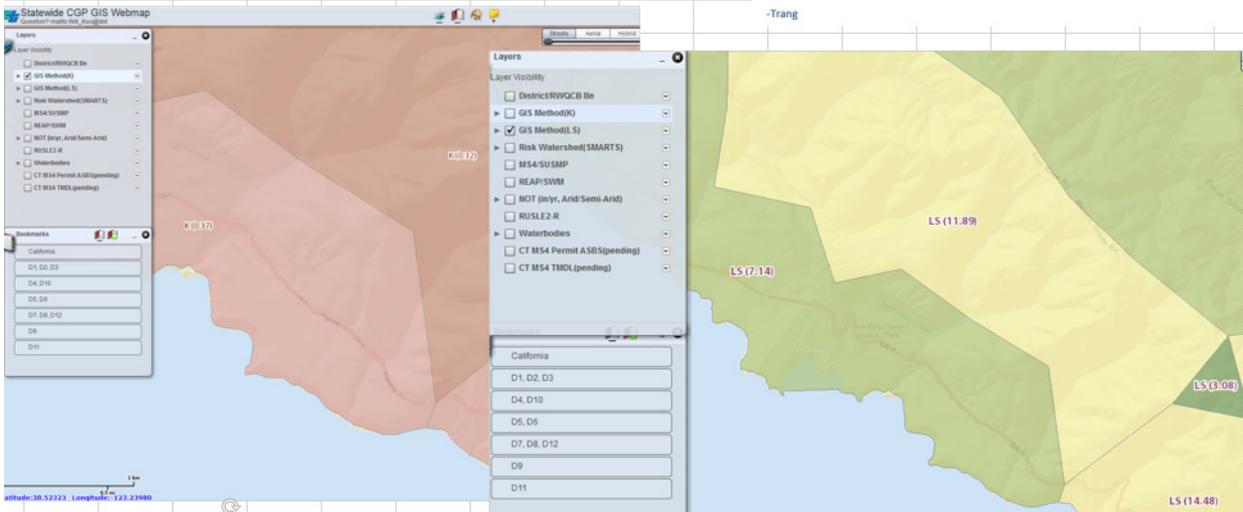
Start Date: 04/01/2017
End Date: 10/30/2018
Latitude: 38.5014
Longitude: -123.2162

Erosivity Index Calculator Results

AN EROSIIVITY INDEX VALUE OF **118.69** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **04/01/2017 - 10/30/2018**.

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

[Start Over](#)



Memorandum

*Serious drought.
Help Save Water!*

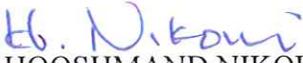
To: MS. KELLY HOLDEN
Supervising Bridge Engineer
Bridge Design West
Structures Design

Date: February 19, 2016

Attention: R. Melko
K. Mori

File: 04-SON-1-PM 30.45
04 – 3G0801
Efis-04 0002 1272
Storm Damage
Soil Nail Walls

From: 
M. ZABOLZADEH/A. KADDOURA
Associate Materials and Research Engineers
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services


HOOSHMAND NIKOUI
Chief, Branch A
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

R.NASHED/M. GAFFNEY 
Engineering Geologists
Office of Geotechnical Design – West
Geotechnical Services
Division of Engineering Services

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

Subject: **REVISED FOUNDATION REPORT (FR) FOR TWO PROPOSED SOIL NAIL WALLS**

1. INTRODUCTION

This memorandum supersedes our previous memorandum dated June 16, 2015.

This memorandum is in response to your request dated February 5, 2015 for our final Foundation Report for the above referenced storm damage project. This project is located on the east side of Route 1, at PM 30.45, about 5 miles north of Meyers Grade Road, north of the Town of Jenner in Sonoma County. This project is to mitigate a landslide that occurred in April 2011. See Exhibit A-Location Map.

1.2 Background

This area has been the site of many landslides and repairs in the past 30 plus years:

1. The roadway at this location was constructed in 1938.

MS. KELLY HOLDEN
Attn: R. R.Melko/K.Mori
February 19, 2016
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1. The roadway at this location was constructed in 1938.
2. In 1986, a landslide occurred below the roadway just south of the current landslide in this project. The roadway was moved inland approximately 20 feet to mitigate the landslide.
3. In 1995, a new slide occurred below the roadway at the same location that was named Blue Slide. One boring was drilled and one Slope Inclinometer (SI) was installed to investigate and to monitor the Blue Slide activity.
4. In 1999, a tieback wall was constructed under Contract No. EA 04-195304 to address the Blue Slide. In this project, the cut slopes above the roadway across from this tieback wall were re-graded to approximately 1:1.
5. Since completion of the Blue Slide project, minor local failures have been occurring in the cut slopes above the road just north and across from Blue Slide tieback wall.
6. Currently, there is a local failure occurring (evidenced by a longitudinal crack and a shallow drop) in the southbound lane, near the center line for a distance of about 100 ft which is the indication of lateral movement of the southbound lane toward the low side of the roadway.

1.3 Proposed Alternatives

To mitigate the landslide, we considered several alternatives such as CIDH tieback wall, side hill cuts, Geosynthetic Reinforced Embankment (GRE) using onsite excavated materials, and soil nail wall. However, we have determined that soil nail wall alternative is the most feasible and cost effective solution to mitigate this landslide compared to the other alternatives mentioned above for the following reasons:

- Soil nail wall is a top down construction procedure which makes it relatively easy to construct. Top down construction of the soil nail wall will allow the removal of the entire landslide mass and at the same time stabilizes the hillside behind the scarp of the landslide.
- Due to the very close proximity to San Andrea Fault, soil nail wall is considered to be the most feasible type of walls to be constructed in the close proximity of an earthquake fault.
- Construction of top down soil nail wall and staged excavation makes it easy to widen the roadway into the hillside, within the limits of the landslide mass.
- Soil nail wall is considered to be the most cost effective type of earth retaining structure.

Refer to Table 1 and Figures 1 and 2 for the proposed wall details.

*“Provide a safe, sustainable, integrated and efficient transportation system
to enhance California’s economy and livability”*

Table 1

ERS No.	ERS Type	Begin Wall		End Wall		Length* (feet)	Design Height (feet)		Notes LOL* Length
		Sta.	Offset	Sta.	Offset		Min.	Max.	
"B1" Line	Soil Nail	"A2" Line 4+14.67 "B1" Line 30+00	40.76 Lt	"A2" Line 8+34.51± "B1" Line 34+34	27.26' Lt	420±	4.0±	45±	434'±
"C1" Line	Soil Nail	"A2" Line 4+54.12 "C1" Line 40+00	79.65 Lt	"A2" Line 7+65.67± "C1" Line 42+88	59.40' Lt	311±	6.0±	28.0±	288'±

* **"B1" & "C1" Lines: LOL wall length is different than roadway alignment "A2" line length.**

Other alternatives were eliminated for the following reasons:

CIDH Tieback Wall - The use of tieback wall alternative would be at least three times more than soil nail wall option.

Side Hill Cuts - Cutting into the hillside in order to remove the entire landslide mass (with a minimum 12 feet. wide bench) and laying back the side slope, requires acquiring significant amount of right of way. This alternative would extend the project limits outside the landslide area significantly and creates significant environmental issues.

GRE - The entire mass would have to be removed and reconstructed with geosynthetic reinforcements. Because of the large magnitude of the landslide, the scope of work would be extended outside the perimeter of the slide mass creating significant environmental issues.

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Attn: R. R.Melko/K.Mori
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1.3 Project Constrains and Requirements

This location has a very complicated landslide history because it is part of the San Andreas Fault zone. This site is located at the midpoint of a ridge that had been mapped as landslide complex (California Division of Mines and Geology; Geology of Sonoma County for Planning Purposes, 1980). The San Andreas Fault lies at approximately the western edge of the proposed wall. Fault rupture is to be expected within the footprint of the wall, and the wall could fail in a future earthquake on the San Andreas Fault.

2. SCOPE OF WORK

As the basis for our evaluation, we have completed the following services:

- Field mapping.
- Review of published geologic maps to evaluate the prevailing geologic conditions at the site and in the site vicinity.
- Field geotechnical exploration, including drilling one horizontal boring in February 2013).
- Reviewed previously prepared memorandums by this office.
- Laboratory testing on selected samples.
- Prepare this memorandum presenting a summary of our investigation, a description of the engineering geologic conditions at the site, our conclusions relating to the impact of the engineering geologic conditions on the roadway, and recommendations for mitigating the landslide.

3. SITE EXPLORATION

The Office of Geotechnical Design – West, a Division of Engineering Services, investigated the subsurface conditions (February 2013) at the site using Christensen CS 2000 track drill rig.

3.1 Subsurface Exploration

The foundation investigation for the proposed soil nail walls consisted of drilling one horizontal boring (R-13-001) to a depth of 165 ft. The boring was located at 25 feet left of Sta. 5+40 “A2” line. The boring was inclined upward slightly (<5°).

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3.2 Laboratory Test and In-Situ Tests

Laboratory testing was performed on selected soil and rock samples obtained during our subsurface investigation for corrosion and Rock Quality Designation (RQD). In-situ tests included performing pocket penetrometer testing on clay soil samples.

4. SITE CONDITIONS

The landslide occurred in April 2011 in the cut slope above the roadway just north of the existing Blue Slide tieback wall causing the upslope shoulder and part of the northbound lane to heave up. The length of the landslide at its toe is about 250 ft., however, the scarp of the failure extends for a total distance of about 400 ft. approximately 6 ft. above the roadway. The slope failure appears to have been caused by a complex of many smaller failures including a previous RSP repaired location discussed in Section 4.1 of this report.

