

FOR CONTRACT NO.: 02-2C2304

# INFORMATION HANDOUT

## WATER QUALITY

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
(CENTRAL VALLEY REGION)

WDID#5A45CR00381

## PERMITS

STATE OF CALIFORNIA  
DEPARTMENT OF FISH AND GAME

NOTIFICATION NO. 1600-2010-0231-R1

UNITED STATES ARMY CORPS OF ENGINEERS

NON-REPORTING NATIONWIDE 14 PERMIT

## MATERIALS INFORMATION

FOUNDATION REPORT

BRIDGE NO. 06-0131R (OCTOBER 12, 2010)

FINAL SEISMIC DESIGN RECOMMENDATIONS

JANUARY 26, 2010



# California Regional Water Quality Control Board Central Valley Region

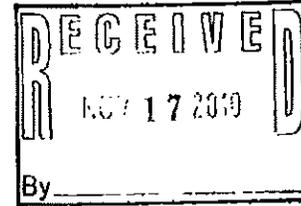
Katherine Hart, Chair



Arnold  
Schwarzenegger  
Governor

Linda S. Adams  
Secretary for  
Environmental  
Protection

415 Knollcrest Drive, Suite 100, Redding, California 96002  
(530) 224-4845 • Fax (530) 224-4857



15 November 2010

Mr. Carl Anderson  
California Department of Transportation  
1657 Riverside Drive  
Redding, CA 96001

## CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION FOR DISCHARGE OF DREDGED AND/OR FILL MATERIALS FOR THE TUNNEL GULCH VIADUCT SEISMIC RETROFIT PROJECT (WDID#5A45CR00381), REDDING, SHASTA COUNTY

### ACTION:

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

### WATER QUALITY CERTIFICATION STANDARD CONDITIONS:

1. This certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to §13330 of the California Water Code and §3867 of Title 23 of the California Code of Regulations (23 CCR).
2. This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR subsection 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 shall be conditioned upon total payment of the full fee required under 23 CCR §3833, unless otherwise stated in writing by the certifying agency.
4. Certification is valid for the duration of the described project. This certification is no longer valid if the project (as currently described) is modified, or coverage under Section 404 of the Clean Water Act has expired.

**ADDITIONAL TECHNICALLY CONDITIONED CERTIFICATION CONDITIONS:**

In addition to the four standard conditions, Caltrans shall satisfy the following:

1. The California Department of Transportation (Caltrans) shall notify the Central Valley Regional Water Quality Control Board (Central Valley Water Board) in writing 7 days in advance of the start of any in-water activities.
2. Except for activities permitted by the U.S. Army Corps under §404 of the Clean Water Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.
3. All areas disturbed by project activities shall be protected from washout or erosion.
4. Caltrans shall maintain a copy of this Certification and supporting documentation (Project Information) at the Project site during construction for review by site personnel and agencies. All personnel (employees, contractors, and subcontractors) performing work on the proposed project shall be adequately informed and trained regarding the conditions of this Certification.
5. An effective combination of erosion and sediment control Best Management Practices (BMPs) must be implemented and adequately working during all phases of construction.
6. All temporarily affected areas will be restored to pre-construction contours and conditions upon completion of construction activities.
7. Caltrans shall perform surface water sampling: 1) When performing any in-water work; 2) In the event that project activities result in any material reaching surface waters; or 3) When any activities result in the creation of a visible plume in surface waters. The following monitoring shall be conducted immediately upstream out of the influence of the project and 300 feet downstream of the active work area. Sampling results shall be submitted to this office within two weeks of initiation of sampling and every two weeks thereafter. The sampling frequency may be modified for certain projects with written permission from the Central Valley Water Board.

Parameter	Unit	Type of Sample	Frequency of Sample
Turbidity	NTU	Grab	Every 4 hours during in water work
Settleable Material	ml/l	Grab	Same as above.
Visible construction related pollutants	Observations	Visible Inspections	Continuous throughout the construction period

8. Activities shall not cause turbidity increases in surface water to exceed:

- (a) where natural turbidity is less than 1 Nephelometric Turbidity Units (NTUs), controllable factors shall not cause downstream turbidity to exceed 2 NTU;
- (b) where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU;
- (c) where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
- (d) where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs;
- (e) where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

Except that these limits will be eased during in-water working periods to allow a turbidity increase of 15 NTU over background turbidity as measured in surface waters 300 feet downstream from the working area. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected. Averaging periods may only be assessed by prior permission of the Central Valley Water Board.

- 9. Activities shall not cause settleable matter to exceed 0.1 ml/l in surface waters as measured in surface waters 300 feet downstream from the project.
- 10. The discharge of petroleum products or other excavated materials to surface water is prohibited. Activities shall not cause visible oil, grease, or foam in the work area or downstream. Caltrans shall notify the Central Valley Water Board immediately of any spill of petroleum products or other organic or earthen materials.
- 11. Caltrans shall notify the Central Valley Water Board immediately if the above criteria for turbidity, settleable matter, oil/grease, or foam are exceeded.
- 12. Caltrans must comply with all of the conditions of California Department of Fish and Game Streambed Alteration Agreement 1600-2010-0231-R1.
- 13. Caltrans must comply with all requirements of U.S. Army Corps of Engineers Nationwide Permit Number 14, Linear Transportation Projects.
- 14. Caltrans shall comply with their General NPDES Permit Order No 99-06-DWQ (NPDES No. CAS 000003) issued by the State Water Resources Control Board.
- 15. Caltrans shall comply with all conditions of the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board, including the development and implementation of a Storm Water Pollution Prevention Plan for the project.
- 16. The Conditions in this water quality certification are based on the information in the attached "Project Information." If the information in the attached Project Information is modified or the project changes, this water quality certification is no longer valid until amended by the Central Valley Water Board.

17. In the event of any violation or threatened violation of the conditions of this Order, the violation or threatened violation shall be subject to any remedies, penalties, process, or sanctions as provided for under State law and section 401 (d) of the federal Clean Water Act. The applicability of any State law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to ensure compliance with this Order.
- a. If Caltrans or a duly authorized representative of the project fails or refuses to furnish technical or monitoring reports, as required under this Order, or falsifies any information provided in the monitoring reports, the applicant is subject to civil, for each day of violation, or criminal liability.
  - b. In response to a suspected violation of any condition of this Order, the Central Valley Water Board may require Caltrans to furnish, under penalty of perjury, any technical or monitoring reports the Central Valley Water Board deems appropriate, provided that the burden, including cost of the reports, shall be in reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
  - c. Upon the presentation of credentials and other documents as may be required by law, Caltrans shall allow the staff of the Central Valley Water Board or their authorized representative, to enter the project premises for inspection; including taking photographs and securing copies of project-related records, for the purpose of assuring compliance with this certification and determining the ecological success of the project.
18. Caltrans shall provide a Notice of Completion (NOC) no later than 30 days after the project completion. The NOC shall demonstrate that that the project has been carried out in accordance with the project's description (and any amendments approved). The NOC shall include a map of the project location and representative pre and post construction photographs. Each photograph shall include a descriptive title, date taken, photographic site, and photographic orientation.

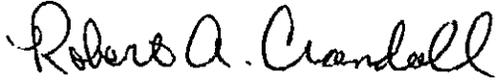
**REGIONAL WATER QUALITY CONTROL BOARD CONTACT PERSON:**

Dannas J. Berchtold, Engineering Associate, Redding Branch Office, 415 Knollcrest Drive, Suite 100, Redding, California 96002, [dberchtold@waterboards.ca.gov](mailto:dberchtold@waterboards.ca.gov), (530) 224-4783

**WATER QUALITY CERTIFICATION:**

I hereby issue an order certifying that any discharge from Caltrans Tunnel Gulch Viaduct Seismic Retrofit Project (WDID# 5A45CR00381) will comply with the applicable provisions of §301 ("Effluent Limitations"), §302 ("Water Quality Related Effluent Limitations"), §303 ("Water Quality Standards and Implementation Plans"), §306 ("National Standards of Performance"), and §307 ("Toxic and Pretreatment Effluent Standards") of the Clean Water Act. This discharge is also regulated under State Water Resources Control Board Water Quality Order No. 2003-0017 DWQ "Statewide General Waste Discharge Requirements For Dredged Or Fill Discharges That Have Received State Water Quality Certification (General WDRs)".

Except insofar as may be modified by any preceding conditions, all certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with Caltrans project description and the attached Project Information Sheet, and (b) compliance with all applicable requirements of the Water Quality Control Plan for the Sacramento River and San Joaquin River, Fourth Edition, revised September 2009.



