FOR CONTRACT NO.: 09-237704

INFORMATION HANDOUT

WATER QUALITY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LAHONTAN REGION
WASTE DISCHARGER IDENTIFICATION NO. 6A261104002

PERMITS

STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME
NOTIFICATION NO. 1600-2011-0142-R6

UNITED STATES ARMY CORPS OF ENGINEERS
NON-REPORTING NATIONWIDE 404 PERMIT

TEMPORARY OCCUPANCY OF NEVADA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY
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SEISMIC REFRACTION SURVEY

ROUTE: 395-Mno-118.7/119.6

California Regional Water Quality Control Board
Lahontan Region

Matthew Rodriquez
Secretary for Environmental Protection

2501 Lake Tahoe Boulevard, South Lake Tahoe, California 96150
(530) 542-5400 • Fax (530) 544-2271
www.waterboards.ca.gov/lahontan

Edmund G. Brown Jr.
Governor

August 5, 2011

Dan Holland
Caltrans District 9
500 S. Main Street
Bishop, CA 93514

ORDER FOR CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION FOR HIGHWAY 395 HIGH POINT CURVE REALIGNMENT, MONO COUNTY, WDID 6A261104002

The California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board) has received a complete Clean Water Act Section 401 Water Quality Certification (WQC) application and application filing fee from the California Department of Transportation (Applicant) for the Highway 395 High Point Curve Realignment (Project) in Mono County. This Order for WQC hereby assigns this Project the following reference number: Waste Discharger Identification (WDID) No. 6A261104002. Please use this reference number in all future correspondence regarding this Project.

Any person aggrieved by this action of the Water Board may petition the State Water Resources Control Board (State Water Board) to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

PROJECT DESCRIPTION

Table of Project Information:

WDID Number	6A261104002
Applicant	Dan Holland Caltrans District 9, Environmental Engineering 500 S. Main Street Bishop, CA 93514

Table of Project Information continued:

Agent	Same as applicant
Project Name	Highway 395 High Point Curve Realignment
Project Purpose and Description	The purpose of the proposed project is to improve roadway safety by reducing the icing potential of the roadway and eliminating sharp curves and undulating terrain that limit sight lines. Two drainage systems will be replaced that are considered jurisdictional waters subject to Army Corps of Engineers regulation.
Location (closest City & County)	Coleville, Mono County
Location Latitude/Longitude	Latitude: 38.6618; Longitude: -119.5401
Hydrologic Unit(s)	Antelope Valley Hydrologic Area, 631.10 in the West Walker River Hydrologic Unit, 631.00
Project Area	13.46 acres
Receiving Water(s) Name	Unnamed tributaries to Topaz Lake
Water Body Type(s)	Streams
Area and Linear Feet of Water(s) of the U.S. (WOUS) within the project area	91,280 square feet (2.0 acres) 4,564 linear feet
Area of Permanent Impacts to WOUS	0.025 acres
Linear Feet of Permanent Impact to WOUS	86 linear feet
Volume of Fill to WOUS	162 cubic yards
Federal Permit(s)	The applicant has applied for U.S. Army Corps of Engineers (USACOE) authorization to proceed under a Nationwide Permit No. 3, pursuant to Clean Water Act section 404.
Non-Compensatory Mitigation	The Project will be implemented when ephemeral flows have ceased. Sediment and erosion control Best Management Practices (BMPs), as well as other standard BMPs required under the Applicant's storm water program, will be used throughout the construction period to control erosion.
Compensatory Mitigation	None required.
Applicable Fees	**$1,190.00** ($640.00 application fee + $550.00 for 86 linear feet of permanent impacts to Federal Jurisdictional Waters at $6.40 per foot).
Fees Received	$1,190.00

CEQA COMPLIANCE

On December 10, 2007 the Applicant adopted a mitigated negative declaration (SCH No. 2007082035) for the project in order to comply with CEQA. The Lahontan Water Board has reviewed and considered the environmental document and any proposed changes incorporated into the project or required as a condition of approval to avoid significant effects to the environment. The Applicant has incorporated appropriate erosion and storm water runoff controls to mitigate impacts from the project.

SECTION 401 WATER QUALITY CERTIFICATION

Authority

Section 401 of the CWA (33 U.S.C., paragraph 1341) requires that any applicant for a CWA Section 404 permit, who plans to conduct any activity that may result in discharge of dredged or fill materials to waters of the United States, must provide to the permitting agency a certification that the discharge will be in compliance with applicable water quality standards of the state in which the discharge will originate. No Section 404 permit may be granted (or valid) until such certification is obtained. The Applicant submitted a complete application and the $1,190.00 fee required for WQC under Section 401 for the Project. The Applicant has applied for U.S. Army Corps of Engineers (ACOE) authorization to proceed under Nationwide Permit No. 3 pursuant to CWA section 404.

California Code of Regulations (CCR) title 23, section 3831(e) grants the Water Board Executive Officer the authority to grant or deny WQC for projects in accordance with CWA section 401. The Project qualifies for such WQC.

Standard Conditions

Pursuant to CCR title 23, section 3860, the following standard conditions are requirements of this certification:

1. 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 CCR title 23, section 3867.

2. This certification action is not intended and must not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license unless the pertinent certification application was filed pursuant to CCR title 23, section 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

3. The validity of any non-denial certification action must be conditioned upon total payment of the full fee required under CCR title 23, section 3833, unless otherwise stated in writing by the certifying agency.

4. Neither project construction activities nor operation of the project may cause a violation of the Water Quality Control Plan for the Lahontan Region (Basin Plan), may cause a condition or threatened condition of pollution or nuisance, or cause any other violation of the Water Code.

5. The project must be constructed and operated in accordance with the project described in the application for WQC that was submitted to the Water Board.

Deviation from the project description constitutes a violation of the conditions upon which the certification was granted. Any significant changes to this project that would have a significant or material effect on the findings, conclusions, or conditions of this certification, including project operation, must be submitted to the Executive Officer for prior review and written approval.

6. This WQC is subject to the acquisition of all local, regional, state, and federal permits and approvals as required by law. Failure to meet any conditions contained herein or any conditions contained in any other permit or approval issued by the State of California or any subdivision thereof may result in the revocation of this Certification and civil or criminal liability.

7. The Lahontan 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, or as appropriate to coordinate the operations of this project with other projects where coordination of operations is reasonably necessary to achieve water quality standards or protect the beneficial uses of water. Notwithstanding any more specific conditions in this certification, the project must be constructed and operated in a manner consistent with all 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.

8. This certification does not authorize any act that results in the taking of a threatened or endangered species or any act which is now prohibited, or becomes prohibited in the future, under the California Endangered Species Act (Fish and Game Code section 2050 et seq.) or the federal Endangered Species Act (16 U.S.C. sections 1531 et seq.). If a "take" will result from any act authorized under this certification, the applicant must obtain authorization for the take prior to construction or operation of the project. The Applicant is responsible for meeting all applicable requirements of the Endangered Species Act for the project authorized under this certification.

Additional Conditions

Pursuant to CCR title 23, section 3859(a), the following additional conditions are requirements of this certification:

1. No debris, cement, concrete (or wash water therefrom), oil or petroleum products must enter into or be placed where it may be washed from the Project site by rainfall or runoff into waters of the State. When operations are completed, any excess material must be removed from the Project work area, and from any areas adjacent to the work area where such material may be transported into waters of the State.

2. The Applicant must immediately notify Water Board staff by telephone whenever an adverse condition occurs as a result of this discharge. Such a condition includes, but is not limited to, a violation of the conditions of this Order, a significant spill of petroleum products or toxic chemicals, or damage to control facilities that would cause noncompliance. A written notification of the adverse condition must be provided to the Water Board within two weeks of occurrence. The written notification must identify the adverse condition, describe the actions necessary to remedy the condition, and specify a timetable, subject to any modifications by Water Board staff, for the remedial actions.

3. The Applicant must ensure that the Contractor employs necessary measures to prevent the introduction or spread of noxious/invasive weeds within the Project and staging area. These measures may include the treatment of on-site infestations, the cleaning of all equipment and gear that has been in an infested site, the use of weed-free erosion control materials (including straw), and the use of weed-free seeds and plant material for revegetation of disturbed areas.

4. Construction equipment must be monitored for leaks, and removed from service if necessary to protect water quality.

5. An emergency spill kit must be at the Project site at all times.

6. A copy of this Order must be maintained at the Project site so as to be available at all reasonable times to site operating personnel and Water Board staff.

Enforcement

1. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation must be subject to any remedies, penalties, process or sanctions as provided for under state law. For purposes of Clean Water Act section 401(d), 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.

2. In response to a suspected violation of any condition of this certification, the State Water Resources Control Board (State Water Board) or the Lahontan Water Board may require the holder of any permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring report the State Water Board or Lahontan Water Board deems appropriate, provided that the burden, including costs, of the reports must be a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

3. In response to any violation of the conditions of this certification, the Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

Section 401 Water Quality Certification Requirements Granted

I hereby issue an order certifying that any discharge from the referenced project will comply with the applicable provisions of Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards), and with other applicable requirements of State law. This discharge is also regulated under State Water 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 WQC.

Except insofar as may be modified by any preceding conditions, all WQC certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the Applicant's project description and the terms specified in this WQC order, and (b) compliance with all applicable requirements of the Basin Plan.

We look forward to working with you in your efforts to protect water quality. If you have questions, please contact Bud Amorfini, Engineering Geologist, at (530) 542-5463 or Alan Miller at (530) 542-5430.

HAROLD J. SINGER
EXECUTIVE OFFICER

cc: Tammy Branston/ California Department of Fish and Game, Bishop
Dave Smith / Wetlands Regulatory Office (WTR-8), US EPA, Region 9
(via email at R9-WTR8-Mailbox@epa.gov)
Jason Deters / U.S. Army Corps of Engineers, South Branch Sacramento Office
Bill Orme / State Water Resources Control Board, Division of Water Quality
(via email at Stateboard401@waterboards.ca.gov)

\BA/adw/T:\Hwy 395 High Point Curve 401 Cert - v2.doc
File Under: New File – Lake Tahoe Construction General Permit

CALIFORNIA DEPARTMENT OF FISH AND GAME
Inland Deserts Region
407 West Line St.
Bishop, CA 93514
Phone (760) 872-1171
Fax (760) 872-1284

STREAMBED ALTERATION AGREEMENT
NOTIFICATION NO. 1600-2011-0142-R6

CALIFORNIA DEPARTMENT OF TRANSPORTATION
HIGH POINT CURVE REALIGNMENT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and the California Department of Transportation as represented by Daniel Holland (Permittee).

RECITALS

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on April 8, 2011 that Permittee intends to complete the project described herein.

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

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

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

PROJECT LOCATION

The project is located at seven normally dry unnamed drainages between PM 118.2 and PM 119.5 on U.S. Highway 395, tributary to Topaz Lake, in the County of Mono, State of California; Township 10N, Range 21E, Sections 27 and 34, Topaz Lake US Geological Survey map.

PROJECT DESCRIPTION

The project is limited to the replacement of seven culverts, two of which are located in unnamed normally dry channels and five of which drain accumulated storm water from the paved road surface.

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At approximately PM 118.82 an existing 48" by 48" concrete box culvert will be replaced by a pre-cast 54" diameter reinforced concrete pipe with headwalls. As this drainage is normally dry, rock slope protection will be placed on the existing 12% slope to prevent soil erosion. Large rocks (95% weighing 220kg and 5% weighing 900-1800kg) will be placed on filter fabric using an excavator or backhoe at the inlet and outlet of the pipe.

At approximately PM 119.30 an existing 24" diameter culvert pipe will be replaced by a new 24" diameter corrugated metal pipe. The existing damaged headwall will be replaced with a new cast-in-place pored concrete headwall. The existing 5% slope will remain the same for the construction of the new culvert pipe. As this drainage is normally dry, rock slope protection will be placed over filter fabric using a backhoe. Approximately 75% of rock will be 11kg and 25% will be 0.4kg and will be placed only at the outlet, extending to the base of the fill slope (approximately 30 feet long and 10 feet wide).

At approximately PM 118.88, 118.98, 119.16, 119.40 and 119.50, existing 24" diameter culvert pipes will be replaced by new 24" diameter culvert pipes with modified drainage inlets. The modified drainage inlet has an additional 18" to 24" of depth and will function as a sediment basin to trap sediment and cinders.

Equipment to be used includes heavy earth moving and excavation equipment, loaders, graders, backhoes, vibratory compactors and service trucks. Work is proposed to begin in July 2012 and may take up to two months to complete. The proposed project is described in greater detail in the Permittee's notification package.

PROJECT IMPACTS

Existing fish or wildlife resources the project could substantially adversely affect include: small mammals, songbirds, raptors, reptiles, and riparian plant species.

MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES

1. Administrative Measures

Permittee shall meet each administrative requirement described below.

1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.

1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of the Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of

Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.

1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.

1.4 Project Site Entry. Permittee agrees that DFG personnel may enter the project site at any time to verify compliance with the Agreement.

2. Avoidance and Minimization Measures

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

2.1 Permittee assumes responsibility for the restoration of any fish and wildlife habitat which may be impaired or damaged, either directly or incidental, to the project, as a result of failure to properly implement or complete the conditions of this agreement, or from activities which were not included in Permittee's notification.

2.2 Permittee shall construct a temporary 4-foot high chain link fence with silt fence installed at its base approximately 8-feet above the historic high water line of Topaz lake. This temporary fence will run the entire length of the project and act as a barrier to the movement of sediment and debris into the lake from the work site. Additionally, silt fences and straw wattles shall be placed to control erosion at the seven culvert locations described in this Agreement.

2.3 Permittee shall implement silt fences, straw wattles, gravel bag check dams and similar structural devices to control and contain construction site waste and pollutants. Construction site waste shall be removed upon completion of work activities and shall be disposed of off site at a proper disposal facility.

2.4 Pursuant to Section 5650 of the Fish and Game Code, Permittee shall not use any chemicals, herbicides, or other substance or material deleterious to fish, plant life, or bird life, near a water body where it can pass into any waters of the State.

2.5 If Permittee intends to remove any woody vegetation from the project site during the period commencing March 15 through September 15, Permittee shall direct a qualified Biologist to assess all potential bird nesting habitat at the project site within 48 hours prior to project activities. If an active bird nest is located, Permittee shall protect the nest site from project-related impacts until the young have fledged or the nest otherwise becomes inactive. If threatened or endangered bird species are observed in the area, no work shall occur during the breeding season (March 15 through September 15) to avoid take of listed species. Sections 3503, 3503.5, and 3513 of FGC prohibits take of all birds and their active nests, including raptors

and other migratory nongame birds (As listed under the Migratory Bird Treaty Act). The name and qualifications of the biologist, as well as the results of this survey, shall be submitted to DFG prior to the implementation of project activities.

2.6 Permittee shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the Permittee to ensure compliance.

2.7 No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction, or associated activity of whatever nature shall be allowed to enter into or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream or lake.

2.8 No equipment maintenance shall be done within or near any stream channel where petroleum products or other pollutants from the equipment may enter these areas under any flow.

3. Reporting Measures

Permittee shall meet each reporting requirement described below.

3.1 Permittee shall notify DFG, in writing, at least 5 days prior to initiation of project activities as noted in the Project Description above, and within 5 days of completion of project activities as noted in the Project Description above. Notification shall be transmitted by electronic mail to tbranston@dfg.ca.gov, or by FAX to DFG's Bishop Field Office (760) 872-1284. The subject line of any electronic mail or FAX pursuant to this term shall contain the phrase "1602 work advisory." This subject line is important so DFG can automatically disseminate the information to affected personnel. Please reference SAA # 1600-2011-0142-R6.

CONTACT INFORMATION

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

To Permittee:

Mr. Daniel Holland
Caltrans District 9
500 South Main Street
Bishop, CA 93514

dan_holland@dot.ca.gov

To DFG:

Department of Fish and Game
407 West Line Street
Bishop, CA 93514
Attn: Lake and Streambed Alteration Program – Tammy Branston
Notification #1600-2011-0142-R6
tbranston@dfg.ca.gov

LIABILITY

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

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

SUSPENSION AND REVOCATION

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

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

ENFORCEMENT

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

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

OTHER LEGAL OBLIGATIONS

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

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

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

AMENDMENT

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

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

TRANSFER AND ASSIGNMENT

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

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

EXTENSIONS

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

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

EFFECTIVE DATE

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

TERM

This Agreement shall expire on **December 31, 2013,** unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

AUTHORITY

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

AUTHORIZATION

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

CONCURRENCE

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

FOR CALIFORNIA DEPARTMENT OF TRANSPORTAION

7/12/2011

Dan Holland
District 9 Environmental Engineer

Date

FOR DEPARTMENT OF FISH AND GAME

7/13/11

Brad Henderson
Environmental Program Manager

Date

Prepared by: Tammy Branston
Environmental Scientist

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO CA 95814-2922

REPLY TO
ATTENTION OF

June 8, 2011

Regulatory Division (SPK-2011-00469)

State of California
Department of Transportation, District 6
Attn: Mr. Zachary Parker
2015 East Shields Avenue, Suite A-100
Fresno, California 93726-5428

Dear Mr. Parker:

We are responding to your, April 18, 2011, request for a Department of the Army permit for the State Route 395 High Point Curve Alignment. This approximately 65-acre project involves activities, including discharges fill material, in waters of the United States to realign a 1.5 mile segment of State Route 395 from PM 118.7 to 119.6. The project is located on or near Topaz Lake, Section 34, Township 10 North, Range 22 East, Mount Diablo Meridian, Latitude 38.663530°, Longitude -119.541807°, Mono County, California.

Based on the information you provided, the proposed activity, resulting in the permanent loss of approximately 0.11 acre of open water, is authorized by Nationwide Permit Number 3. However, until Section 401 Water Quality Certification for the activity has been issued or waived, our authorization is denied without prejudice. Once you have provided us evidence of water quality certification, the activity is authorized and the work may proceed subject to the conditions of certification and the Nationwide Permit. Your work must comply with the general terms and conditions listed on the enclosed Nationwide Permit information sheets (enclosure 1) and the following special conditions:

Special Conditions:

1. We understand the State of California, Department of Transportation (Caltrans) is the National Environmental Policy Act (NEPA) lead federal agency for this project, and as such, will ensure the authorized work complies with the National Environmental Policy Act, the Endangered Species Act, the National Historical Preservation Act and any other applicable federal laws.

2. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify the appropriate Caltrans and U.S. Army Corps of Engineers Regulatory offices of what you have found. Caltrans acting as the lead Federal agency for this project may consult as appropriate to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register, pursuant to 36 CFR Part 800, as amended 8/05/2004.

3. The Permittee (California Department of Transportation) is responsible for all work authorized herein and ensuring that all contractors and workers are made aware and adhere to the terms and conditions of this permit authorization. You shall ensure that a copy of the permit authorization and associated drawings are available for quick reference at the project site until all construction activities are completed.

4. To mitigate for the loss of 0.1 acre of open waters, you shall submit a check to this office in the amount of $15,000 payable to the National Fish and Wildlife Foundation (NFWF). Prior to initiation of any construction activities within waters of the U.S., you must receive written notification from the Corps that the check has been deposited in NFWF's Sacramento District Wetlands Conservation Fund.

5. You and your authorized contractor shall allow representatives from this office to inspect the authorized activity areas at any time deemed necessary to ensure that work is being or has been accomplished in accordance with the terms and conditions of this verification.

6. All equipment staging, including Temporary Construction Areas (TCA's), shall take place within Corps of Engineers approved areas within the project boundary. Prior to construction implementation, you shall ensure all equipment staging, TCA's, demolition and excavation, off pavement detours, borrow and fill areas, and upland disposal areas have been evaluated under National Environmental Policy Act, Section 401 and 404 of the Clean Water Act, Section 7 of the Endangered Species Act and Section 106 of the National Historical Preservation Act and all required permits have been obtained.

7. Excavated materials shall only be placed in upland locations. The upland disposal site(s) shall be delineated for waters of the U.S. and must be approved by the Corps of Engineers prior to disposal. This condition is necessary to ensure that no fill is disposed of in an area that may contain waters without first being delineated and approved by the Corps.

8. Within 30 days prior to initiation of construction activities within waters of the United States, you shall submit to this office pre-construction photographs of the proposed discharge areas in waters of the U.S., landscape view photographs of major project features, which have been taken no more than 1 year prior to initiation of construction activities. Within 30 days following construction activities, you shall submit post-construction photographs of the same locations, showing the placement and/or removal of fill, and landscape view photographs of all major project features. The pre & post camera positions and view angles of the photographs shall be identical and identified on a map, aerial photo, or project drawing.

9. You shall follow specifications and standards described in the Storm Water Pollution Prevention Plan (SWPPP) and/or Water Pollution Control Plan (WPCP), to prevent erosion and sedimentation during and after construction. Construction work within waters of the U. S. shall be performed when the flows are at their seasonal low or when they have ceased and the areas are dry, typically late summer through early fall.

10. Between construction seasons all equipment and materials, with the exception of ESA fencing, temporary falsework, and trestles, shall be removed from waters of the U.S. and all disturbed areas shall be stabilized to prevent erosion and sedimentation.

11. Temporary fills, access roads, dams and/or water structures shall be removed in their entirety and the affected areas returned to pre-construction elevations, contours and conditions within 30 days of completion of authorized work in waters of the U.S.

12. If any of the above conditions are violated or unauthorized activities occur, you shall stop work immediately and notify the Sacramento District, Regulatory Division Office. You shall provide us with a detailed description of the unauthorized activity(s), photo documentation, and any measures taken to remedy the violation.

13. You shall notify this office of the start and completion dates for each phase of the authorized work within 30 calendar days prior to initiation of construction activities within waters of the U.S. and 30 calendar days following completion of construction activities. Along with this notification, you shall submit a copy of the project construction/work schedule or similar report.

14. Within 30 days after completion of the authorized work, you must sign the enclosed *Compliance Certification* form and return it to this office, along with the items required in special condition #9.

This verification is valid until March 18, 2012, when the existing Nationwide Permits are scheduled to be modified, reissued, or revoked. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant NWP is modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this nationwide permit. Failure to comply with the General Conditions of this Nationwide Permit, or the project-specific Special Conditions of this authorization, may result in the suspension or revocation of your authorization.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey*.

Please refer to identification number SPK-2011-00469 in any correspondence concerning this project. If you have any questions, please contact Mr. Jason Deters at our California South Branch Office, 650 Capitol Mall, Suite 5-200, Sacramento, California 95814-4708, email *Jason.Deters@usace.army.mil*, or telephone 916-557-7152. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/regulatory.html*.