The bedrock at this site is mapped as the Franciscan Complex. The Franciscan Complex has two components at this site, the Coastal Belt sandstone and mélangé. It is composed of intensely sheared and fractured sandstone, siltstone and shale. Coastal Belt sedimentary rocks are composed mainly of gray, thickly-bedded sandstone with siltstone and shale interbeds. Although, the sedimentary bedding is prominent in outcrops, it is not possible to trace individual beds for great distances. The outcrops commonly represent relatively intact blocks of rock bounded by shear zones. The massive, hard sandstone blocks, are bounded by weak sheared zones forms steep slopes and rock fall slides of large intact blocks of rock. Refer to Exhibit B-Geology Map.

4.1 Surface Conditions

During construction of the 1:1 cut-slope (across from the tieback wall) for the Blue Slide project in 1995, a small failure occurred in the face of the cut estimated to be 20 feet long, 15 feet high, and 10 deep. RSP (¼ Ton) was placed to mitigate the failure. We estimated the existing RSP to be about 40 cubic yards. The presence of the RSP and approximate quantities (about 40 cubic yard) should be mentioned in the project Special Provisions in order to avoid any potential claims during construction.

Rocks of the Franciscan Group as well as locally derived alluvium and thin residual soils underlie the project site. The Franciscan rocks are deeply weathered and moderately to intensely fractured. Massive blocks and boulders of sandstone intrude the slide debris. An unlined drainage ditch is located at the bottom of the slope. The site is sparsely vegetated with grasses and small shrubs.

4.2 Subsurface Conditions

The foundation investigation for the proposed soil nail wall consisted of drilling one horizontal boring (R-13-001). The subsurface soils/rocks encountered in the boring can be described in sequential order from surface to the bottom of the boring as follows:

- 43 ft of soft; intensely weathered and fractured mudstone, interbedded by 10 feet of stiff lean clay.
- 17 feet of soft; intensely weathered and slightly fractured sandstone.
- 38 feet of soft to hard; intensely weathered and moderately to severely fractured Greywacke
- 7 feet moderately hard to hard and intensely weathered and fractured shale
- 46 feet hard; moderately weathered; intensely fractured mudstone and interbedded by 5 feet of loose sand
- 4 feet moderately soft and intensely weathered and fractured sandstone
- 10 feet of moderately; intensely weathered and fractured mudstone

Recovery and RQD values were very low (0) to moderate (65%). The boring was inclined upward slightly (<5°). Results of the subsurface investigation indicate soil and rocks of varying strengths, consistent with deeply weathered Franciscan bedrock exposed near the San Andreas Fault.

4.3 Groundwater and Seepage

Groundwater was not measured due to horizontal drilling.

4.4 Faulting and Seismicity

The project area lies within the seismically active San Francisco Bay region and the project is located within the Alquist-Priolo (AP) Earthquake Fault Zone for the San Andreas Fault. The AP Fault Zone is based on the rupture during the 1906 San Francisco earthquake. According to the boring log of R-13-001, the subsurface soils consist of predominantly soft Franciscan mudstone and graywacke. Hence, the soil profile of the project site can be classified Class C (very dense soil and soft rock). The corresponding shear wave velocity of top 100 feet (30 m) V_{S30} is chosen to be 1837 feet/s (560 m/s).

Table 2 below lists nearby seismic faults, their distances to the project site, and maximum magnitudes they can generate. These data are from the latest California Seismic Hazard Map (version 2.3.06).

Using Caltrans ARS Online tool, both probabilistic and deterministic seismic hazard analyses were performed. The probabilistic analysis was performed using USGS Probabilistic Seismic Hazard Deaggregation model, with a 975-year return period (5% probability of exceedance in 50 years). The resulting ARS curves are shown in Figure A below. The probabilistic curve yields higher amplitudes

for all periods and thus is recommended as the design ARS curve with a PGA of 0.83g. Note that this curve has accounted for the near-fault effect.

Table 2 lists the fault data for the project. Refer to Exhibit C- The Alquist-Priolo Earthquake Fault Zone Map.

Figure A

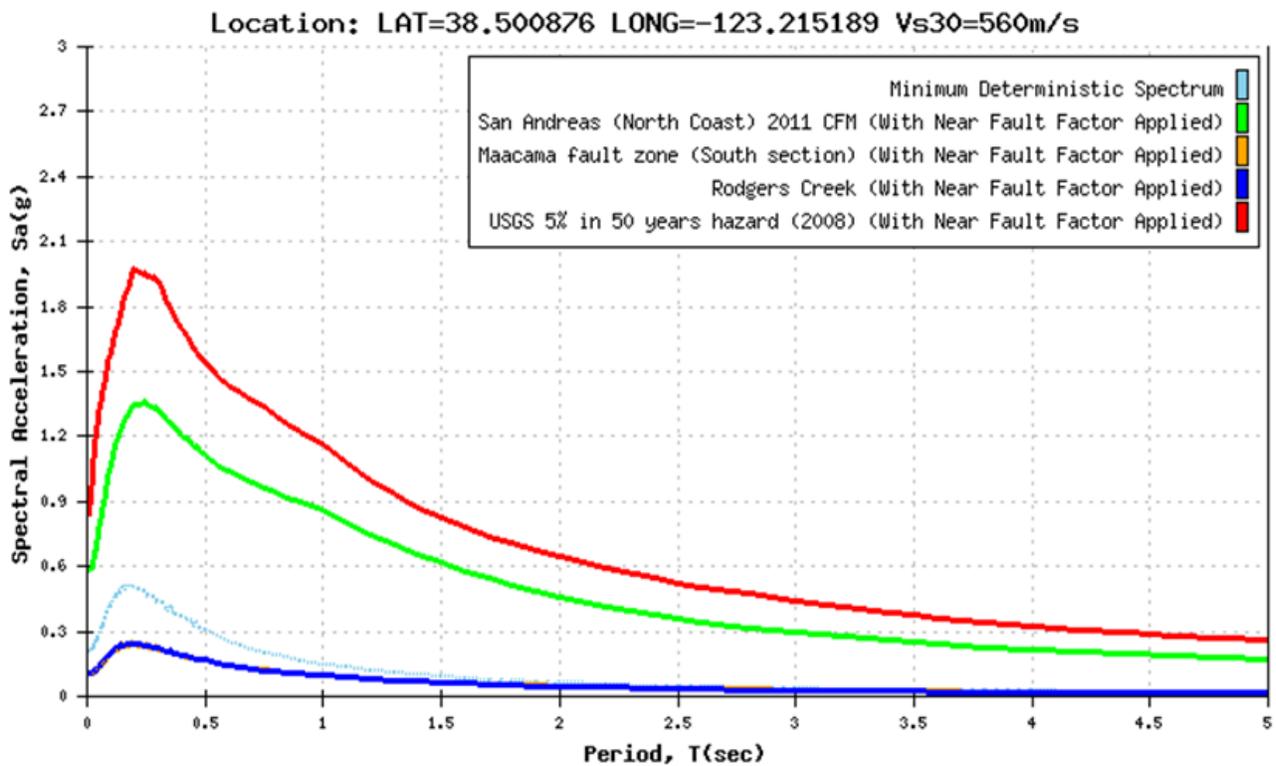


Table 2. Summary of Faults

<i>Fault</i>	<i>Fault Style</i>	<i>Maximum Magnitude (MMax):</i>	<i>Fault ID</i>	<i>Distance (Miles)</i>	<i>SA (Final Spectrum)</i>
San Andreas (North Coast)-2011 CFM	Strike Slip	8	80	0.0	0.83
Maacama fault zone (South section)	Strike Slip	7.4	92	24.6	
Rodgers Creek	Strike Slip	7.3	103	23.0	

5. RECOMMENDATIONS

5.1 Soil Nail Walls

As mentioned above soil nail wall is the most feasible and economical alternative to mitigate this relatively large landslide. We recommend constructing two soil nail walls (SNW# "B1" Line and SNW#"C1" Line) to mitigate the landslide. SNW "B1" (with a maximum height of about 45') will be constructed along and slightly behind the scarp of the landslide to accommodate the removal of the landslide mass. SNW "C1" (with a maximum height of about 28') will be constructed about 10'-15' away from the toe of SNW "B1". Building two soil nail walls with a bench in between (instead of one deep one), significantly minimizes the amount of excavation required to stabilize the landslide. See attached Figures 1 and 2 for details.

Due to the permitting agencies requirements, part of SNW "B1" and entire SNW "C1" will be buried after the slide mass is removed with onsite excavated materials and reinforced with geosynthetic reinforcements. See attached Figures 1 and 2 for details.

A. **Design Criteria for Soil Nail Walls**

In this project, the design for the proposed soil nail walls is performed using the recently improved Caltrans' Computer Program "SNAILWIN", 2014. The rock/soil parameters used in this program were selected based on the horizontal borings (See LOTB sheets for details) drilled within the proposed wall limits, and field observations. Refer to Section 1.2, Table 1 for wall data.

The following limiting criteria are used in the design of the soil nail retaining Walls:

- The minimum factor of safety with seismic loading (pseudo-static): $FOS_{dynamic} = 1.0$; a horizontal pseudo-static coefficient of 0.3 g was used to simulate seismic loading conditions.
- The inclination angle (θ) of all the nails to the horizontal = 15 degrees
- The average soil/rock design parameters used for design of all soil nail walls (based on the LOTB sheet) were:
 - Friction Angle (ϕ) = 32 degrees
 - Cohesion (c) = 1000 psf
 - Unit Weight (γ) = 125 pcf
- Soil nail profile lines shall be parallel to the top of the wall except the bottom most line, which shall be parallel to the bottom of the wall.