(for) PAMELA C. CREEDON  
Executive Officer

DJB: lm

Enclosure: Project Information

cc: Mr. Matt Kelley, U.S. Army Corp of Engineers, Redding  
U.S. Fish and Wildlife Service, Sacramento  
Ms. Donna Cobb, Department of Fish and Game, Region 1, Redding  
Mr. Bill Jennings, CALSPA, Stockton

cc by email: Mr. Dave Smith, U.S. EPA, Region 9, San Francisco  
Mr. Bill Orme, SWRCB, Certification Unit, Sacramento

## PROJECT INFORMATION

**Application Date:** 14 July 2010

**Applicant:** Caltrans, Attn: Mr. Carl Anderson  
1657 Riverside Drive, Redding, CA 96001

**Applicant Representatives:** Caltrans, Attn: Mr. Chris Quiney

**Project Name:** Tunnel Gulch Viaduct Seismic Retrofit Project

**Application Number:** WDID No. 5A45CR00381

**Type of Project:** Seismic retrofit work on two piers of the Tunnel Gulch Viaduct.

**Project Location:** Section 22, Township 34 North, Range 4 West, MDB&M.  
Latitude: 40°47'18" and Longitude: -122°18'36"

**County:** Shasta County

**Receiving Water(s) (hydrologic unit):** Shasta Lake, which is tributary to Sacramento River.  
Shasta Dam Hydrologic Unit-Shasta Lake Hydrologic Area No. 506.10

**Water Body Type:** Lakebed

**Designated Beneficial Uses:** The *Water Quality Control Plan for the Sacramento River and San Joaquin River*, Fourth Edition, revised September 2009 (Basin Plan) has designated beneficial uses for surface and ground waters within the region. Beneficial uses that could be impacted by the project include: Municipal and Domestic Water Supply (MUN); Agricultural Supply, Irrigation (AGR); Industrial Supply (IND), Hydropower Generation (POW); Groundwater Recharge, Water Contact Recreation (REC-1); Non-Contact Water Recreation (REC-2); Warm Freshwater Habitat (WARM); Cold Freshwater Habitat (COLD); Warm Freshwater Spawning (SPWN); Cold Freshwater Spawning (SPWN); and Wildlife Habitat (WILD).

**Project Description (purpose/goal):** The Tunnel Gulch Viaduct Seismic Retrofit Project consists of rehabilitation and seismic retrofit of the Tunnel Gulch Viaduct (Bridge No. 06-0131R) and the Sweetbriar Overcrossing (Bridge No. 06-0115) on Interstate 5 in Shasta County, post-miles 30.55 and 61.75. A total of approximately 1.5 acres will be disturbed by construction activities, including work at the foundations of piers 2 and 5 and construction of temporary access roads and work pads. Tree removal will be limited to the extent necessary to construct temporary access roads and staging areas. Access roads will be approximately 20 feet wide and work pads will be constructed at each pier where work will occur. Cuts and fills will be required to construct the access roads. Appropriate erosion and sediment controls will be implemented on all disturbed soils. Seismic retrofit work consists of installing steel sleeves around the bottom of piers 2 and 5, enlarging the footings by filling the annular space between the steel sleeves and the existing footings with lightweight concrete, and installing tie-down rods to connect the existing footings to bedrock. Additional work includes placement of rock slope protection within an eroded gully located above the full pool elevation of Shasta Lake,

near the foundation of pier number 5. This work includes lining the eroded area with filter fabric, placement of backing rock, and then placement of ¼-ton rock slope protection match the surrounding elevation. Following construction, temporary access roads and pads will be removed and the topography will be returned as close as possible to pre-construction conditions.

**Preliminary Water Quality Concerns:** Construction activities may impact surface waters with increased turbidity and settleable matter.

**Proposed Mitigation to Address Concerns:** Caltrans will implement Best Management Practices (BMPs) to control sedimentation and erosion. All temporary affected areas will be restored to as close as possible to pre-construction contours and conditions upon completion of construction activities. Caltrans will conduct turbidity and settleable matter testing during in-water work, stopping work if Basin Plan criteria are exceeded or are observed.

**Fill/Excavation Area:** Project implementation will temporarily impact 0.25 acres (300 linear feet) of lakebed.

**Dredge Volume:** 150 cubic yards.

**Compensatory Mitigation:** Not Applicable.

**U.S. Army Corps Permit Number:** Nationwide Permit No. 14, Linear Transportation Projects (Non-Reporting)

**Department of Fish and Game Streambed Alteration Agreement:** Caltrans applied for a Streambed Alteration Agreement on 9 July 2010 (Agreement 1600-2010-0231-R1).

**Possible Listed Species:** Not Applicable

**Status of CEQA Compliance:** Caltrans has determined that this project is categorically exempt from California Environmental Quality Act review (Class 1 Categorical Exemption, Notice of Exemption dated 15 April 2010,).

**Central Valley Water Board Public Notice:** Information regarding this project was noticed on the Central Valley Water Board's website from 23 July 2010 to 13 August 2010. No comments were received.

**Application Fee Provided:** Total fees of \$2,560.00 have been submitted as required by 23 CCR §3833b(3)(A) and by 23 CCR §2200(e).

**CALIFORNIA ENVIRONMENTAL QUALITY ACT  
NOTICE OF EXEMPTION**

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**To:** Office of Planning and Research  
1400 Tenth Street, Room 121  
Sacramento, California 95814

**Date:** October 25, 2010

**From:** California Department of Fish and Game  
Northern Region  
601 Locust Street  
Redding, California 96001

**Project Title:** Issuance of Streambed Alteration Agreement No. **1600-2010-0231-R1**, Tunnel Gulch Viaduct Seismic Retrofit Project.

**Project Location (Specific):** Interstate 5/Shasta Lake, Section 22, Township 34N, Range 4W, Mount Diablo Base and Meridian; Latitude 40° 47' 18.17 North, Longitude 122° 18' 36.02 West.

**Project Location (City and County):** O'Brien, Shasta County.

**Description of Project:** See Attached Agreement.

**Name of Public Agency Approving Project:** California Department of Fish and Game.

**Name of Agency Carrying Out Project:** California Department of Transportation.

**Exempt Status (Class and Guidelines Section):** **Categorical Exemption: Class 1, Section 15301** – Operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination.

**Reasons Why Project is Exempt:** The project proposes to seismic retrofit a section of Interstate 5 adjacent to Lake Shasta for public safety. The project will have no significant effect on the environment.

**Lead Agency Contact Person:** Michael Dege      **Phone:** (530) 225-2309

**Signature:**



**Date:**

10/29/10

**Title:**

Curt Babcock  
Acting Habitat Conservation Program Manager

**Signed by Lead Agency**

**Date received for filing at OPR:**

**Signed by Applicant**

**CALIFORNIA DEPARTMENT OF FISH AND GAME**  
NORTHERN REGION  
601 LOCUST STREET  
REDDING, CA 96001

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**LAKE or STREAMBED ALTERATION AGREEMENT**  
NOTIFICATION No. 1600-2010-0231-R1  
Shasta Lake, Shasta County

DFG - REDDING

CARL ANDERSON  
TUNNEL GULCH VIADUCT SEISMIC RETROFIT

This Lake Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and Mr. Carl Anderson, representing the California Department of Transportation (Permittee).

#### **RECITALS**

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on July 14, 2010 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 Lake Shasta, in the County of Shasta; Latitude 40° 47' 18.17 North, Longitude 122° 18' 36.02 West; Section 22, Township 34N, Range 04W, Mount Diablo Base and Meridian; U.S. Geological Survey (USGS) map O'Brien.

#### **PROJECT DESCRIPTION**

The project is limited to seismic upgrades on the Tunnel Gulch Viaduct (Interstate Highway 5) at Lake Shasta. In addition to the seismic upgrades, bridge approach slabs, deck overlay, joint seals, and, drainage is included as part of the overall project. To access the bridge piers, temporary roads will be constructed from the northeast access, and southeast access locations. Only the southeast access road will be below the lake

capacity elevation and all others above lake capacity elevation. Rock slope protection may be added to below lake level piers and an erosion ditch located near the project site. All work shall be in accordance with submitted plans and diagrams and any subsequent revisions approved by the DFG in writing. Specific work includes:

- a. Excavating and installation partial steel column castings (to be filled with concrete), footing retrofit, and pier/soffit tie-downs at the base of piers 2 and 5.
- b. Creating temporary access roads (300 feet in length and 20 feet wide to be created below full pool capacity, 0.25 acres) and staging areas at each pier requiring a retrofit (approximately 1.5 acres of total disturbance).
- c. Removing existing vegetation (approximately 1.5 acres) for the staging areas and access roads.
- d. Adding filter fabric and clean rock slope protection (RSP) to an adjacent gully from bridge runoff.
- d. Use of heavy equipment adjacent and in the dry lake bed to perform work.
- e. Minor maintenance of the bridge work to keep it in good working order.