Sincerely,

Paul Maniccia
Chief, California South Branch

Enclosure(s)

Copies Furnished without enclosure(s)
Mr. Alan Miller, California Regional Water Quality Control Board, Lahontan Region, 2501 Lake Tahoe Boulevard, South Lake Tahoe, California 96150
State of California, Department of Fish and Game, Inland Deserts Region, 3602 Inland Empire Boulevard, Suite C-220, Ontario, California 91764
U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office, Attn: Robert D. Williams, 1340 Financial Boulevard, Suite 234, Reno, Nevada 89502

COMPLIANCE CERTIFICATION

Permit File Number: SPK-2011-00469

Nationwide Permit Number:

Permittee: Mr. Zachary Parker
State of California
Department of Transportation, District 6
2015 East Shields Avenue, Suite A-100
Fresno, California 93726-5428

County: Mono

Date of Verification: June 8, 2011

Within 30 days after completion of the activity authorized by this permit, sign this certification and return it to the following address:

U.S. Army Corps of Engineers
Sacramento District
650 Capitol Mall, Suite 5-200
Sacramento, California 95814-4708
DLLS-CESPK-RD-Compliance@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of the permit your authorization may be suspended, modified, or revoked. If you have any questions about this certification, please contact the Corps of Engineers.

* * * * * * * * *

I hereby certify that the work authorized by the above-referenced permit, including all the required mitigation, was completed in accordance with the terms and conditions of the permit verification.

_____ _____
Signature of Permittee Date

Nationwide Permit Summary

U S Army Corps of Engineers
Sacramento District

33 CFR Part 330; Issuance of Nationwide Permits – March 19, 2007 includes corrections of May 8, 2007 and addition of regional conditions December 2007

3. Maintenance.

(a) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This NWP authorizes the repair, rehabilitation, or replacement of those structures or fills destroyed or damaged by storms, floods, fire or other discrete events, provided the repair, rehabilitation, or replacement is commenced, or is under contract to commence, within two years of the date of their destruction or damage. In cases of catastrophic events, such as hurricanes or tornadoes, this two-year limit may be waived by the district engineer, provided the permittee can demonstrate funding, contract, or other similar delays.

(b) This NWP also authorizes the removal of accumulated sediments and debris in the vicinity of and within existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) and the placement of new or additional riprap to protect the structure. The removal of sediment is limited to the minimum necessary to restore the waterway in the immediate vicinity of the structure to the approximate dimensions that existed when the structure was built, but cannot extend further than 200 feet in any direction from the structure. This 200 foot limit does not apply to maintenance dredging to remove accumulated sediments blocking or restricting outfall and intake structures or to maintenance dredging to remove accumulated sediments from canals associated with outfall and intake structures. All dredged or excavated materials must be deposited and retained in an upland area unless otherwise specifically approved by the district engineer under separate authorization. The placement of riprap must be the minimum necessary to protect the structure or to ensure the safety of the structure. Any bank stabilization measures not directly associated with the structure will require a separate authorization from the district engineer.

(c) This NWP also authorizes temporary structures, fills, and work necessary to conduct the maintenance activity. 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.

(d) This NWP does not authorize maintenance dredging for the primary purpose of navigation or beach restoration. This NWP does not authorize new stream channelization or stream relocation projects.

Notification: For activities authorized by paragraph (b) of this NWP, the permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 27). Where maintenance dredging is proposed, the pre-construction notification must include information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals. (Sections 10 and 404)

Note: This NWP authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the Clean Water Act Section 404(f) exemption for maintenance.

A. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP.

☐ **1. Navigation.**

☐ (a) No activity may cause more than a minimal adverse effect on navigation.

☐ (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

☐ (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made

"no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed.

☐ (d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

☐ (e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide Web pages at http://www.fws.gov/ and http://www.noaa.gov/fisheries.html respectively.

☐ **18. Historic Properties.**

☐ (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

☐ (b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

☐ (c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

☐ (d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

☐ (e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

☐ **19. Designated Critical Resource Waters.** Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

☐ (a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and

of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

☐ **25. Transfer of Nationwide Permit Verifications.** If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

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

(Transferee)

(Date)

☐ **26. Compliance Certification.** Each permittee who received an NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:

☐ (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;

☐ (b) A statement that any required mitigation was completed in accordance with the permit conditions; and

☐ (c) The signature of the permittee certifying the completion of the work and mitigation.

☐ **27. Pre-Construction Notification.**

☐ (a) **Timing.**. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, as a general rule, will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

☐ (1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

☐ (2) Forty-five calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 17 that listed species or critical habitat might affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 18 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) is completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee cannot begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

☐ (b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

☐ (1) Name, address and telephone numbers of the prospective permittee;

☐ (2) Location of the proposed project;

☐ (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided result in a quicker decision.);

☐ (4) The PCN must include a delineation of special aquatic sites and other waters of the United States on the project site. Wetland delineations must

conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any conditions the district engineer deems necessary. The district engineer must approve any compensatory mitigation proposal before the permittee commences work. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP.

If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (1) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (2) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (3) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period. The authorization will include the necessary conceptual or specific mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan.

☐ **(a) 28. Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

B. Regional Conditions:

I. Sacramento District (All States, except Colorado)

1. When pre-construction notification (PCN) is required, the prospective permittee shall notify the Sacramento District in accordance with General Condition 27 using either the South Pacific Division Preconstruction Notification (PCN) Checklist or a completed application form (ENG Form 4345). In addition, the PCN shall include:

a. A written statement explaining how the activity has been designed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States;

b. Drawings, including plan and cross-section views, clearly depicting the location, size and dimensions of the proposed activity. The drawings shall contain a title block, legend and scale, amount (in cubic yards) and size (in acreage) of fill in Corps jurisdiction, including both permanent and temporary fills/structures. The ordinary high water mark or, if tidal waters, the high tide line should be shown (in feet), based on National Geodetic Vertical Datum (NGVD) or other appropriate referenced elevation; and

c. Pre-project color photographs of the project site taken from designatedlocations documented on the plan drawing.

2. The permittee shall complete compensatory mitigation required by special conditions of the NWP verification before or concurrent with construction of the authorized activity, except when specifically determined to be impracticable by the Sacramento District. When project mitigation involves use of a mitigation bank or in-lieu fee program, payment shall be made before commencing construction.

3. The permittee shall record the NWP verification with the Registrar of Deeds or other appropriate official charged with the responsibility for maintaining records of title to or interest in real property against areas (1) designated to be preserved as part of mitigation for authorized impacts, including any associated covenants or restrictions, or (2) where structures such as boat ramps or docks, marinas, piers, and permanently moored vessels will be constructed in or adjacent to navigable waters (Section 10 and Section 404). The recordation shall also include a map showing the surveyed location of the authorized structure and any associated areas preserved to minimize or compensate for project impacts.

4. The permittee shall place wetlands, other aquatic areas, and any vegetative buffers preserved as part of mitigation for impacts into a separate "preserve" parcel prior to discharging dredged or fill material into waters of the United States, except where specifically determined to be impracticable by the Sacramento District. Permanent legal protection shall be established for all preserve parcels, following Sacramento District approval of the legal instrument.

5. The permittee shall allow Corps representatives to inspect the authorized activity and any mitigation areas at any time deemed necessary to determine compliance with the terms and conditions of the NWP verification. The permittee will be notified in advance of an inspection.

6. For NWPs 29, 39, 40, 42, 43, 44, and 46, requests to waive the 300 linear foot limitation for intermittent or ephemeral waters of the U.S. shall include an evaluation of functions and services provided by the waterbody taking into account the watershed, measures to be implemented to avoid and minimize impacts, other measures to avoid and minimize that were found to be impracticable, and a mitigation plan for offsetting impacts.

7. Road crossings shall be designed to ensure fish passage, especially for anadromous fisheries. Permittees shall employ bridge designs that span the stream or river, utilize pier or pile supported structures, or involve large bottomless culverts with a natural streambed, where the substrate and streamflow

cubic yard of suitable fill* material per running foot below the plane of the ordinary high water mark. Activities greater than 1/4 cubic yard may be authorized if the permittee notifies the District Engineer in accordance with General Condition 27 (Pre-Construction Notification) and the Corps determines the adverse environmental effects are minimal. [* See (g) for definition of Suitable Fill]

c. Nationwide Permit No. 27 Aquatic Habitat Restoration, Establishment, and Enhancement Activities.

(1) For activities that include a fishery enhancement component, the Corps will send the Pre-Construction Notification to the Colorado Division of Wildlife (CDOW) for review. In accordance with General Condition 27 (Pre-Construction Notification), CDOW will have 10 days from the receipt of Corps notification to indicate that they will be commenting on the proposed project. CDOW will then have an additional 15 days after the initial 10-day period to provide those comments. If CDOW raises concerns, the applicant may either modify their plan, in coordination with CDOW, or apply for a standard individual permit.

(2) For activities involving the length of a stream, the post-project stream sinuosity will not be significantly reduced, unless it is demonstrated that the reduction in sinuosity is consistent with the natural morphological evolution of the stream (sinuosity is the ratio of stream length to project reach length).

(3) Structures will allow the upstream and downstream passage of aquatic organisms, including fish native to the reach, as well as recreational water craft or other navigational activities, unless specifically waived in writing by the District Engineer. The use of grout and/or concrete in building structures is not authorized by this nationwide permit.

(4) The construction of water parks (i.e., kayak courses) and flood control projects are not authorized by this nationwide permit.

d. Nationwide Permits Nos. 29 and 39; Residential Developments and Commercial and Institutional Developments. A copy of the existing FEMA/locally-approved floodplain map must be submitted with the Pre-Construction Notification. When reviewing proposed developments, the Corps will utilize the most accurate and reliable FEMA/locally-approved pre-project floodplain mapping, not post-project floodplain mapping based on a CLOMR or LOMR. However, the Corps will accept revisions to existing floodplain mapping if the revisions resolve inaccuracies in the original floodplain mapping and if the revisions accurately reflect pre-project conditions.

2. Final Regional Conditions Applicable to All Nationwide Permits within Colorado

e. Removal of Temporary Fills. General Condition 13 (Removal of Temporary Fills) is amended by adding the following: When temporary fills are placed in wetlands in Colorado, a horizontal marker (i.e. fabric, certified weed-free straw, etc.) must be used to delineate the existing ground elevation of wetlands that will be temporarily filled during construction.

f. Spawning Areas. General Condition 3 (Spawning Areas) is amended by adding the following: In Colorado, all Designated Critical Resource Waters (see enclosure 1) are considered important spawning areas. Therefore, In accordance with General Condition 19 (Designated Critical Resource Waters), the discharge of dredged or fill material in not authorized by the following nationwide permits in these waters: NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50. In addition, in accordance with General Condition 27 (Pre-Construction Notification), notification to the District Engineer is required for use of the following nationwide permits in these waters: NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37 and 38".

g. Suitable Fill. In Colorado, use of broken concrete as fill material requires notification to the District Engineer in accordance with General Condition 27 (Pre-Construction Notification). Permittees must demonstrate that soft engineering methods utilizing native or non-manmade materials are not practicable (with respect to cost, existing technology, and logistics), before broken concrete is allowed as suitable fill. Use of broken concrete with exposed rebar is prohibited in perennial waters and special aquatic sites.

h. Invasive Aquatic Species. General Condition 11 is amended by adding the following condition for work in perennial or intermittent waters of the United States: If heavy equipment is used for the subject project that was previously working in another stream, river, lake, pond, or wetland within 10 days of initiating work, one the following procedures is necessary to prevent the spread of New Zealand Mud Snails and other aquatic hitchhikers:

(1) Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and keep the equipment dry for 10 days. OR

(2) Remove all mud and debris from Equipment (tracks, turrets, buckets, drags, teeth, etc.) and spray/soak equipment with either a 1:1 solution of Formula 409 Household Cleaner and water, or a solution of Sparquat 256 (5 ounces Sparquat per gallon of water). Treated equipment must be kept moist for at least 10 minutes. OR

(3) Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and spray/soak equipment with water greater than 120 degrees F for at least 10 minutes.

3. Final Regional Conditions for Revocation/Special Notification Specific to Certain Geographic Areas

i. Fens: All Nationwide permits, except permit Nos. 3, 6, 20, 27, 32, 38 and 47, are revoked in fens and wetlands adjacent to fens. Use of nationwide permit Nos. 3, 20, 27 and 38, requires notification to the District Engineer, in accordance with General Condition 27 (Pre-Construction

project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects waterbodies with their adjacent uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 20.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete project: The term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

TOPAZ LAKE QUADRANGLE
CALIFORNIA–NEVADA
15 MINUTE SERIES (TOPOGRAPHIC)

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
09	Mno	395	118.7/119.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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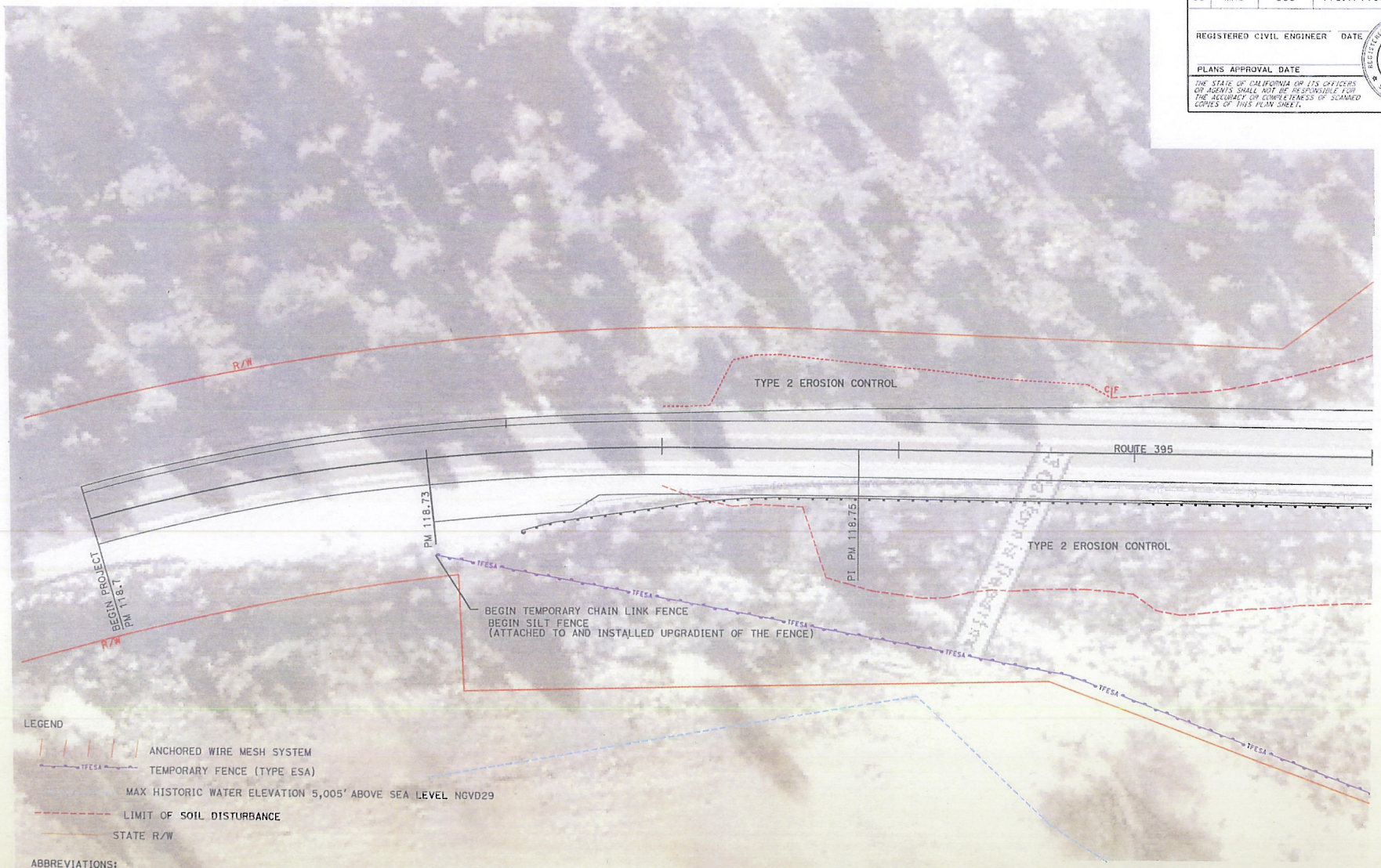

LEGEND

ANCHORED WIRE MESH SYSTEM

TFESA TEMPORARY FENCE (TYPE ESA)

MAX HISTORIC WATER ELEVATION 5,005' ABOVE SEA LEVEL NGVD29

LIMIT OF SOIL DISTURBANCE

STATE R/W

ABBREVIATIONS:
AFTS- ALTERNATIVE FLARED TERMINAL SYSTEM
RSP - ROCK SLOPE PROTECTION FOR DETAIL SEE SHEET DD-1

SCALE: 1"=20'

LAYOUT L-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

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TIME PLOTTED => 14:05

RELATIVE BORDER SCALE 0 1 2 3

USERNAME => s134546

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EA 000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
09	Mno	395	118.7/119.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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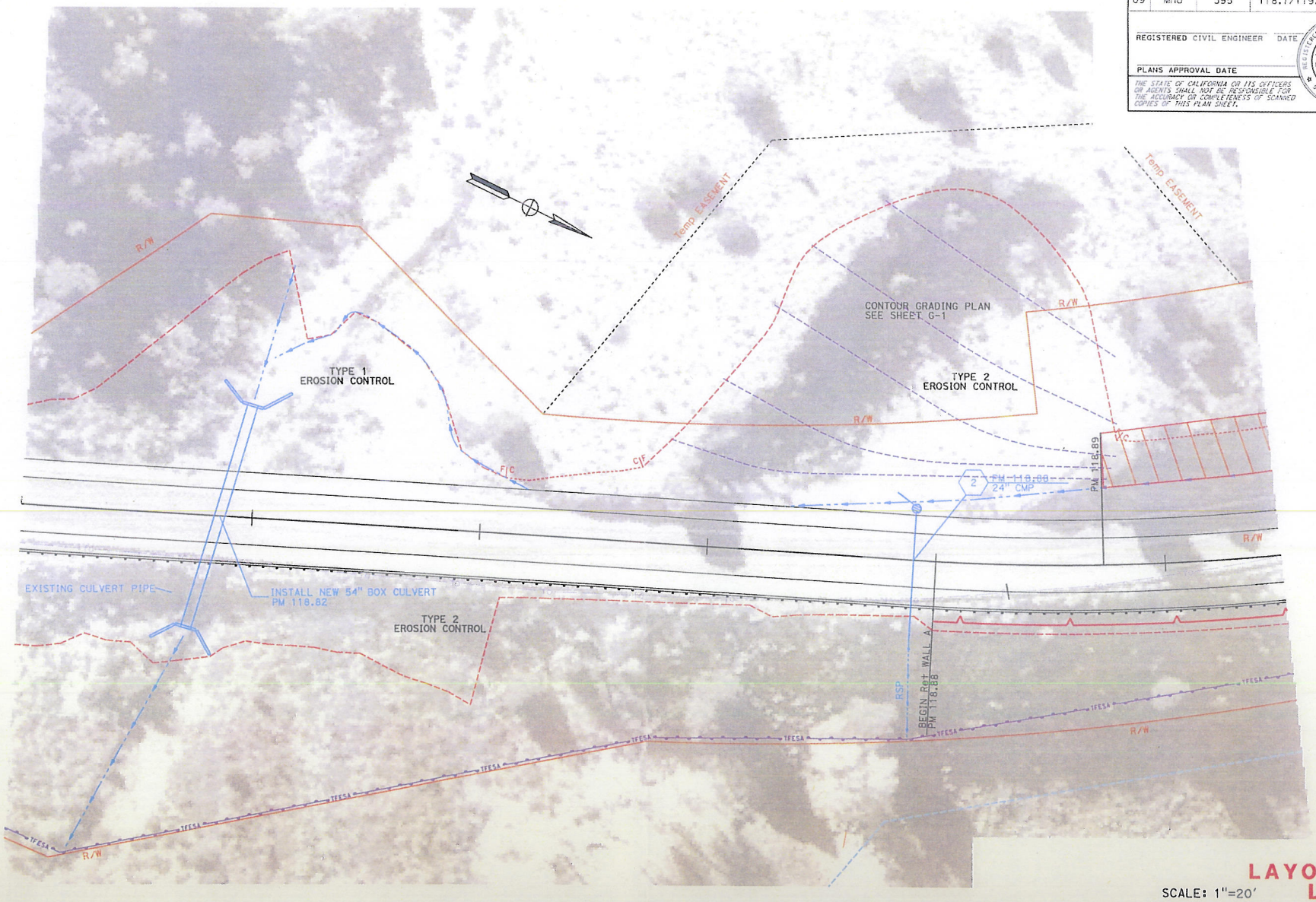

SCALE: 1"=20'