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Attn: R. R.Melko/K.Mori

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- Minimum and maximum vertical distances from the bottom of the wall to the bottom level of the soil nail assembly (SB) shall be 2 feet and 3.5 feet, respectively, except where shown on the plans.
- Soil nails shall be of ASTM Designation: A615, Grade 75, $f_s = 75,000$ psi.
- Design pullout resistance between grout and drilled hole = 2.7 kips per linear foot of bonded length for all soil nail walls.
- Punching shear capacity = 45 kips for both soil nail walls.
- The design vertical distance between the bottom of the wall and the finished grade of the proposed roadway elevation is = 3 ft.
- Vertical distance between top of wall (cut line as shown on the plans) and the top most row of soil nails $ST = 2$ ft.
- Minimum and maximum spacing, both horizontal and vertical, of soil nail assembly = 1.5 and 6.5 feet, respectively.
- Minimum and maximum distances between the beginning/end of wall and the first/last soil nail = 1.5 feet and 2.5 feet, respectively.
- The designed lengths (embedment depth) of the soil nails will be shown on the proposed Soil Nail Retaining Wall Plans. See attached Exhibits D (two sheets) and E (one sheet) for Wall Elevation Views, Nail Schedules and Embedment Depths.

B. Field Testing

Field verification of the design pullout resistance values used in the design ensures that the nail design loads can be carried without excessive movements and with an acceptable factor of safety for the service life of the wall. Verification testing and proof testing shall be conducted in order to verify the design pullout resistance and to ensure consistency of the quality of drilling, installation and grouting technique.

Verification testing and stability testing for each “wall zone” shall be conducted prior to the installation of production soil nails in accordance to the special provisions at locations recommended by the Engineer. It is recommended that locations for these tests be shown in the Contractor’s working drawing submittal for approval. The wall zones shall be defined as shown on Table 3 below.

Table 3

WALL NO.	ZONE No.	BEGIN STATION	END STATION	LOWER ELEV.	UPPER ELEV.
"B1"	<i>I</i>	30+39	33+90	355	395
"B1"	<i>II</i>	30+39	34+00	329	355
"B1"	<i>III</i>	30+00	30+32	304	329
"C1"	<i>I</i>	40+00	42+88	328	356.75
"C1"	<i>II</i>	40+00	41+68	311	328

Proof testing on at least eight (8) sacrificial test nails shall be performed for every one hundred production soil nails. The locations of such proof test locations of pullout tests are shown on the plans. An additional two (2) sacrificial test nails for every one hundred production soil nails may be necessary during construction for further quality assurance. Locations of both the proof testing and verification testing shall be chosen in such a manner that the entire limits of the wall is covered, particularly where significant changes in the ground condition and soil/rock characteristics are expected. The pullout test procedure described in the standard special provisions shall be followed. If the test nails fail to meet the requirements stated in the special provisions, the OGDW shall be contacted immediately for assessment of the failure and modification of the wall design, if necessary.

C. Wall Drainage System

To protect against any possible hydrostatic pore pressure build up behind the wall and to direct the surface runoff away from the wall, we recommend constructing proper internal and external drainage systems. For these drainage systems, we recommend the following:

i. Internal Drainage System

- Place 1 feet wide prefabricated geotextile drain strips (placed with the geotextile side against the ground) vertically on 5 feet centers prior to applying shotcrete. The geotextile

MS. KELLY HOLDEN
Attn: R. R.Melko/K.Mori
February 19, 2016
Page 11

drain strips shall start 2' below the top of the proposed Wall No. "B1" Line and from the top of the wall for the proposed Wall No. "C1" Line and end at the bottom PVC pipe weep holes.

- Install PVC pipe (3 inches in diameters) weep holes through the shotcrete face at the center and base of the prefabricated geotextile drainage strips.
- Connect all the weep holes at toe of the walls into a 6-inch corrugated flexible solid pipe to collect the groundwater and discharge to the nearest proposed Drainage Inlets (DIs) at beginning and end of the walls.
- Install 70' long, 2" diameter horizontal drains at 50 ft. horizontal spacing at the bottom of SNW# "B1" and connect to the proposed 6- inch solid underdrain PVC pipe that connects all SNW# "B1" weep holes. See attached Figure 1, Exhibit F and Structures Drainage Plans for details.

ii. External Drainage System

- According to Hydraulics Section, there is no proposed gutter at the top of the proposed SNW "B1" Line (SNW# "C1" Line will completely be buried).
- A concrete apron (instead of traditional gutter) is proposed at the top of the walls to allow the water to run over the top of the walls.

The District Hydraulics Branch should be contacted for specific drainage recommendations.

D. Wall Facing System

The design of the wall facing system is the responsibility of the Office of Structures Design (OSD) and District 4 Landscape Architecture Branch. Because SNW# "C1" line will be buried entirely, it will not have permanent facing. This will reduce the cost significantly.

6. CORROSION

Corrosion studies were conducted in accordance with the requirements of California Test Method No. 643.

The following table provides our corrosion test summary:

*"Provide a safe, sustainable, integrated and efficient transportation system
to enhance California's economy and livability"*

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 Attn: R. R.Melko/K.Mori
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 Page 12

<i>Boring</i>	<i>SIC Number</i>	<i>Sample Depth</i>	<i>Resistivity (Ohm-Cm)</i>	<i>pH</i>	<i>Chloride Content (ppm)</i>	<i>Sulfate Content (ppm)</i>
R-13-001	C868701	40'-115'	3552	7.0	N/A	N/A

Note: 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 2000 ppm, or the pH is 5.5 or less.

Based on the laboratory test results on the soil samples, the site appears to be non-corrosive

Corrosion mitigation measures should be designed using these test results according to the guidelines provided in the Standard Specifications.

7. CONSTRUCTION CONSIDERATIONS

Due to the weakness nature of the soils/rocks, caving of the nail holes is anticipated and the use of casing may be required.

Contractor should expect to remove existing Rock Slope Protection. Refer to Section 4.1.

8. DISCLAIMER

The recommendations contained in this report are based on specific project information regarding structure type, location, and design loads that have been provided by the Office of West. If any conceptual changes are made during final project design, the Office of Geotechnical Design-West, Branch A should review those changes to determine if these foundation recommendations are still applicable.

* * * * *

MS. KELLY HOLDEN
Attn: R. R.Melko/K.Mori
February 19, 2016
Page 13

Any questions regarding the above recommendations should be directed to the attention of Mohammad Zabolzadeh/Ali Kaddoura at 510-286-4831/4676 or Hooshmand Nikoui at 510-286-4811, at the Office of Geotechnical Design-West, Branch A.

Attachments

- c: TPokrywka, HNikoui, MZabolzadeh, AKaddoura , CRisden/MGaffney/RNashed- (GS West)
- HSeto (Project Liason Engineer)
- SGalvez (District Environmental Analysis)
- RFernandes (Structures Office Engineer)
- Structure Construction (RE_pending_File@dot.ca.gov)
- Rubin Woo (District 04 ME)
- LAcorda (District 04 PM)
- CCashin (Hydraulics Branch)
- JLee (District 04 Senior Engineer)
- NBabacarkhial (District 04 PE)
- Geotechnical Archive
- Daily File