## **PROJECT IMPACTS**

Existing fish or wildlife resources the project could substantially adversely affect include: silver-haired bat (*Lasionycteris noctivagans*), yuma bat (*Myotis yumanensis*), western pond turtle (*Actinemys marmorata*), Chinook salmon (*Oncorhynchus tshawytscha*), rainbow trout (*O. mykiss*), Sacramento sucker (*Catostomus occidentalis*), Sacramento pikeminnow, (*Ptychocheilus grandis*), prickly sculpin (*Cottus asper*), blackfish (*Orthodon microlepidotus*), hardhead (*Mylopharodon conocephalus*), white sturgeon (*Acipenser transmontanus*), other non-game and game fishes, amphibians, reptiles, aquatic invertebrates, mammals, birds, and other aquatic and riparian species.

The adverse effects the project could have on the fish or wildlife resources identified above include: excessive noise and vibration due to heavy equipment use near roosting/nest sites and respiratory problems in aquatic species due to suspended sediment and the smothering and/or shading of egg masses, submerged aquatic vegetation, and benthic communities due to settled sediment.

## **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 non-enforcement personnel may enter the project site at any time to verify compliance with the Agreement, provided DFG: a) provides 24 hours advance notice; and b) allows the Permittee or representatives to participate in the inspection and/or monitoring.
- 1.5 Permittee's notification (Notification of Lake or Streambed Alteration together with all maps, plans, photographs, drawings, and all other supporting documents submitted with notification to describe the activity) is hereby incorporated by reference into this Agreement. Permittee shall conduct project activities within the work areas and using the mitigative features described in the notification and supporting documents, unless such project activities, work areas or mitigative features are modified by the provisions of this Agreement, in which case the activities shall be conducted as described in this 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 Work in or around the bed, bank, or channel of any stream or Shasta Lake shall be confined to the period commencing June 1 and ending October 15. If weather conditions permit and streams are dry and the lake elevation is low, the Permittee may perform work outside of the above referenced work window, provided a written request is made to DFG at least five (5) days before the proposed work period variance. Written approval from DFG for the proposed work period variance must be received by the Permittee prior to the start or with the continuation of work outside of the above referenced work window.

- 2.2 If work is performed outside of the above referenced work window, the Permittee shall do all of the following:
- a. Stage erosion and sediment control materials at the work site.
  - b. Cease work and implement erosion control measures when there is a forecast of more than 50% chance of rain, or at the onset of any precipitation. Monitoring of the 72 hour forecast from the National Weather Service is recommended.
- 2.3 The Permittee shall instruct all persons who will be completing any ground disturbing activity at a worksite to comply with the conditions set forth in this Agreement and shall inspect each work site before, during, and after completion of any ground-disturbing activity at the work site.

#### BRIDGE SEISMIC RETROFIT WORK

- 2.4 The Permittee shall install necessary containment structures to prevent fugitive wet concrete from entering the lake.
- 2.5 At all times fugitive dust, debris and other airborne material from the project shall be controlled prevented from entering into, or placed where it may be washed by rainfall or runoff into, waters of the State.
- 2.6 No stormwater shall be allowed to pass through the project area during construction activities. All stormwater shall be routed around the project area for the duration of the project.
- 2.7 Any turbid water pumped from the work site shall be disposed of in an upland location where it will not drain directly into any stream channel.
- 2.8 Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portions of any stream channel or lake margin within the high water mark of the stream or lake shall be restored to as near their original condition as possible.

#### ROCK SLOPE PROTECTION (RSP)

- 2.9 RSP and energy dissipater materials shall consist of clean rock, competent for the application, sized and properly installed to resist washout.
- 2.10 RSP slopes and footing trenches shall feature an underlayment of appropriate grade geo-textile fabric to protect fill from tractive forces.

- 2.11 Excavation spoils shall not be side-cast into the channel nor is any manipulation of the substrate of the channel authorized except as herein expressly provided.

### SENSITIVE SPECIES

- 2.12 To avoid or minimize impacts to roosting bats, work around bridge abutment #1 and pier #2 will be limited from September 1 to April 14. During the roosting period (April 15 to August 31 or modified by data collected onsite and approved by DFG) a 60 foot construction free buffer will be implemented by the Permittee around abutment #1 and pier #2.
- 2.13 At least a week prior to the work window (September 1) on abutment #1 or pier #2, the Permittee shall install one way exclusion sleeves over all access holes/openings used by bats.
- 2.14 To avoid impacts to nesting birds, the removal of vegetation will be limited from September 1 to March 1.

### EROSION AND SEDIMENT CONTROL

- 2.15 The project shall at all time feature adequate erosion and sediment control devices to prevent the degradation of water quality.
- 2.16 The Permittee shall prevent the discharge of sediment, and/or muddy, turbid, or silt-laden waters, resulting from the project, into the lake or stream. Where necessary to prevent such discharge, the Permittee shall properly install and maintain sediment barriers (including but not limited to filter fabric fencing, fiber mats, rice straw or fiber wattles or rolls) capable of preventing downstream sedimentation/turbidity. Said devices shall be cleaned of all trapped sediment as necessary to maintain proper function. Recovered sediment shall be disposed of where it shall not return to the waters of the State. Said devices shall be completely removed from the channel, along with all temporary fills, upon completion of operations.
- 2.17 Soils exposed by project operations shall be mulched to prevent sediment runoff and transport. Mulches shall be applied so that not less than 90% of the disturbed areas are covered. All mulches (except hydro-mulch) shall be applied in a layer not less than two inches deep. All mulches shall be kneaded or tracked-in with track marks parallel to the contour, and tackified as necessary to prevent excessive movement. All exposed soils and fills, including the downstream face of the road prism adjacent to the outlet of culverts, shall be reseeded with a mix of native grasses common to the area, free from seeds of noxious or invasive weed species, and applied at a rate which will ensure establishment.

- 2.18 If necessary to prevent mobilization of loose soils, fiber mats shall be laid over loose soils prior to mulching and tracking.
- 2.19 Soils adjacent to the lake or stream that are exposed by project operations shall be adequately stabilized when rainfall is reasonably expected (50% or greater chance) during construction, and immediately upon completion of construction, to prevent the mobilization of such sediment into the lake or adjacent wetlands. National Weather Service forecasts shall be monitored by the Permittee to determine the chance of precipitation.
- 2.20 Upon DFG determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation, shall be halted until effective DFG approved control devices are installed, or abatement procedures are initiated.

#### EQUIPMENT ACCESS

- 2.21 Vehicles shall not be driven, or equipment operated, in water covered portions of a lake or stream, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the Agreement to complete authorized work.
- 2.22 Structures and associated materials not designed to withstand high seasonal flows shall be removed to areas above the high water mark before such flows occur.

#### PETROLEUM, CHEMICAL AND OTHER POLLUTANTS

- 2.23 Staging, storage, and re-fueling areas for machinery, equipment, and materials shall be located outside of the lake or stream a minimum distance of 150 feet from waters of the State.
- 2.24 No equipment or machinery shall be operated within any lake or flowing stream.
- 2.25 Any equipment or vehicles driven and/or operated within or adjacent to the lake or stream channel shall be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life, wildlife, or riparian habitat.
- 2.26 Stationary equipment such as motors, pumps, generators, and welders that contain deleterious materials, located within or adjacent to a lake or stream shall be positioned over drip pans.
- 2.27 All activities performed in or near a lake or stream shall have absorbent materials designated for spill containment and clean up activities on-site for use in an accidental spill. The Permittee shall immediately notify the California Emergency

Management Agency at 1-800-852-7550 and immediately initiate the clean up activities. DFG shall be notified by the Permittee and consulted regarding clean-up procedures.

- 2.28 No debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, asphalt, paint or other coating material, 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 lake or stream.

### **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:

California Department of Transportation  
Attn: Carl Anderson  
1657 Riverside Drive  
Redding, California 96001  
carl.anderson@dot.ca.gov

To DFG:

Department of Fish and Game  
Northern Region  
601 Locust Street, California 96001  
Attn: Lake and Streambed Alteration Program – Michael Dege  
Notification #1600-2010-0231-R1  
Fax: (530) 225-2303  
mdege@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](http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html).

#### TERM

This Agreement shall expire on December 31, 2014 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.