LAYOUT L-2

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

FUNCTIONAL SUPERVISOR

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
09	Mno	395	118.7/119.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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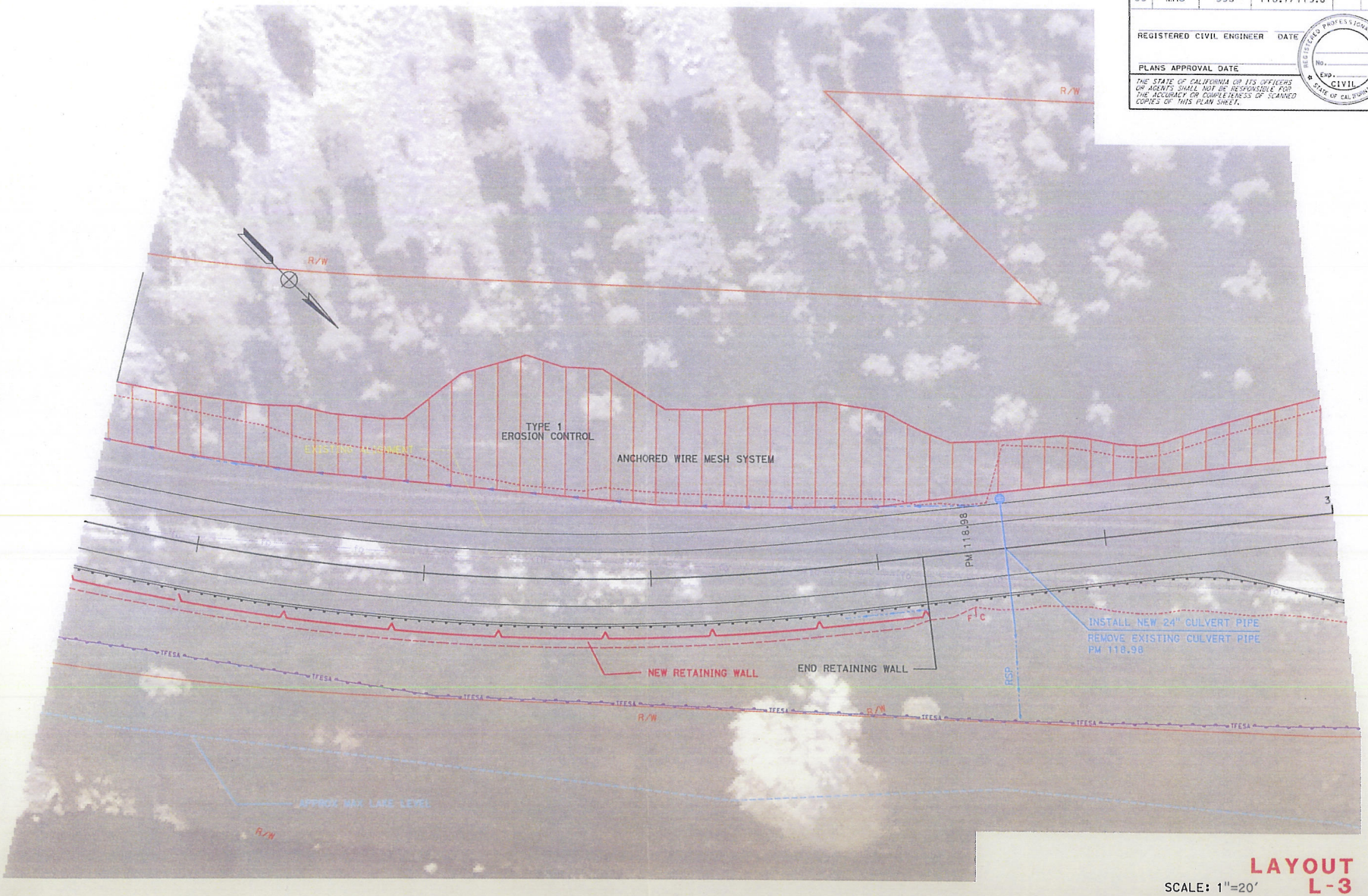

LAYOUT L-3

SCALE: 1"=20'

REVISED BY	
DATE REVISED	
CALCULATED-DESIGNED BY	
CHECKED BY	
FUNCTIONAL SUPERVISOR	

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

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TIME PLOTTED => 14:12

00-00-00

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
09	Mno	395	118.7/119.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

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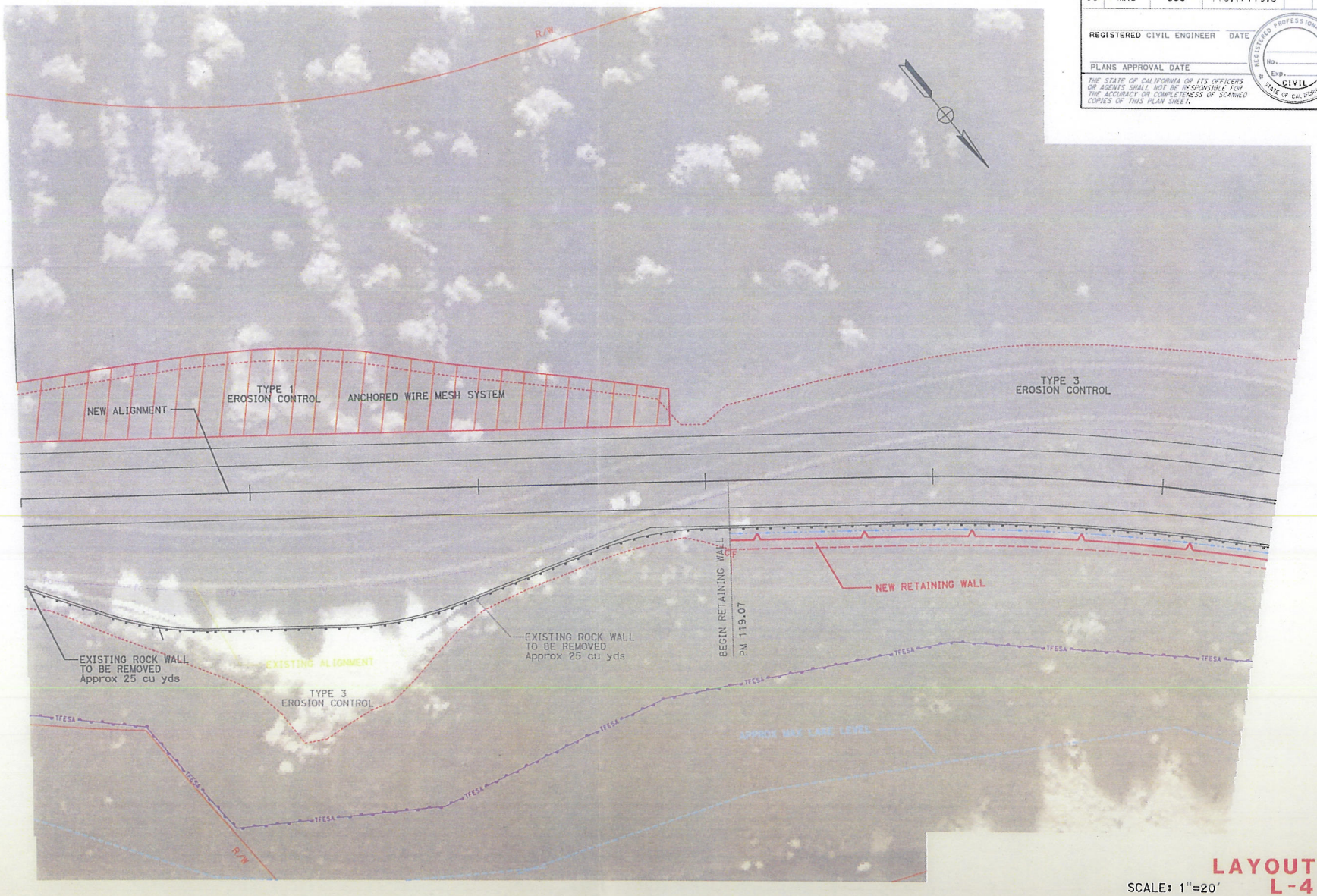

SCALE: 1"=20'

LAYOUT L-4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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REVISED BY

DATE REVISED

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DATE PLOTTED => 29-MAR-2011

TIME PLOTTED => 14:12

RELATIVE BORDER SCALE 0 1 2 3

USERNAME => s134546

CU 00000

EA 000000

District	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
09	Mno	395	118.7/119.6		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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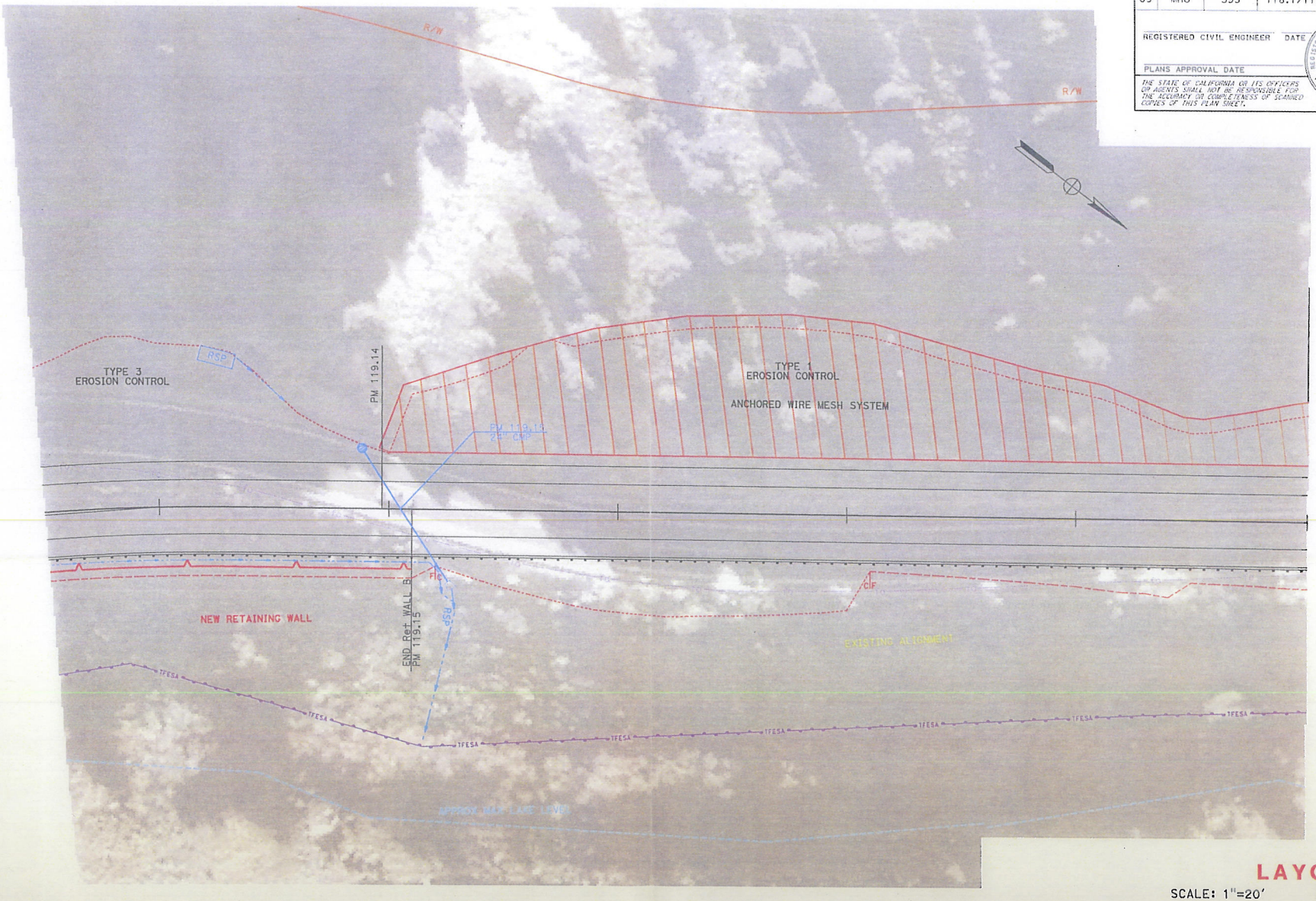

SCALE: 1"=20'

LAYOUT L-5

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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TIME PLOTTED => 14:13

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EA 000000

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

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PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER No. Exp. CIVIL STATE OF CALIFORNIA

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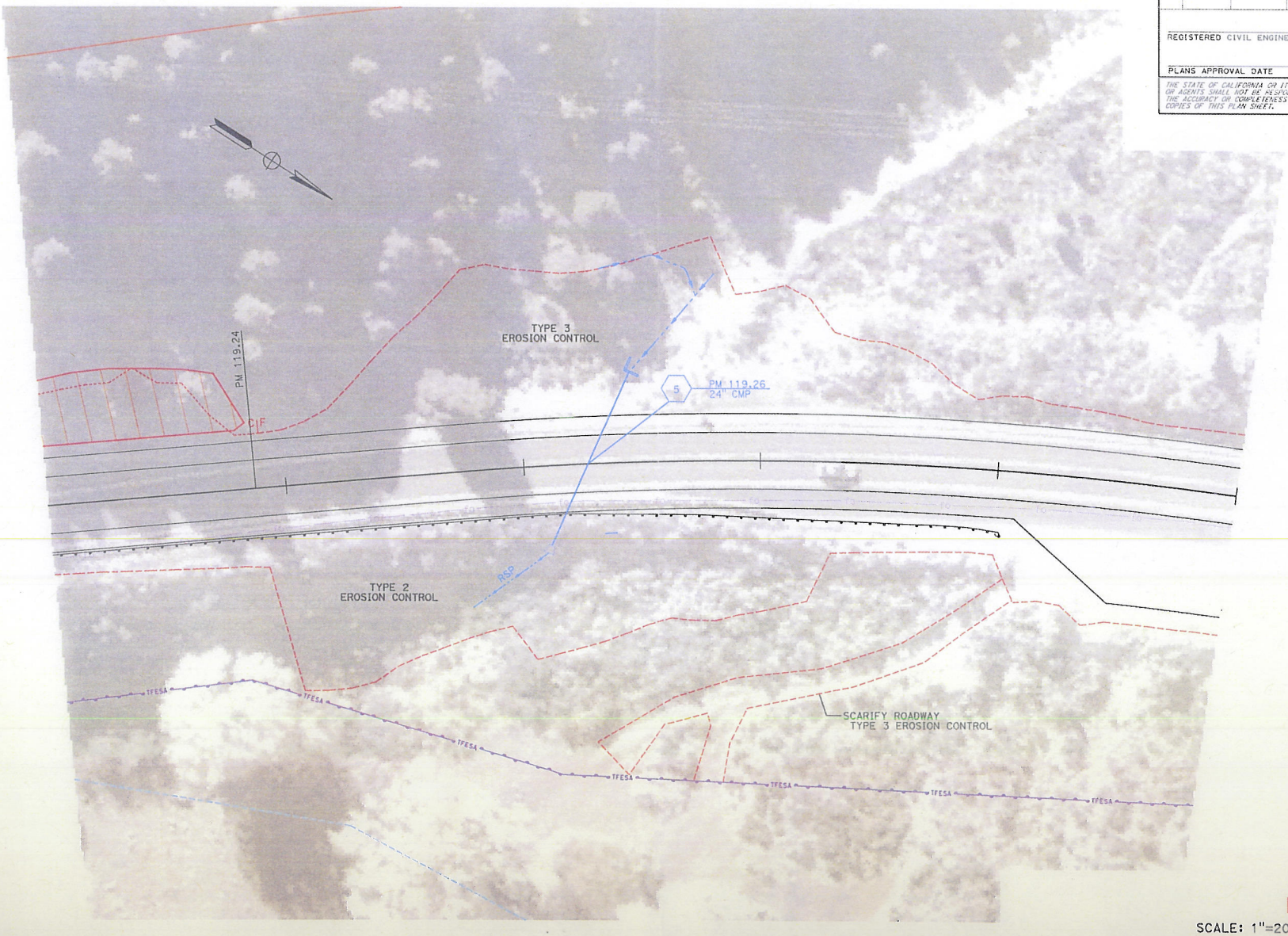

SCALE: 1"=20'

LAYOUT L-6

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CALCULATED-DESIGNED BY

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FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

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USERNAME => s134546

CU 00000

EA 000000

LAST REVISED 00-00-00

DATE PLOTTED => 29-MAR-2011

TIME PLOTTED => 14:11

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
09	Mno	395	118.7/119.6		

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PLANS APPROVAL DATE

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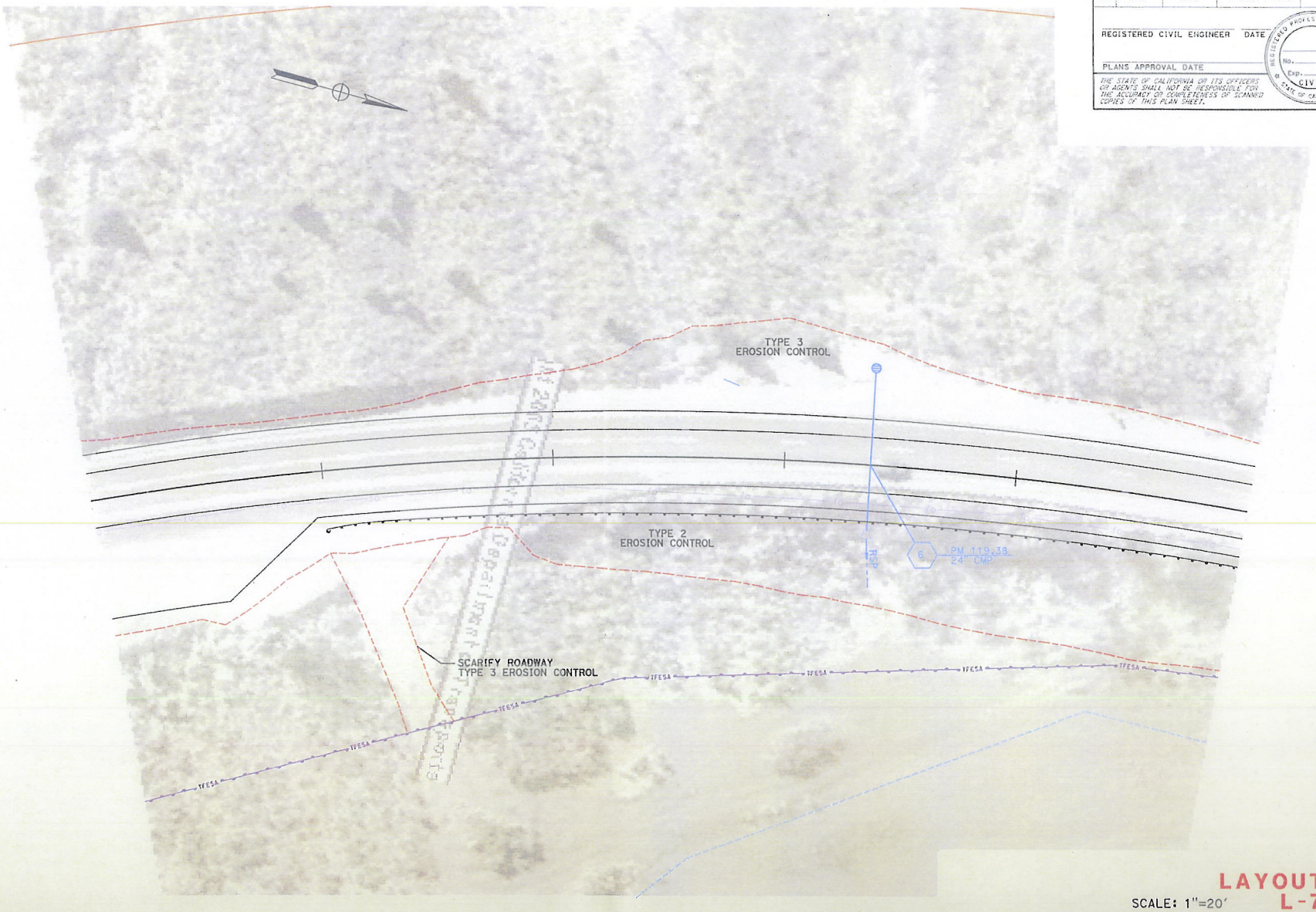

SCALE: 1"=20'

LAYOUT
L-7

REVISED BY
DATE REVISED
CALCULATED-DESIGNED BY
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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

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RELATIVE BORDER SCALE 0 1 2 3

USERNAME => s134546

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Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
09	Mno	395	118.7/119.6		

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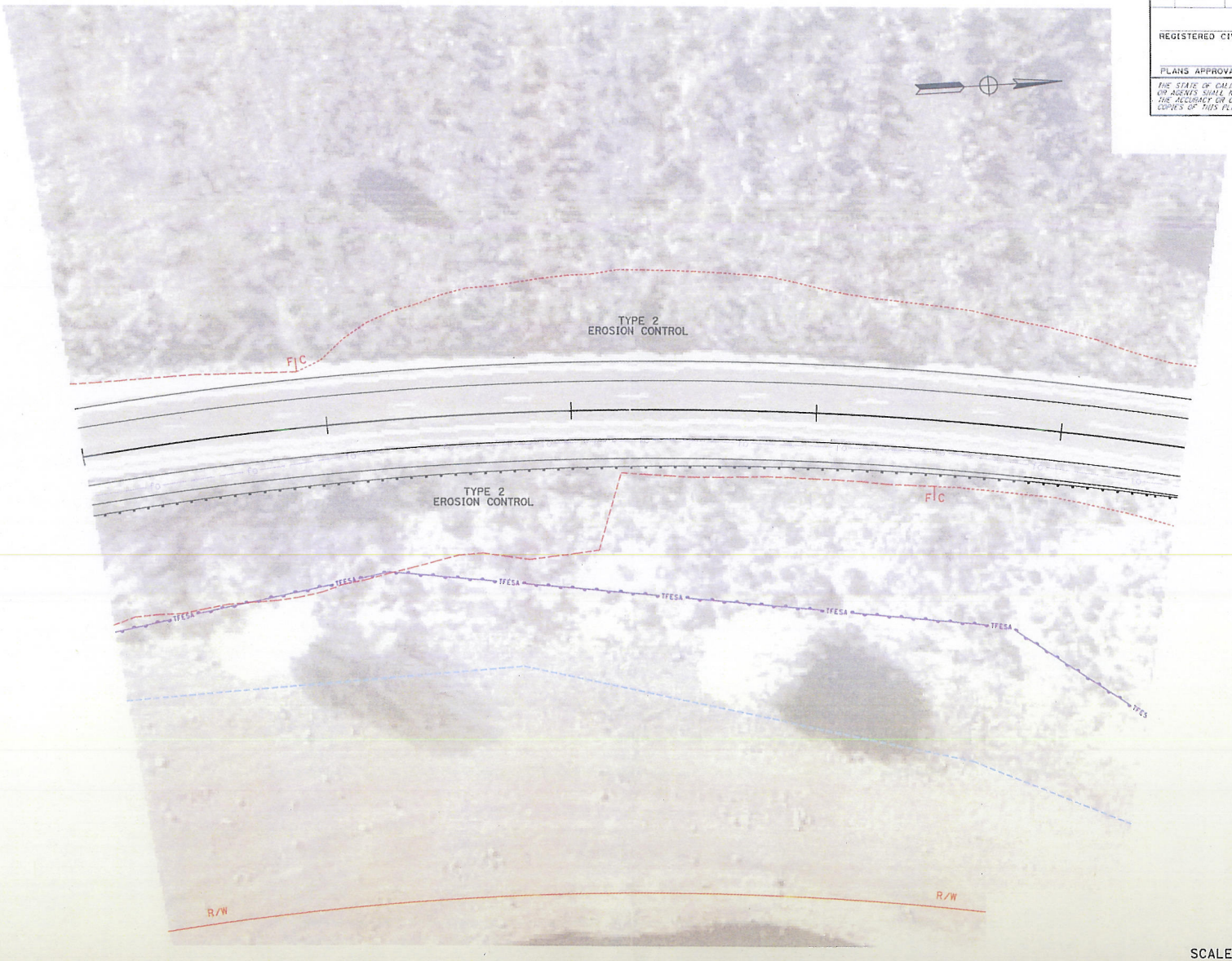

SCALE: 1"=20'