Attachments

Kaddoura-Zabolzadeh/ak/mz/3G0801-Soil Nail Walls FINAL FR- Son-1-PM 30.45



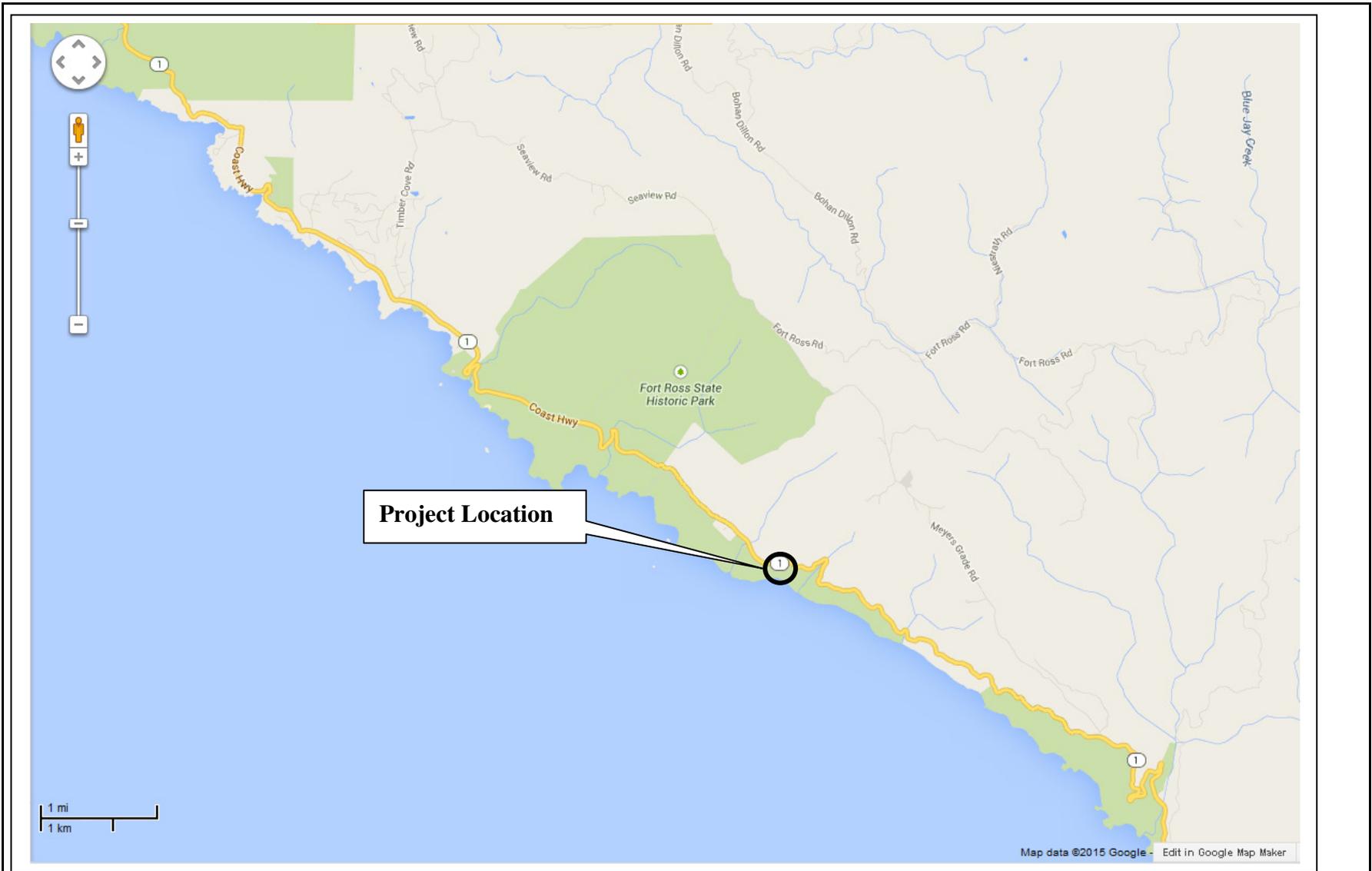


EXHIBIT A - LOCATION MAP



Engineering Service Center
 DIVISION OF ENGINEERING SERVICES
 OFFICE OF GEOTECHNICAL SERVICES
 GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

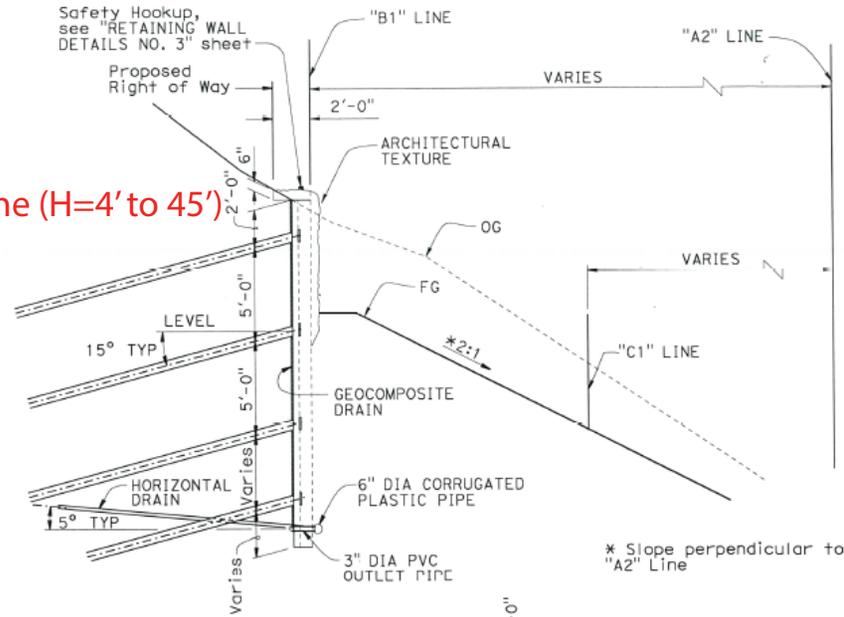
04-SON-1

PM 30.45

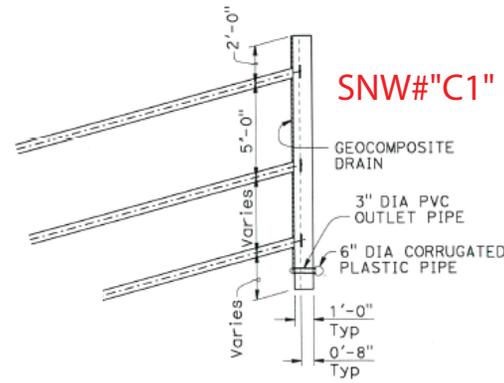
ID: 0400021272

February 2015

SNW#"B1"Line (H=4' to 45')



SNW#"C1" Line (H=6' to 28')



TYPICAL SECTION

SCALE

Not to Scale

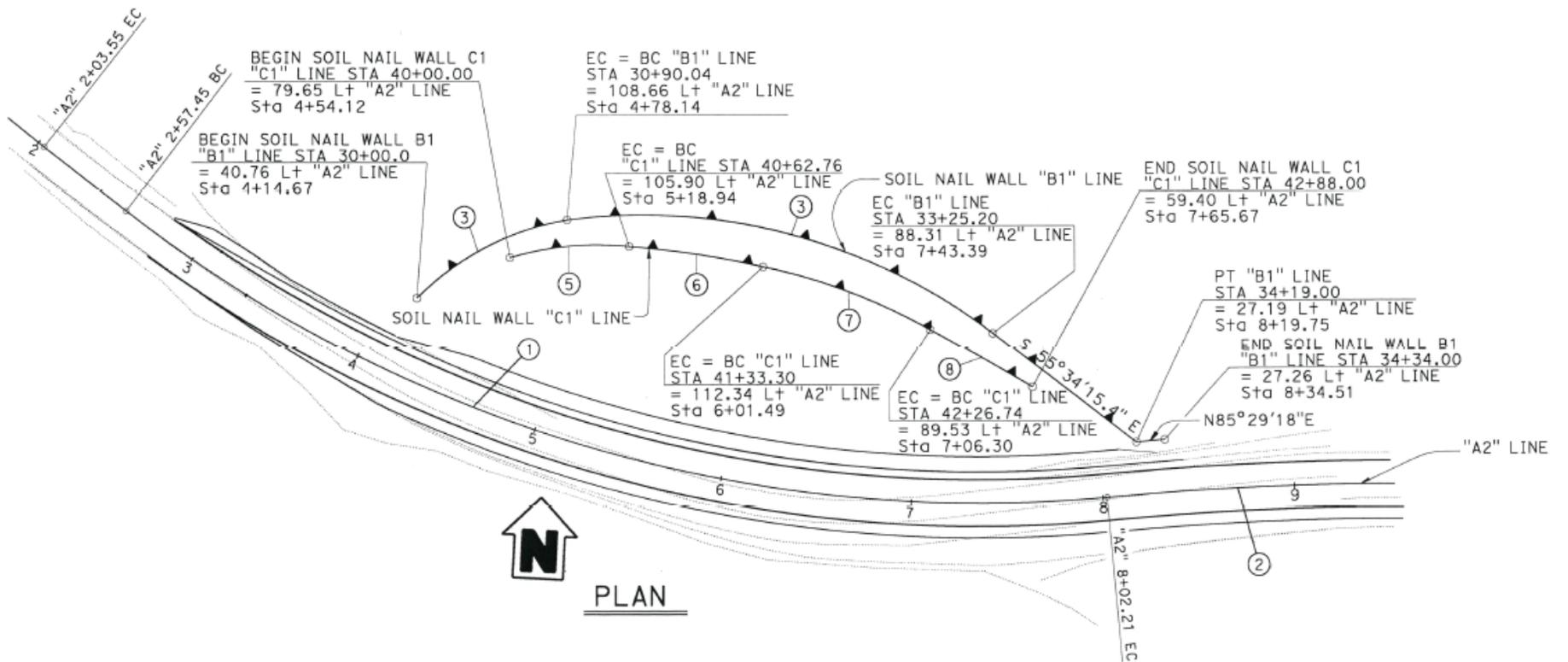


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 OFFICE OF GEOTECHNICAL SERVICES
 GEOTECHNICAL DESIGN BRANCH (WEST) - BRANCH A

SOIL NAIL WALLS - TYPICAL SECTION

04-SON-001 EFIS 0400021272
 EA 04-3G0801
 PM 30.45 MAY 2015

FIGURE 1



SCALE

Not to Scale



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 OFFICE OF GEOTECHNICAL SERVICES
 GEOTECHNICAL DESIGN BRANCH (WEST) - BRANCH A