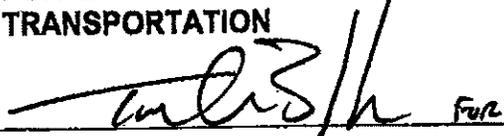
#### AUTHORIZATION

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  
TRANSPORTATION**

  
\_\_\_\_\_  
Carl Anderson

10/18/10  
\_\_\_\_\_  
Date

**FOR DEPARTMENT OF FISH AND GAME**



Curt Babcock  
Acting Habitat Conservation Program Manager

20/29/10

Date

Prepared by: Michael Dege  
Environmental Scientist

State of California  
**MEMORANDUM**

**Business, Transportation, and Housing Agency**

*Flex your power!  
Be energy efficient!*

**To:** Project File

July 6, 2010

03-Environmental Management  
02-SHA-5-PM 30.55R  
03 172 02 2C2301  
Tunnel Gulch Viaduct

**From:** DEPARTMENT OF TRANSPORTATION – Chris Quiney, Office of Environmental Management,  
P. O. Box 496073, Redding, CA 96049-6073

**Subject:** Non-Reporting U.S. Army Corps Nationwide Permit 14 (Linear Transportation Projects)

The California Department of Transportation (Caltrans) is initiating a project to rehabilitate and seismically retrofit the Tunnel Gulch Viaduct (Bridge No. 06-0131R) on Interstate 5 in Shasta County, approximately 10.6 miles north of the city of Redding. The project will be constructed in accordance with the terms and conditions of U.S. Army Corps of Engineers (USACE) Nationwide Permit 14 (Linear Transportation Projects) [NWP14]. The project will not result in a loss of waters of the United States greater than 0.10 acre nor will it result in a discharge to a special aquatic site, including wetlands. Based on the terms of the NWP14, notification to the USACE is not required. Attached is a copy of the NWP terms and conditions, a NWP General/Regional Condition Checklist, pre-construction photographs of the project site, a map delineating impacts within jurisdictional waters, and preliminary project plans.

Project purpose and need: Caltrans bridge maintenance reports indicate deterioration and stress damage in the concrete deck and superstructure. Additionally, the structure does not meet modern seismic standards.

Seismic work will occur at the base of piers number 2 and 5. The piers are located above the full pool elevation of Shasta Lake, which is 1,069.7 feet above sea level. The only encroachment within jurisdictional waters (below the full pool elevation of Shasta Lake) would result from construction of a segment of a temporary access road. Temporary construction access roads will be required to access each work area. Access roads will be approximately 20 feet in width and capable of supporting heavy construction equipment such as a crane, drill rig, excavator, loader, concrete trucks, dump trucks, and large flatbed trailers. In addition, a level work pad will be required at the base of piers number 2 and 5. It is anticipated that access will be gained from the southeast, northwest, and/or northeast quadrant of the structure depending on lake levels during the construction period. Construction of access roads will require the removal of small conifers between I-5 and the lakeshore. If access is gained from the southeast quadrant, the following work would be required below the full pool elevation of the lake:

Only a portion of the access road approximately 300 feet in length (approximately 0.25 acre) would be located below the full pool elevation of the lake. This area is located below the viaduct between piers 2 and 5. The area is devoid of substantial vegetation. Construction of the

Non-reporting NWP 14

temporary access road would require minor cuts and fills involving up to 150 cubic yards of material from the lakeshore. Following construction, temporary access roads and pads will be removed and the topography will be returned as close as possible to pre-construction conditions. Appropriate erosion control measures will be applied to all disturbed soils.

The work will entail installation of steel sleeves around the bottom of piers number 2 and 5, enlargement of the footings, and installation of tie-down rods at the footings. The steel sleeves will be larger in diameter than the existing concrete piers and will extend from the top of the footing to approximately 10 feet above original ground. The annular space between the sleeve and pier will be filled with lightweight concrete. The tie-down rods will connect the existing footings to bedrock.

Additional work includes placement of rock slope protection (RSP) within an eroded gully, above the full pool elevation of Shasta Lake, near the foundation of pier number 5. This work will include lining the eroded area with filter fabric, placement of backing rock, and then placement of ¼-ton RSP to match the surrounding elevation.

Caltrans performed an environmental evaluation consisting of a review of resource records and databases, consultation and coordination with applicable agencies and individuals, and field surveys of the project limits.

No listed hazardous waste sites, historic properties, or listed species will be affected. Swallows nest on the underside of the bridge deck but will not be affected by the work. Tree removal will be scheduled to occur during the period of September 1 to April 15 to avoid impacting nesting birds.

Bats utilize the internal hollow cells of Pier 2 as a day roost, generally May through August. Bats also use the south abutment as a temporary night roost. Pier 5 is also hollow but has no bat use. Work at Pier 2 and the south abutment will occur after August 31 and will end no later than April 15. The hollow Pier 2 will not be filled with any material and access for bats will be maintained from April 15 through August 31. In addition, an ESA fence/buffer of approximately 60 ft. will be established around the south abutment and Pier 2 during the April 15 – August 31 period. This ESA buffer will minimize disturbance to both day and night roosting bats.

Caltrans has determined that the proposed action is Categorically Exempt pursuant to Section 15302 of the California Environmental Quality Act.

The following measures are included in the project to avoid and minimize impacts to surface waters:

- Vegetation removal will be limited to extent necessary to create access to the work site.
- The contractor will be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) or Water Pollution Control Program (WPCP) in accordance with

the Statewide NPDES Storm Water Permit issued by the State Water Resources Control Board.

- Construction will occur during dry conditions when no water is present.

Additional regulatory permits will be required from the Regional Water Quality Control Board (Water Quality Certification), and Department of Fish and Game (1600 Agreement) for work below the full pool elevation of Shasta Lake.

**Attachments:** NWP terms and conditions, a NWP General/Regional Condition Checklist, pre-construction photographs of the project site, a map delineating impacts within jurisdictional waters, and preliminary project plans.

**SHA-5-PM 30.55R Tunnel Gulch Viaduct (Bridge No. 06-0131R)  
Rehabilitation and Seismic Retrofit  
02-2C230  
Non-Reporting NWP 14 (Linear Transportation Projects)**

**Compliance with Nationwide Permit General and Regional  
Conditions**

**Nationwide Permit General Conditions**

1. Navigation: The project will not affect navigation.
2. Aquatic Life Movements: The proposed project will not substantially disrupt the life cycle or movements of any species indigenous to bodies of water in the project area or species that migrate through waters in the project area.
3. Spawning Areas: There are no spawning areas within the construction limits.
4. Migratory Bird Breeding Areas: None of the waters of the United States in the project area serve as breeding grounds for migratory birds.
5. Shellfish Beds: There are no shellfish beds within the construction limits.
6. Suitable Material: No trash, debris, asphalt, concrete, or other unsuitable material will be placed in waters of the United States, and all fill material will be free from toxic pollutants in toxic amounts.
7. Water Supply Intakes: There is no public water supply intake in or near the project area.
8. Adverse Effects from Impoundments: The proposed project will not cause any temporary or permanent impoundment of water.
9. Management of Water Flows: The proposed project will not temporarily or permanently alter the pre-construction course, condition, capacity, or location of open waters.
10. Fills within 100-Year Floodplain: The project will not affect beneficial floodplain values or result in an adverse effect on the floodplain.
11. Equipment: The proposed project will not require use of heavy equipment in wetlands, mudflats, or other special aquatic sites.
12. Soil Erosion and Sediment Controls: Prior to start of construction, the contractor will be required to submit, for Caltrans's approval, a Storm Water Pollution Prevention

Plan (SWPPP). The SWPPP must meet the standards and objectives for avoidance and minimization of adverse impacts to water quality set forth in Section 7-1.01G of Caltrans's Standard Specifications and will describe the Best Management Practices (BMPs) that the contractor intends to use to prevent erosion and sedimentation during and after construction.

13. Removal of Temporary Fills: After construction has been completed, temporary fills will be removed in their entirety or they will be used to fill in erosional features such as rills and gulleys above the full pool elevation of the lake.

14. Proper Maintenance: Caltrans is aware of this condition.

15. Wild and Scenic Rivers: There are no National Wild and Scenic Rivers, nor any rivers officially designated by Congress as study rivers for possible inclusion in the National Wild and Scenic River System and currently in official study status, within the construction limits.

16. Tribal Rights: The proposed project will not affect any tribal rights.

17. Endangered Species: Caltrans, acting as the federal lead agency under NEPA delegation, has determined that the proposed project will have no effect on any federally threatened or endangered species or species proposed for federal listing under the Endangered Species Act (ESA), nor will it affect the critical habitat of any such species.

18. Historic Properties: The proposed project will not affect any properties listed, or eligible for listing, in the National Register of Historic Places.