LAYOUT L-8

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FUNCTIONAL SUPERVISOR

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

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TIME PLOTTED => 14:14

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RELATIVE BORDER SCALE 0 1 2 3

USERNAME => s134546

CU 00000

EA 000000

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
09	Mno	395	118.7/119.6		

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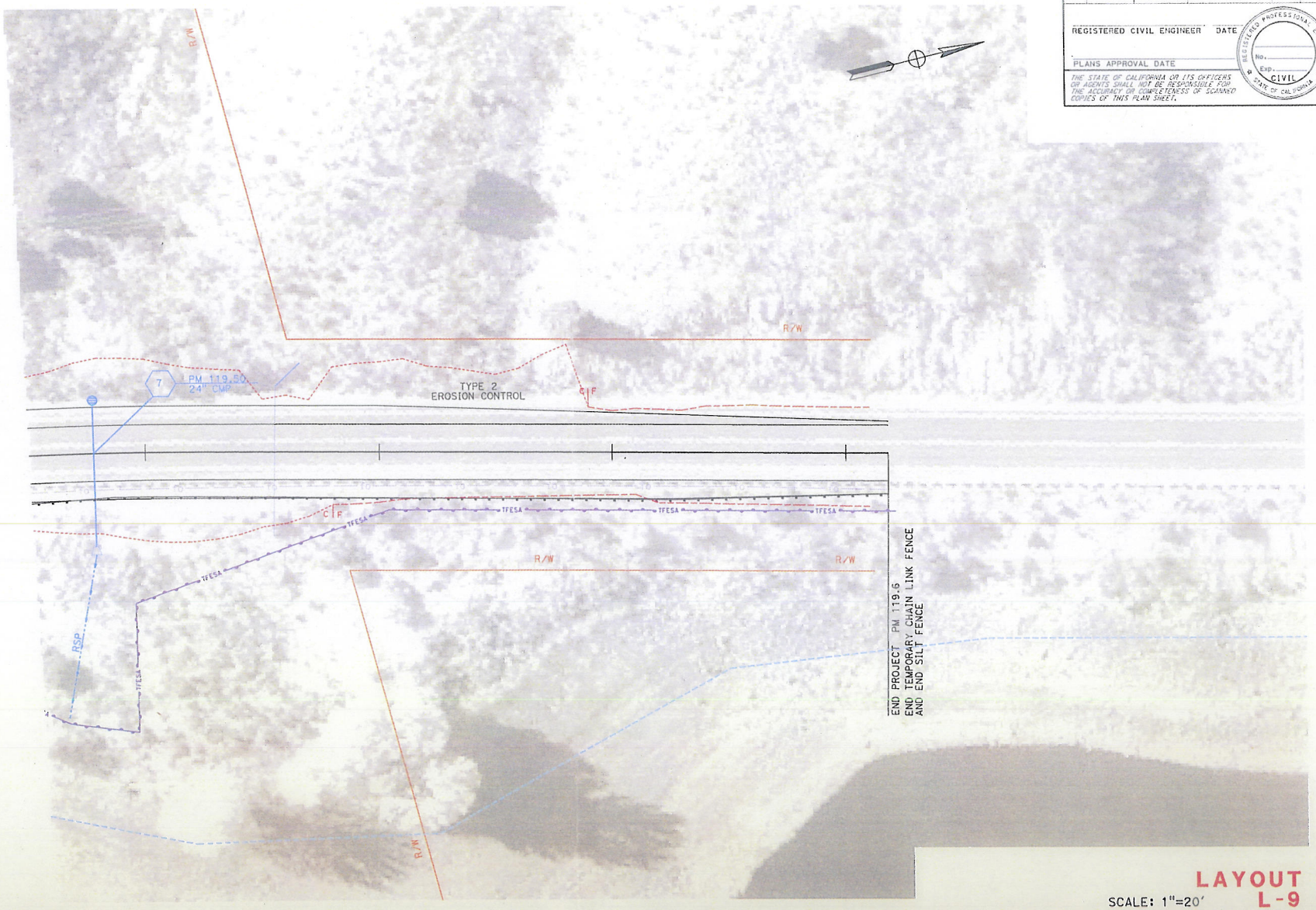

LAYOUT L-9

SCALE: 1"=20'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

FUNCTIONAL SUPERVISOR

CALCULATED-DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

REVISION DATE PLOTTED => 29-MAR-2011

00-00-00 TIME PLOTTED => 14:14

BORDER LAST REVISED 4/11/2008

RELATIVE BORDER SCALE 0 1 2 3

USERNAME => s134546

CU 00000

EA 000000

TEMPORARY

	II
Milepost	District
District Permit No.: T-019-11	
Applicant: Cal Trans	
Type of Activity: Detours & traffic Control in right of way.	
FOR DEPARTMENT USE ONLY	

APPLICATION AND PERMIT FOR TEMPORARY OCCUPANCY OF
NEVADA DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY
(Under the Provisions of NRS 408.423 and 408.210)

1. Location where event and/or occupancy is proposed:

US 395, NV SR 338, NV SR 829 (WELLINGTON CUTOFF RD), NV SR 208

Local name of highway — Street address or nearest cross street

between Milepost 0.0 SR 338 LYON Co. and Milepost 3.2 US 395 DOUGLAS Co.

2. Describe in detail the event, number of participants, proposed route, scheduled dates and time of event. Attach plans and/or drawings of proposed route.

SEE COVER LETTER, ATTACHED DETOUR PLANS AND SPECIAL PROVISIONS.

PLEASE DO COMMUNITY OUTREACH EARLY & OFTEN! 2/9/11

EVENT DATES: MAY 1, 2012 THROUGH MAY 25, 2012

3. SPECIFIC TERMS AND CONDITIONS APPURTENANT TO THIS PERMIT ARE LISTED ON PAGES 2 & 3.

4. THE PERMIT SHALL BE SIGNED AND RETURNED TO THE DISTRICT OFFICE.

CALIFORNIA DEPARTMENT OF TRANSPORTATION	STEPHEN WINZENREAD, SENIOR TRANSPORTATION ENGINEER	
Name of PERMITTEE	*Name and Title (Please print)*	
500 SOUTH MAIN ST.	Stephen Winzenread	
Address	*Signature*	PH: (760) 872-5222
BISHOP, CA 93514	1/27/2011	FAX: (760) 872-0717
City, State, Zip	*Date of Application*	*Telephone/Fax*

District Permit No.: T-01911

ADDITIONAL TERMS AND CONDITIONS

1. The permit shall be signed by **PERMITTEE** on Page 1 and returned to the district office. The permit shall not be valid until the **SIGNED** original permit has been received by the district office.

2. This temporary permit expires upon completion of the event.

3. The temporary Right-of-Way Occupancy Permit, or a conformed copy, shall be kept at the site of the event and must be shown to any representative of the Department of Transportation or any law enforcement officer on demand. **THE EVENT SHALL BE SUSPENDED IF THE PERMIT IS NOT AT THE SITE AS PROVIDED.**

4. The **PERMITTEE**, in addition to obtaining the temporary Right-of-Way Occupancy Permit must also obtain any and other permits required by State law or local ordinances.

5. The **PERMITTEE** agrees to indemnify and save harmless the State of Nevada and its officers, agents, and employees gainst any and all liability, loss, damage, cost and expense which it or they may incur, suffer, or be required to pay by reason of death, disease, or bodily injury to any person or persons, or injury to, destruction of, or loss of use of any property, including property belonging to the State of Nevada, arising out of or incident to activities contemplated by this permit, and proximately caused, in whole or in part, by any act or omission of the **PERMITTEE**, or its contractors, agents, or the employees of any one or all of them **OR BY THE OFFICERS, AGENTS, OR EMPLOYEES OF THE STATE OF NEVADA,** unless it is established by the **PERMITTEE** that the proximate cause was the willful misconduct or gross negligence of the officers, agents, or employees of the State of Nevada.

6. **This application must have the following signatures of approval before being processed by the district office:**

Nevada Highway Patrol

By: WAIVED SRS

Date:

Special conditions / requirements or other comments (i.e. escorts, traffic control, contact area supervisor, or N/A):

Sheriff/Police

By: WAIVED SRS

Date:

Special conditions / requirements or other comments (i.e. escorts, traffic control, contact area supervisor, or N/A):

CALTRANS — NEEDS TEMPORARY PERMIT TO CONTINUE CONTRACT PROCESSING

*** SEE ADDITIONAL TERMS AND CONDITIONS ON PAGE 3. ***

Reviewed by:
District Permit Office

This temporary Right-of-Way Occupancy permit is granted to the PERMITTEE in accordance with the provisions of Chapter 408 NRS, and subject to the terms and conditions stipulated to perform the work described.

Dated this 9th day of FEBRUARY, 2011

STATE OF NEVADA, DEPARTMENT OF TRANSPORTATION

By

Director or District Engineer

ADDITIONAL TERMS AND CONDITIONS

7. The State Right-of-Way shall be returned to the original condition. Road travel way shall remain clean and free of debris at all times. Removal of trash and debris will be the responsibility of the PERMITTEE.

8. All Category 1 & 2 Traffic Control Devices used on NDOT roadways must be National Cooperative Highway Research Program (NCHRP) Report 350 compliant. The PERMITTEE and/or contractor shall have manufacturer's certificates of compliance available at the project site.

9. Upon project completion, NDOT agrees to take over ownership and maintenance of all turnable sign posts installed in the State of Nevada, as specified in the attached plans.

10. **PERMITEE shall contact the District II Permit Office at (775) 834-8330, approximately thirty (30) days prior to the anticipated beginning of work, to give notice and discuss any possible changes to project plans.**

11. Traffic control shall be set up as shown on the attached plans, unless otherwise noted herein or directed by the NDOT Permit Inspector. Any deviation will require prior approval from the NDOT Permit Office. NDOT requires at least two (2) full working days to review construction traffic control plans.

12. PERMITTEE shall not store equipment, materials or spoils in NDOT Right-of-Way outside of normal working hours.

MONO COUNTY

Planning Division

NOTICE OF DECISION / VARIANCE

REC'D/FILED
MC 11-27
AUG 24 2011
Mono
OFFICE OF THE CLERK

VARIANCE #: 11-001 **APPLICANT:** California Department of Transportation

PROJECT TITLE: Variance 11-001/Caltrans– High Point Curve Realignment

PROJECT LOCATION: U.S. Highway 395 from 0.83 mile north of the State Route 89 junction at post mile 117.8 to 0.89 mile south of the California/Nevada state line at post mile 119.6 along Topaz Lake in Mono County, California.

On August 11, 2011, a duly advertised and noticed public hearing was held, and the necessary findings, pursuant to Chapter 33, section 33.010 of the Mono County General Plan, were made by the Mono County Planning Commission. In accordance with those findings, a Notice of Decision is hereby rendered for **Variance 11-001** subject to the following conditions:

CONDITIONS OF APPROVAL

1. Project variance is generally limited to the estimated 14 days between May 1 and May 25, 2012, for the nighttime construction activities.
2. Project shall comply with requirements of Caltrans Standard Specifications Section 7-1.1011 "Sound Control Requirements."
3. Minor adjustments to the duration and timing of the nighttime construction activities may be authorized by the Community Development Director if found to be in substantial compliance with the intent of Variance 11-001.

DATE OF DECISION: August 11, 2011

Ongoing compliance with the above conditions is mandatory. Failure to comply constitutes grounds for revocation and the institution of proceedings to enjoin the subject use.

MONO COUNTY PLANNING COMMISSION

DATED: August 11, 2011

Staff Signature

cc: X Applicant
___ Engineer
___ Assessor
___ Compliance officer

Post
8/24/11 thru 9/24/11

Geotechnical Design Report

HIGH POINT CURVE CORRECTION

09-237701
09-MON-395-PM 118.7/119.6

Prepared for

Mr. Stephen Winzenread

Senior Design Engineer

District 9, Design 1 – Branch K

Prepared by

Division of Engineering Services

Geotechnical Services - MS#5

Office of Geotechnical Design - North

OCTOBER 2009

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1. Introduction

The Office of Geotechnical Design North (OGDN) is providing a Geotechnical Design Report (GDR) for the proposed High Point Curve Correction project for Highway 395, postmiles 118.7 to 119.6, in Mono County adjacent to Topaz Lake. It has been indicated that there is a higher than average accident rate for the High Point Curve area. The curve in this area is proposed to undergo horizontal and vertical curve realignment. The shoulders will be increased from the existing two-feet to the standard width of eight-feet. We have been requested to determine the feasibility of 1:1 cuts with rock netting and tie-back retaining walls for the proposed realignment.

The purpose of this report is to document subsurface geotechnical conditions, provide analysis of anticipated site conditions as they pertain to the project herein, and to recommend design and construction criteria for the roadway portions of the project. This report also established a geotechnical baseline to be used in assessing the existence and scope of changed site conditions.

This report is intended for use by the project design engineer, construction personnel, bidders and contractors.

2. Pertinent Reports and Investigations

The District has provided project plans. The following presents a list of references used in preparation of this report.

- *Topographic Map of the Topaz Lake quadrangle, California*, United States Geological Survey, 1953
- Sadigh, et al, 1997 attenuation equations, http://peer.berkeley.edu/course_modules/eqrd/IntExmp/atten03.htm#calcanch
- Western Regional Climate Center for 1957-2005
- Keonig, J.B., 1963, *Geologic map of California: Walker Lake Sheet*, California Division of Mines and Geology
- John, D.A., Giusso, James, Moore, W.J., Armin, R.A. and Dohrenwend, J.C., 1981, Reconnaissance geologic map of the Topaz Lake 15 minute quadrangle, California and Nevada: U.S. Geological Survey, Open-File Report OF-81-273, scale 1:62500
- Toppozada, T., Branum, D., Petersen, M., Hallstrom, C., Cramer, C., and Reichle, M., 2000, Epicenters of and Areas Damaged by M>5 California Earthquakes, 1800-1999: California Division of Mines and Geology, Map Sheet MS 49
- Preliminary Geotechnical Report, CalTrans, EA: 09-237700, May 8, 2006
- Updated Preliminary Foundation and Seismic Recommendations, CalTrans, November 17, 2008

- California Division of Mines and Geology, 1985, Official map of Alquist-Priolo Earthquake Fault Hazard Zones, NE 1/4 Topaz Lake Quadrangle: California Division of Mines and Geology, scale 1:24000.

3. Existing Facilities and Proposed Improvements

The proposed project lies along Highway 395 in Mono County adjacent to Topaz Lake. The roadway in this area trends roughly north-south adjacent to the west shore of the lake. The entire length is comprised of two 12-foot lanes and two-foot wide shoulders. The length of roadway was constructed entirely on a cut/fill. According to the reviewed as-built plans and our site reconnaissance, the cut slopes were graded between 0.5:1 and 1:1 (H:V) with both cut and fill slope heights up to about 50-feet. The largest existing cut slopes are observed between Stations 71+60 to 75+80 and Stations 81+20 to 84+60.

Overhead power lines lie to the west of the roadway. Drainage is handled by a system of swales, drop inlets, culverts and overside drains.

It is proposed to grade the new cut slopes at 1:1 and apply a "rock stabilization netting" to the slope surface. It has also been proposed to construct two tie-back retaining walls between stations 66+00 to 71+30 and between stations 76+05 to 80+15. No wall layouts or details have been provided from Structures Design by the time of this report.

4. Physical Setting

The physical setting of the project site and the surrounding area was reviewed to aid in project design and construction planning. The physical setting includes climate, topography and drainage, man-made and natural features, geology and seismicity characteristics.

4.1 Climate

According to the Western Regional Climate Center, the average annual precipitation at the Topaz Lake Station (located approximately 0.05 miles west of the project site) is 8.80 in. The majority of this precipitation (80%) occurs during the months of January to March. The average snowfall in this area is approximately 14.8 in. The average maximum daily air temperature throughout the warmest month (July) is 90.6°F and the average minimum daily air temperature throughout the coldest month (January) is 46.4°F. Refer to **Table 1** for the monthly climate summary.

Table 1: Period of Record Monthly Climate Summary

Topaz Lake Station, Nevada (268186) Period of Record: 7/1/1957 to 12/31/2008

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (°F)	46.9	51.5	56.8	62.3	71.7	81.9	90.6	89.1	80.8	69.7	55.8	48.4	67.1
Average Min. Temperature (°F)	18.5	22.0	25.4	29.1	37.3	44.7	50.4	48.8	40.4	31.6	23.9	18.8	32.6
Average Total Precipitation (in.)	1.35	1.14	0.84	0.52	0.61	0.60	0.51	0.48	0.32	0.42	0.96	1.05	8.80
Average Total Snowfall (in.)	3.6	3.4	1.4	1.2	0.3	0.0	0.0	0.0	0.0	0.1	1.1	3.6	14.8

4.2 Topography and Drainage

Based on the USGS topographic map of the Topaz Lake quadrangle, the topographic survey and our field investigation, the site area lies in an area of steep topographic relief with elevations ranging from approximately 5000 feet to greater that 6300 feet above mean sea level in the immediate vicinity of the project site. Slopes in the project area range from about 4:1 (H:V) to about 0.5:1. The map shows Topaz Lake to the east of the project, California Creek, Nevada Creek and the town of Topaz Lake to the north of the project, Slinkard Creek and the junction for Highway 89 to the south. Mountainous terrain, Monitor Pass and Virgil Connor Spring were shown to the west of the project.

4.3 Man-made and Natural Features of Engineering and Construction Significance

The highway was constructed on a cut/fill with Topaz Lake to the east and steep, mountainous terrain to the west.

Power lines were observed to the west of the roadway. Culverts and drains were installed where drainages to the west intersected the existing roadway.

Embankment fill slopes along the roadway were placed at 0.5:1 to 1:1 (H:V) and the existing cut slopes are at 1.5:1 (H:V) or steeper. The embankment slopes are experiencing a minor amount of surficial erosion in the form of rilling. The cut slopes are experiencing a moderate amount of erosion in the form of rockfall on the westerly side of the roadway. The rockfall is due to the highly fractured nature of the rock where bedrock is present in the cutslopes and by differential erosion in those areas where alluvial fan material is exposed.

4.4 Regional and Local Geology and Seismicity

This portion of Highway 395 lies near the border of California and Nevada, at the boundary between the Basin and Range and the Sierra Nevada Geomorphic provinces. The basin and range province is characterized by numerous, northeast to northwest

trending normal faults forming a nearly regular set of ridges and valleys. The Sierra Nevada geomorphic province is characterized by Mesozoic granitic intrusions uplifted into a continuous series of mountain ranges bordering California and Nevada.

According to the Geologic Map of California, Walker Lake sheet (CDMG, 1963), the majority of the roadway was constructed atop Quaternary alluvium consisting of boulders, gravel, sand, silt and clay. The map also states that metasedimentary rocks are located to the west of the roadway. According to the Reconnaissance Geologic Map of the Topaz Lake 15-minute quadrangle (USGS, 1981), the roadway lies upon young alluvial fan deposits (Qf_3) that consist of poorly sorted sand and gravel with boulders. The map also indicates that the Jurassic West Antelope sequence (Schweikert, 1976) is situated in the hills to the west of the roadway. The map states that the sequence of rocks consists of dark-brown to black tuffaceous sandstone and siltstone interbedded with minor conglomerate, limestone, and rhyolite tuff that have been metamorphosed to a greenschist facies schist, phyllite, granofels, marble and felsite.

Between stations 67+80 and 78+50 the rocks consist of black and light brown, tuffaceuous sandstone. The material is moderately to highly fractured and slightly to moderately weathered. The fracture orientation and differential weathering has formed relatively loose blocks up to about 5-feet in longest dimension.

Between stations 80+00 and 87+50, and stations 99+50 to the end of the project, rhyolitic tuff is observed in the cut slopes. The material is highly fractured and slightly to moderately weathered, forming blocks up to 3-feet in longest dimension.

Alluvial fan material was observed to completely comprise the cut slopes between stations 59+00 and station 67+80, station 78+50 to station 80+00, and station 87+50 to station 99+50. Alluvial fan material was also observed overlying the bedrock in many of the remaining cut slopes along the project alignment. The boulders situated in the alluvial fan material vary from about one-foot to about three feet in longest dimension.

Artificial fill associated with roadway construction composes the embankment slopes to the east of the roadway. Between the roadway embankments and Topaz Lake, quaternary alluvium in the form of fan, delta and lake deposits were observed. These deposits consist of unconsolidated gravels, sands, silts and clays.

The Department's California Seismic Hazard Map, 1996 (with errata), was also reviewed. The map indicates that the controlling fault for the project is the Antelope Valley West fault (AVW), which parallels the entire length of the project. The fault is classified as a normal type fault and is expected to be capable of producing a Maximum Credible Earthquake (MCE) of magnitude 7.00. The MCE from this source is expected to produce peak bedrock acceleration on the order of 0.8g at the project location based on the Geometrix (1997) attenuation equation. This fault paralleling the highway will be of special interest for the proposed structures.

According to the "Epicenters of and Areas Damaged by M>5 California Earthquakes, 1800-1999 (CGS, 2000), an earthquake occurred along the Antelope Valley West fault

between the periods from 1869 to 1931. The magnitude was estimated to be between 5.0 and 5.4. A series of earthquakes occurred in the Antelope Valley, between the Antelope Valley Fault Zone and the Genoa fault to the north. That series of earthquakes took place between 1932 and 1999 and varied between M5.0 and M6.4. The documentation indicates that a M5.5 earthquake occurred within this series on December 28, 1995, and a M6.2 occurred within this series on September 12, 1994.

The potential for liquefaction along the proposed wall layouts is low due to the coarse nature of the soils overlying the bedrock.

4.5 Soil Survey

We reviewed the United States Department of Agriculture - Natural Resource Conservation Service web page for soil survey information. The web page can be found at http://websoilsurvey.nrcs.usda.gov/app/. Currently, the NRCS has no soil survey information for this area.

The "Soil Survey of the Toiyabe National Forest Area" is situated to the west of the project site and may give an indication of the types of materials present within the project layout. The soils consist of the 390-Heenlake/Loope/Chenhigh Association and the 520-Canfire/Crispy/Rock Outcrop Association.

The Heenlake/Loope/Chenhigh Association consists of colluvium and residuum of andesite, tuff breccia or other volcanic rocks. The depth to bedrock varies from 14 to 40-inches. Shrink-swell potential is low to moderate. Water flow is high.

The Canfire/Crispy/Rock Outcrop Association consists of colluvium over residuum of metamorphic rocks. The depth to bedrock varies from 14 to 20-inches. Shrink-swell potential is moderate. Water flow is high.

5. Exploration

5.1 Drilling, Sampling and Testing

A subsurface investigation will be performed at the request of Structures Design for their design of the tie-back retaining walls. If another wall option is chosen, wall parameters will be provided in an addendum report.