SOIL NAIL WALL - PLAN VIEW

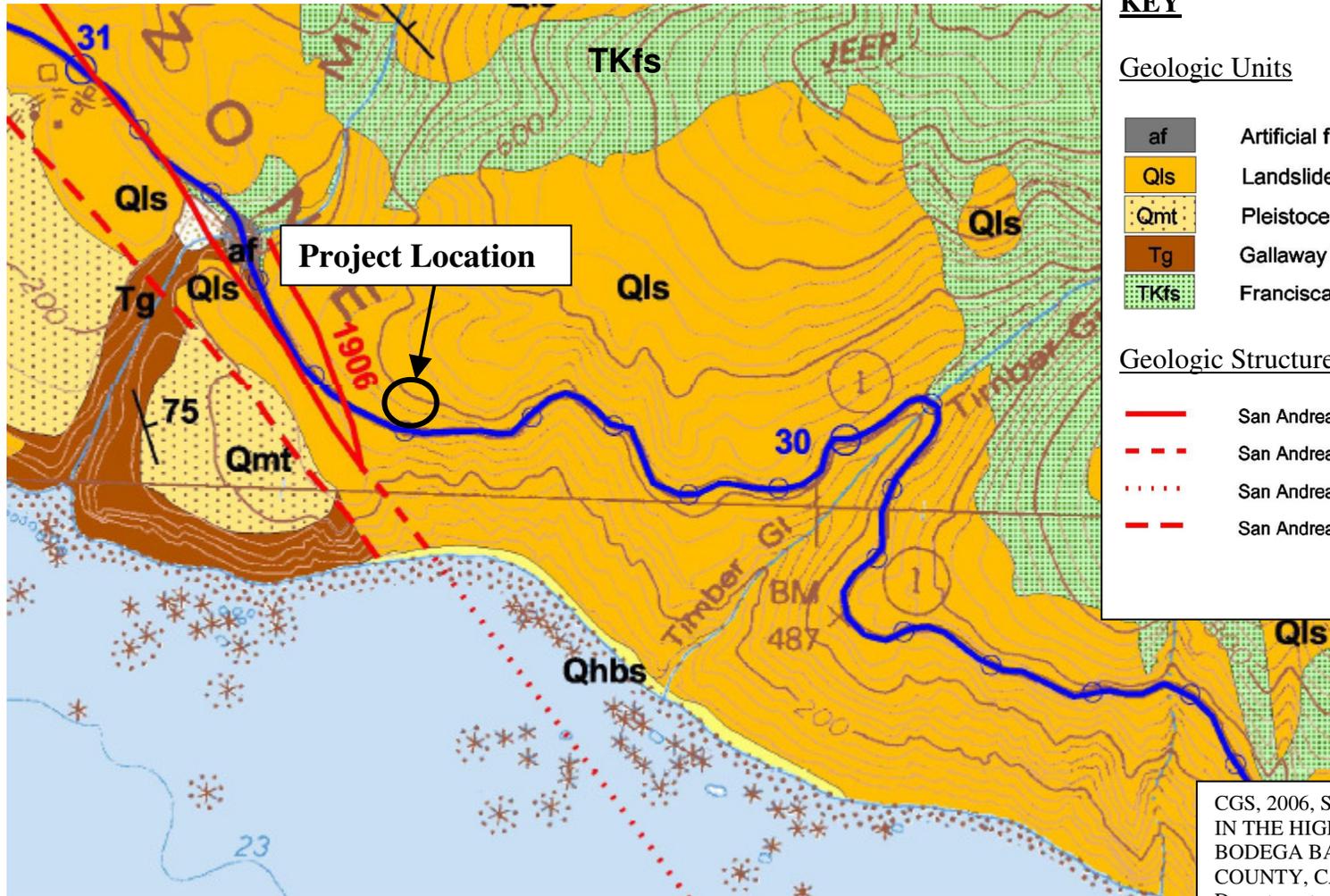
04-SON-001 EFIS 0400021272

EA 04-3G0801

PM 30.45

MARCH 2015

FIGURE 2



KEY

Geologic Units

- af Artificial fill
- Qls Landslide
- Qmt Pleistocene marine terrace deposits
- Tg Gallaway Formation (?)
- TKfs Franciscan Coastal Belt sandstone and shale

Geologic Structure Symbols

- San Andreas Fault 1906, well located
- San Andreas Fault 1906, inferred
- San Andreas Fault 1906, concealed
- San Andreas Fault, pre-1906, approximately located

CGS, 2006, SPECIAL REPORT 196, LANDSLIDES IN THE HIGHWAY 1 CORRIDOR, BETWEEN BODEGA BAY AND FORT ROSS, SONOMA COUNTY, CALIFORNIA Prepared for California Department of Transportation New Technology and Research Program Office of Infrastructure Research Project F99TL34 by Manson, et. al.

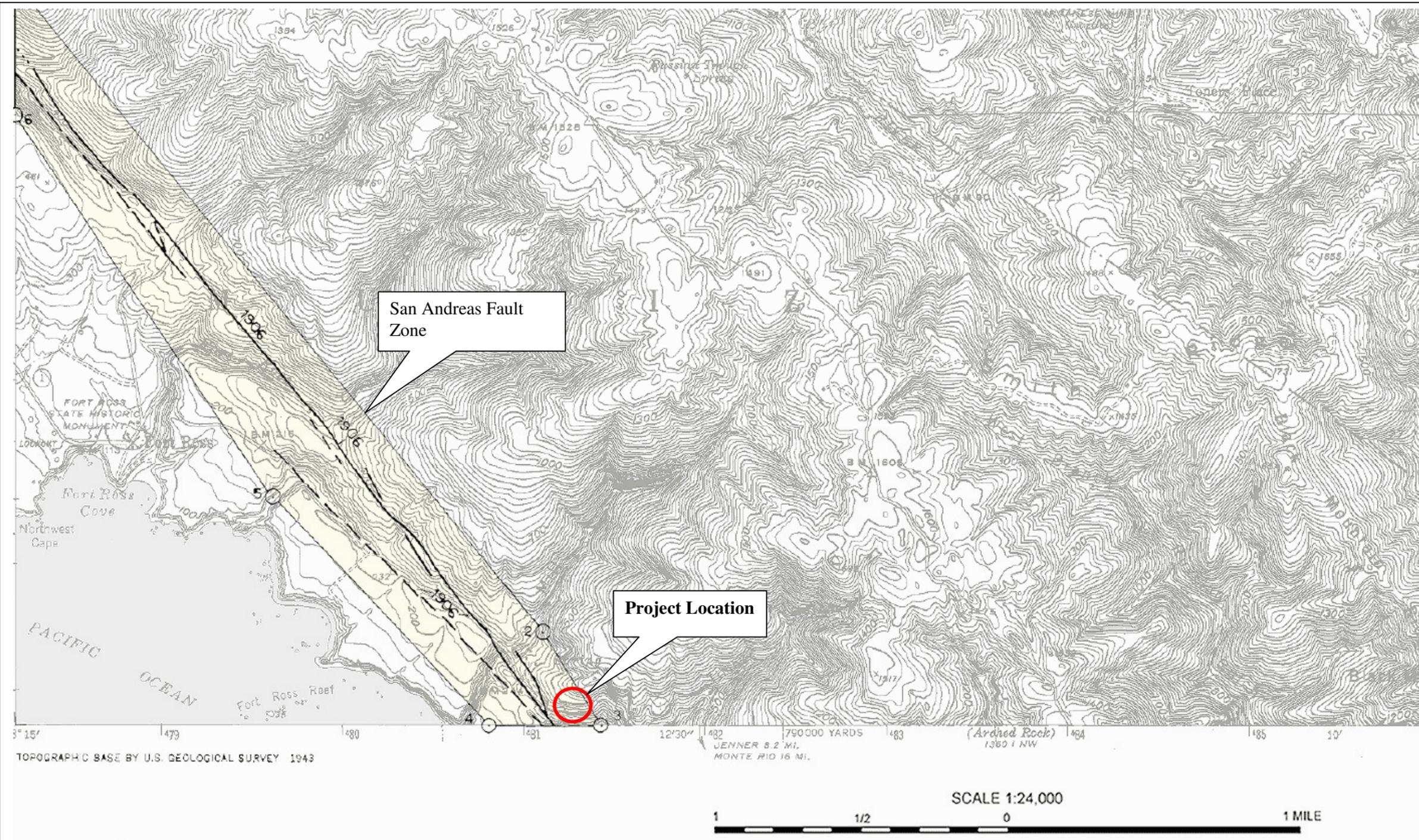
SCALE
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OFFICE OF GEOTECHNICAL SERVICES
GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

EXHIBIT B - GEOLOGY MAP

04-SON-001	EFIS 0400021272
PM 30.45	FEBRUARY 2015



CDMG, 2000, Official Maps of Alquist- Priolo Earthquake Fault Zones Of California, Central Coastal Region.



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OFFICE OF GEOTECHNICAL SERVICES
GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B

EXHIBIT C - ALQUIST- PRIOLO FAULT ZONE MAP

04- SON - 01

EFIS 0400021272

PM 30.45

February 2015

NAIL SCHEDULE H		BAR SIZE #8 (1")							
No. of Soil Nail Rows	9								
Row No. (from Top to Bottom)	1	2	3	4	5	6	7	8	9
Embedment Depth LE (ft.)	55	55	45	45	45	30	30	25	20

NAIL SCHEDULE G		BAR SIZE #8 (1")							
No. of Soil Nail Rows	8								
Row No. (from Top to Bottom)	1	2	3	4	5	6	7	8	
Embedment Depth LE (ft.)	35	35	30	30	25	25	20	20	

NAIL SCHEDULE F		BAR SIZE #8 (1")						
No. of Soil Nail Rows	7							
Row No. (from Top to Bottom)	1	2	3	4	5	6	7	
Embedment Depth LE (ft.)	35	35	25	25	25	20	20	