19. Designated Critical Resource Waters: The project area does not contain any waters designated by a state or federal agency as a marine sanctuary, National Estuarine Research Reserve, natural heritage site, or otherwise officially designated as having particular environmental or ecological significance, nor will the proposed project directly affect any such waters.

## 20. Mitigation

- a. Avoidance and Minimization: The contractor will be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) to avoid adverse impacts to water quality.
- b. Compensatory Mitigation for Impacts that Cannot Be Avoided or Minimized:  
n/a

21. Water Quality: Water Quality Certification will be requested from the Central Valley Regional Water Quality Control Board.

22. Coastal Zone Management: The proposed project lies outside the coastal zone; therefore, this General Condition is not applicable.
23. Regional and Case-by Case Conditions: Caltrans will comply with all Regional and Special (Case-by-Case) Conditions.
24. Use of Multiple Nationwide Permits: The proposed project will not require multiple NWPs; therefore, this General Condition is not applicable.
25. Transfer of Nationwide Permit Verifications: Caltrans will complete the proposed project under the specified Nationwide Permit.
26. Compliance Certification: The work will be performed under a non-reporting NWP.
27. Pre-Construction Notification: The project does not require notification under the terms of NWP 14 (Linear Transportation Projects).
28. Single and Complete Project: The proposed project constitutes a single, complete project.

## **USACE Sacramento District's Regional Conditions – 1) Conditions Applicable to All States in the District**

### 1. Contents of Pre-Construction Notification

Avoidance and Minimization: See General Condition 20a above.

Drawings, Including Plan and Cross Section Views: See attached 11" X 17" plan sheets.

Pre-Project Color Photographs of the Project Site: See attached Pre-construction Photos.

2. Compensatory Mitigation: See General Condition 20 above.

3. Recording NWP Verifications: Caltrans is aware of this Regional Condition.

4. Long-Term Protection of Mitigation Sites: Caltrans is aware of this Regional Condition.

5. USACE Inspections of the Project Area and Mitigation Sites: Caltrans is aware of this Regional Condition.

6. NWPs 29, 39, 40, 42, 43, and 46 – Request for Waiver of the 300 Linear Foot Limitation: Caltrans is not requesting authorization to use NWP 29, 39, 40, 42, 43, or 46 for the proposed project; therefore, this Regional Condition is not applicable.

7. Road Crossings: The work does not entail installation of a permanent road crossing.

8. NWP 12 – Sealing NWP Utility Line Trenches: Caltrans is not requesting authorization to use NWP 12 for the proposed project; therefore, this Regional Condition is not applicable.
9. NWP 13 – Use of Vegetation or Other Biotechnical Design for Bank Stabilization: Caltrans is requesting authorization to use NWP 13 for the proposed project; therefore, this Regional Condition is not applicable.
10. NWP 23 – Signed Categorical Exclusion and Other Documentation: Caltrans is not requesting authorization to use NWP 23 for the proposed project; therefore, this Regional Condition is not applicable.
11. NWP 44 – 300 Linear Foot Limit to Loss of Streambed: Caltrans is not requesting authorization to use NWP 44 for the proposed project; therefore, this Regional Condition is not applicable.
12. NWPs 29 and 39 – Channelization or Relocation of Drainage: Caltrans is not requesting authorization to use NWP 29 or 39 for the proposed project; therefore, this Regional Condition is not applicable.
13. NWP 33 – Use of Clean, Spawning-Quality Gravel as Temporary Fill: Caltrans is not requesting authorization to use NWP 33; therefore, this Regional Condition is not applicable.
14. NWP 46 – Restrictions on Loss of Linear Footage or Loss of Acreage of Waters of the United States: Caltrans is not requesting authorization to use NWP 46 for the proposed project; therefore, this Regional Condition is not applicable.
15. NWPs 29, 39, 40, 42, and 43 – Establishment of Upland Vegetated Buffers: Caltrans is not requesting authorization to use NWP 29, 39, 40, 42, or 43 for the proposed project; therefore, this Regional Condition is not applicable.
16. Revocation of all NWPs except 3, 6, 20, 27, 32, 38, and 47 in Histosols, Fens, and Wetlands Contiguous with Fens: There are no histosols, fens, or wetlands contiguous with fens within the construction limits; therefore, this Regional Condition is not applicable.
17. Activities within 100 Feet of a Natural Spring: There are no natural springs within 100 feet of the construction limits; therefore, this Regional Condition is not applicable.

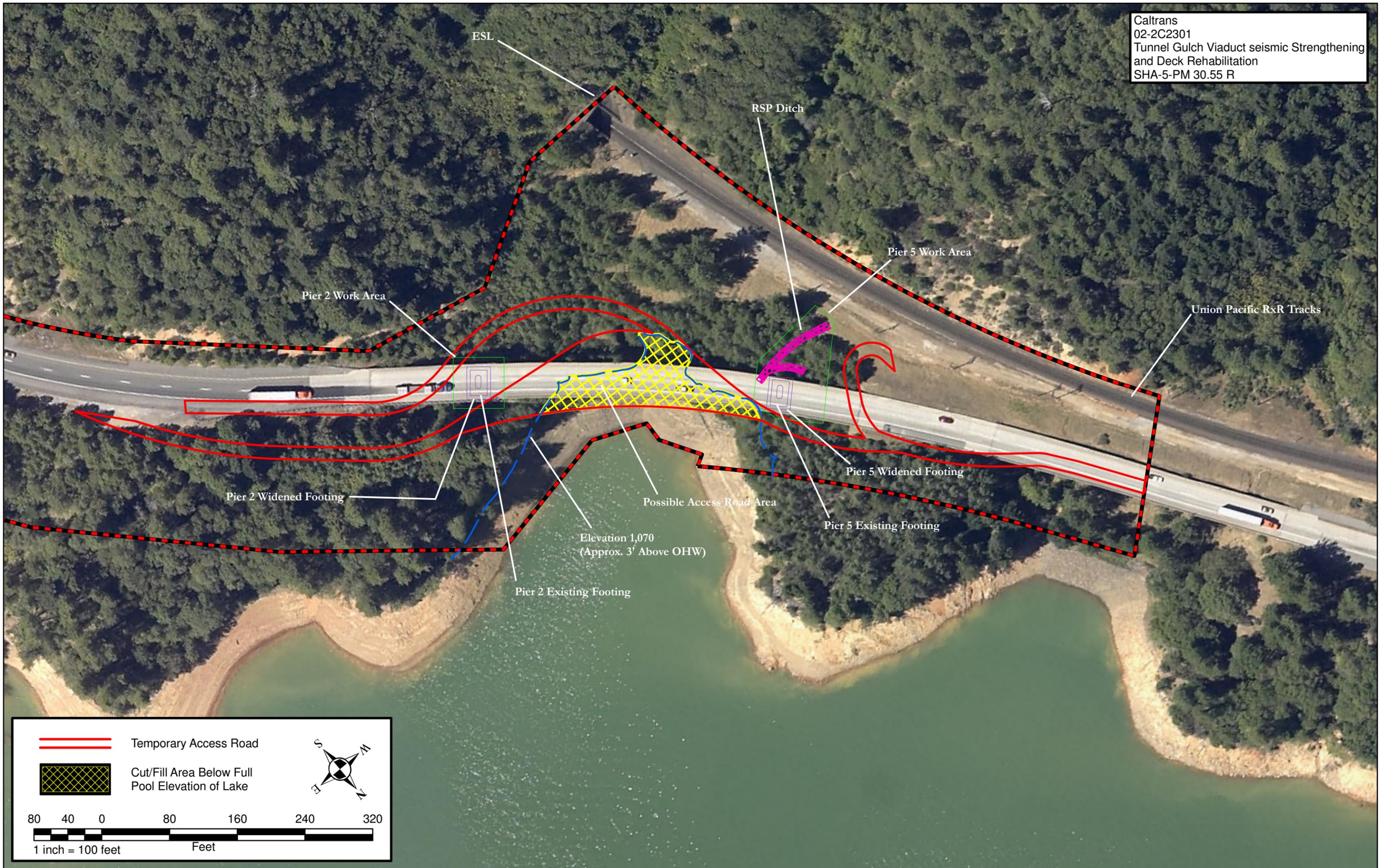
## **USACE Sacramento District's Regional Conditions – 2) Conditions Applicable to California Only**

1. Revocation of all NWPs in the Tahoe Basin: This project lies outside the Lake Tahoe Basin; therefore, this Regional Condition is not applicable.

2. Revocation of NWP 29 and 39 in the Primary and Secondary Zones of the Legal Delta: This project lies outside both the Primary and Secondary Zones of the Legal Delta; therefore, this Regional Condition is not applicable.