5.2 Geophysical Studies

The bedrock material is not rippable and will need to be blasted following our standard special provisions for controlled blasting.

6. Geotechnical Conditions

6.1 Natural Slope Stability

The existing slopes in the project area appear globally stable. There is a variable amount of surficial erosion in the area as evidenced by the rockfall and rilling of the slopes within the project.

6.2 Subsurface Soil Conditions

The majority of the project area appears to have anywhere from zero to 50 feet of soil cover depending on the exact location. Thicker soils are observed in those areas where alluvial fans have deposited sedimentary materials. The soil can be predominantly classified as poorly graded gravelly silty sand with cobbles and boulders.

6.3 Rock Conditions

The rocks observed in the existing roadcuts consist of tuffaceous sandstone and rhyolite tuff. The material is moderately to highly fractured and slightly to moderately weathered forming relatively loose blocks up to 5-feet in longest dimension. Much of the fracturing may have been produced as a result of blasting overbreak during prior road building events. Fracture orientations were taken on all of the available cut slopes and shows the potential for wedge failure.

6.4 Water

6.4.1 Surface Water

Topaz Lake lies to the east of the roadway. Several unnamed ephemeral creeks carry water during the winter months that cross the alignment in low-lying areas. These creeks may provide for locally higher water tables with in their vicinity.

6.4.2 Ground Water

Due to the presence of Topaz Lake, the groundwater is estimated to be at the lake elevation of about 5000 feet above mean sea level.

6.5 Erosion

As shown on the site topography map, there are many existing slopes within the project boundaries. The 1:1 cuts slopes are semi- to nonvegetated with native vegetation and show minor amounts of erosion. Erosion on the slopes is mild and similar performance can be expected for fill placed for the new alignment providing proper erosion control measures, such as proper drainage, are utilized.

A soil erodibility factor (k) is a measure of the susceptibility of soil particles to detach and transport by rainfall and runoff. A soil erodibility factor of $k \cong 0.25$ is recommended for the silty sand present at the site. However, since there are

are limited amounts of soil throughout the project area, most of the fill used will probably be crushed rock, gravel, and cobbles. For this case, a k ≅ 0.10 is recommended.

7.0 Geotechnical Conclusions and Recommendations

7.1 Fill Slopes

For embankment fills, since the existing slopes are graded between 1:1 and 1.5:1 (H:V) and there is minor erosion, new embankment slopes may be graded at 1.5:1 (H:V) or flatter. Embankment construction should be performed in accordance with Caltrans Standard Specification Section 19-5 and 19-6.

7.2 Cut Slopes

Stations 59+00 to 67+80

The cut slopes through this area were graded at 0.5:1 (H:V) and are about 20 feet in height. The material consists of quaternary fan debris that is an unconsolidated sand and gravel with cobbles and boulders. The primary block size was about one-foot in longest dimension. Due to right-of way limitations, the District prefers a steeper than 2:1 (H:V) slope. Because the existing slopes appear globally stable in their existing configurations, 0.5:1 slope angles may be utilized for this portion of the slope provided a catchment is considered as a part of the plan. Given the low slope heights anticipated along this portion of the project, the 8-foot shoulder should provide the catchment necessary to reduce potential for rockfall to reach the roadway.

Stations 67+80 to 78+50

The cut slopes through this portion of the project were graded at 0.5:1 to 1:1 with heights upwards of five feet. The material exposed in the cut is primarily a rhyolitic tuff and tuffaceous sandstone with fan debris in the upper five to ten feet of the slope profile. Because the existing slopes appear globally stable in their existing configurations, 0.5:1 slope angles may be utilized for this portion of the slope provided a catchment is considered a part of the plan. Due to the anticipated cut slope heights of 70-feet, we recommend a catchment be provided that is 25-feet in width and 4.2-feet deep with 6:1 (H:V) backslope along the area with the largest cut. This catchment would include the shoulder area. If the District wishes to reduce the catchment width, a double-twisted wire mesh (DTWM) may be used. Details on the DTWM are located further in the report.

Stations 78+50 to 80+00

The cut slopes through this portion of the project were originally graded between 1:1 to 1.5:1 (H:V) with heights up to about 10-feet. The material exposed in the cuts was primarily fan debris with an average boulder size of about one foot. Given the low slope heights anticipated along this portion of the project, the 8-foot shoulder should provide the catchment necessary to reduce potential for rockfall to reach the roadway.

Station 80+00 to 87+50

The cut slopes through this portion of the project were originally graded at 0.75:1 to 1:1 (H:V) with slope heights up to 10-feet. The material exposed in the cut slopes consists of bedrock with some fan debris making up the drainages and overlying some of the bedrock in the cuts. New cut slopes through this stationing may be graded at 0.75:1 based on the global stability of the existing cut slopes. Proposed cut slopes will be up to 80-feet in height and it is recommended that a catchment be provided that is 26-feet in width and 4.3-feet deep with 6:1 (H:V) backslope. If the District wishes to reduce the catchment and utilize a drapery, then a cable mesh drapery would be more applicable on the cuts through this section due to the potential blocks size of material that may become dislodged from the slope.

Stations 87+50 to 99+50

The existing cut slopes in this area were originally graded at 1:1 (H:V) with slope height up to about 50-feet. Bedrock was exposed in the bottom 2/3 of the cut slopes with alluvial fan debris occupying the upper 20-feet. The new slopes may be graded at 1:1 provided a catchment is used. Given the low slope heights anticipated along this portion of the project, the 8-foot shoulder should provide the catchment necessary to reduce potential for rockfall to reach the roadway.

7.3 Rockfall

A minor amount of recurrent rockfall has occurred through the project limits. The new cut slopes should incorporate a catchment area in order to reduce the potential for rockfall to enter the roadway. The District may wish to use a double twisted wire mesh drapery in order to reduce the catchment width.

7.4 Stepped Slopes

Stepped slopes are not anticipated to be used on this project.

7.5 Settlement

Fills anticipated to be developed during the construction of the project will be created primarily from the adjacent cut slopes containing abundant bedrock. We do not suggest earthwork quantities be adjusted to account for settlement.

7.6 Rippability and Blasting

The bedrock encountered in the cut slopes is anticipated to requiring blasting to be excavated. Blasting should follow our Standard Special Provisions for controlled blasting.

7.7 Earthwork Factors

Earthwork factors have not been estimated for the project. If these values are desired, we can provide the factors in an addendum report.

7.8 ***Wire Mesh Drapery***

If a wire mesh drapery (rock netting) is to be utilized, we recommend the use of double twisted wire mesh due to its strength and due to the fact that it is readily obtainable by any contractor.

Due to the size of the blocks (three to five-feet) in the cut slopes between stations 67+80 and 78+50 and stations 80+00 and 99+50, DTWM may not be feasible. An alternative would be a cable mesh drapery that will withstand larger block sizes. This is a more expensive option although the DTWM may become damaged and may not adequately hold the material against the slope if solely utilized.

We further recommend that if netting is utilized, the AC dike be discontinued in that section so that maintenance will not damage the AC curb in the process of cleaning the catchment below the netting.

7.9 ***Retaining Walls***

The District has proposed tie-back walls. Tie-back walls will need to be designed by Structures as indicated in the Highway Design Manual, page 200-50. Tie-back walls are feasible for this area due to the presence of hard bedrock for the anchors.

If the District wishes to design other retaining wall types, the following wall types may be utilized. Due to the presence of the Antelope Valley West Fault and potential for strong ground motion in the event of an earthquake, a less rigid structure may be pertinent.

Stations 66+00 to 71+30

The proposed retaining wall is anticipated to be 530-feet in length with a maximum height of about 25 feet based on the preliminary plans. Based on the cross sections, the preliminary anticipated unbonded length of the tiebacks will be about 60-feet. The actual wall parameters will be developed based on a detailed analysis that will be provided in a foundation report once the wall details are provided from Structures Design.

Stations 76+05 to 80+15

The retaining wall along this portion of the roadway is proposed to be about 410-feet in length with a maximum height of about 35-feet. Based on the cross sections, the preliminary anticipated unbonded length for the tie-backs will be about40-feet. The actual wall parameters will be developed based on a detailed

analysis that will be provided in a foundation report once the wall details are provided from Structures Design.

8. Corrosion Studies

Due to the type of soil present and shallow bedrock, samples were not collected for corrosion. However, based on field observations of existing metal culverts, it is opinion the subsurface conditions are non-corrosive.

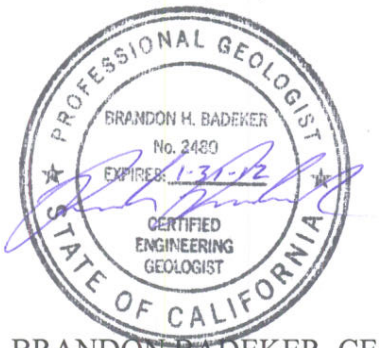
9. Material Sources and Disposal

The material to be used as fill will come from the cut sections. The cuts and fills have been balanced as much as possible to minimize importing or exporting fill. The material on-site will consist mostly of highly fractured volcanic rock as well as silts and sands. When the embankment fill contains large rocks, the rock should be well distributed and placed such that finer material can be compacted around the rocks. In addition, rocks larger than 0.1 m cannot be placed in embankment areas were piles are to be placed or driven. Refer to Section 19-6.01 of the Standard Specifications for more information.

10. Construction Considerations

Excavation for all utilities and foundations will be difficult due to the shallow depth of bedrock as well as the boulders contained in the existing fill and alluvium.

If you have any questions or comments, please call Brandon Badeker at (916) 227-1046 or John Huang at (916) 227-1037.



BRANDON BADEKER, CEG
Engineering Geologist
Geotechnical Design - North

11. Appendices

11.1 Plates

APPENDIX 11.1

Plates

Plate 1: Vicinity Map

Plate 2: Aerial Photograph

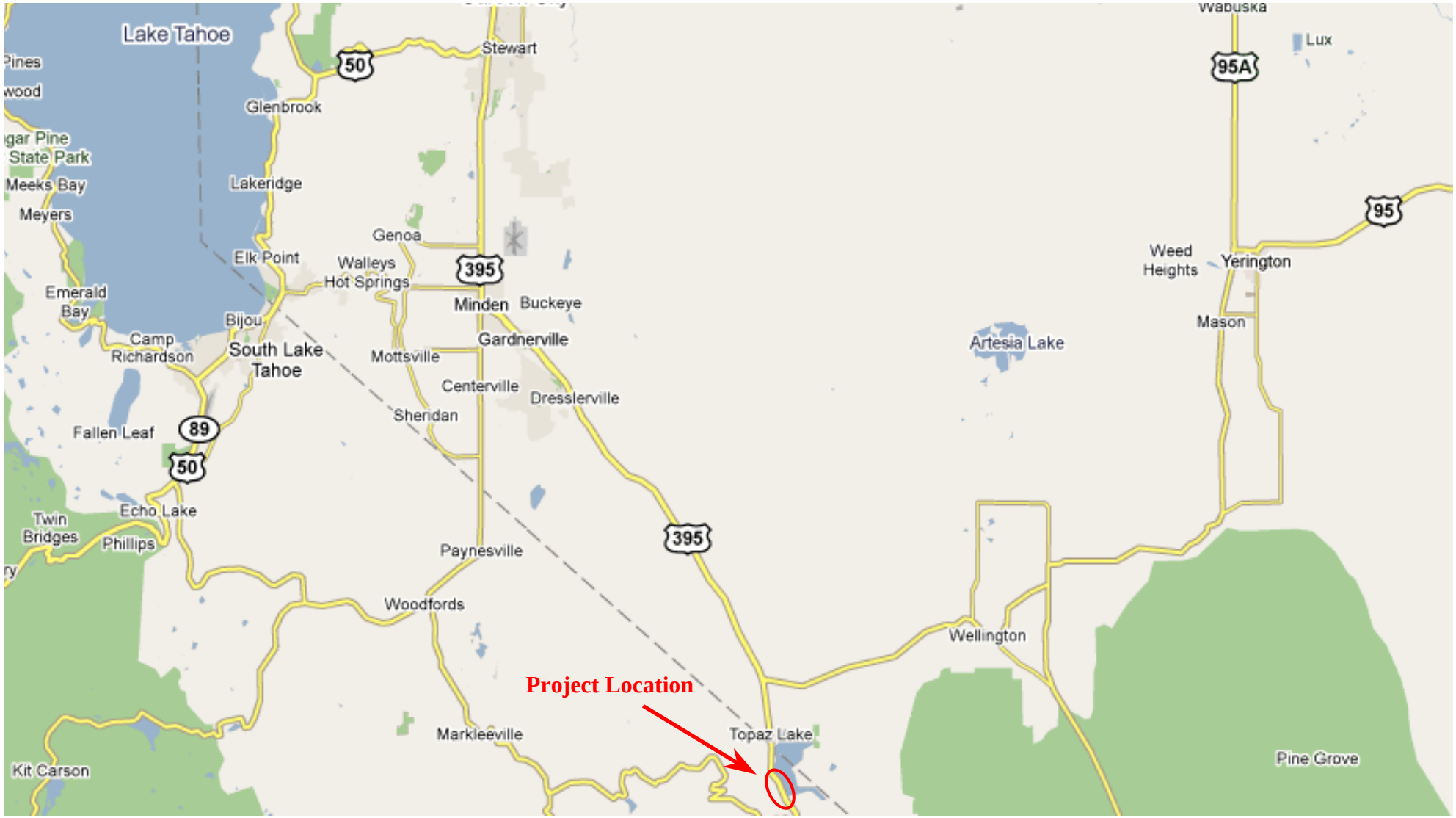
Plate 3: Geologic Map

Plate 4: Cross Section – Station 69+80

Plates 5: Cross Section – Station 74+05

Plates 6: Cross Section – Station 77+80

Plates 7: Cross Section – Station 81+75

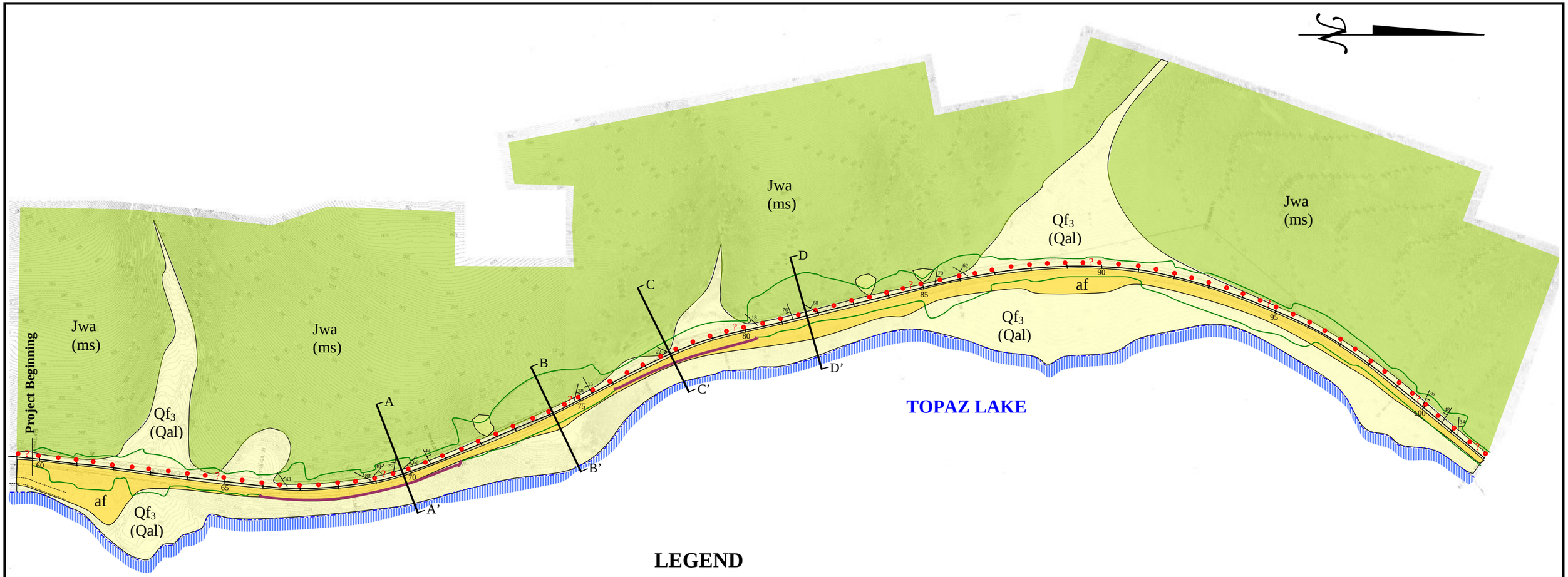


Map adapted from Google Maps, 2009

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 09-237701 Date: JULY 2009	**VICINITY MAP**	PLATE 1
	09-Mno-395 PM 118.7/119.6		

Map adapted from Google Maps, 2009

CALTRANS Division of Engineering Services Geotechnical Services Office of Geotechnical Design - North	EA: 09-237701 Date: JULY 2009	**AERIAL PHOTOGRAPH**	Plate 2
	09-Mno-395 PM 118.7/119.6		



LEGEND

af	artificial fill
Qf3 (Qal)	Young Alluvial Fan Deposits (USGS, 1981) Quaternary alluvium (CDMG, 1963)
Jwa (ms)	Jurassic West Antelope Sequence (USGS, 1981) metasedimentary rocks (CDMG, 1963)
A — A'	Cross Sections
• ? •	Fault, dotted where covered, questioned where inferred
34	Fracture Orientation

0 125 250

Scale: 1" = 250'

Map compiled from:

- John, D.A., Giusso, James, Moore, W.J., Armin, R.A. and Dohrenwend, J.C., 1981, Reconnaissance geologic map of the Topaz Lake 15 minute quadrangle, California and Nevada: U.S. Geological Survey, Open-File Report OF-81-273, scale 1:62500
- Keonig, J.B., 1963, *Geologic map of California: Walker Lake Sheet*, California Division of Mines and Geology
- California Division of Mines and Geology, 1985, Official map of Alquist-Priolo Earthquake Fault Hazard Zones, NE 1/4 Topaz Lake Quadrangle: California Division of Mines and Geology, scale 1:24000.
- Stewart, J.H., Carlson, J.E. and Johannessen, D.C., 1982, Geologic map of the Walker Lake 1 degree X 2 degree quadrangle, California and Nevada: U.S. Geological Survey, Miscellaneous Field Studies Map MF-1382-A, scale 1:250000.
- Dohrenwend, J.C., 1982, Surficial geologic map of the Walker Lake 1 degree x 2 degrees quadrangle, Nevada-California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-1382-C, scale 1:250000.

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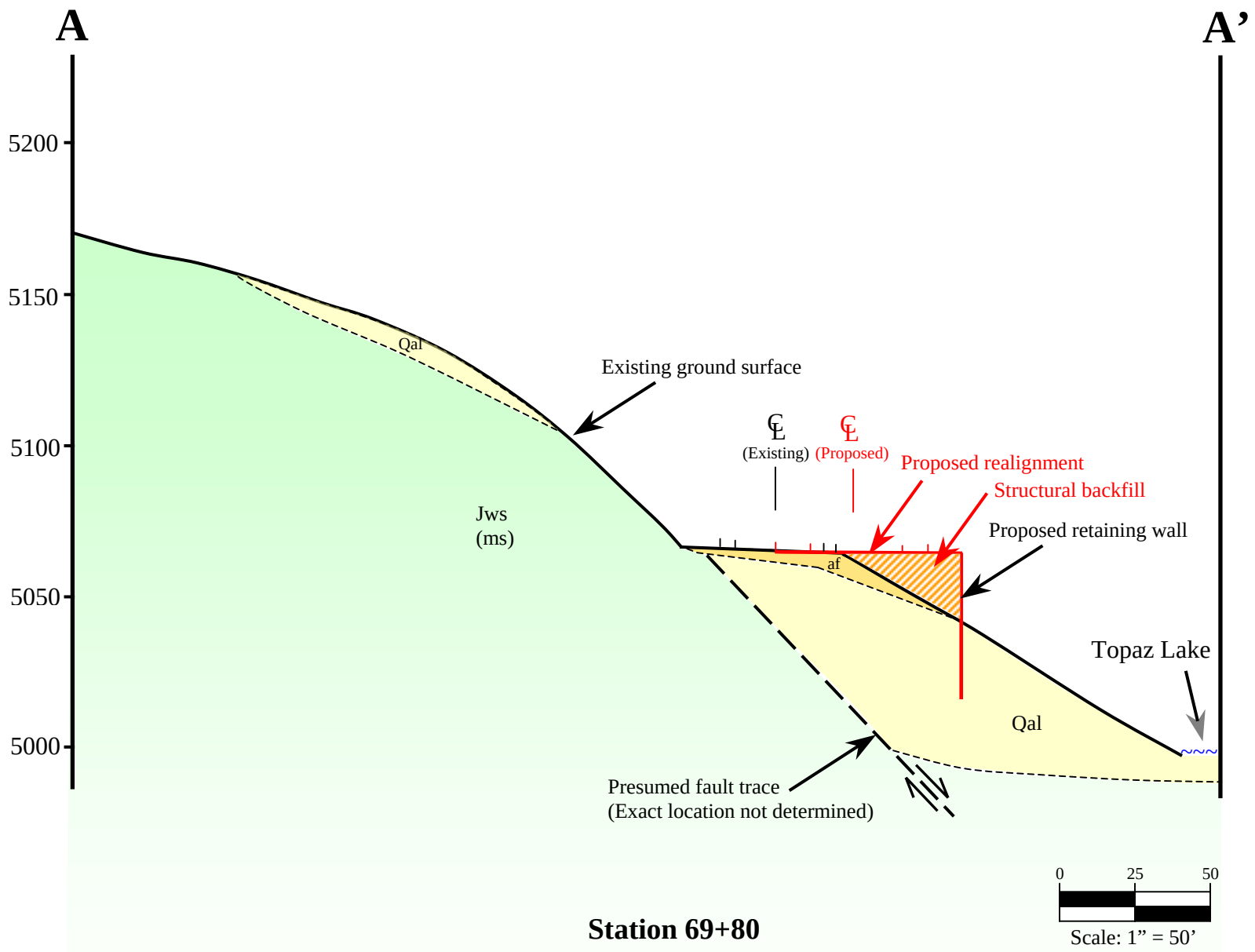
EA: 09-237701