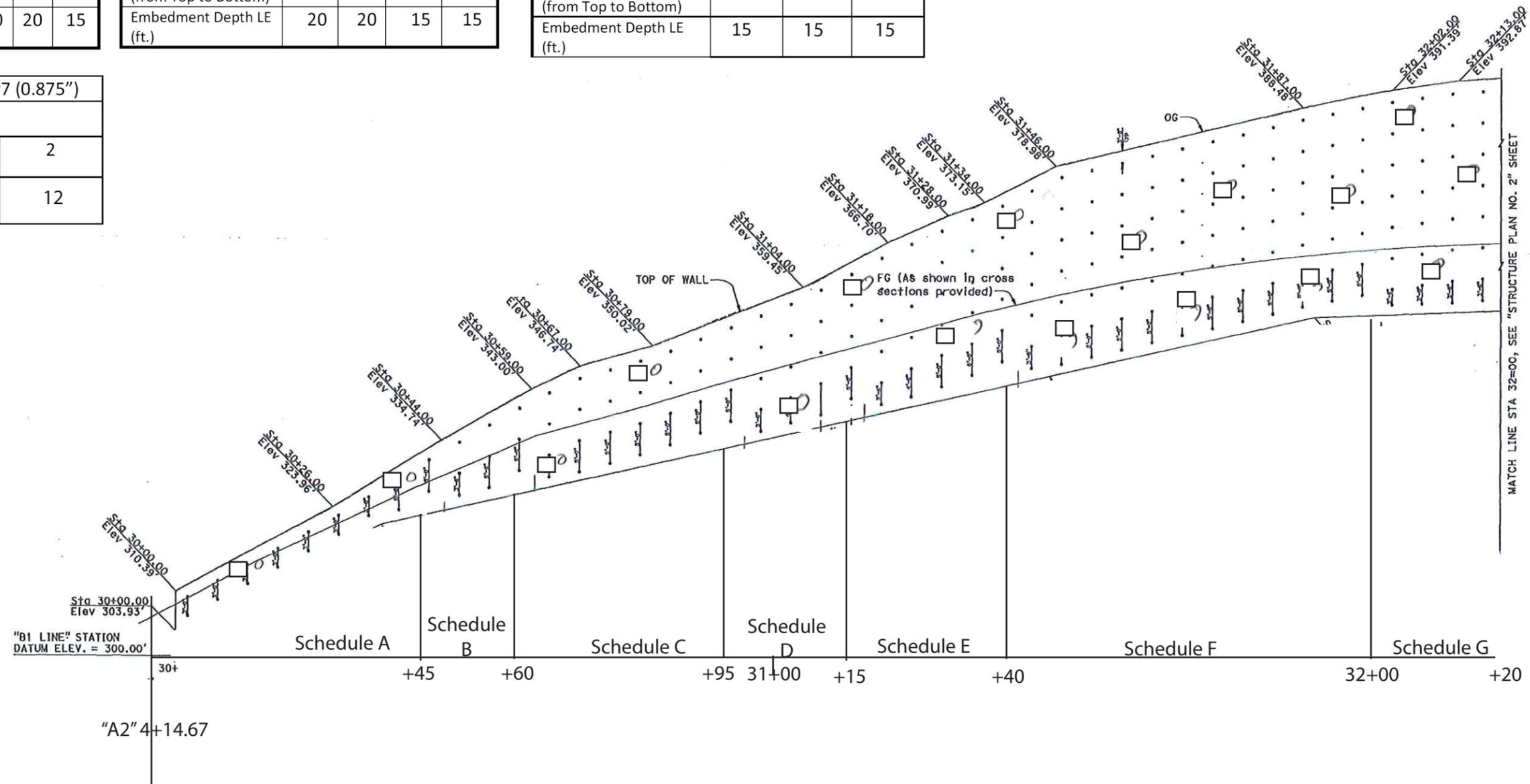
NAIL SCHEDULE E		BAR SIZE #8 (1")					
No. of Soil Nail Rows	6						
Row No. (from Top to Bottom)	1	2	3	4	5	6	
Embedment Depth LE (ft.)	30	30	25	25	20	20	

NAIL SCHEDULE D		BAR SIZE #8 (1")				
No. of Soil Nail Rows	5					
Row No. (from Top to Bottom)	1	2	3	4	5	
Embedment Depth LE (ft.)	23	23	20	20	15	

NAIL SCHEDULE C		BAR SIZE #7 (0.875")			
No. of Soil Nail Rows	4				
Row No. (from Top to Bottom)	1	2	3	4	
Embedment Depth LE (ft.)	20	20	15	15	

NAIL SCHEDULE B		BAR SIZE #7 (0.875")		
No. of Soil Nail Rows	3			
Row No. (from Top to Bottom)	1	2	3	
Embedment Depth LE (ft.)	15	15	15	

NAIL SCHEDULE A		BAR SIZE #7 (0.875")	
No. of Soil Nail Rows	2		
Row No. (from Top to Bottom)	1	2	
Embedment Depth LE (ft.)	12	12	

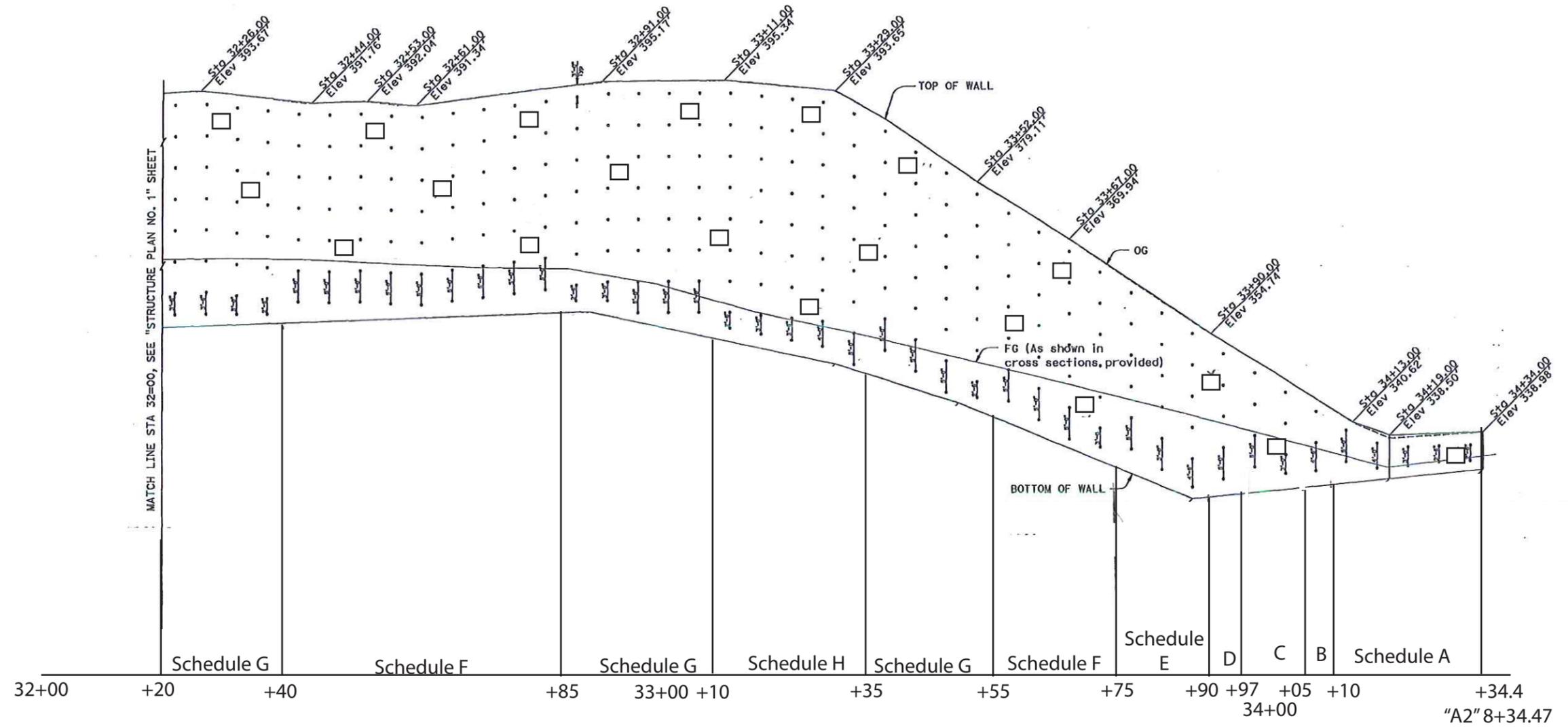


LEGEND	
•	Indicates Approximate location of Soil Nail Assemblies
□	Indicates Approximate location of Proof test nails
Not to Scale	

SCALE	
Not to Scale	

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 GEOTECHNICAL DESIGN BRANCH (WEST) - BRANCH A

SNW "B1" Line - WALL ELEVATION VIEW	
04-SON-001	EFIS 0400021272
	EA 04-3G0801
PM 30.45	MARCH 2015
EXHIBIT D SHEET 1 of 2	



LEGEND	
•	Indicates Approximate location of Soil Nail Assemblies
□	Indicates Approximate location of Proof test nails
Not to Scale	



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 GEOTECHNICAL DESIGN BRANCH (WEST) - BRANCH A