\* \* \* \* \*

Caltrans  
02-2C2301  
Tunnel Gulch Viaduct seismic Strengthening  
and Deck Rehabilitation  
SHA-5-PM 30.55 R



ESL

RSP Ditch

Pier 5 Work Area

Union Pacific RxR Tracks

Pier 2 Work Area

Pier 2 Widened Footing

Possible Access Road Area

Pier 5 Widened Footing

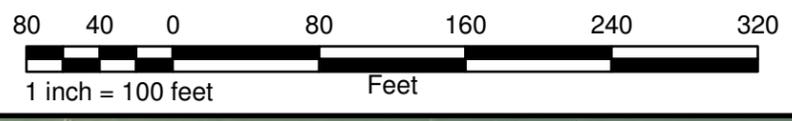
Elevation 1,070  
(Approx. 3' Above OHW)

Pier 5 Existing Footing

Pier 2 Existing Footing

Temporary Access Road

Cut/Fill Area Below Full Pool Elevation of Lake





U S Army Corps of  
Engineers  
Sacramento District

# Nationwide Permit Summary

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

**14. Linear Transportation Projects.** Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

**Notification:** The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10 acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 27.) (Sections 10 and 404)

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

## 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 against the United States on account of any such removal or alteration.

**2. Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

**3 Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

**4. Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

**5. Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48.

**6. Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

**7. Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

**8. Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or

restricting its flow must be minimized to the maximum extent practicable.

**9. Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

**10. Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

**11. Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

**12. Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

**13. Removal of Temporary Fills.** Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

**14. Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

**15. Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

**16. Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

**17. Endangered Species.**

(a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No

activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity “may affect” or will have “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.

## Memorandum

*Flex your power!  
Be energy efficient!*

To: MR. JOE DOWNING  
Chief, Bridge Design Branch 3  
Office of Bridge Design North  
Structure Design  
Division of Engineering Services MS 9  
  
Attn: Mr. Lewis Shen

Date: October 12, 2010  
  
File: 02-Sha-5-PM 30.55  
EA 02-2C2301  
Tunnel Gulch SHV  
(Earthquake Retrofit)  
Br. No. 06-0131R

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

Subject: Foundation Report for Tunnel Gulch SHV (Br. No. 06-0131R)

### Introduction/Scope of Work

Per your request, the Office of Geotechnical Design North (OGD-N) has prepared the Final Foundation Report for the proposed bridge earthquake retrofit. This report is based on review and evaluation of the existing bridge files and field reconnaissance on December 28, 2004.

This Foundation Report supersedes the Preliminary Geology Recommendations and Seismicity Information for Advanced Planning Study for Tunnel Gulch SHV (Br. No. 06-0131R) dated December 15, 2006.

### Project Description

The proposed earthquake retrofit is to enlarge the existing Pier 2 and Pier 5 spread footings. The vertical datum used in this report is NAVD 88. An additional 2.67 feet needs to be added to the NGVD 29 vertical datum elevations to convert these elevations to vertical datum NAVD 88.

### Field Investigation

Five mud rotary soil test borings, two 1-inch sample tube borings, and one cone penetration test boring were conducted in 1961. The borings were drilled/penetrated to a maximum depth of approximately 46.0 feet. No new borings were conducted for this report.

## **Site Geology and Subsurface Conditions**

The subject site is located in the Klamath Mountains geomorphic province of California. The Geologic Map of the Redding Sheet, scale 1:250,000 compilation by Rudolph Strand, 1962, California Geological Survey, formerly the Division of Mines and Geology, shows the site area to be mapped as Carboniferous marine sedimentary and metavolcanic rocks (C and Cv).

According to "As-Built" Log of Test Borings (LOTBs) dated December 12, 1966, the materials encountered consisted mainly of andesite overlain by a layer (less than 4 feet) of sand and silt with rock fragments. The andesite encountered was fractured and weathered to a depth of approximately 18 feet and then became fractured and moderately fresh at the Abutment 1, Bent 2, and Bent 3 locations. At the Bent 4 and Bent 5 locations, the andesite was fractured and moderately fresh. At the Abutment 6 area, fractured and friable tuffaceous shale was encountered and was underlain unconformably by fractured andesite. The hardness of the rock was not mentioned either in the "As-Built" LOTBs or the Foundation Recommendations memorandum dated February 8, 1962. It is assumed that the hardness of the rock was soft to very hard.

According to the "As-Built" LOTBs, ground water level was measured at elevation 1046.4 feet in Boring B-4 and 1038.5 feet in Boring B-3 during the field investigation conducted in May 1961 (see "As-Built" LOTBs).

According to the December 18, 1967 report (Appendix A) "lake water and downhill seepage" were encountered in the Pier 3 and the Pier 4 footing excavations during the construction in the 1960's. Ground water and seepage may be encountered during the footing excavations for the earthquake retrofit. The amount of water and flow rate of water will depend on seasonal precipitation, level of lake water, and other factors.

## **Scour**

A hydraulic report is not available. Based on the information available, we assume that scour is not an issue for the Pier 2 and Pier 5 spread footings.

### **Corrosivity**

The geotechnical design for the earthquake retrofit is based on the "As-Built" LOTBs, therefore, no information on corrosivity is available. Based on the geology of the site, we consider the foundation materials at the site as non-corrosive. But due to the bridge location and elevation (approximately 1170 feet), deicing salts are likely used on the roadway and bridge deck, therefore, appropriate corrosion measures may be considered.

### **Seismic Recommendation**

See Final Seismic Design Recommendations dated January 26, 2010.

### **As-Built Foundation Data**

According to the Foundation Report for Tunnel Gulch Viaduct, Bridge No. 6-131, dated December 18, 1967, the existing bridge foundations are founded on spread footings with the right retaining wall at Abutment 1 on steel "H" piles. The "H" piles that were used to support the retaining wall foundation were HP 10 x 57 (in x lb/ft) with 90.0 kips (45.0 ton) design loads. At the pier locations, the spread footings were founded on fractured andesite with an 8.0 ksf (4.0 tsf) allowable bearing capacity value. Abutment 1 was founded on fractured andesite with an allowable bearing capacity value of 6.0 ksf (3.0 tsf) and Abutment 6 was founded on fractured shale and weathered andesite with an allowable bearing capacity value of 5.6 ksf (2.8 tsf), see Appendix A for details.

### **Foundation Recommendations**

The proposed earthquake retrofit is to enlarge the existing Pier 2 and Pier 5 spread footings dimensions from 20' x 30' to 28' x 38' (width B x length L). The footings will be enlarged four (4) feet evenly on all sides. The bottom of the spread footing elevations will be on the same elevation as the existing Pier 2 and Pier 5 spread footings. Based on the information available, we recommended the gross allowable bearing capacity to match the allowable bearing capacity of 8.0 ksf used for the existing Pier 2 and Pier 5 spread footings. The new portion of the footing must be founded on clean bedrock. This project is designed using Load Factor Design methodology.

**Table 1. Foundation Design Recommendations for Spread Footings, Bridge No. 08-0131R<sup>1,2</sup>**

Support Location	Minimum Footing Width (feet)	Bottom of Footing Elevation (feet)	Recommended Bearing Limits	
			WSD <sup>(1)</sup>	LFD <sup>(2)</sup>
			Gross Allowable Bearing Capacity ( $q_{all}$ )	Nominal Bearing Resistance ( $q_n$ )
Pier 2	28.0	+ 1098.67±	N/A	24 ksf
Pier 5	28.0	+ 1077.67±	N/A	24 ksf

Notes: 1. Working Stress Design (WSD): The Maximum Contact Pressure ( $q_{max}$ ) is not to exceed the Recommended Gross Allowable Soil Bearing Capacity, ( $q_{all}$ ).  
 2. Load Factor Design (LFD): The Maximum Contact Pressure ( $q_{max}$ ), divided by the Strength Reduction Factor ( $\phi$ ) is not to exceed the Nominal Bearing Resistance ( $q_n$ ).

**Construction Considerations**

1. Ground water and seepage may be encountered during the footing excavations. The amount of water and flow rate of water will depend on seasonal precipitation, level of lake water, and other factors.
2. Footing excavations may encounter very hard bedrock and require specialized equipment and/or specialized methods.
3. All footing excavations are to be inspected and approved by this Office or a representative of the Office of Structure Construction when the excavations are completed to the bottom of footing and prior to placement of concrete.
4. Spread footings shall be placed neat against competent materials. All loose materials shall be removed prior to placement of concrete. Deeper removal may be required if soft materials, and other non-suitable materials are encountered at the bottom of the excavation. Structural concrete may be used to level the subgrade of the spread footings.