JULY 2009

GEOLOGIC MAP

PLATE 3

09-Mno-395 PM 118.7/119.6



Station 69+80

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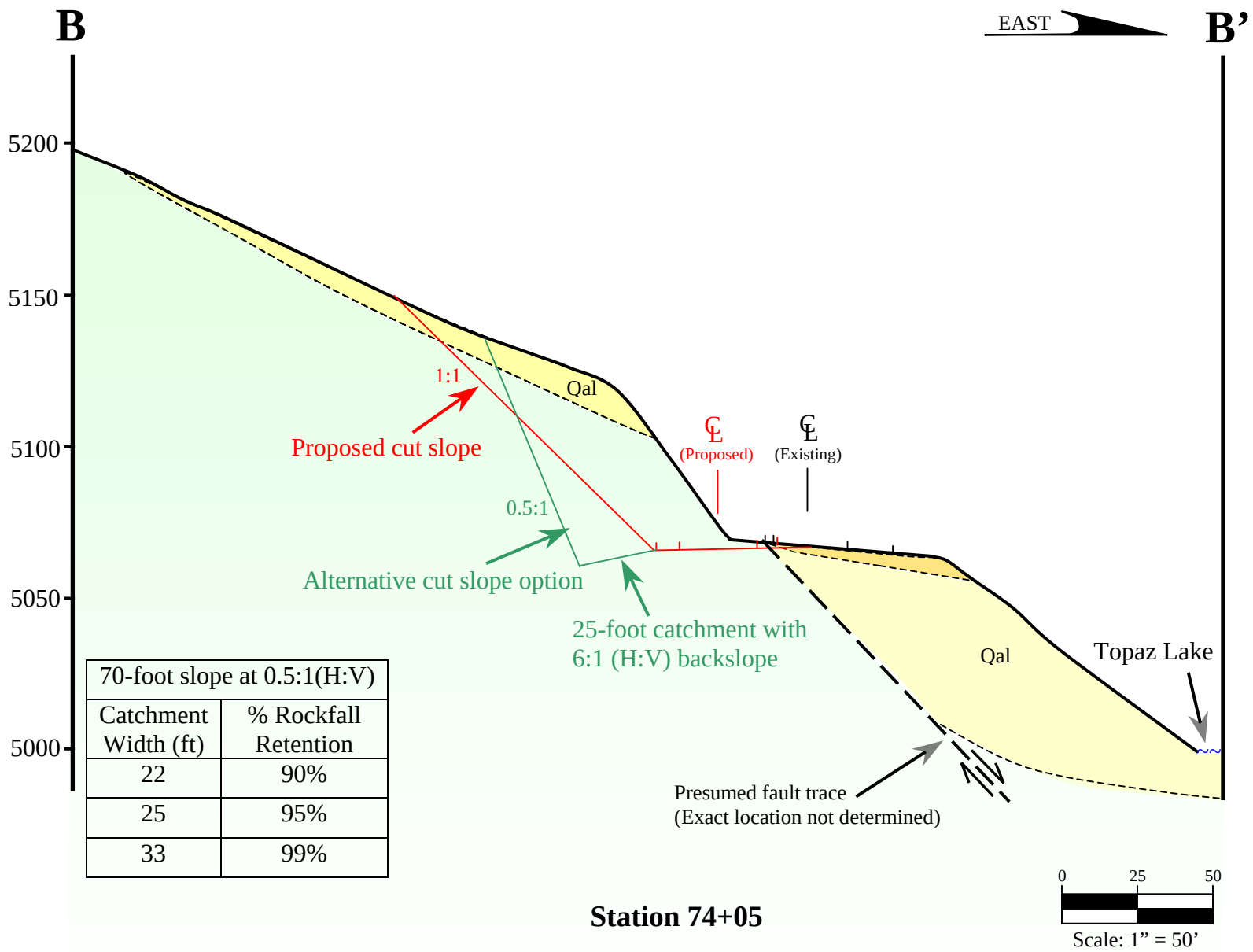
EA: 09-237701

Date: JULY 2009

CROSS SECTION

PLATE 4

09-Mno-395 PM 118.7/119.6



70-foot slope at 0.5:1(H:V)	
Catchment Width (ft)	% Rockfall Retention
22	90%
25	95%
33	99%

Station 74+05

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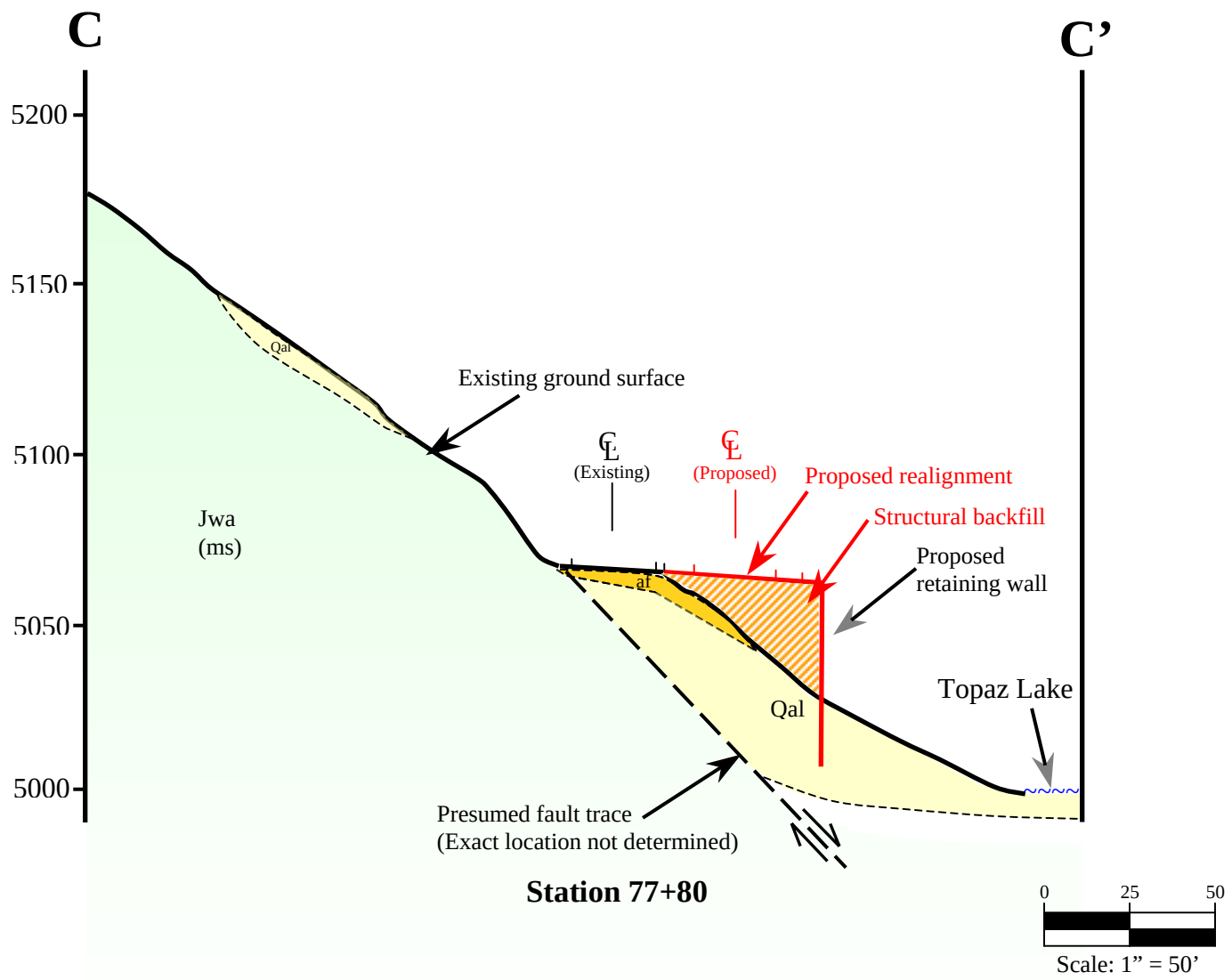
EA: 09-237701

Date: JULY 2009

CROSS SECTION

PLATE 5

09-Mno-395 PM 118.7/119.6



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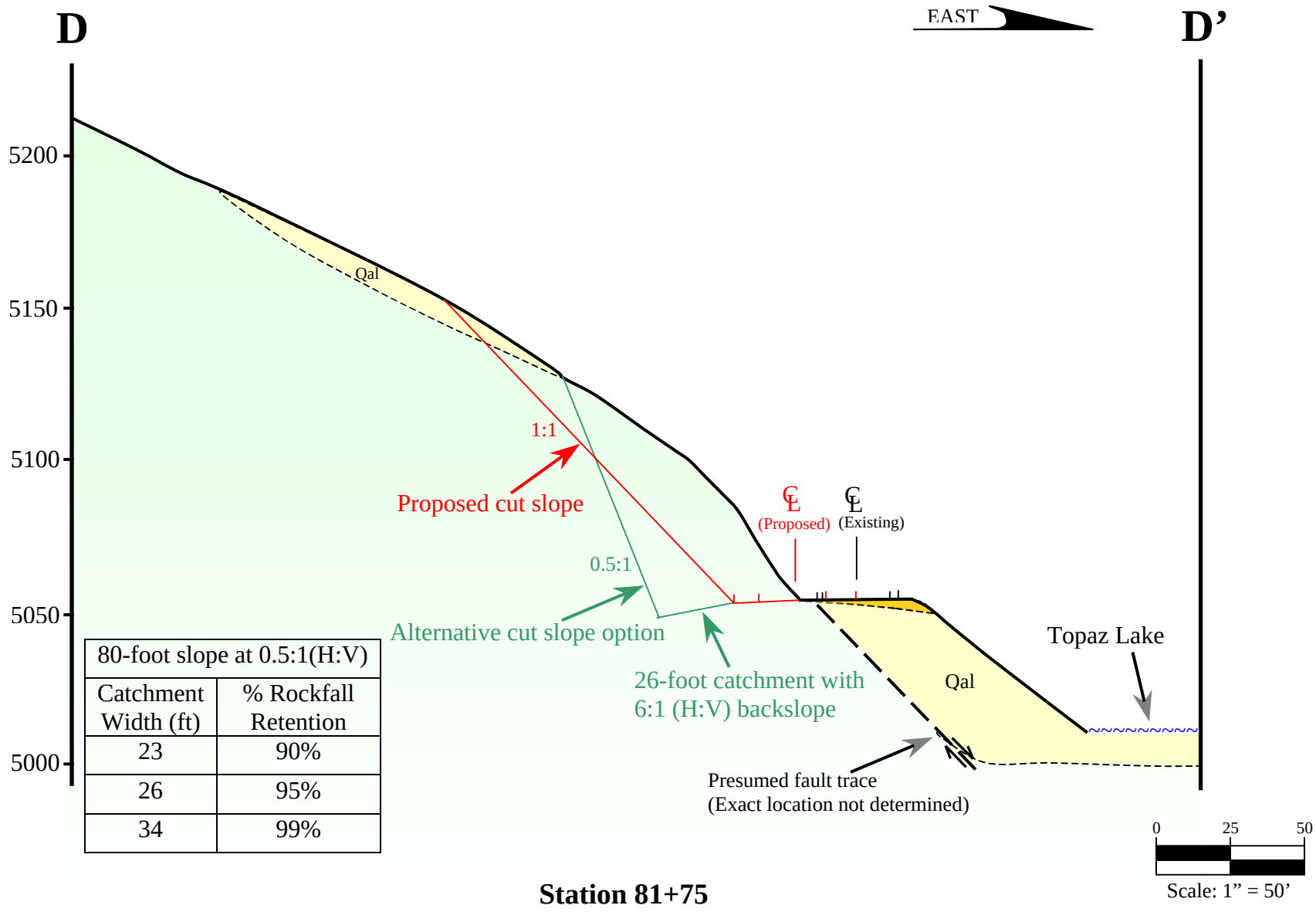
EA: 09-237701

Date: JULY 2009

CROSS SECTION

PLATE 6

09-Mno-395 PM 118.7/119.6



80-foot slope at 0.5:1(H:V)	
Catchment Width (ft)	% Rockfall Retention
23	90%
26	95%
34	99%

Station 81+75

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Geotechnical Services
Office of Geotechnical Design - North

EA: 09-237701

Date: JULY 2009

CROSS SECTION

PLATE 7

09-Mno-395 PM 118.7/119.6

State of California
DEPARTMENT OF' TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MR. GORDON DANKE
Design Branch Chief, Branch 9
Office of Bridge Design West

Date: March 11, 2011

Attn: Peter Norboe, TE

File: 09-Mno-395
PM 118.7/119.6
Retaining Wall A
EA: 09-237701

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

Subject: Foundation Report

Introduction

As requested, the Office of Geotechnical Design North (OGDN) is providing a Foundation Report for Retaining Wall A as part of the High Point Curve Correction project. The project is located on the east side of Highway 395 in Mono County between postmiles 118.7 and 119.6. This report will address the geotechnical design elements needed for wall foundation design and includes soil and rock engineering parameters based on site specific geology, and unbonded length of the tiebacks.

Scope of Work

The foundation recommendations contained in this report are based on a subsurface investigation consisting of four mud rotary soil borings, laboratory testing of soil and rock samples obtained from the borings, geotechnical calculations using data obtained from the subsurface investigation and Department standards. The information contained in this report is applicable to the proposed site of the retaining wall and may not be valid outside of this location. Subsurface conditions were evaluated only at the boring locations and may deviate elsewhere within the project site. If a change in the location of the wall is proposed, this Office should be consulted to provide supplementary recommendations, if necessary.

This foundation report supercedes the updated Preliminary Foundation and Seismic Recommendations for the High Point Curve Realignment, dated November 17, 2008, which addresses the bridge alternative.

Project Description

The District is planning to realign the "High Point Curve" through horizontal and vertical curve corrections. As part of that project, existing, adjacent cut slopes will be further cut and two retaining walls will be constructed.

Retaining Wall A is anticipated to be a soldier pile tieback wall approximately 587-feet in length with a maximum height of about 25-feet. There is anticipated to be two levels of tiebacks through the maximum wall height, approximately between Stations 67+22.45 and 70+34.01. There are no tiebacks planned on either end of the wall, approximately between Stations 65+76.00 to 66+15.35 and Stations 71+12.70 to 71+62.70. Concrete lagging is anticipated.

The soldier pile tieback walls are planned to be constructed along an access road pioneered on the existing fill slope east of the roadway. Structure design is anticipating using a 36-inch diameter CIDH pile foundation. Pile sections will be placed in the 36-inch drilled shaft and backfilled with class 2 concrete. Concrete lagging is anticipated to be utilized for the wall.

Field Exploration

A subsurface investigation was conducted for this project during September 21 through October 10, 2010. Four 94-millimeter diameter mud rotary borings, Borings R-10-001, R-10-002, R-10-003 and R-10-004, were advanced to depths of approximately 24-feet, 50-feet, 45-feet, and 95-feet respectively, to assess the foundation soil and rock conditions throughout the wall layout. Soil samples were collected in each boring using continuous punch coring interrupted by Standard Penetration Testing at approximately five-foot intervals. Locations of the borings are illustrated on Plate 1.

In addition, full-sized Log of Test Borings (LOTB), will be incorporated in the project plans, are being prepared by the Geotechnical Services, Office of Geotechnical Support.

Seismic Testing

We are planning to perform two seismic refraction lines along the wall LOL's to verify bedrock depth and fill conditions. The results of the study will be addressed in an addendum memo with the results of the laboratory testing.

Laboratory Testing

Laboratory testing is in process of being performed on soil and rock samples from Borings R-10-001 and R-10-003. Soil samples are being analyzed to determine moisture content and gradation. One soil sample is also being tested for corrosivity. Rock samples are being tested for

unconfined compressive strength. Results of the laboratory testing program will be presented in an addendum report as well as indicated on the LOTB's.

Existing Conditions

The proposed project lies along Highway 395 in Mono County adjacent to Topaz Lake. The roadway in this area trends roughly north-south adjacent to the west shore of the lake. The entire length is comprised of two 12-foot lanes and two-foot wide shoulders. The length of roadway was constructed entirely on a cut/fill. According to the reviewed as-built plans and our site reconnaissance, the cut slopes were graded between 0.5:1 and 1:1 (H:V) and fill slopes were graded between 1:1 and 1.5:1 (H:V). Both cut and fill slope heights were observed up to about 50-feet in vertical height.

Regional and Site Geology

This portion of Highway 395 lies near the border of California and Nevada, at the boundary between the Basin and Range and the Sierra Nevada Geomorphic provinces. The basin and range province is characterized by numerous, northeast to northwest trending normal faults forming a nearly regular set of ridges and valleys. The Sierra Nevada geomorphic province is characterized by Mesozoic granitic intrusions uplifted into a continuous series of mountain ranges bordering California and Nevada.

According to the Geologic Map of California, Walker Lake sheet (CDMG, 1963), the majority of the roadway was constructed atop Quaternary alluvium consisting of boulders, gravel, sand, silt and clay. The map also states that metasedimentary rocks are located to the west of the roadway. According to the Reconnaissance Geologic Map of the Topaz Lake 15-minute quadrangle (USGS, 1981), the roadway lies upon young alluvial fan deposits (Qf_3) that consist of poorly sorted sand and gravel with boulders. The map also indicates that the Jurassic West Antelope sequence (Schweikert, 1976) is situated in the hills to the west of the roadway. The map states that the sequence of rocks consists of dark-brown to black tuffaceous sandstone and siltstone interbedded with minor conglomerate, limestone, and rhyolite tuff that have been metamorphosed to a greenschist facies schist, phyllite, granofels, marble and felsite.

According to the subsurface investigation the site geology consists of artificial fill associated with roadway construction is situated under and adjacent to the highway and consisted of sandy GRAVEL with SILT, COBBLES and BOULDERS that was brown to gray, dry to slightly moist, and loose to medium-dense. The gravel, cobbles and boulders consisted of angular metasedimentary rock derived from the adjacent cutslope. Metasedimenatry bedrock was encountered at a depth of about fourteen to seventeen feet below the existing pavement surface. The rock varied from light gray to black, from strong to weak depending on the amount of weathering and was moderately to very intensely fractured with fracture spacing varies from a few inches to about one-foot resulting in blocks of various sizes. The fractures generally dipped from about 40 degrees to near vertical.

Global Stability

Based on our site reconnaissance, there is no global instability observable within the project limits.

Groundwater

Groundwater was not encountered in the exploratory borings. Also, there was no nearby well data provided by the Department of Water Resources for the area around Topaz Lake. It is anticipated that groundwater levels will approximate the lake level. Groundwater levels adjacent to the lake may be higher with a perched water table lying along the fill/rock contact and within the fractured rock. These perched water tables will vary in elevation with seasonal rainfall and snowmelt.

Recommendations – Soldier Pile Tieback Wall

The following recommendations are based on geological and geotechnical information that has been collected at the time the report was prepared. We were requested to provide the coefficient of active pressure for the wall as well as unit weight, friction angle and cohesion for the upper fill. For the tieback anchors we have been asked to provide unbonded length.

Table 1: Retaining Wall Active Pressure Design Parameters

Station (PG 395)	Pile Top Elev (ft)	Fill Parameters **	Tieback Unbonded Length Level A (ft)*	Tieback Unbonded Length Level B (ft)*
66+25.09 – 66.64.03	5044.4 – 5042.0	c=0 ϕ=32° γ=130 pcf	30-feet	N/A
66+73.77 – 67+12.72	5041.9 – 5041.5	c=0 ϕ=32° γ=130 pcf	35-feet	N/A
67+22.45 – 67+61.40	5040.8 – 5038.0	c=0 ϕ=32° γ=130 pcf	40-feet	28-feet
67+71.13 – 68+10.08	5037.7 – 5036.5	c=0 ϕ=32° γ=130 pcf	40-feet	30-feet
68+19.81 – 68+58.76	5036.6 – 5037.0	c=0 ϕ=32° γ=130 pcf	40-feet	30-feet

68+68.50 – 69+07.44	5037.3 – 5038.5	c=0 ϕ=32° γ=130 pcf	40-feet	30-feet
69+17.18 – 69+56.12	5039.0 – 5041.0	c=0 ϕ=32° γ=130 pcf	40-feet	30-feet
69+65.86 – 70+04.80	5041.8 – 5045.0	c=0 ϕ=32° γ=130 pcf	40-feet	32-feet
70+14.54 – 70+34.01	5046.0 – 5048.0	c=0 ϕ=32° γ=130 pcf	40-feet	32-feet
70+43.75 – 70+53.49	5049.0 – 5050.0	c=0 ϕ=32° γ=130 pcf	40-feet	N/A
70+63.22 – 71+02.70	5051.4 – 5057.0	c=0 ϕ=32° γ=130 pcf	40-feet	N/A

*fill thickness and unbonded length may be refined after seismic refraction is performed on the wall LOL.
**Apparent cohesion has been neglected for design purposes.

The active pressure coefficient for the wall is anticipated to be 0.3 with a unit weight of 130 pcf.

Traffic induced surcharge should be added to the active pressure for wall design.

It is the responsibility of the contractor to provide the bonded length of the tiebacks.

Construction Considerations

Difficult drilling was encountered in the exploratory borings and should be anticipated in drilling for the piles and tieback anchors. The encountered metasedimentary bedrock was moderately to very intensely fractured, very hard to soft and fresh to decomposed.

Depending on the season the piles are constructed, groundwater may enter the drilled shafts through fractures in the rock or along the fill/rock contact. It is possible that a significant amount of water may enter the drilled shaft depending on schedule, methods and groundwater levels. Caving conditions are also anticipated due to the very intensely fractured rock encountered in the borings. Temporary casing may be needed. The piles will have to be constructed in a wet condition if groundwater is encountered.

Horizontal borings for the tieback anchors may also encounter caving conditions and groundwater. Casing may be required if the tieback excavations encounter caving conditions.

Circulation loss was noted during drilling of some of the exploratory borings, casing may be needed to prevent grout loss and ensure proper installation of the tieback anchors.

Due to freeze/thaw conditions associated with the site, air entrained concrete should be used for the concrete lagging of the wall to prevent premature deterioration.

The proposed construction may require a temporary access road. The access road may be constructed entirely of fill, on a cut/fill or cut only. Depending on the method of construction, temporary shoring may be needed. The access road and any associated temporary shoring should be designed by the contractor.

Controlled blasting may be necessary if large boulders or hard rock is encountered in order to construct the access road along the layout line of the retaining wall. Our Standard Specifications for Controlled Blasting should be utilized for excavation throughout the project.

Pertinent Reports and Investigations

The District has provided site photographs and project plans. The following presents a list of references used in preparation of this report.