SNW "B1" Line- WALL ELEVATION VIEW	
04-SON-001	EFIS 0400021272
	EA 04-3G0801
PM 30.45	MARCH 2015
EXHIBIT D SHEET 2	

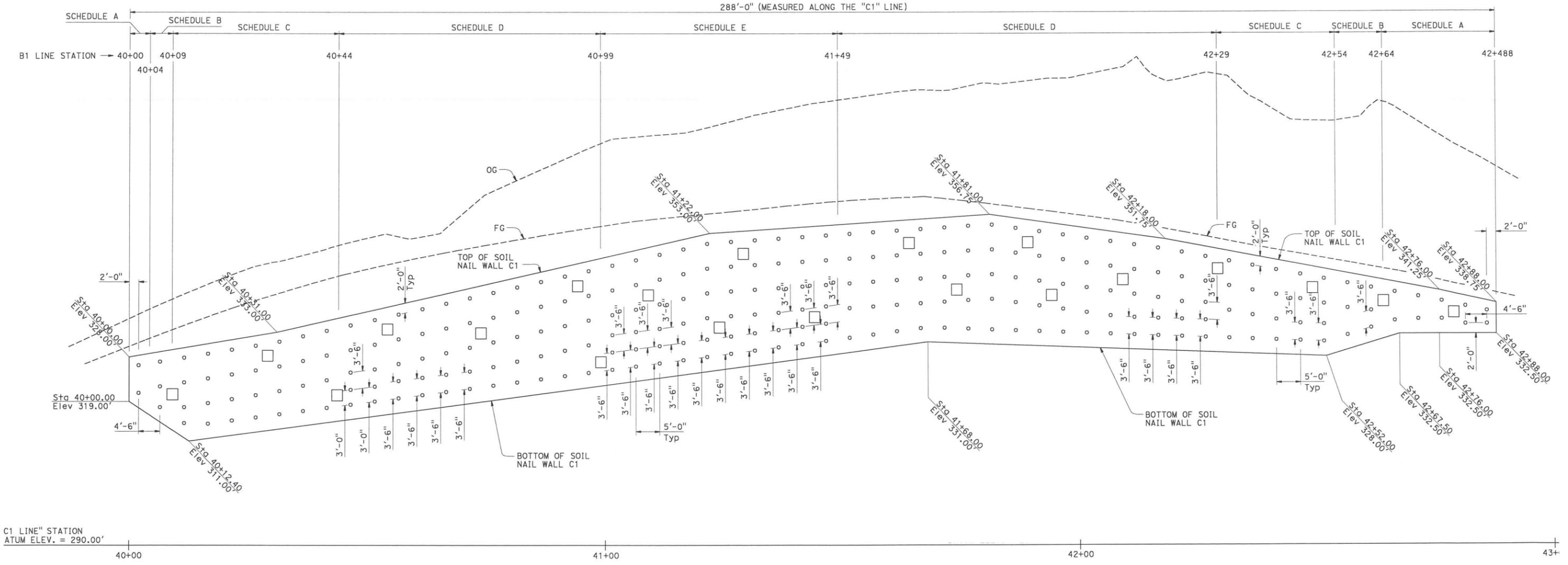
NAIL SCHEDULE A	BAR SIZE #7 (0.875")	
No. of Soil Nail Rows	2	
Row No. (from Top to Bottom)	1	2
Embedment Depth LE (ft.)	12	12

NAIL SCHEDULE B	BAR SIZE #7 (0.875")		
No. of Soil Nail Rows	3		
Row No. (from Top to Bottom)	1	2	3
Embedment Depth LE (ft.)	15	15	15

NAIL SCHEDULE C	BAR SIZE #7 (0.875")			
No. of Soil Nail Rows	4			
Row No. (from Top to Bottom)	1	2	3	4
Embedment Depth LE (ft.)	25	20	15	15

NAIL SCHEDULE D	BAR SIZE #7 (0.875")				
No. of Soil Nail Rows	5				
Row No. (from Top to Bottom)	1	2	3	4	5
Embedment Depth LE (ft.)	30	25	25	20	15

NAIL SCHEDULE E	BAR SIZE #8 (1")					
No. of Soil Nail Rows	6					
Row No. (from Top to Bottom)	1	2	3	4	5	6
Embedment Depth LE (ft.)	35	35	30	30	20	20



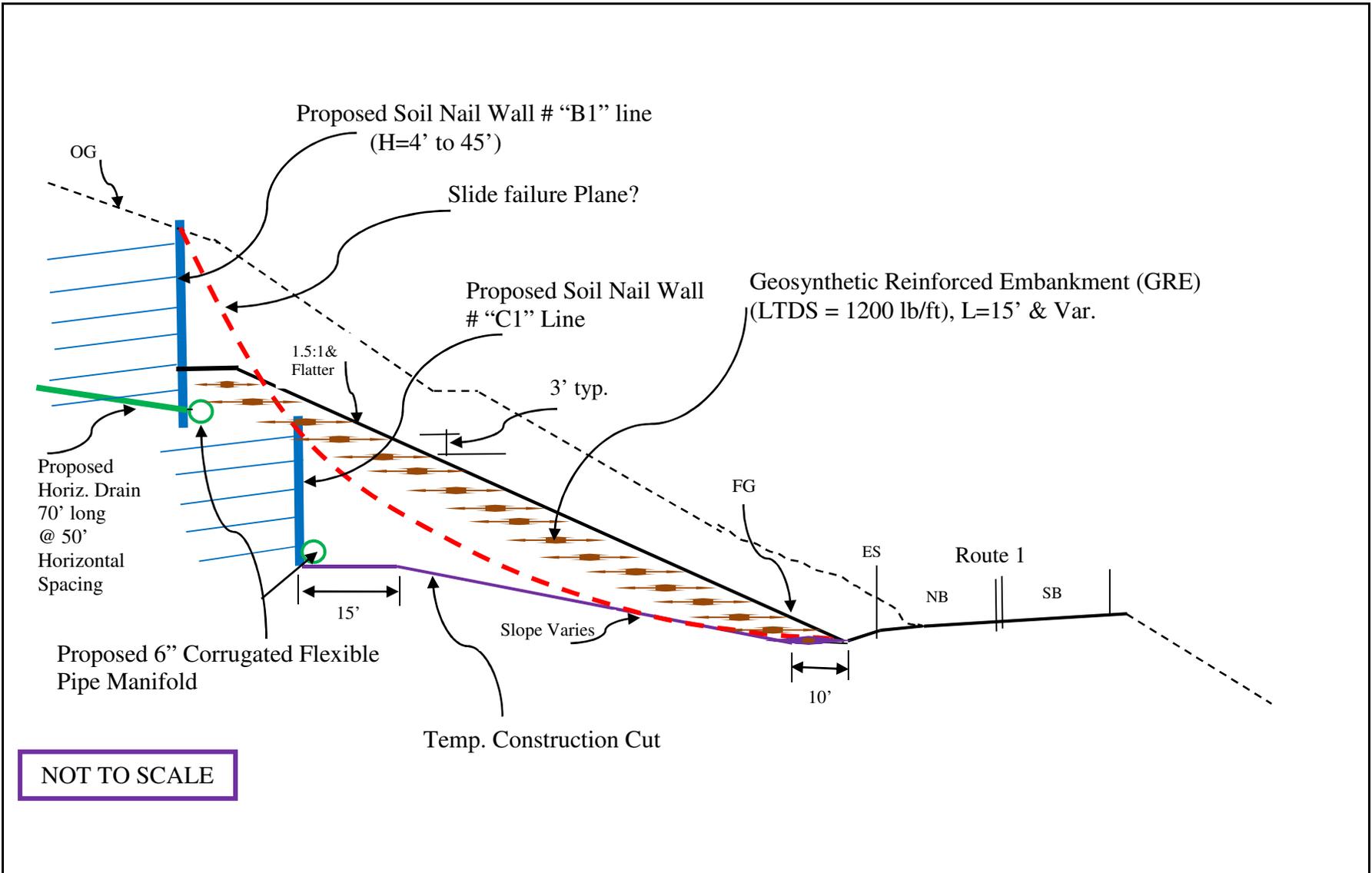
LEGEND	
•	Indicates Approximate location of Soil Nail Assemblies
□	Indicates Approximate location of Proof test nails
Not to Scale	

SCALE
Not to Scale



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 GEOTECHNICAL DESIGN BRANCH (WEST) - BRANCH A