## **Project Information**

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

*Data and information attached with the project plans are:*

- A. As-Built Log of Test Borings (Tunnel Gulch Viaduct, Br. No. 06-0131R).

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

- A. Foundation Report for Tunnel Gulch Viaduct, Br. No. 06-0131R dated October 12, 2010.
- B. Final Seismic Design Recommendations dated January 26, 2010.

*Data and information available for inspection at the District 2 Office:*

- A. None

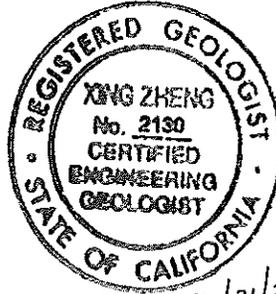
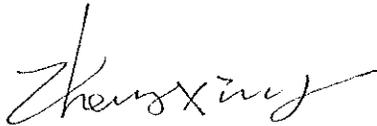
*Data and information available for inspection at the Transportation Laboratory:*

- A. As-Built Plans for the Tunnel Gulch Viaduct, Br. No. 06-0131R.

Mr. Joe Downing  
October 12, 2010  
Page 6

Tunnel Gulch SHV  
Bridge No. 06-0131R  
EA 02-2C2301

If you have any questions regarding this report, please contact Xing Zheng at 916-227-1036.



*exp. 3/31/2011*

Xing Zheng, C.E.G. No. 2130  
Engineering Geologist  
Geotechnical Design – North

c: ReidBuell

District Project Manager-Tom Balkow

R.E. Pending File

Eskinder Taddese-PCE (E-copy)

GS Corporate Mark Willian (E-copy)

Byron Berger-DME (E-copy)

GDN File

GS File Room

# Appendix A

Ronald Reagan Governor

STATE OF CALIFORNIA--HIGHWAY TRANSPORTATION AGENCY

EDMUND G. BROWNE

DEPARTMENT OF PUBLIC WORKS  
DIVISION OF HIGHWAYS  
P. O. BOX 1499, SACRAMENTO



1967 DEC 26 AM 11 40

18 December 1967

Mr. H. R. Hineman  
Bridge Engineer - Operations  
Sacramento, Calif.

02-Sha-5 R28.1/R36.4  
02-026714 (502)  
I-005-8(37)692  
Pit Riv Br to O'Brien

Dear Sir:

Herewith is the FOUNDATION REPORT for Tunnel Gulch Viaduct, Bridge No. 6 - 131, a structure on the above noted contract.

Tunnel Gulch Viaduct is a five span pretensioned concrete "I" girder bridge over an inlet of Shasta Lake. The structure is founded on spread footings with the right retaining wall at Abut 1 on steel bearing piling. All spread footings were inspected by Bridge Dept Geology Section before placement of footing concrete.

The stepped retaining wall footings consisted of five 10BP57 steel "I" piles. Design Loading was 45 Ton driven to 80 Ton bearing. The estimated tip elevation for the stepped footings was 1140.0, average tip elevation was 1133.0. Jack Strange Co. Bid the pile driving using a Delmag DL2 diesel hammer with fixed leads mounted on a 25 Ton truck crane.

The spread footings at Abutments 1 and 6 were founded at plan elevations of 1146.0 & 1149.0 for Abut 1 and 1132.0 for Abut 6. The brown fractured and weathered andesite material encountered at Abut 1 exceeds the allowable and design bearing value of 3.0 TSF. The material at Abut 6 consisted of a brown fractured shale at the uphill end and highly fractured and weathered andesite mixed with silty sand on the lower end. This material met the 2.8 TSF design bearing value.

The spread footings at Piers 2 and 5 were also founded at plan elevation of 1096.0 for Pier 2 and 1075.0 for Pier 5. The material for both footings consisted of brown to blue fractured andesite. Jackhammers were used to reach the planned elevation. Both footings exceeded the allowable and designed bearing value of 4.0 TSF and were poured against undisturbed material.

At Pier 3 the planned footing elevation was 1021.0. Dense blue andesite was encountered above this elevation and the bottom of footing was raised to elevation 1023.5. The footing was socketed into 4.0 feet of undisturbed material. Material at grade elevation exceeded the 4.0 TSF allowable and design bearing value. Lake water and downhill seepage were encountered in the footing excavation. A sheet pile cofferdam was driven around the lake sides of the footing, decreasing the seepage from the lake. The remaining seepage was handled with a 4 inch pump.

ENGINE	
ASST. ENGR.	
ADMIN.	
OFFICE ENGINEER	
OPERATIONS	
ADV. PLAN.	
DESIGN	
MAINTENANCE	
ACCOUNTING	
FED. AID SEC.	
AGREEMENTS	
PERSONNEL	
RESEARCH	
TRAINING	
PLANS	
EST.	

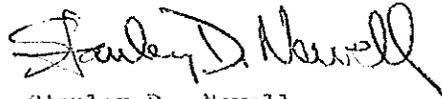
FOUNDATION REPORT  
(Cont'd)

02-Sha-6 R28.1/R36.4  
02-039714 (502)  
I-005-8157)092  
Pit River to O'Brien

-2-

Due to the Contractor's overexcavation, the footing at Pier 4 was lowered from the planned elevation of 1032.0 to elevation 1030.0. A keyway 4.0' wide, 2.0' deep and extending the full width was provided in lieu of placing concrete against undisturbed material on the right side of the footing. The remaining three sides were poured against undisturbed material. The material on the uphill side (left) was a dense blue andesite with a sharp angle of incline. This material required blasting before it could be removed. On the downhill side (right) the material was loose, highly fractured and weathered brown andesite. The material on the right end met the required 4.0 TSP design bearing value. Seepage from the lake was no problem and was handled with a 4 inch pump.

Respectfully yours,



Stanley D. Newell  
Bridge Dept Rep

cc: File  
attach: Copy of Log of Test Borings  
Bridge No 6 - 131



## Memorandum

*Flex your power!  
Be energy efficient!*

To: MR. LEWIS SHEN  
Senior Bridge Engineer  
Division of Structure Design MS 9  
Office of Bridge Design Services  
Bridge Design Branch 3

Date: January 26, 2010  
File: 02-Sha-5-PM 30.55  
02-2C2301  
Tunnel Gulch SHV  
Br. No. 06-0131 R

From: DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
GEOTECHNICAL SERVICES - MS 5  
OFFICE OF GEOTECHNICAL DESIGN - NORTH

Subject: Final Seismic Design Recommendations

This report presents the final seismic design recommendations for the above referenced bridge and is in response to your e-mail request dated January 4, 2010. Please note that this report supersedes the previous recommendation in a report entitled "Preliminary Seismic Design Recommendations" dated July 15, 2005.

### Soil Profile

The As-Built Log of Test Borings (LOTB) dated April and May 1961 indicates the foundation materials consist of a few feet of slightly compact clayey silt/silty sand underlain by weathered and fractured andesite. Based on the description of the materials a shear wave velocity of 560 m/s is estimated for the top 100 feet of the soil/rock column.

### Seismicity

Based on the Caltrans 2009 Seismic Design Procedure (SPD), the nearest active fault to the site is the Keswick Fault (Fault ID No. 320) with  $M_{max}$  of 6. This fault is about 5 kilometers southwest of the proposed bridge location, and is identified as a reverse blind fault with a vertical distance to top rupture from the ground surface of 5 kilometers. The spectral accelerations (SA) that is generated from the Keswick fault is less than the SA that is generated from the probabilistic method for periods greater than about 1.2 second. Therefore, the design Acceleration Response Spectrum (ARS) curve is based on an envelope of the probabilistic method by USGS Seismic Hazard Map (Peterson et al, 2008)

MR. LEWIS SHEN  
January 26, 2010  
Page 2

Seismic Design Recommendations  
Tunnel Gulch SHV  
Br. No. 06-0131R  
EA 02-2C2301

for the 5% in 50 years probability of exceedance (975 year return period), and the deterministic SA. The design ARS curve with an estimated peak ground acceleration of 0.4g is attached in Appendix A.

### Liquefaction

Liquefaction potential due to ground strong shaking is considered to be insignificant.

### Surface Fault Rupture Hazard

The site is not located within Alquist-Priolo Fault Rupture Hazard Zones. The potential for surface fault rupture is considered negligible.

We will revisit these recommendations if additional soil/rock data become available. In the meantime, if you have any questions regarding the above recommendations, please call me at (916) 227-1033.