- *Topographic Map of the Topaz Lake quadrangle, California*, United States Geological Survey, 1953
- Western Regional Climate Center for 1957-2005
- Keonig, J.B., 1963, *Geologic map of California: Walker Lake Sheet*, California Division of Mines and Geology
- John, D.A., Giusso, James, Moore, W.J., Armin, R.A. and Dohrenwend, J.C., 1981, Reconnaissance geologic map of the Topaz Lake 15 minute quadrangle, California and Nevada: U.S. Geological Survey, Open-File Report OF-81-273, scale 1:62500
- Toppozada, T., Branum, D., Petersen, M., Hallstrom, C., Cramer, C., and Reichle, M., 2000, Epicenters of and Areas Damaged by M>5 California Earthquakes, 1800-1999: California Division of Mines and Geology, Map Sheet MS 49
- Preliminary Geotechnical Report, CalTrans, EA: 09-237700, May 8, 2006
- Updated Preliminary Foundation and Seismic Recommendations, CalTrans, November 17, 2008
- Geotechnical Design Report, CalTrans, October, 2009

If you have any questions or comments, please call Brandon Badeker at (916) 227-1040 or John Huang at (916) 227-1037.

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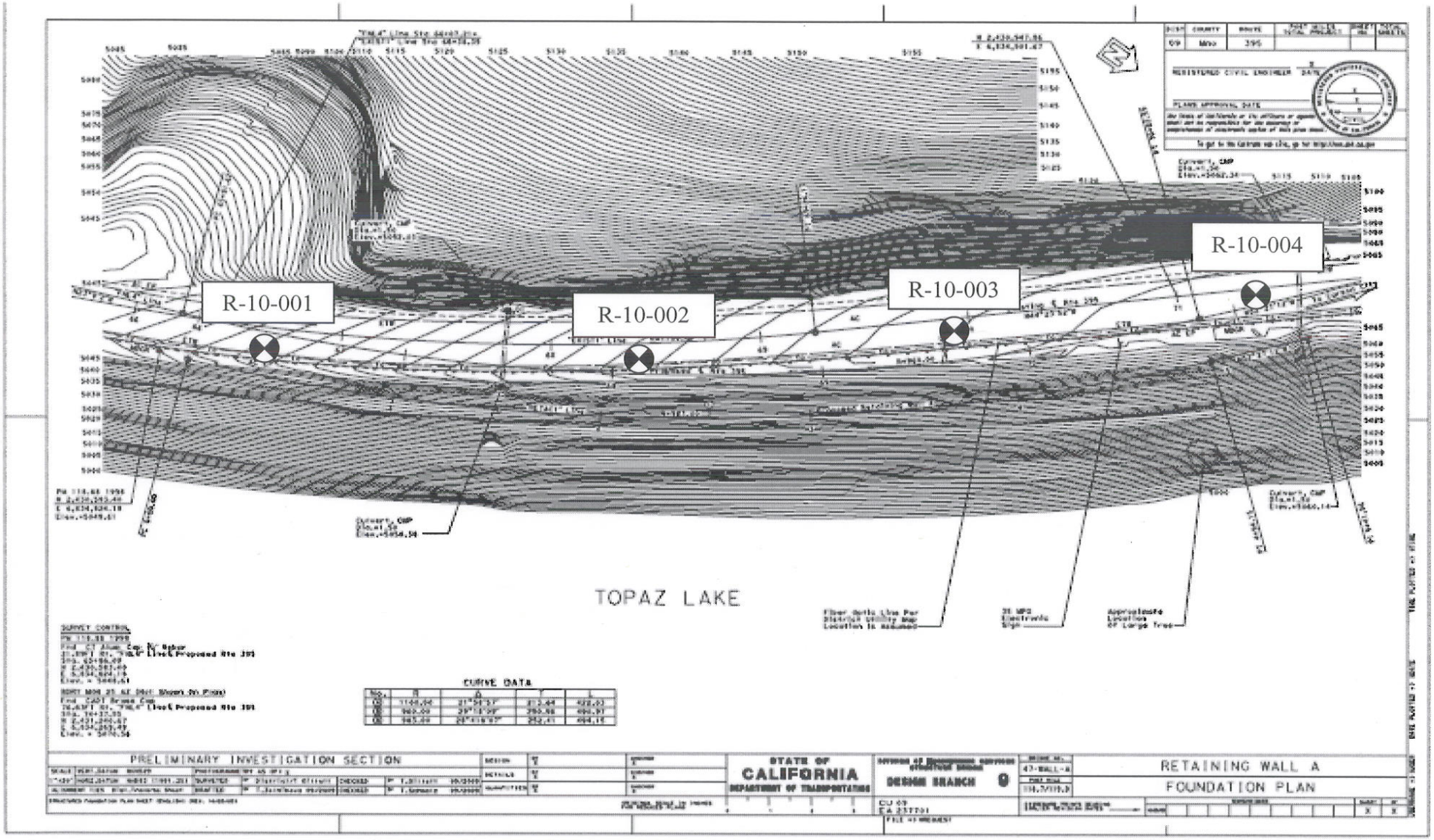
QIANG (JOHN) HUANG, P.E.
Senior Materials and Research Engineer
Geotechnical Design - North

Attachments:
- Plate 1: Boring Plan

C: RBibbens (E-copy)
JHuang (E-copy)
GDN File



CALTRANS

Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

EA: 09-237701

Date: MARCH, 2011

BORING PLAN

RETAINING WALL A

PLATE 1

09-Mno-395 KP118.7/119.6

State of California
DEPARTMENT OF' TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: MR. GORDON DANKE
Design Branch Chief, Branch 9
Office of Bridge Design West

Date: March 11, 2011

Attn: Pete Norboe, TE

File: 09-Mno-395
PM 118.7/119.6
Retaining Wall B
EA: 09-237701

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

Subject: Foundation Report

Introduction

As requested, the Office of Geotechnical Design North (OGDN) is providing a Foundation Report for Retaining Wall B as part of the High Point Curve Correction project. The project is located on the east side of Highway 395 in Mono County between postmiles 118.7 and 119.6. This report will address the geotechnical design elements needed for wall foundation design and includes soil and rock engineering parameters based on site specific geology, and unbonded length of the tiebacks.

Scope of Work

The foundation recommendations contained in this report are based on a subsurface investigation consisting of three mud rotary soil borings, laboratory testing of soil and rock samples obtained from the borings, geotechnical calculations using data obtained from the subsurface investigation and Department standards. The information contained in this report is applicable to the proposed site of the retaining wall and may not be valid outside of this location. Subsurface conditions were evaluated only at the boring locations and may deviate elsewhere within the project site. If a change in the location of the wall is proposed, this Office should be consulted to provide supplementary recommendations, if necessary.

This foundation report supercedes the updated Preliminary Foundation and Seismic Recommendations for the High Point Curve Realignment, dated November 17, 2008, which addresses the bridge alternative.

Project Description

The District is planning to realign the "High Point Curve" through horizontal and vertical curve corrections. As part of that project, existing, adjacent cut slopes will be further cut and two retaining walls will be constructed.

Based on the General Plan, Retaining Wall B is anticipated to be a soldier pile tieback wall approximately 478-feet in length with a maximum height of 38.3-feet. There is anticipated to be three levels of tiebacks through the maximum wall height, approximately between RWLOL Stations 2+50 and 4+00. There are no tiebacks planned on either end of the wall, approximately between Stations 0+00 to 0+50 and Stations 4+40 to 4+78. There is a discrepancy between the length of the wall in the General Plan versus the Foundation Plan. The Foundation Plan shows that the wall is anticipated to be 394-feet in length. Concrete lagging is anticipated.

The soldier pile tieback walls are planned to be constructed along an access road pioneered on the existing fill slope east of the roadway. Structure design is anticipating using a 36-inch diameter CIDH pile foundation. Pile sections will be placed in the 36-inch drilled shaft and backfilled with class 2 concrete. Concrete lagging is anticipated to be utilized for the wall.

Field Exploration

A subsurface investigation was conducted for this project during September 21 through October 10, 2010. Three 94-millimeter diameter mud rotary borings, Borings R-10-005, R-10-006 and R-10-007, were advanced to depths of approximately 45-feet, 90-feet and 25-feet, respectively, to assess the foundation soil and rock conditions throughout the wall layout. Soil samples were collected in each boring using continuous punch coring interrupted by Standard Penetration Testing at approximately five-foot intervals. Locations of the borings are illustrated on Plate 1.

In addition, full-sized Log of Test Borings (LOTB), to be incorporated in the project plans, are being prepared by the Geotechnical Services, Office of Geotechnical Support.

Seismic Testing

We are planning to perform two seismic refraction lines along the wall LOL's to verify bedrock depth and fill conditions. The results of the study will be addressed in an addendum memo with the results of the laboratory testing.

Laboratory Testing

Laboratory testing is in process of being performed on soil and rock samples from Borings R-10-005, R-10-006, and R-10-007. Soil samples are being analyzed to determine moisture content and gradation. One soil sample is also being tested for corrosivity. Rock samples are being tested for unconfined compressive strength. Results of the laboratory testing program will be presented in an addendum report as well as indicated on the LOTB's.

Existing Conditions

The proposed project lies along Highway 395 in Mono County adjacent to Topaz Lake. The roadway in this area trends roughly north-south adjacent to the west shore of the lake. The entire length is comprised of two 12-foot lanes and two-foot wide shoulders. The length of roadway was constructed entirely on a cut/fill. According to the reviewed as-built plans and our site reconnaissance, the cut slopes were graded between 0.5:1 and 1:1 (H:V) and fill slopes were graded between 1:1 and 1.5:1 (H:V). Both cut and fill slope heights were observed up to about 50-feet in vertical height.

Regional and Site Geology

This portion of Highway 395 lies near the border of California and Nevada, at the boundary between the Basin and Range and the Sierra Nevada Geomorphic provinces. The basin and range province is characterized by numerous, northeast to northwest trending normal faults forming a nearly regular set of ridges and valleys. The Sierra Nevada geomorphic province is characterized by Mesozoic granitic intrusions uplifted into a continuous series of mountain ranges bordering California and Nevada.

According to the Geologic Map of California, Walker Lake sheet (CDMG, 1963), the majority of the roadway was constructed atop Quaternary alluvium consisting of boulders, gravel, sand, silt and clay. The map also states that metasedimentary rocks are located to the west of the roadway. According to the Reconnaissance Geologic Map of the Topaz Lake 15-minute quadrangle (USGS, 1981), the roadway lies upon young alluvial fan deposits (Qf_3) that consist of poorly sorted sand and gravel with boulders. The map also indicates that the Jurassic West Antelope sequence (Schweikert, 1976) is situated in the hills to the west of the roadway. The map states that the sequence of rocks consists of dark-brown to black tuffaceous sandstone and siltstone interbedded with minor conglomerate, limestone, and rhyolite tuff that have been metamorphosed to a greenschist facies schist, phyllite, granofels, marble and felsite.

According to the subsurface investigation the site geology consists of artificial fill associated with roadway construction is situated under and adjacent to the highway and consisted of sandy GRAVEL with SILT, COBBLES and BOULDERS that was brown to gray, dry to slightly moist, and loose to medium-dense. The gravel, cobbles and boulders consisted of angular metasedimentary rock derived from the adjacent cutslope. Metasedimenatry bedrock was encountered at a depth of about five to fourteen-feet below the existing pavement surface in borings R-10-005 and R-10-007. Metasedimentary bedrock was encountered in boring R-10-006 at a depth of approximately 35-feet below existing pavement surface. The rock varied from light gray to black, from strong to weak depending on the amount of weathering and was moderately to very intensely fractured with fracture spacings varying from a few inches to about one-foot resulting in blocks of various sizes. The fractures generally dipped from about 40 degrees to near vertical. At a depth of approximately 60-feet below pavement surface in Boring R-10-006 the bedrock became pervasively sheared and decomposed to a gravelly CLAY that varied from greenish-gray to brown, slightly moist to moist, soft, and contained few fine to coarse angular GRAVELS. At a depth of 85-feet to the maximum depth encountered in Boring R-10-006 of

approximately 90-feet below pavement surface, the material became highly weathered and intensely fractured.

Global Stability

Based on our site reconnaissance, there is no global instability observable within the project limits.

Groundwater

Groundwater was not encountered in the exploratory borings. Also, there was no nearby well data provided by the Department of Water Resources for the area around Topaz Lake. It is anticipated that groundwater levels will approximate the lake level. Groundwater levels adjacent to the lake may be higher with a perched water table lying along the fill/rock contact and within the fractured rock. These perched water tables will vary in elevation with seasonal rainfall and snowmelt.

Recommendations – Soldier Pile Tieback Wall

The following recommendations are based on geological and geotechnical information that has been collected at the time the report was prepared. We were requested to provide the coefficient of active pressure for the wall as well as unit weight, friction angle and cohesion for the upper fill. We were also requested to provide the strength of the underlying bedrock. For the tieback anchors we have been asked to provide unbonded length. Dimensions are based on the Retaining Wall B Foundation Plan.

Table 1: Retaining Wall Design Parameters

Station (PG 395)	Pile Top Elev (ft)	Fill Parameters **	Tieback Unbonded Length Level A (ft)*	Tieback Unbonded Length Level B (ft)*	Tieback Unbonded Length Level C (ft)*
76+16.00 – 76+46.00	5056.9 – 5050.1	c=0 ϕ=32° γ=130 pcf	45-feet	N/A	N/A
76+56.00 – 77+06.58	5047.7 – 5036.1	c=0 ϕ=32° γ=130 pcf	55-feet	45-feet	N/A
77+16.88 – 77+37.41	5033.9 – 5029.5	c=0 ϕ=32° γ=130 pcf	60-feet	55-feet	50-feet
77+47.69 – 77+88.81	5029.2 – 5028.0	c=0 ϕ=32° γ=130 pcf	65-feet	55-feet	50-feet

77+99.09 – 78+40.20	5028.2 – 5029.0	c=0 ϕ=32° γ=130 pcf	65-feet	55-feet	50-feet
78+50.48 – 79+12.15	5029.7 – 5034.9	c=0 ϕ=32° γ=130 pcf	65-feet	55-feet	50-feet
79+22.43 – 79+62.64	5036.1 – 5042.5	c=0 ϕ=32° γ=130 pcf	60-feet	50-feet	N/A
79+72.64 – 79+92.64	5044.5 – 5048.5	c=0 ϕ=32° γ=130 pcf	45-feet	N/A	N/A

*fill thickness and unbonded length may be refined after seismic refraction is performed on the wall LOL.
**Apparent cohesion has been neglected for design purposes.

The active pressure coefficient for the wall is anticipated to be 0.3 with a unit weight of 130 pcf.

Traffic induced surcharge should be added to the active pressure for wall design.

It is the responsibility of the contractor to provide the bonded length of the tiebacks.

Construction Considerations

Difficult drilling was encountered in the exploratory borings and should be anticipated in drilling for the piles and tieback anchors. The encountered metasedimentary bedrock was moderately to very intensely fractured, very hard to soft and fresh to decomposed.

Depending on the season the piles are constructed, groundwater may enter the drilled shafts through fractures in the rock or along the fill/rock contact. It is possible that a significant amount of water may enter the drilled shaft depending on schedule, methods and groundwater levels. Caving conditions are also anticipated due to the very intensely fractured rock encountered in the borings. Temporary casing may be needed. The piles will have to be constructed in a wet condition if groundwater is encountered.

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Due to freeze/thaw conditions associated with the site, air entrained concrete should be used for the concrete lagging of the wall to prevent premature deterioration.

The proposed construction may require a temporary access road. The access road may be constructed entirely of fill, on a cut/fill or cut only. Depending on the method of construction, temporary shoring may be needed. The access road and any associated temporary shoring should be designed by the contractor.

Controlled blasting may be necessary if large boulders or hard rock is encountered in order to construct the access road along the layout line of the retaining wall. Our Standard Specifications for Controlled Blasting should be utilized for excavation throughout the project.

Pertinent Reports and Investigations

The District has provided site photographs and project plans. The following presents a list of references used in preparation of this report.

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QIANG (JOHN) HUANG, P.E.
Senior Materials and Research Engineer
Geotechnical Design - North

Attachments:

- Plate 1: Boring Plan

C: RBibbens (E-copy)
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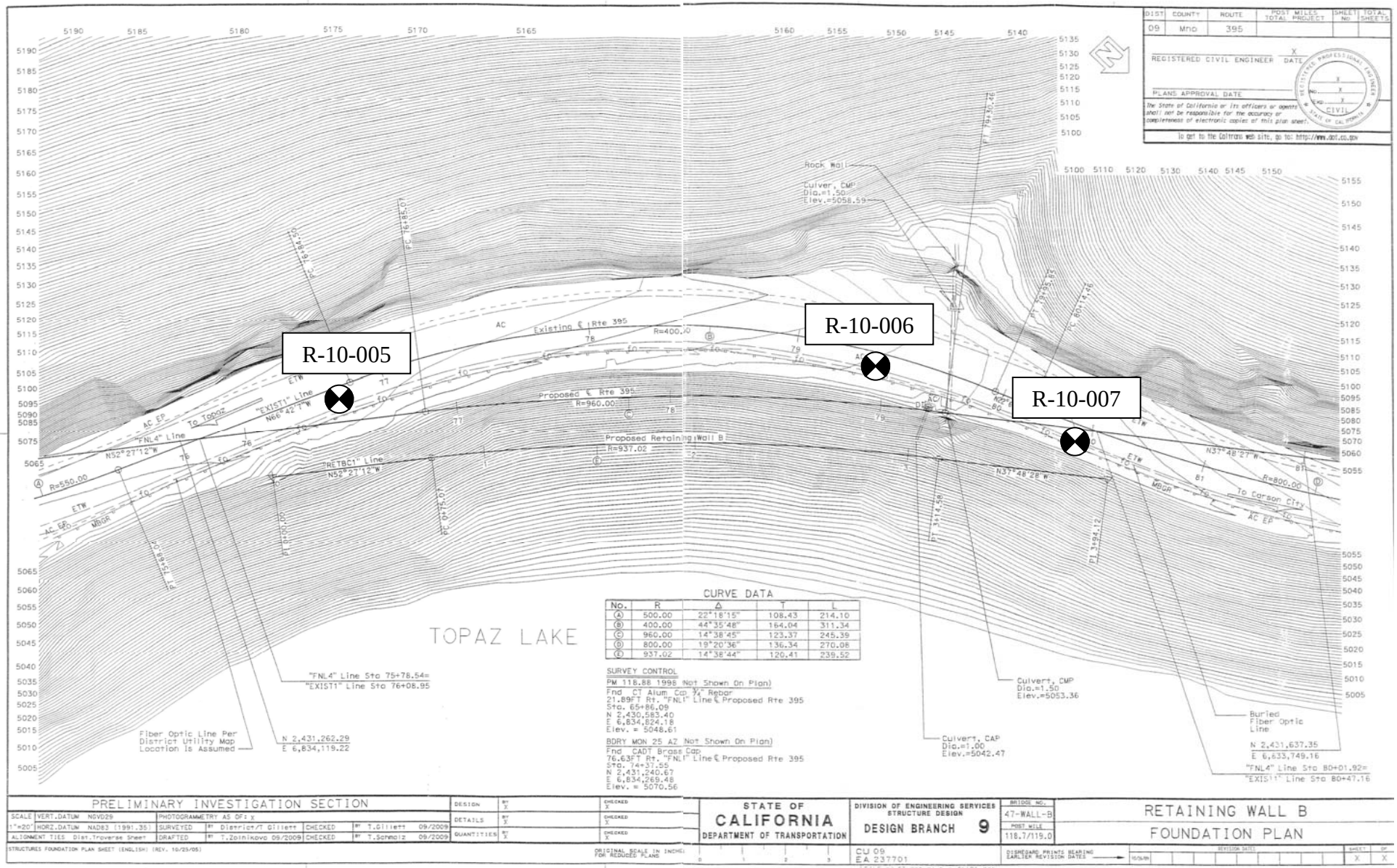
GDN File



CALTRANS

Division of Engineering Services
Geotechnical Services
Office of Geotechnical Design - North

EA: 09-237701

Date: MARCH, 2011

BORING PLAN

RETAINING WALL B

PLATE 1

09-Mno-395 KP118.7/119.6

M e m o r a n d u m

Flex your power!
Be energy efficient!

To: **Qiang Huang**
Senior M&R Engineer
Geotechnical Design North
Division of Engineering Services

Date: June 17, 2011

File: 09-MNO-395-118/119
Project 0900000038

Attention: Brandon Badeker

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

Subject: Seismic Refraction Survey, Route 395, High Point Curve Correction

Introduction

This memo documents the results of a refraction seismic survey to assist in the design of roadway improvements for Highway 395 at High Point Curve. The seismic refraction survey was employed to assist in assessing the engineering characteristics of the material comprising the existing slopes. Refraction profiles were employed at two locations where retaining walls are anticipated. Figure 1 shows the locations of the seismic lines.

Results and Discussion

Figures 3 and 4 present the data for Seismic Line 1. The line traversed a steep fill slope composed of angular gravel, cobbles and boulders. At the time of survey, the slope angle was measured at approximately 40 degrees and appeared to be at or near the angle of repose. Topography along the line was uneven, as exhibited in the figures. Logs of test borings (LOTB's) from the site describe shallow stratigraphy as sand, gravel and boulder fill overlying intensely fractured meta-andesite. The model for Seismic Line 1 indicates about 2.8 meters (9.18feet) of fill above the intensely fractured meta-andesite. At this site, the meta-andesite apparently manifests as two distinct velocity units. The lowermost unit increases in elevation toward the center of the profile and indicates the presence of a more resistant ridge at that location. The high degree of fracturing is supported by the very low velocities for the units (857 m/s [2811ft/s] and 1364 m/s [4475 ft/s], respectively). Erratic arrival times for the refracted wave (Figure 3) imply indurated boulders exist within the meta-andesite units. If excavation of this zone is planned, stockpiling and reduction of such boulders may be required for offsite disposal or use as borrow. In particular, more resistant material may be anticipated in the lowest unit between 35 and 95 meters (Stations 67+45 to 70+00). Although velocities indicate only moderately difficult ripping, reduction of localized indurated blocks by blasting or other mechanical means should be anticipated in this interval if excavation is planned.

Seismic Line 2 is presented in Figures 5 and 6. It traversed a saddle comprised of sidecast fill from prior construction. The model correlates well at boring R-10-004 where the boring is close to the seismic line. LOTB's indicate about 11 feet of fill and so does the model. However, the LOTB for boring R-10-005 indicates a discrepancy with thickness of fill. Model indicates about 14 feet and the LOTB indicates 35 feet. R-10-005 is offline and upslope of the seismic line, that separation likely contributes to the discrepancy. As with Seismic Line 1, three velocity units are indicated. The fractured meta-andesite has slightly lower velocity compared to Line 1 and arrivals are less erratic, implying fewer indurated blocks or boulders within the section. However, local velocity in the lowermost unit increases between 45-60 and 80-100 meters (stations 77+70 – 78+30 and 78+86 – 79+22). Increased bedrock hardness should be anticipated at these locations, possibly requiring mechanical reduction if excavation is planned.