SNW "C1" Line - WALL ELEVATION VIEW	
04-SON-001	EFIS 0400021272
	EA 04-3G0801
PM 30.45	JUNE 2015
EXHIBIT E	



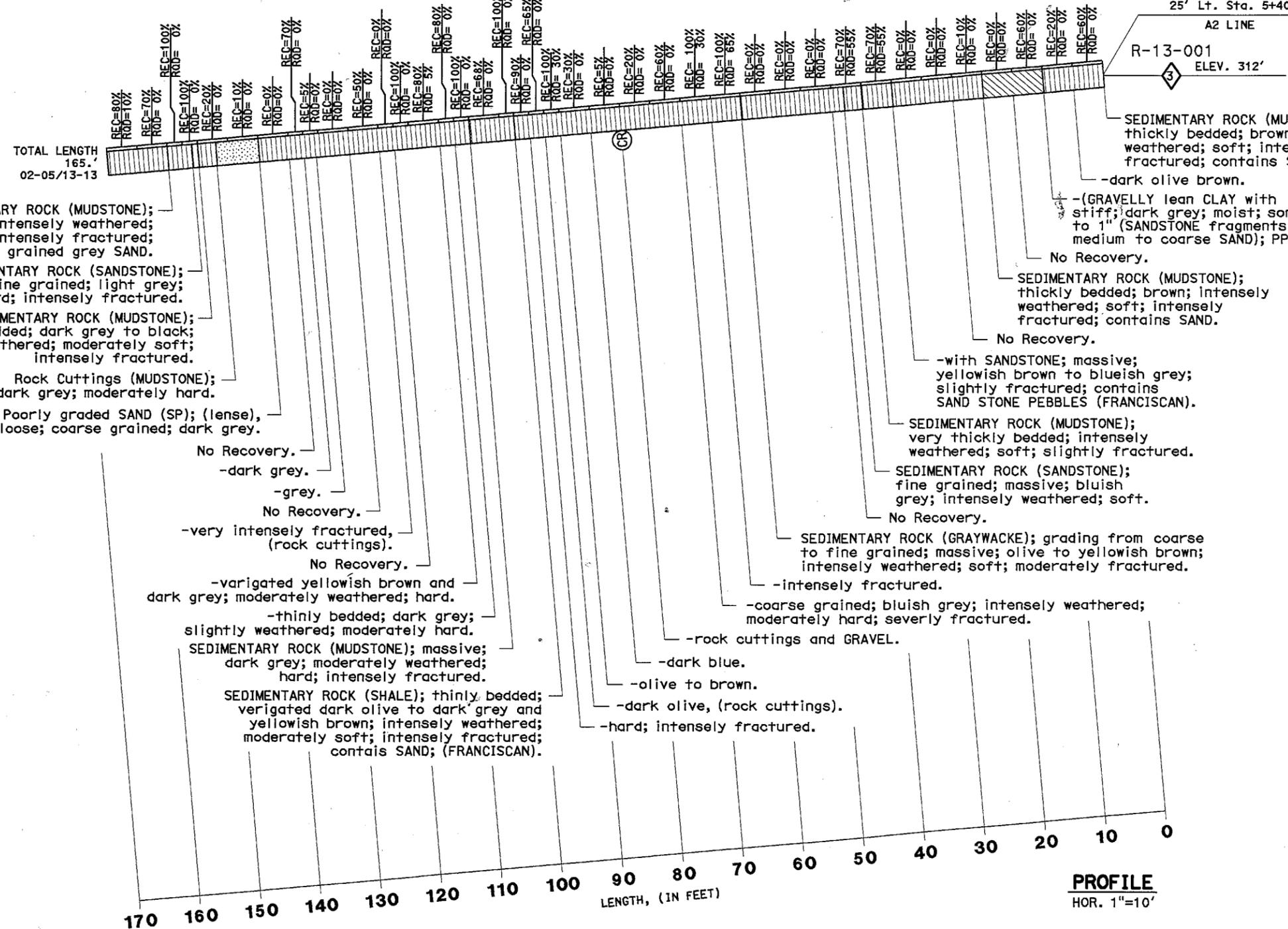
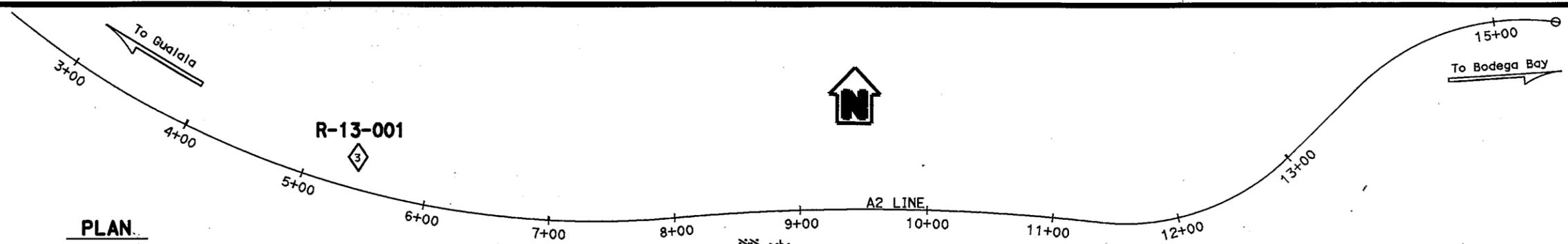
NOT TO SCALE

	Engineering Service Center DIVISION OF ENGINEERING SERVICES OFFICE OF GEOTECHNICAL SERVICES GEOTECHNICAL DESIGN BRANCH (WEST) – BRANCH B	EXHIBIT F – GRE Typical Section	
		04-SON-1 ID: 0400021272	PM 30.45 February 2016

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	Son	1	30.45		
Ali Kaddoura			03-04-15		
REGISTERED CIVIL ENGINEER					
PLANS APPROVAL DATE					
<small>The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.</small>					

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).

PLAN
1" = 50'



SEDIMENTARY ROCK (MUDSTONE); massive; grey; intensely weathered; moderately soft; intensely fractured; contains medium grained grey SAND.

SEDIMENTARY ROCK (SANDSTONE); massive; fine grained; light grey; hard; intensely fractured.

SEDIMENTARY ROCK (MUDSTONE); thinly bedded; dark grey to black; intensely weathered; moderately soft; intensely fractured.

Rock Cuttings (MUDSTONE); dark grey; moderately hard.

Poorly graded SAND (SP); (lense), loose; coarse grained; dark grey.

No Recovery.

-dark grey.

-grey.

No Recovery.

-very intensely fractured, (rock cuttings).

No Recovery.

-variegated yellowish brown and dark grey; moderately weathered; hard.

-thinly bedded; dark grey; slightly weathered; moderately hard.

SEDIMENTARY ROCK (MUDSTONE); massive; dark grey; moderately weathered; hard; intensely fractured.

SEDIMENTARY ROCK (SHALE); thinly bedded; verigated dark olive to dark grey and yellowish brown; intensely weathered; moderately soft; intensely fractured; contains SAND; (FRANCISCAN).

SEDIMENTARY ROCK (MUDSTONE); thickly bedded; brown; intensely weathered; soft; intensely fractured; contains SAND.
-dark olive brown.

-(GRAVELLY lean CLAY with SAND (CL); stiff; dark grey; moist; some GRAVEL to 1" (SANDSTONE fragments); few medium to coarse SAND); PP=1.5 tsf.

No Recovery.

SEDIMENTARY ROCK (MUDSTONE); thickly bedded; brown; intensely weathered; soft; intensely fractured; contains SAND.

No Recovery.

-with SANDSTONE; massive; yellowish brown to blueish grey; slightly fractured; contains SAND STONE PEBBLES (FRANCISCAN).

SEDIMENTARY ROCK (MUDSTONE); very thickly bedded; intensely weathered; soft; slightly fractured.

SEDIMENTARY ROCK (SANDSTONE); fine grained; massive; bluish grey; intensely weathered; soft.

No Recovery.

SEDIMENTARY ROCK (GRAYWACKE); grading from coarse to fine grained; massive; olive to yellowish brown; intensely weathered; soft; moderately fractured.

-intensely fractured.

-coarse grained; bluish grey; intensely weathered; moderately hard; severely fractured.

-rock cuttings and GRAVEL.

-dark blue.

-olive to brown.

-dark olive, (rock cuttings).

-hard; intensely fractured.

BENCH MARK

462: cut "+" top of "H" beam/ retaining wall
N: 1,946,535.057
E: 6,213,606.805
ELEV. 332.48'

HORIZONTAL DRILLING

inclination < 5°

ENGINEERING SERVICES		GEOTECHNICAL SERVICES		STATE OF CALIFORNIA		DIVISION OF ENGINEERING SERVICES		BRIDGE NO.		SOIL NAIL RETAINING WALLS	
FUNCTIONAL SUPERVISOR		DRAWN BY: M. Reynolds 04/13		DEPARTMENT OF TRANSPORTATION		OFFICE OF GEOTECHNICAL		POST MILES		LOG OF TEST BORINGS 1 of 1	
NAME: H. Nikouli		CHECKED BY: R. Nashed		A. Kaddoura		DESIGN BRANCH		30.45			
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS						UNIT: 3660		PROJECT NUMBER & PHASE: 04000212720		CONTRACT NO.: 04-3G0800	
						FILE => 0400021272q001.dgn		DISREGARD PRINTS BEARING EARLIER REVISION DATES		REVISION DATES SHEET OF	

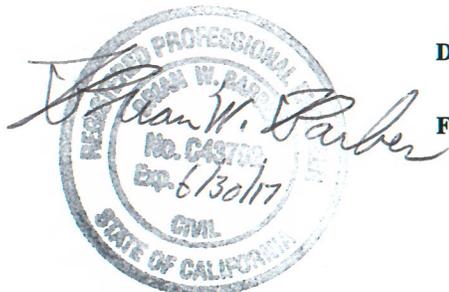
Memorandum

*Serious Drought!
Help Save Water!*

To: MR. STEWART LEE
District Branch Chief
Design SHOPP

Date: June 1, 2016

File: 04-SON-1
PM 30.45
EA 3G0801 (0400021272)



Atten: Nazeer Babacarkhail

From: BRIAN W. BARBER
Materials Design Engineer
Office Of Engineering Services - Materials B

Subject: Revised Materials Recommendations

This memorandum is in response to your May 31, 2016 E-mail requesting our office provide revised materials recommendations for the landslide storm damage project (EA 3G0801) on located Route 1 in Sonoma County at PM 30.45.

Our office last previously provided a recommendation update for this project in our memorandum dated August 10, 2015 recommending the use of Rubberized Hot Mix Asphalt as the estimated HMA quantity at that time was over 1000 tons. In your 5/31/2016 E-mail you have indicated the quantity of HMA recalculated for use on the project is now below 1000 tons and have requested our office concur with using only HMA Type A on this project. Our current revised pavement recommendations are provided below.

REVISED PAVEMENT RECOMMENDATIONS

Based on the understanding from your office the total HMA quantity for the project is estimated to be below 1000 tons we provide the following revised pavement design recommendations:

- For the new pavement structural section: 0.90' HMA-A; 0.35' AB(2)
- For cold plane and replacement of HMA on the existing pavement : 0.15' HMA-A

Notes: HMA-A = Hot Mix Asphalt- Type A
AB(2) = Aggregate Base, Class 2

The above revised pavement design will supersede our previous pavement section design recommendations presented in our August 10, 2015 memorandum.

Atten: Mr. Stewart Lee
Atten: Mr. Nazeer Babacarkhial
June 1, 2016

If you have questions or comments, please contact Brian Barber at (510) 622-5490.

c: Daily File, Route File

BBarber/SON-1 EA 3G0801 (0400021272) Revised Materials Recom.