REZA MAHALLATI  
Senior Materials and Research Engineer  
Office of Geotechnical Design - North

### Attachment

1- Appendix A - ARS Curve

c: Xing Zheng (OGD-N)  
GDN File



# Appendix A

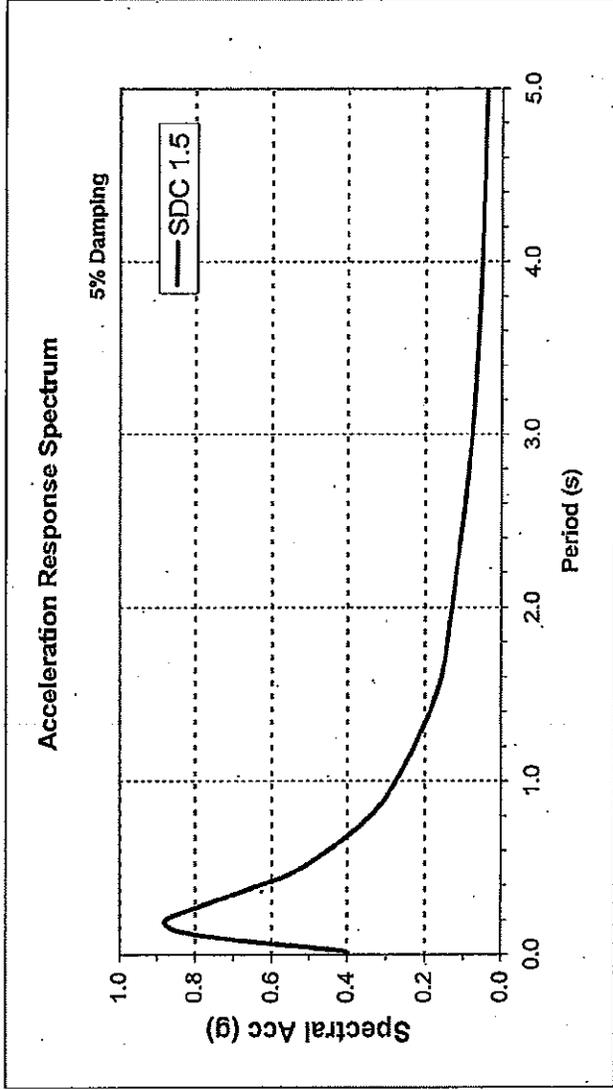
## Recommended ARS Curve

# Tunnel Gulch SHV

Bridge No. 06-0131R

SDC 1.5 Controlling Procedure : Probabilistic/Deterministic

Period (s)	SDC 1.5
0.010	0.398
0.020	0.405
0.030	0.434
0.050	0.524
0.075	0.647
0.100	0.751
0.120	0.808
0.150	0.864
0.200	0.878
0.250	0.824
0.300	0.762
0.400	0.633
0.500	0.522
0.750	0.365
1.000	0.275
1.500	0.170
2.000	0.131
3.000	0.078
4.000	0.053
5.000	0.040



### Deterministic Procedure Data

Fault	Keswick Fault		
Fault ID	320	Reverse	
Style	6	deg	
Mmax	65	km	
Dip	5		
Z-TOR			

$R_{rup}$	5.60	km
$R_{jb}$	2.40	km
$R_x$	2.40	km
$V_{SS0}$	570	m/s
$Z_{1.0}$	327	m
$Z_{2.5}$	2.00	km

### Notes

ARS curve was modified for Near Fault Directivity Effect (SDC Ver. 1.4 Section 6.1.2.1)

## Memorandum

*Flex your power!  
Be energy efficient!*

To: MR. LEWIS SHEN  
Senior Bridge Engineer  
Division of Structure Design MS 9  
Office of Bridge Design Services  
Bridge Design Branch 3

Date: January 26, 2010  
File: 02-Sha-5-PM 61.75  
02-2C2301  
Sweetbrier OC  
Br. No. 06-0115

From: DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
GEOTECHNICAL SERVICES – MS 5  
OFFICE OF GEOTECHNICAL DESIGN - NORTH

Subject: Final Seismic Design Recommendations

This report presents the final seismic design recommendations for the above referenced bridge and is in response to your e-mail request dated January 4, 2010. Please note that this report supersedes the previous seismic recommendations in the report entitled "Preliminary Geology Recommendations and Seismicity Information for Advanced Planning Study" dated January 10, 2005.

### Soil Profile

The As-Built Log of Test Borings (LOTB) dated July 1957 indicates the foundation materials consist of sandy clay and gravely clay overlaying weathered igneous rock. Based on the description of the materials and the driving record of the cone penetrometer, a conservative shear wave velocity of 270 m/s is estimated for the top 100 feet of the soil/rock column.

### Seismicity

Based on the Caltrans 2009 Seismic Design Procedure (SPD), the nearest active fault to the site is the Mayfield Fault (Fault ID No. 47) with  $M_{max}$  of 7.2. This fault is about 68 kilometers southwest of the proposed bridge location, and is identified as a normal fault with a distance to top rupture from the ground surface of zero kilometer.

The spectral accelerations (SA) generated from this fault is less than the SA generated from

MR. LEWIS SHEN  
January 26, 2010  
Page 2

Seismic Design Recommendations  
Sweetbrier OC  
Br. No. 06-0115  
EA 02-2C2301

the probabilistic method, and therefore, the design Acceleration Response Spectrum (ARS) curve is based on the probabilistic method by USGS Seismic Hazard Map (Peterson et al, 2008) for the 5% in 50 years probability of exceedance (975 year return period). The design ARS curve with an estimated peak ground acceleration of 0.26g is attached in Appendix A.

### Liquefaction

Liquefaction potential due to ground strong shaking is considered to be insignificant.

### Surface Fault Rupture Hazard

The site is not located within Alquist-Priolo Fault Rupture Hazard Zones. The potential for surface fault rupture is considered negligible.

We will revisit these recommendations if additional soil/rock data become available. In the meantime, if you have any questions regarding the above recommendations, please call me at (916) 227-1033.



REZA MAHALLATI  
Senior Materials and Research Engineer  
Office of Geotechnical Design - North



Attachment  
1- Appendix A – ARS Curve

c: Xing Zheng (OGD-N)  
GDN File

# Appendix A

## Recommended ARS Curve



State of California  
**MEMORANDUM**

**Business, Transportation, and Housing Agency**

*Flex your power!  
Be energy efficient!*

**To:** Project File

July 6, 2010

03-Environmental Management  
02-SHA-5-PM 30.55R  
03 172 02 2C2301  
Tunnel Gulch Viaduct

**From:** DEPARTMENT OF TRANSPORTATION – Chris Quiney, Office of Environmental Management,  
P. O. Box 496073, Redding, CA 96049-6073

**Subject:** Non-Reporting U.S. Army Corps Nationwide Permit 14 (Linear Transportation Projects)

The California Department of Transportation (Caltrans) is initiating a project to rehabilitate and seismically retrofit the Tunnel Gulch Viaduct (Bridge No. 06-0131R) on Interstate 5 in Shasta County, approximately 10.6 miles north of the city of Redding. The project will be constructed in accordance with the terms and conditions of U.S. Army Corps of Engineers (USACE) Nationwide Permit 14 (Linear Transportation Projects) [NWP14]. The project will not result in a loss of waters of the United States greater than 0.10 acre nor will it result in a discharge to a special aquatic site, including wetlands. Based on the terms of the NWP14, notification to the USACE is not required. Attached is a copy of the NWP terms and conditions, a NWP General/Regional Condition Checklist, pre-construction photographs of the project site, a map delineating impacts within jurisdictional waters, and preliminary project plans.

Project purpose and need: Caltrans bridge maintenance reports indicate deterioration and stress damage in the concrete deck and superstructure. Additionally, the structure does not meet modern seismic standards.

Seismic work will occur at the base of piers number 2 and 5. The piers are located above the full pool elevation of Shasta Lake, which is 1,069.7 feet above sea level. The only encroachment within jurisdictional waters (below the full pool elevation of Shasta Lake) would result from construction of a segment of a temporary access road. Temporary construction access roads will be required to access each work area. Access roads will be approximately 20 feet in width and capable of supporting heavy construction equipment such as a crane, drill rig, excavator, loader, concrete trucks, dump trucks, and large flatbed trailers. In addition, a level work pad will be required at the base of piers number 2 and 5. It is anticipated that access will be gained from the southeast, northwest, and/or northeast quadrant of the structure depending on lake levels during the construction period. Construction of access roads will require the removal of small conifers between I-5 and the lakeshore. If access is gained from the southeast quadrant, the following work would be required below the full pool elevation of the lake:

Only a portion of the access road approximately 300 feet in length (approximately 0.25 acre) would be located below the full pool elevation of the lake. This area is located below the viaduct between piers 2 and 5. The area is devoid of substantial vegetation. Construction of the

Non-reporting NWP 14