For both models, the air wave (the audible portion of the seismic pulse) dominates the early arrivals on the seismograms. This indicates that the P-wave transmission velocity of the fill is equal or less than that of air. This may result in overestimation of fill thickness and cannot be ruled out with the available data.

The results of our findings are summarized in Table 1 below:

TABLE 1

Line	Layer	Average Thickness (m.)	Average Velocity (m/sec)	Line Length(m)	Inferred Material	Rippability
1	1	2.8	276	162	Sand with Cobbles and Boulders (Fill)	ER
1	2	7.0	857		Fractured Meta-Andesite	ER
1	3	N/A	1364		Fractured Meta-Andesite	MD
2	1	2.5	359	137	Sand with Cobbles and Boulders (Fill)	ER
2	2	6.0	654		Fractured Meta-Andesite	ER
2	3	N/A	1198		Fractured Meta-Andesite	MD

[1] ER = Easily Ripped, MD = Moderately Difficult, DR = Difficult Ripping, NR = Not Rippable,

Ripping ability is based on unpublished Caltrans data for a Caterpillar D9G series bulldozer with a single-tooth ripper. These values are as follows:

Velocity (m/s)	**Rippability**
<1050	Easily Ripped
1050-1500	Moderately Difficult
1500-2000	Difficult Ripping
>2000	Not Rippable

Different excavation equipment may experience different results. Penetrating efficacy of the ripping tooth is often more important in predicting ripping success than seismic velocity alone.

Undetected blocks or lenses of high-velocity material may also be present within rippable zones, requiring blasting or other means of mechanical breakage for excavation.

Data Acquisition and Processing

Seismic refraction data were recorded using an EG&G Smartseis 24-channel seismograph with 14 MHz geophones. The profiles varied in length. The energy sources employed were a hammer and striker plate and a downhole seisgun percussion source. Refraction data from each shot were stored in the seismograph's memory. Both profile geometry and refraction data were backed-up to paper and floppy disk upon completion of the survey.

Profiles in this report are presented in terms of velocity units. A velocity unit is a three-dimensional unit, which due to its elastic properties and density, propagates seismic waves at a characteristic velocity or within a characteristic velocity range. Velocities denoted in this report and in the seismic refraction sections are expressed in meters per second. At least one velocity is present within a geological rock unit. In addition, each zone of weathering, or fracturing within that geological unit can constitute its own velocity unit. Conversely, when two rock units such as water saturated gravel and moderately weathered rock propagate seismic waves at the same velocity and are adjacent to each other, both units would be part of the same velocity unit. Lastly, discontinuous velocities might result from variation in the degree of alteration in the form of physical and chemical weathering and should be considered in the interpretation of the data.

Thank you for the opportunity to work on this project. If you have any questions or need additional assistance, please contact me at (916) 227-1307 or Mr. Bill Owen at (916) 227-0227.

Report by:

Dennison Leeds
Engineering Geologist
Geophysics and Geology Branch

Reviewed By:

William Owen, PGP 1031
Chief, Geophysics and Geology Branch

PROFESSIONAL GEOPHYSICIST
W.P. OWEN
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DL/WO
Project File: 09_MNO_395_118.5_2011_SEI.doc

Figure 1. Location of Seismic Line 1 (green line). Retaining Wall A layout in red.

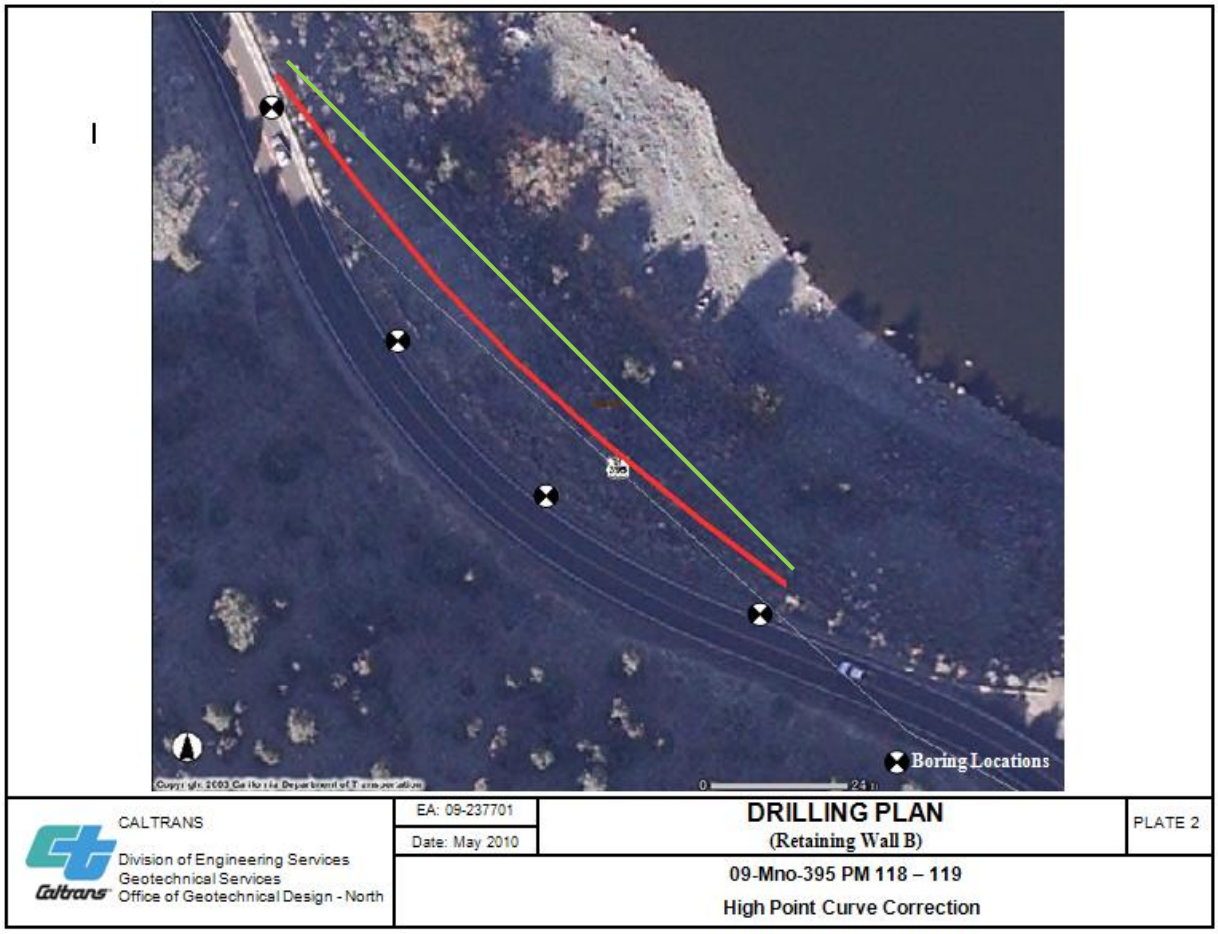

Figure 2. location of Seismic Line 2 (green line). Retaining Wall B layout shown in red.

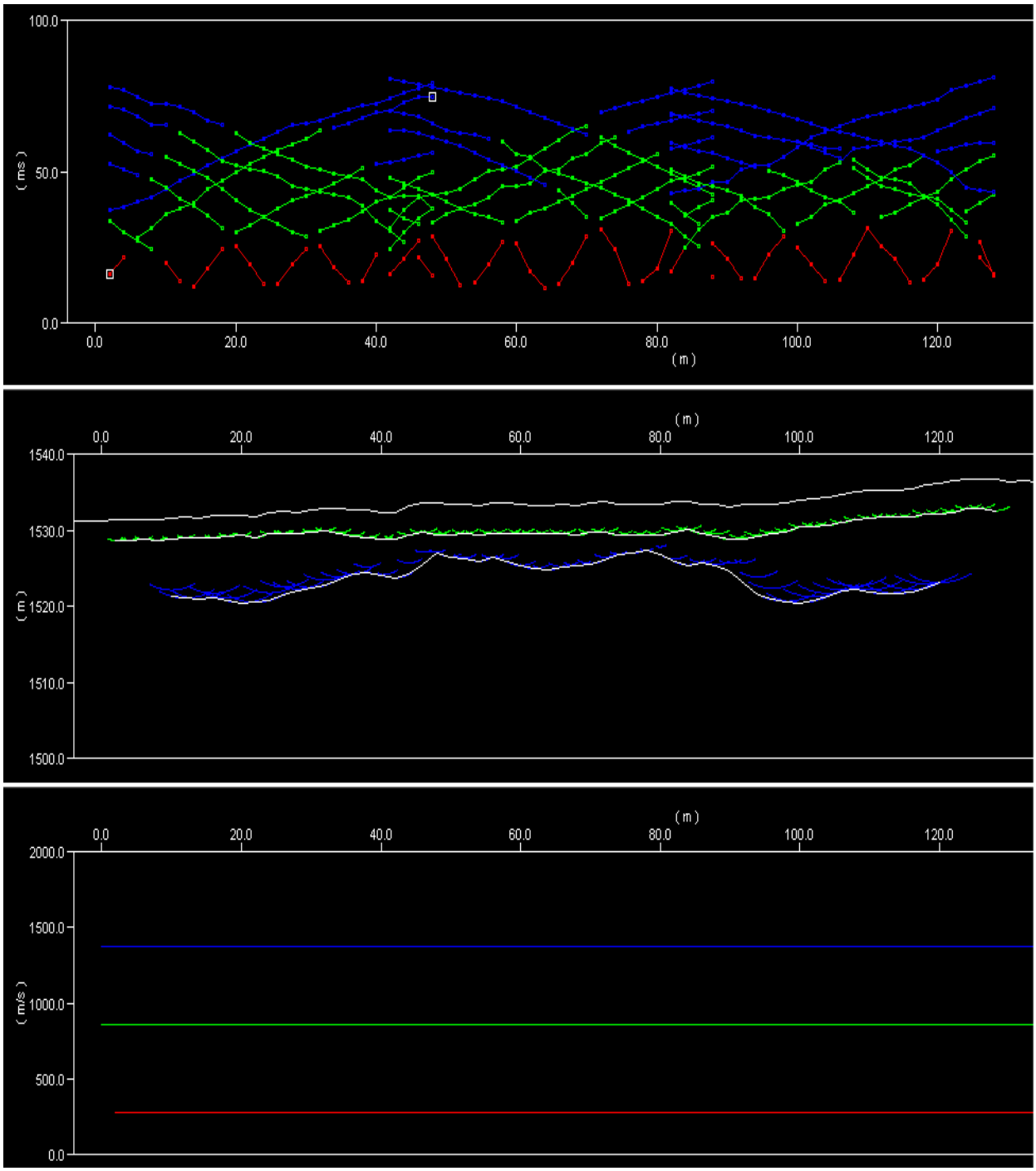

Figure 3. Travel-time curve, velocity model and depth section for Seismic Line 1.

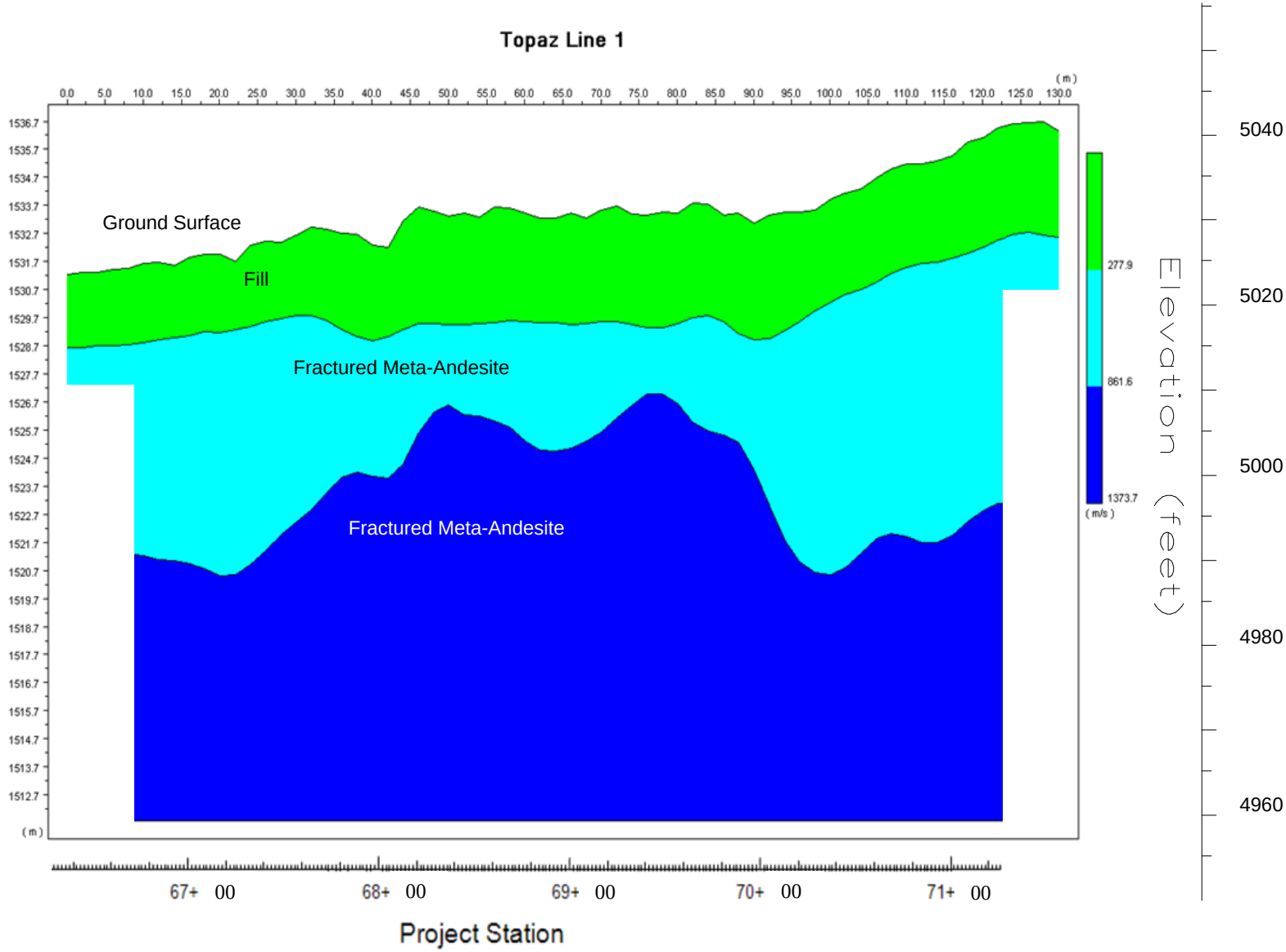

Figure 4. Color density plot of seismic line 1

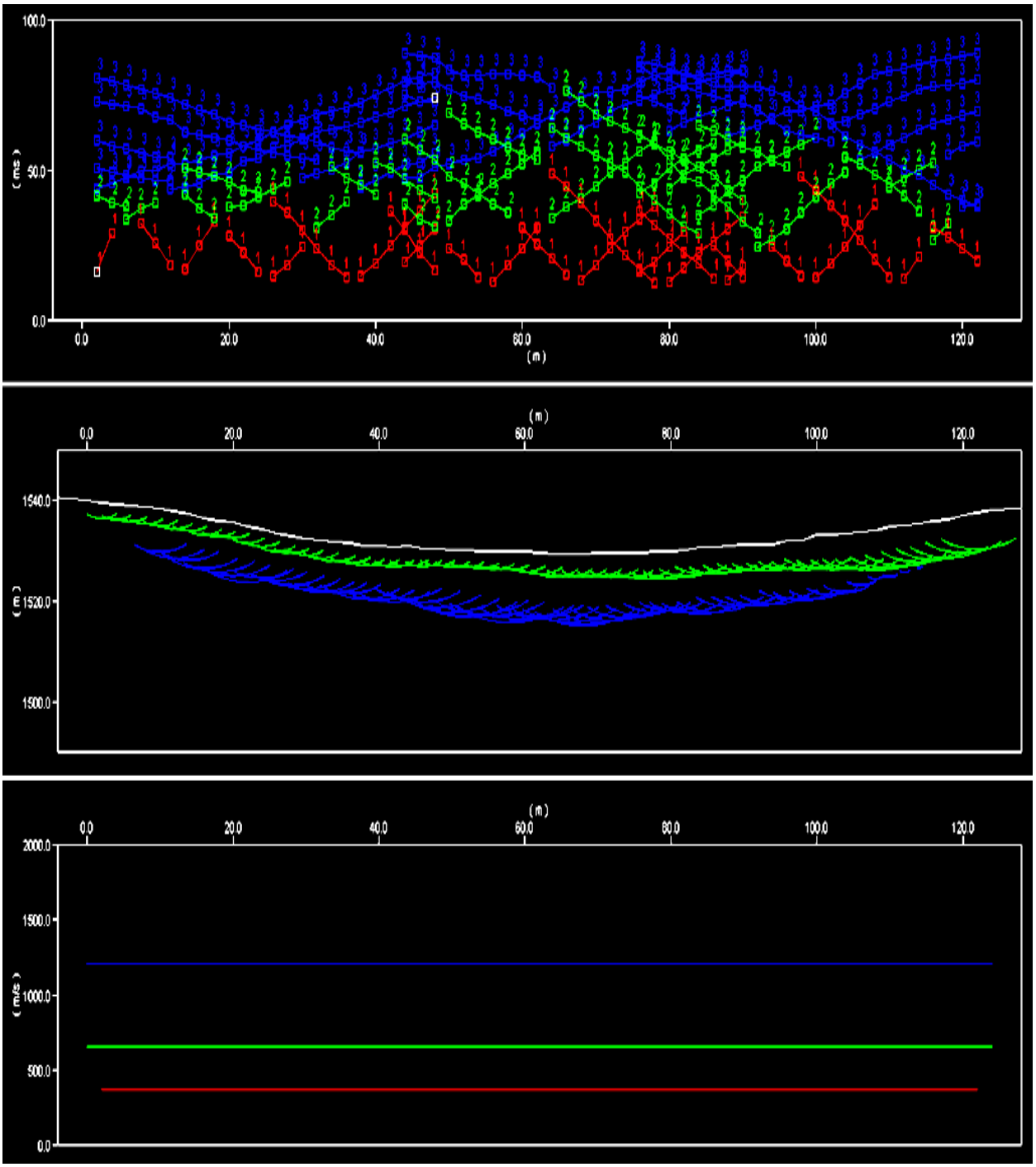

Figure 5. Travel-time curve, velocity model and depth section for Seismic Line 2.

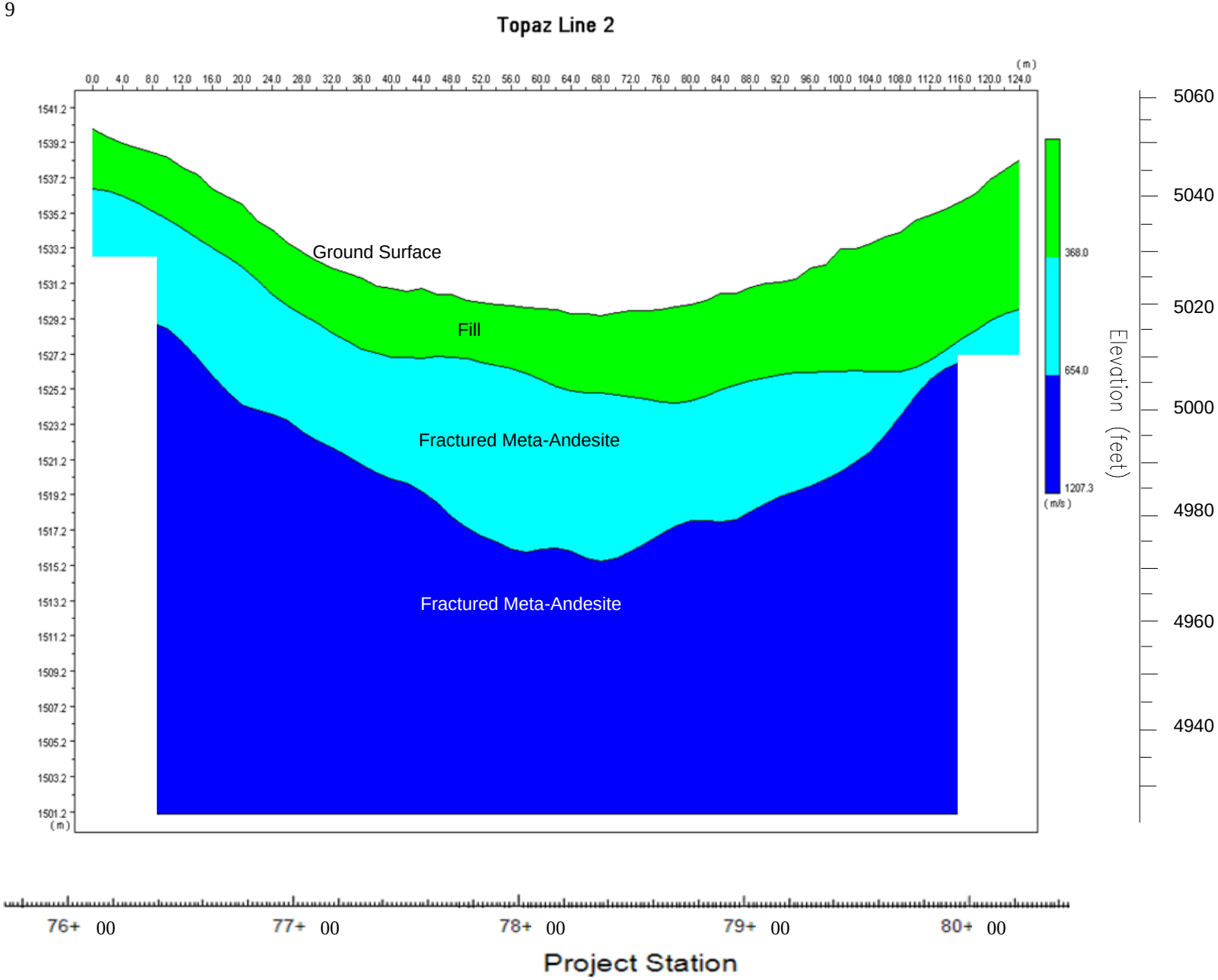

Figure 6. Color density plot of Seismic Line 2.